

## TYPHOON L

| Type    | Standard | Gas Type  | Inlet Pressure       | Outlet Pressure    | Art. No. | Cat. No. |
|---------|----------|-----------|----------------------|--------------------|----------|----------|
| L/E-O   | DIN      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021058 |          |
| L/B-O   | BSP      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021059 |          |
| L/F-O   | NFE      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021060 |          |
| L/BU-O  | BSP/CGA  | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021111 |          |
| L/AS-O  | AS       | Oxygen    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 77021061 |          |
| L/U-O   | CGA      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021112 |          |
| L/E-A   | DIN      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 77021062 |          |
| L/B-A   | BSP      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 77021063 |          |
| L/BU-A  | BSP/CGA  | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 77021113 |          |
| L/F-A   | NFE      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 77021065 |          |
| L/AS-A  | AS       | Acetylene | 2500 KPa / 360 psi   | 150 KPa / 22 psi   | 77021066 |          |
| L/U-A   | CGA      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 77021114 |          |
| L/E-P   | DIN      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 77021067 |          |
| L/B-P   | BSP      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 77021068 |          |
| L/BU-P  | BSP/CGA  | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 77021115 |          |
| L/F-P   | NFE      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 77021069 |          |
| L/AS-P  | AS       | Propane   | 2500 KPa / 360 psi   | 250 KPa / 36 psi   | 77021070 |          |
| L/U-P   | CGA      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 77021116 |          |
| L/E-H   | DIN      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021072 |          |
| L/B-H   | BSP      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021073 |          |
| L/BU-H  | BSP/CGA  | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021117 |          |
| L/F-H   | NFE      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021074 |          |
| L/AS-H  | AS       | Hydrogen  | 20000 KPa / 2900 psi | 1000 BPa / 145 psi | 77021075 |          |
| L/U-H   | CGA      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021118 |          |
| L/E-AR  | DIN      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021076 |          |
| L/B-AR  | BSP      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021077 |          |
| L/BU-AR | BSP/CGA  | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021119 |          |
| L/F-AR  | NFE      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021078 |          |
| L/AS-AR | AS       | Argon     | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 77021079 |          |
| L/U-AR  | CGA      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021120 |          |
| L/E-C   | DIN      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 77021080 |          |
| L/B-C   | BSP      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 77021081 |          |
| L/BU-C  | BSP      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 77021121 |          |
| L/F-C   | NFE      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 77021082 |          |
| L/AS-C  | AS       | Carbon    | 10000 KPa / 2900 psi | 1000 KPa / 145 psi | 77021083 |          |
| L/U-C   | CGA      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 77021122 |          |



### TYPHOON L



| Type   | Standard | Gas Type | Inlet pressure       | Outlet pressure    | Art. No. | Cat. No. |
|--------|----------|----------|----------------------|--------------------|----------|----------|
| L/E-N  | DIN      | Nitrogen | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021084 |          |
| L/B-N  | BSP      | Nitrogen | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021085 |          |
| L/BU-N | BSP/CGA  | Nitrogen | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021123 |          |
| L/F-N  | NFE      | Nitrogen | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021086 |          |
| L/AS-N | AS       | Nitrogen | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 77021087 |          |
| L/U-N  | CGA      | Nitrogen | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021124 |          |
| L/E-H  | DIN      | Helium   | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021088 |          |
| L/B-H  | BSP      | Helium   | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021089 |          |
| L/BU-H | BSP/CGA  | Helium   | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021125 |          |
| L/F-H  | NFE      | Helium   | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021090 |          |
| L/AS-H | AS       | Helium   | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 77021091 |          |
| L/U-H  | CGA      | Helium   | 200 bar / 2900 psi   | 10 bar / 145 psi   | 77021126 |          |

### TYPHOON B



| Type   | Standard | Gas Type  | Inlet pressure   | Outlet pressure  | Art. No. | Cat. No. |
|--------|----------|-----------|------------------|------------------|----------|----------|
| B/B-A  | BSP      | Acetylene | 25 bar / 360 psi | 1,5 bar / 22 psi | 77021064 |          |
| B/SI-P | BSP      | Propane   | 25 bar / 360 psi | 2,5 bar / 36 psi | 77021071 |          |

### TYPHOON LFM

| Type      | Standard | Gas Type | Inlet Pressure       | Outlet Pressure    | Art. No. | Cat. No. |
|-----------|----------|----------|----------------------|--------------------|----------|----------|
| LFM/E-Ar  | DIN      | Argon    | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021092 |          |
| LFM/B-Ar  | BSP      | Argon    | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021093 |          |
| LFM/F-Ar  | NFE      | Argon    | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021094 |          |
| LFM/BU-Ar | BSP/CGA  | Argon    | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021128 |          |
| LFM/AS-Ar | AS       | Argon    | 20000 KPa / 2900 psi | 30 l/min / 64 seth | 77021095 |          |
| LFM/U-Ar  | CGA      | Argon    | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021129 |          |
| LFM/E-C   | DIN      | Carbon   | 100 bar / 2900 psi   | 30 l/min / 64 seth | 77021096 |          |
| LFM/B-C   | BSP      | Carbon   | 100 bar / 2900 psi   | 30 l/min / 64 seth | 77021097 |          |
| LFM/BU-C  | BSP/CGA  | Carbon   | 100 bar / 2900 psi   | 30 l/min / 64 seth | 77021131 |          |
| LFM/F-C   | NFE      | Carbon   | 100 bar / 2900 psi   | 30 l/min / 64 seth | 77021098 |          |
| LFM/AS-C  | AS       | Carbon   | 10000 KPa / 2900 psi | 30 l/min / 64 seth | 77021132 |          |
| LFM/U-C   | CGA      | Carbon   | 100 bar / 2900 psi   | 30 l/min / 64 seth | 77021129 |          |
| LFM/E-N   | DIN      | Nitrogen | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021100 |          |
| LFM/B-N   | BSP      | Nitrogen | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021101 |          |
| LFM/F-N   | BSP/CGA  | Nitrogen | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021134 |          |
| LFM/BU-N  | NFE      | Nitrogen | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021102 |          |
| LFM/AS-N  | AS       | Nitrogen | 20000 KPa / 2900 psi | 30 l/min / 64 seth | 77021103 |          |
| LFM/U-N   | CGA      | Nitrogen | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021135 |          |
| LFM/E-H   | DIN      | Helium   | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021151 |          |
| LFM/B-H   | BSP      | Helium   | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021152 |          |
| LFM/BU-H  | BSP/CGA  | Helium   | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021153 |          |
| LFM/F-H   | NFE      | Helium   | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021154 |          |
| LFM/AS-H  | AS       | Helium   | 20000 KPa / 2900 psi | 30 l/min / 64 seth | 77021155 |          |
| LFM/U-H   | CGA      | Helium   | 200 bar / 2900 psi   | 30 l/min / 64 seth | 77021156 |          |





### TORNADO SERIES W

| Type    | Standard | Gas Type              | Inlet Pressure     | Flow Rate | Art. No.  | Cat. No. |
|---------|----------|-----------------------|--------------------|-----------|-----------|----------|
| W/E-Ar  | DIN      | Argon                 | 230 bar/3335 psi   | 30 l/min  | 770.21047 |          |
| W/E-C   | DIN      | Carbon                | 230 bar/3335 psi   | 30 l/min  | 770.21048 |          |
| W/E-X   | DIN      | Argon/Co <sub>2</sub> | 230 bar/3335 psi   | 30 l/min  | 770.21049 |          |
| W/B-Ar  | BSP      | Argon                 | 230 bar/3335 psi   | 30 l/min  | 770.21052 |          |
| W/B-C   | BSP      | Carbon                | 230 bar/3335 psi   | 30 l/min  | 770.21053 |          |
| W/B-X   | BSP      | Argon/Co <sub>2</sub> | 230 bar/3335 psi   | 30 l/min  | 770.21051 |          |
| W/U-Ar  | CGA      | Argon                 | 230 bar/3335 psi   | 30 l/min  | 770.21041 |          |
| W/U-C   | CGA      | Carbon                | 230 bar/3335 psi   | 30 l/min  | 770.21042 |          |
| W/U-X   | CGA      | Argon/Co <sub>2</sub> | 230 bar/3335 psi   | 30 l/min  | 770.21043 |          |
| W/F-Ar  | NFE      | Argon                 | 230 bar/3335 psi   | 30 l/min  | 770.21038 |          |
| W/F-C   | NFE      | Carbon                | 230 bar/3335 psi   | 30 l/min  | 770.21039 |          |
| W/F-X   | NFE      | Argon/Co <sub>2</sub> | 230 bar/3335 psi   | 30 l/min  | 770.21040 |          |
| W/AS-Ar | AS       | Argon                 | 23000 KPa/3335 psi | 30 l/min  | 770.21035 |          |
| W/AS-C  | AS       | Carbon                | 23000 KPa/3335 psi | 30 l/min  | 770.21036 |          |
| W/AS-X  | AS       | Argon/Co <sub>2</sub> | 23000 KPa/3335 psi | 30 l/min  | 770.21037 |          |



# TORNADO

CYLINDER PRESSURE REGULATOR

### TORNADO SERIES L

| Type     | Standard | Gas Type  | Inlet pressure       | Outlet pressure    | Art. No.  | Cat. No. |
|----------|----------|-----------|----------------------|--------------------|-----------|----------|
| L/E-O    | DIN      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51740 |          |
| L/B-O    | BSP      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51742 |          |
| L/F-O    | NFE      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51750 |          |
| L/AS-O   | AS       | Oxygen    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51752 |          |
| L/E-A    | DIN      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51756 |          |
| L/B-A    | BSP      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51758 |          |
| L/F-A    | NFE      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51766 |          |
| L/AS-A   | AS       | Acetylene | 2500 KPa / 360 psi   | 150 KPa / 22 psi   | 770.51768 |          |
| L/E-P    | DIN      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51772 |          |
| L/B-P    | BSP      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51774 |          |
| L/F-P    | NFE      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51782 |          |
| L/AS-P   | AS       | Propane   | 2500 KPa / 360 psi   | 250 KPa / 36 psi   | 770.51784 |          |
| L/E-H    | DIN      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51788 |          |
| L/B-H    | BSP      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51790 |          |
| L/F-H    | NFE      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51798 |          |
| L/AS-H   | AS       | Hydrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51800 |          |
| L/E-Ar   | DIN      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51804 |          |
| L/B-Ar   | BSP      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51806 |          |
| L/F-Ar   | NFE      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51814 |          |
| L/AS-Ar  | AS       | Argon     | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51816 |          |
| L/E-C    | DIN      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51820 |          |
| L/B-C    | BSP      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51822 |          |
| L/F-C    | NFE      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51830 |          |
| L/AS-C   | AS       | Carbon    | 10000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51832 |          |
| L/E-N    | DIN      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51836 |          |
| L/B-N    | BSP      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51838 |          |
| L/F-N    | NFE      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51846 |          |
| L/AS-N   | AS       | Nitrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51848 |          |
| L/E-He   | DIN      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51852 |          |
| L/B- He  | BSP      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51854 |          |
| L/F- He  | NFE      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51862 |          |
| L/AS- He | AS       | Helium    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51864 |          |



### TORNADO SERIES LS



| Type      | Standard | Gas Type  | Inlet pressure       | Outlet pressure    | Art. No.  | Cat. No. |
|-----------|----------|-----------|----------------------|--------------------|-----------|----------|
| LS/E-O    | DIN      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51741 |          |
| LS/B-O    | BSP      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51743 |          |
| LS/F-O    | NFE      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51751 |          |
| LS/AS-O   | AS       | Oxygen    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51753 |          |
| LS/E-A    | DIN      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51757 |          |
| LS/B-A    | BSP      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51759 |          |
| LS/F-A    | NFE      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51767 |          |
| LS/AS-A   | AS       | Acetylene | 2500 KPa / 360 psi   | 150 KPa / 22 psi   | 770.51769 |          |
| LS/E-P    | DIN      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51773 |          |
| LS/B-P    | BSP      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51775 |          |
| LS/F-P    | NFE      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51783 |          |
| LS/AS-P   | AS       | Propane   | 2500 KPa / 360 psi   | 250 KPa / 36 psi   | 770.51785 |          |
| LS/E-H    | DIN      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51789 |          |
| LS/B-H    | BSP      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51791 |          |
| LS/F-H    | NFE      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51799 |          |
| LS/AS-H   | AS       | Hydrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51801 |          |
| LS/E-Ar   | DIN      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51805 |          |
| LS/B-Ar   | BSP      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51807 |          |
| LS/F-Ar   | NFE      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51815 |          |
| LS/AS-Ar  | AS       | Argon     | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51817 |          |
| LS/E-C    | DIN      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51821 |          |
| LS/B-C    | BSP      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51823 |          |
| LS/F-C    | NFE      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51831 |          |
| LS/AS-C   | AS       | Carbon    | 10000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51833 |          |
| LS/E-N    | DIN      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51837 |          |
| LS/B-N    | BSP      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51839 |          |
| LS/F-N    | NFE      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51847 |          |
| LS/AS-N   | AS       | Nitrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51849 |          |
| LS/E-He   | DIN      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51853 |          |
| LS/B- He  | BSP      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51855 |          |
| LS/F- He  | NFE      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51863 |          |
| LS/AS- He | AS       | Helium    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51865 |          |



### TORNADO SERIES R

| Type    | Standard | Gas Type  | Inlet pressure     | Outlet pressure  | Art. No.  | Cat. No. |
|---------|----------|-----------|--------------------|------------------|-----------|----------|
| R/B-O   | BSP      | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51868 |          |
| R/BU-O  | BSP/CGA  | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51746 |          |
| R/U-O   | CGA      | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51748 |          |
| R/B-A   | BSP      | Acetylene | 25 bar / 360 psi   | 1,5 bar / 22 psi | 770.51870 |          |
| R/BU-A  | BSP/CGA  | Acetylene | 25 bar / 360 psi   | 1,0 bar / 15 psi | 770.51762 |          |
| R/U-A   | CGA      | Acetylene | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51764 |          |
| R/B-P   | BSP      | Propane   | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51872 |          |
| R/BU-P  | BSP/CGA  | Propane   | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51778 |          |
| R/U-P   | CGA      | Propane   | 25 bar / 360 psi   | 10 bar / 145 psi | 770.51780 |          |
| R/B-H   | BSP      | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51874 |          |
| R/BU-H  | BSP/CGA  | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51794 |          |
| R/U-H   | CGA      | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51796 |          |
| R/B-Ar  | BSP      | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51876 |          |
| R/BU-Ar | BSP/CGA  | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51810 |          |
| R/U-Ar  | CGA      | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51812 |          |
| R/B-C   | BSP      | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51878 |          |
| R/BU-C  | BSP/CGA  | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51826 |          |
| R/U-C   | CGA      | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51828 |          |
| R/UB-N  | BSP      | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51880 |          |
| R/BU-N  | BSP/CGA  | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51842 |          |
| R/U-N   | CGA      | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51844 |          |
| R/B-He  | BSP      | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51882 |          |
| R/BU-He | BSP/CGA  | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51858 |          |
| R/U-He  | CGA      | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51860 |          |



### TORNADO SERIES RS



| Type     | Standard | Gas Type  | Inlet pressure     | Outlet pressure  | Art. No.  | Cat. No. |
|----------|----------|-----------|--------------------|------------------|-----------|----------|
| RS/B-O   | BSP      | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51869 |          |
| RS/BU-O  | BSP/CGA  | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51747 |          |
| RS/U-O   | CGA      | Oxygen    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51749 |          |
| RS/B-A   | BSP      | Acetylene | 25 bar / 360 psi   | 1,5 bar / 22 psi | 770.51871 |          |
| RS/BU-A  | BSP/CGA  | Acetylene | 25 bar / 360 psi   | 1,0 bar / 15 psi | 770.51763 |          |
| RS/U-A   | CGA      | Acetylene | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51765 |          |
| RS/B-P   | BSP      | Propane   | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51873 |          |
| RS/BU-P  | BSP/CGA  | Propane   | 25 bar / 360 psi   | 2,5 bar / 36 psi | 770.51779 |          |
| RS/U-P   | CGA      | Propane   | 25 bar / 360 psi   | 10 bar / 145 psi | 770.51781 |          |
| RS/B-H   | BSP      | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51875 |          |
| RS/BU-H  | BSP/CGA  | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51795 |          |
| RS/U-H   | CGA      | Hydrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51797 |          |
| RS/B-Ar  | BSP      | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51877 |          |
| RS/BU-Ar | BSP/CGA  | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51811 |          |
| RS/U-Ar  | CGA      | Argon     | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51813 |          |
| RS/B-C   | BSP      | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51879 |          |
| RS/BU-C  | BSP/CGA  | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51827 |          |
| RS/U-C   | CGA      | Carbon    | 100 bar / 1450 psi | 10 bar / 145 psi | 770.51829 |          |
| RS/UB-N  | BSP      | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51881 |          |
| RS/BU-N  | BSP/CGA  | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51843 |          |
| RS/U-N   | CGA      | Nitrogen  | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51845 |          |
| RS/B-He  | BSP      | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51883 |          |
| RS/BU-He | BSP/CGA  | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51859 |          |
| RS/U-He  | CGA      | Helium    | 200 bar / 2900 psi | 10 bar / 145 psi | 770.51861 |          |

### TORNADO SERIES B

| Type    | Standard | Gas Type  | Inlet pressure       | Working pressure   | Art. No.  | Cat. No. |
|---------|----------|-----------|----------------------|--------------------|-----------|----------|
| B/B-O   | BSP      | Oxygen    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51744 |          |
| B/AS-O  | AS       | Oxygen    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51754 |          |
| B/B-A   | BSP      | Acetylene | 25 bar / 360 psi     | 1,5 bar / 22 psi   | 770.51760 |          |
| B/AS-A  | AS       | Acetylene | 2500 KPa / 360 psi   | 150 KPa / 22 psi   | 770.51770 |          |
| B/B-P   | BSP      | Propane   | 25 bar / 360 psi     | 2,5 bar / 36 psi   | 770.51776 |          |
| B/AS-P  | AS       | Propane   | 2500 KPa / 360 psi   | 250 KPa / 36 psi   | 770.51786 |          |
| B/B-H   | BSP      | Hydrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51792 |          |
| B/AS-H  | AS       | Hydrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51802 |          |
| B/B-Ar  | BSP      | Argon     | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51808 |          |
| B/AS-Ar | AS       | Argon     | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51818 |          |
| B/B-C   | BSP      | Carbon    | 100 bar / 1450 psi   | 10 bar / 145 psi   | 770.51824 |          |
| B/AS-C  | AS       | Carbon    | 10000 KPa / 1450 psi | 1000 KPa / 145 psi | 770.51834 |          |
| B/B-N   | BSP      | Nitrogen  | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51840 |          |
| B/AS-N  | AS       | Nitrogen  | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51850 |          |
| B/B-He  | BSP      | Helium    | 200 bar / 2900 psi   | 10 bar / 145 psi   | 770.51856 |          |
| B/AS-He | AS       | Helium    | 20000 KPa / 2900 psi | 1000 KPa / 145 psi | 770.51866 |          |



### TORNADO SERIES BS

| Type     | Standard | Gas Type  | Inlet pressure     | Working pressure | Art. No.  | Cat. No. |
|----------|----------|-----------|--------------------|------------------|-----------|----------|
| BS/B-O   | BSP      | Oxygen    | 200 bar/2900 psi   | 10 bar/145 psi   | 770.51745 |          |
| BS/AS-O  | AS       | Oxygen    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.51755 |          |
| BS/B-A   | BSP      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.51761 |          |
| BS/AS-A  | AS       | Acetylene | 2500 KPa/360 psi   | 150 KPa/22 psi   | 770.51771 |          |
| BS/B-P   | BSP      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.51777 |          |
| BS/AS-P  | AS       | Propane   | 2500 KPa/360 psi   | 250 KPa/36 psi   | 770.51787 |          |
| BS/B-H   | BSP      | Hydrogen  | 200 bar/2900 psi   | 10 bar/145 psi   | 770.51793 |          |
| BS/AS-H  | AS       | Hydrogen  | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.51803 |          |
| BS/B-Ar  | BSP      | Argon     | 200 bar/2900 psi   | 10 bar/145 psi   | 770.51809 |          |
| BS/AS-Ar | AS       | Argon     | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.51819 |          |
| BS/B-C   | BSP      | Carbon    | 100 bar/1450 psi   | 10 bar/145 psi   | 770.51825 |          |
| BS/AS-C  | AS       | Carbon    | 10000 KPa/1450 psi | 1000 KPa/145 psi | 770.51835 |          |
| BS/B-N   | BSP      | Nitrogen  | 200 bar/2900 psi   | 10 bar/145 psi   | 770.51841 |          |
| BS/AS-N  | AS       | Nitrogen  | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.51851 |          |
| BS/B-He  | BSP      | Helium    | 200 bar/2900 psi   | 10 bar/145 psi   | 770.51857 |          |
| BS/AS-He | AS       | Helium    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.51867 |          |



### TORNADO SERIES LFG



| Type      | Standard | Gas Type | Inlet pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|--------------------|-----------|----------|
| LFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51951 |          |
| LFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51955 |          |
| LFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51959 |          |
| LFG/AS-Ar | AS       | Argon    | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51963 |          |
| LFG/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51967 |          |
| LFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51971 |          |
| LFG/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51975 |          |
| LFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51979 |          |
| LFG/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51983 |          |
| LFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51987 |          |
| LFG/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51991 |          |
| LFG/AS-N  | AS       | Nitrogen | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51995 |          |
| LFG/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51999 |          |
| LFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52003 |          |
| LFG/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52007 |          |
| LFG/AS-H  | AS       | Hydrogen | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52011 |          |

### TORNADO SERIES LFG



| Type      | Standard | Gas Type | Inlet pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|--------------------|-----------|----------|
| LFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51952 |          |
| LFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51956 |          |
| LFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51960 |          |
| LFG/AS-Ar | AS       | Argon    | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51964 |          |
| LFG/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51968 |          |
| LFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51972 |          |
| LFG/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51976 |          |
| LFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51980 |          |
| LFG/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51984 |          |
| LFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51988 |          |
| LFG/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51992 |          |
| LFG/AS-N  | AS       | Nitrogen | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51996 |          |
| LFG/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52000 |          |
| LFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52004 |          |
| LFG/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52008 |          |
| LFG/AS-H  | AS       | Hydrogen | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52012 |          |

### TORNADO SERIES LSFG

| Type       | Standard | Gas Type | Inlet pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| LSFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51953 |          |
| LSFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51957 |          |
| LSFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51961 |          |
| LSFG/AS-Ar | AS       | Argon    | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51965 |          |
| LSFG/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51969 |          |
| LSFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51973 |          |
| LSFG/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.51977 |          |
| LSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51981 |          |
| LSFG/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51985 |          |
| LSFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51989 |          |
| LSFG/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.51993 |          |
| LSFG/AS-N  | AS       | Nitrogen | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.51997 |          |
| LSFG/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52001 |          |
| LSFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52005 |          |
| LSFG/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52009 |          |
| LSFG/AS-H  | AS       | Hydrogen | 20000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52013 |          |



### TORNADO SERIES LSFG

| Type       | Standard | Gas Type | Inlet pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| LSFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51954 |          |
| LSFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51958 |          |
| LSFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51962 |          |
| LSFG/AS-Ar | AS       | Argon    | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51966 |          |
| LSFG/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51970 |          |
| LSFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51974 |          |
| LSFG/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.51978 |          |
| LSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51982 |          |
| LSFG/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51986 |          |
| LSFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51990 |          |
| LSFG/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.51994 |          |
| LSFG/AS-N  | AS       | Nitrogen | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.51998 |          |
| LSFG/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52002 |          |
| LSFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52006 |          |
| LSFG/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52010 |          |
| LSFG/AS-H  | AS       | Hydrogen | 20000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52014 |          |



### TORNADO SERIES RFG



| Type      | Standard | Gas Type | Inlet pressure    | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|-------------------|--------------------|-----------|----------|
| RFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52015 |          |
| RFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52019 |          |
| RFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52023 |          |
| RFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi  | 16 l/min / 34 scfh | 770.52027 |          |
| RFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi  | 16 l/min / 34 scfh | 770.52031 |          |
| RFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi  | 16 l/min / 34 scfh | 770.52035 |          |
| RFG/B-N   | BSP      | Nitrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52039 |          |
| RFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52043 |          |
| RFG/U-N   | CGA      | Nitrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52047 |          |
| RFG/B-H   | BSP      | Hydrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52051 |          |
| RFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52055 |          |
| RFG/U-H   | CGA      | Hydrogen | 200 bar/ 2900 psi | 16 l/min / 34 scfh | 770.52059 |          |

### TORNADO SERIES RFG



| Type      | Standard | Gas Type | Inlet pressure    | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|-------------------|--------------------|-----------|----------|
| RFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi  | 32 l/min / 68 scfh | 770.52016 |          |
| RFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi  | 32 l/min / 68 scfh | 770.52020 |          |
| RFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi  | 32 l/min / 68 scfh | 770.52024 |          |
| RFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi  | 32 l/min / 68 scfh | 770.52028 |          |
| RFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi  | 32 l/min / 68 scfh | 770.52032 |          |
| RFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi  | 32 l/min / 68 scfh | 770.52036 |          |
| RFG/B-N   | BSP      | Nitrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52040 |          |
| RFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52044 |          |
| RFG/U-N   | CGA      | Nitrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52048 |          |
| RFG/B-H   | BSP      | Hydrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52052 |          |
| RFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52056 |          |
| RFG/U-H   | CGA      | Hydrogen | 200 bar/ 2900 psi | 32 l/min / 68 scfh | 770.52060 |          |

### TORNADO SERIES RSFG

| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. Nr. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RSFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52017 |          |
| RSFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52021 |          |
| RSFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52025 |          |
| RSFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52029 |          |
| RSFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52033 |          |
| RSFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52037 |          |
| RSFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52041 |          |
| RSFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52045 |          |
| RSFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52049 |          |
| RSFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52053 |          |
| RSFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52057 |          |
| RSFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52061 |          |



### TORNADO SERIES RSFG

| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RSFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52018 |          |
| RSFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52022 |          |
| RSFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52026 |          |
| RSFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52030 |          |
| RSFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52034 |          |
| RSFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52038 |          |
| RSFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52042 |          |
| RSFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52046 |          |
| RSFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52050 |          |
| RSFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52054 |          |
| RSFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52058 |          |
| RSFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52062 |          |





### TORNADO SERIES BFG



| Type      | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|------------------|--------------------|-----------|----------|
| BFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52063 |          |
| BFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52065 |          |
| BFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52066 |          |
| BFG/B-C   | BSP      | Carbon   | 400 bar/1450 psi | 16 l/min / 34 scfh | 770.52071 |          |
| BFG/AS-C  | AS       | Carbon   | 400 bar/1450 psi | 16 l/min / 34 scfh | 770.52073 |          |
| BFG/AS-C  | AS       | Carbon   | 400 bar/1450 psi | 32 l/min / 68 scfh | 770.52074 |          |
| BFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52079 |          |
| BFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52081 |          |
| BFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52082 |          |
| BFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52087 |          |
| BFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52089 |          |
| BFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52090 |          |

### TORNADO SERIES BSFG



| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| BSFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52064 |          |
| BSFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52067 |          |
| BSFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52068 |          |
| BSFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52069 |          |
| BSFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52070 |          |
| BSFG/B-C   | BSP      | Carbon   | 400 bar/1450 psi   | 32 l/min / 68 scfh | 770.52072 |          |
| BSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52075 |          |
| BSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52076 |          |
| BSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52077 |          |
| BSFG/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52078 |          |
| BSFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52080 |          |
| BSFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52083 |          |
| BSFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52084 |          |
| BSFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52085 |          |
| BSFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52086 |          |
| BSFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52088 |          |
| BSFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52091 |          |
| BSFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52092 |          |
| BSFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52093 |          |
| BSFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52094 |          |



### TORNADO SERIES LFM

| Type      | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|--------------------|-----------|----------|
| LFM/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52095 |          |
| LFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52097 |          |
| LFM/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52099 |          |
| LFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52101 |          |
| LFM/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.52103 |          |
| LFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.52105 |          |
| LFM/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 16 l/min / 34 scfh | 770.52107 |          |
| LFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52109 |          |
| LFM/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52111 |          |
| LFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52113 |          |
| LFM/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52115 |          |
| LFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52117 |          |
| LFM/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52119 |          |
| LFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52121 |          |
| LFM/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52123 |          |
| LFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52125 |          |



### TORNADO SERIES LFM

| Type      | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|--------------------|-----------|----------|
| LFM/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52096 |          |
| LFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52098 |          |
| LFM/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52100 |          |
| LFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52102 |          |
| LFM/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 32 l/min / 64 scfh | 770.52104 |          |
| LFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 32 l/min / 64 scfh | 770.52106 |          |
| LFM/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 32 l/min / 64 scfh | 770.52108 |          |
| LFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 64 scfh | 770.52110 |          |
| LFM/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52112 |          |
| LFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52114 |          |
| LFM/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52116 |          |
| LFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52118 |          |
| LFM/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52120 |          |
| LFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52122 |          |
| LFM/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52124 |          |
| LFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52126 |          |



### TORNADO SERIES RFM



| Type      | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|------------------|--------------------|-----------|----------|
| RFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52127 |          |
| RFM/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52129 |          |
| RFM/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52131 |          |
| RFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52133 |          |
| RFM/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52135 |          |
| RFM/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52137 |          |
| RFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52139 |          |
| RFM/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52141 |          |
| RFM/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52143 |          |
| RFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52145 |          |
| RFM/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52147 |          |
| RFM/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52149 |          |

### TORNADO SERIES RFM



| Type      | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|------------------|--------------------|-----------|----------|
| RFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52128 |          |
| RFM/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52130 |          |
| RFM/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52132 |          |
| RFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 32 l/min / 64 scfh | 770.52134 |          |
| RFM/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 32 l/min / 64 scfh | 770.52136 |          |
| RFM/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 32 l/min / 64 scfh | 770.52138 |          |
| RFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52140 |          |
| RFM/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52142 |          |
| RFM/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52144 |          |
| RFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52146 |          |
| RFM/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52148 |          |
| RFM/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52150 |          |

### TORNADO SERIES BFM

| Type      | Standard | Gas Type | Inlet Pressure    | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|-------------------|--------------------|-----------|----------|
| BFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52151 |          |
| BFM/AS-Ar | AS       | Argon    | 20000 KPa/2900psi | 16 l/min / 34 scfh | 770.52153 |          |
| BFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi  | 16 l/min / 34 scfh | 770.52155 |          |
| BFM/AS-C  | AS       | Carbon   | 10000 KPa/1450psi | 16 l/min / 34 scfh | 770.52157 |          |
| BFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52159 |          |
| BFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900psi | 16 l/min / 34 scfh | 770.52161 |          |
| BFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi  | 16 l/min / 34 scfh | 770.52163 |          |
| BFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900psi | 16 l/min / 34 scfh | 770.52165 |          |



### TORNADO SERIES BFM

| Type      | Standard | Gas Type | Inlet Pressure    | Flow Rate          | Art. No.  | Cat. No. |
|-----------|----------|----------|-------------------|--------------------|-----------|----------|
| BFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi  | 32 l/min / 64 scfh | 770.52152 |          |
| BFM/AS-Ar | AS       | Argon    | 20000 KPa/2900psi | 32 l/min / 64 scfh | 770.52154 |          |
| BFM/B-C   | BSP      | Carbon   | 100 bar/1450 psi  | 32 l/min / 64 scfh | 770.52156 |          |
| BFM/AS-C  | AS       | Carbon   | 10000 KPa/1450psi | 32 l/min / 64 scfh | 770.52158 |          |
| BFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi  | 32 l/min / 64 scfh | 770.52160 |          |
| BFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900psi | 32 l/min / 64 scfh | 770.52162 |          |
| BFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi  | 32 l/min / 64 scfh | 770.52164 |          |
| BFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900psi | 32 l/min / 64 scfh | 770.52166 |          |



### TORNADO SERIES LFM2



| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|----------------------|-----------|----------|
| LFM2/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52167 |          |
| LFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52169 |          |
| LFM2/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52171 |          |
| LFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52173 |          |
| LFM2/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 2x16 l/min / 34 scfh | 770.52175 |          |
| LFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 2x16 l/min / 34 scfh | 770.52177 |          |
| LFM2/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 2x16 l/min / 34 scfh | 770.52179 |          |
| LFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 2x16 l/min / 34 scfh | 770.52181 |          |
| LFM2/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52183 |          |
| LFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52185 |          |
| LFM2/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52187 |          |
| LFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52189 |          |
| LFM2/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52191 |          |
| LFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52193 |          |
| LFM2/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52195 |          |
| LFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52197 |          |

### TORNADO SERIES LFM2



| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|----------------------|-----------|----------|
| LFM2/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52168 |          |
| LFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52170 |          |
| LFM2/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52172 |          |
| LFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52174 |          |
| LFM2/E-C   | DIN      | Carbon   | 100 bar/1450 psi   | 2x32 l/min / 64 scfh | 770.52176 |          |
| LFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 2x32 l/min / 64 scfh | 770.52178 |          |
| LFM2/F-C   | NFE      | Carbon   | 100 bar/1450 psi   | 2x32 l/min / 64 scfh | 770.52180 |          |
| LFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 2x32 l/min / 64 scfh | 770.52182 |          |
| LFM2/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52184 |          |
| LFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52186 |          |
| LFM2/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52188 |          |
| LFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52190 |          |
| LFM2/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52192 |          |
| LFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52194 |          |
| LFM2/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52196 |          |
| LFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52198 |          |

### TORNADO SERIES RFM2

| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|----------------------|-----------|----------|
| RFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52199 |          |
| RFM2/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52201 |          |
| RFM2/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52203 |          |
| RFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 2x16 l/min / 34 scfh | 770.52205 |          |
| RFM2/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 2x16 l/min / 34 scfh | 770.52207 |          |
| RFM2/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 2x16 l/min / 34 scfh | 770.52209 |          |
| RFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52211 |          |
| RFM2/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52213 |          |
| RFM2/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52215 |          |
| RFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52217 |          |
| RFM2/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52219 |          |
| RFM2/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 2x16 l/min / 34 scfh | 770.52221 |          |



### TORNADO SERIES RFM2

| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|----------------------|-----------|----------|
| RFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52200 |          |
| RFM2/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52202 |          |
| RFM2/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52204 |          |
| RFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 2x32 l/min / 64 scfh | 770.52206 |          |
| RFM2/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 2x32 l/min / 64 scfh | 770.52208 |          |
| RFM2/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 2x32 l/min / 64 scfh | 770.52210 |          |
| RFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52212 |          |
| RFM2/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52214 |          |
| RFM2/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52216 |          |
| RFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52218 |          |
| RFM2/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52220 |          |
| RFM2/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 2x32 l/min / 64 scfh | 770.52222 |          |



### TORNADO SERIES BFM2



| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|----------------------|-----------|----------|
| BFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52223 |          |
| BFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52225 |          |
| BFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 2x16 l/min / 34 scfh | 770.52227 |          |
| BFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 2x16 l/min / 34 scfh | 770.52229 |          |
| BFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52231 |          |
| BFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52233 |          |
| BFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 2x16 l/min / 34 scfh | 770.52235 |          |
| BFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 2x16 l/min / 34 scfh | 770.52237 |          |

### TORNADO SERIES BFM2



| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate            | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|----------------------|-----------|----------|
| BFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52224 |          |
| BFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52226 |          |
| BFM2/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 2x32 l/min / 64 scfh | 770.52228 |          |
| BFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 2x32 l/min / 64 scfh | 770.52230 |          |
| BFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52232 |          |
| BFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52234 |          |
| BFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 2x32 l/min / 64 scfh | 770.52236 |          |
| BFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 2x32 l/min / 64 scfh | 770.52238 |          |

### TORNADO SERIES LD

| Type     | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|----------|----------|----------|------------------|-----------------|-----------|----------|
| LD/E-O   | DIN      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52430 |          |
| LD/B-O   | BSP      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52432 |          |
| LD/F-O   | NFE      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52436 |          |
| LD/AS-O  | AS       | Oxygen   | 20000 KPa        | 1000 KPa        | 770.52438 |          |
| LD/E-H   | DIN      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52440 |          |
| LD/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52442 |          |
| LD/F-H   | NFE      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52446 |          |
| LD/AS-H  | AS       | Hydrogen | 20000 KPa        | 1000 KPa        | 770.52448 |          |
| LD/E-Ar  | DIN      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52450 |          |
| LD/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52452 |          |
| LD/F-Ar  | NFE      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52456 |          |
| LD/AS-Ar | AS       | Argon    | 20000 KPa        | 1000 KPa        | 770.52458 |          |
| LD/E-C   | DIN      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52460 |          |
| LD/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52462 |          |
| LD/F-C   | NFE      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52466 |          |
| LD/AS-C  | AS       | Carbon   | 10000 KPa        | 1000 KPa        | 770.52468 |          |
| LD/E-N   | DIN      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52470 |          |
| LD/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52472 |          |
| LD/F-N   | NFE      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52476 |          |
| LD/AS-N  | AS       | Nitrogen | 20000 KPa        | 1000 KPa        | 770.52478 |          |
| LD/E-He  | DIN      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52480 |          |
| LD/B-He  | BSP      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52482 |          |
| LD/F-He  | NFE      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52486 |          |
| LD/AS-He | AS       | Helium   | 20000 KPa        | 1000 KPa        | 770.52488 |          |





### TORNADO SERIES LSD



| Type       | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|-----------------|-----------|----------|
| LSD/E-O    | DIN      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52431 |          |
| LSD/B-O    | BSP      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52433 |          |
| LSD/F-O    | NFE      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52437 |          |
| LSD/AS-O   | AS       | Oxygen   | 20000 KPa        | 1000 KPa        | 770.52439 |          |
| LSD/E-H    | DIN      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52441 |          |
| LSD/B-H    | BSP      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52443 |          |
| LSD/F-H    | NFE      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52447 |          |
| LSD/AS-H   | AS       | Hydrogen | 20000 KPa        | 1000 KPa        | 770.52449 |          |
| LSD/E- Ar  | DIN      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52451 |          |
| LSD/B- Ar  | BSP      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52453 |          |
| LSD/F- Ar  | NFE      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52457 |          |
| LSD/AS- Ar | AS       | Argon    | 20000 KPa        | 1000 KPa        | 770.52459 |          |
| LSD/E-C    | DIN      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52461 |          |
| LSD/B-C    | BSP      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52463 |          |
| LSD/F-C    | NFE      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52467 |          |
| LSD/AS-C   | AS       | Carbon   | 10000 KPa        | 1000 KPa        | 770.52469 |          |
| LSD/E-N    | DIN      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52471 |          |
| LSD/B-N    | BSP      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52473 |          |
| LSD/F-N    | NFE      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52477 |          |
| LSD/AS-N   | AS       | Nitrogen | 20000 KPa        | 1000 KPa        | 770.52479 |          |
| LSD/E-He   | DIN      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52481 |          |
| LSD/B-He   | BSP      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52483 |          |
| LSD/F-He   | NFE      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52487 |          |
| LSD/AS-He  | AS       | Helium   | 20000 KPa        | 1000 KPa        | 770.52489 |          |



### TORNADO SERIES RD

| Type     | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|----------|----------|----------|------------------|-----------------|-----------|----------|
| RD/B-O   | BSP      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52490 |          |
| RD/U-O   | CGA      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52492 |          |
| RD/BU-O  | BSP/CGA  | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52434 |          |
| RD/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52494 |          |
| RD/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52496 |          |
| RD/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52444 |          |
| RD/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52498 |          |
| RD/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52500 |          |
| RD/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52454 |          |
| RD/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52502 |          |
| RD/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52504 |          |
| RD/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52464 |          |
| RD/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52506 |          |
| RD/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52508 |          |
| RD/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52474 |          |
| RD/B-He  | BSP      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52510 |          |
| RD/U-He  | CGA      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52512 |          |
| RD/BU-He | BSP/CGA  | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52484 |          |



### TORNADO SERIES RSD



| Type      | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|-----------|----------|----------|------------------|-----------------|-----------|----------|
| RSD/B-O   | BSP      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52491 |          |
| RSD/U-O   | CGA      | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52493 |          |
| RSD/BU-O  | BSP/CGA  | Oxygen   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52435 |          |
| RSD/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52495 |          |
| RSD/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52497 |          |
| RSD/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52445 |          |
| RSD/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52499 |          |
| RSD/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52501 |          |
| RSD/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 10 bar/145 psi  | 770.52455 |          |
| RSD/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52503 |          |
| RSD/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52505 |          |
| RSD/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 10 bar/145 psi  | 770.52465 |          |
| RSD/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52507 |          |
| RSD/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52509 |          |
| RSD/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 10 bar/145 psi  | 770.52475 |          |
| RSD/B-He  | BSP      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52511 |          |
| RSD/U-He  | CGA      | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52513 |          |
| RSD/BU-He | BSP/CGA  | Helium   | 200 bar/2900 psi | 10 bar/145 psi  | 770.52485 |          |

### TORNADO SERIES BD

| Type     | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|----------|--------------------|------------------|-----------|----------|
| BD/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52514 |          |
| BD/AS-O  | AS       | Oxygen   | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52516 |          |
| BD/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52518 |          |
| BD/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52520 |          |
| BD/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52522 |          |
| BD/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52524 |          |
| BD/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 10 bar/145 psi   | 770.52526 |          |
| BD/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 1000 KPa/145 psi | 770.52528 |          |
| BD/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52530 |          |
| BD/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52532 |          |
| BD/B-He  | BSP      | Helium   | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52534 |          |
| BD/AS-He | AS       | Helium   | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52536 |          |



### TORNADO SERIES BSD

| Type      | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|------------------|-----------|----------|
| BSD/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52515 |          |
| BSD/AS-O  | AS       | Oxygen   | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52517 |          |
| BSD/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52519 |          |
| BSD/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52521 |          |
| BSD/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52523 |          |
| BSD/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52525 |          |
| BSD/B-C   | BSP      | Carbon   | 100 bar/1450 psi   | 10 bar/145 psi   | 770.52527 |          |
| BSD/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 1000 KPa/145 psi | 770.52529 |          |
| BSD/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52531 |          |
| BSD/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52533 |          |
| BSD/B-He  | BSP      | Helium   | 200 bar/2900 psi   | 10 bar/145 psi   | 770.52535 |          |
| BSD/AS-He | AS       | Helium   | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.52537 |          |



### TORNADO SERIES LDFG



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| LDFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52538 |          |
| LDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52540 |          |
| LDFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52542 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52544 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52545 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52546 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52547 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52548 |          |
| LDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52549 |          |
| LDFG/E-C   | DIN      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52554 |          |
| LDFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52556 |          |
| LDFG/F-C   | NFE      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52558 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52560 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52605 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52606 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52607 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52608 |          |
| LDFG/AS-C  | AS       | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52609 |          |
| LDFG/E-N   | DIN      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52614 |          |
| LDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52616 |          |
| LDFG/F-N   | NFE      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52618 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52620 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52621 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52622 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52623 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52624 |          |
| LDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52625 |          |
| LDFG/E-H   | DIN      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52630 |          |
| LDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52632 |          |
| LDFG/F-H   | NFE      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52634 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52636 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52637 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52638 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52639 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52640 |          |
| LDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52641 |          |

### TORNADO SERIES LSDFG

| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| LSDFG/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52539 |          |
| LSDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52541 |          |
| LSDFG/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52543 |          |
| LSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52550 |          |
| LSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52551 |          |
| LSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52552 |          |
| LSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52553 |          |
| LSDFG/E-    | DIN      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.52555 |          |
| LSDFG/B-    | BSP      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.52557 |          |
| LSDFG/F-    | NFE      | Carbon   | 100 bar/1450 psi   | 32 l/min / 68 scfh | 770.52559 |          |
| LSDFG/AS-   | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52610 |          |
| LSDFG/AS-   | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52611 |          |
| LSDFG/AS-   | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52612 |          |
| LSDFG/AS-   | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 68 scfh | 770.52613 |          |
| LSDFG/E-    | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52615 |          |
| LSDFG/B-    | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52617 |          |
| LSDFG/F-    | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52619 |          |
| LSDFG/AS-   | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52626 |          |
| LSDFG/AS-   | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52627 |          |
| LSDFG/AS-   | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52628 |          |
| LSDFG/AS-   | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52629 |          |
| LSDFG/E-    | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52631 |          |
| LSDFG/B-    | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52633 |          |
| LSDFG/F-    | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 68 scfh | 770.52635 |          |
| LSDFG/AS-   | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52642 |          |
| LSDFG/AS-   | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52643 |          |
| LSDFG/AS-   | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52644 |          |
| LSDFG/AS-   | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52645 |          |



### TORNADO SERIES RDFG



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52646 |          |
| RDFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52650 |          |
| RDFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52654 |          |
| RDFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52658 |          |
| RDFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52662 |          |
| RDFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52666 |          |
| RDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52670 |          |
| RDFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52674 |          |
| RDFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52678 |          |
| RDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52682 |          |
| RDFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52656 |          |
| RDFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52690 |          |

### TORNADO SERIES RDFG



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52647 |          |
| RDFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52651 |          |
| RDFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52655 |          |
| RDFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52659 |          |
| RDFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52663 |          |
| RDFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52667 |          |
| RDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52671 |          |
| RDFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52675 |          |
| RDFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52679 |          |
| RDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52683 |          |
| RDFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52687 |          |
| RDFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52691 |          |

### TORNADO SERIES RSDFG

| Type        | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|--------------------|-----------|----------|
| RSDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52648 |          |
| RSDFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52652 |          |
| RSDFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52656 |          |
| RSDFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52660 |          |
| RSDFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52664 |          |
| RSDFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 16 l/min / 34 scfh | 770.52668 |          |
| RSDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52672 |          |
| RSDFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52676 |          |
| RSDFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52680 |          |
| RSDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52684 |          |
| RSDFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52688 |          |
| RSDFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52692 |          |



### TORNADO SERIES RSDFG

| Type        | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|--------------------|-----------|----------|
| RSDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52649 |          |
| RSDFG/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52653 |          |
| RSDFG/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52657 |          |
| RSDFG/B-C   | BSP      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52661 |          |
| RSDFG/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52665 |          |
| RSDFG/U-C   | CGA      | Carbon   | 100 bar/1450 psi | 32 l/min / 68 scfh | 770.52669 |          |
| RSDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52673 |          |
| RSDFG/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52677 |          |
| RSDFG/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52681 |          |
| RSDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52685 |          |
| RSDFG/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52689 |          |
| RSDFG/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52693 |          |





### TORNADO SERIES BDFG



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| BDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52694 |          |
| BDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52696 |          |
| BDFG/AS-Ar | AS       | Argon    | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52697 |          |
| BDFG/B-C   | BSP      | Carbon   | 400 bar/1450 psi | 16 l/min / 34 scfh | 770.52702 |          |
| BDFG/AS-C  | AS       | Carbon   | 400 bar/1450 psi | 16 l/min / 34 scfh | 770.52704 |          |
| BDFG/AS-C  | AS       | Carbon   | 400 bar/1450 psi | 32 l/min / 68 scfh | 770.52705 |          |
| BDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52710 |          |
| BDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52712 |          |
| BDFG/AS-N  | AS       | Nitrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52713 |          |
| BDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52718 |          |
| BDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52720 |          |
| BDFG/AS-H  | AS       | Hydrogen | 200 bar/2900 psi | 32 l/min / 68 scfh | 770.52721 |          |

### TORNADO SERIES BSDFG



| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| BSDFG/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52695 |          |
| BSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52698 |          |
| BSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52699 |          |
| BSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52700 |          |
| BSDFG/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52701 |          |
| BSDFG/B-C   | BSP      | Carbon   | 400 bar/1450 psi   | 16 l/min / 34 scfh | 770.52703 |          |
| BSDFG/AS-C  | AS       | Carbon   | 10000 bar/1450 psi | 16 l/min / 34 scfh | 770.52706 |          |
| BSDFG/AS-C  | AS       | Carbon   | 10000 bar/1450 psi | 32 l/min / 68 scfh | 770.52707 |          |
| BSDFG/AS-C  | AS       | Carbon   | 10000 bar/1450 psi | 16 l/min / 34 scfh | 770.52708 |          |
| BSDFG/AS-C  | AS       | Carbon   | 10000 bar/1450 psi | 32 l/min / 68 scfh | 770.52709 |          |
| BSDFG/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52711 |          |
| BSDFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52714 |          |
| BSDFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52715 |          |
| BSDFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52716 |          |
| BSDFG/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52717 |          |
| BSDFG/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52719 |          |
| BSDFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52722 |          |
| BSDFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52723 |          |
| BSDFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52724 |          |
| BSDFG/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 68 scfh | 770.52725 |          |



### TORNADO SERIES LDFM

| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| LDFM/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52726 |          |
| LDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52728 |          |
| LDFM/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52730 |          |
| LDFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52732 |          |
| LDFM/E-C   | DIN      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52734 |          |
| LDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52736 |          |
| LDFM/F-C   | NFE      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52738 |          |
| LDFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52740 |          |
| LDFM/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52742 |          |
| LDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52744 |          |
| LDFM/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52746 |          |
| LDFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52748 |          |
| LDFM/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52750 |          |
| LDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52752 |          |
| LDFM/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52754 |          |
| LDFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52756 |          |



### TORNADO SERIES LDFM

| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| LDFM/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52727 |          |
| LDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52729 |          |
| LDFM/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52731 |          |
| LDFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52733 |          |
| LDFM/E-C   | DIN      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52735 |          |
| LDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52737 |          |
| LDFM/F-C   | NFE      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52739 |          |
| LDFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 64 scfh | 770.52741 |          |
| LDFM/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52743 |          |
| LDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52745 |          |
| LDFM/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52747 |          |
| LDFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52749 |          |
| LDFM/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52751 |          |
| LDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52753 |          |
| LDFM/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52755 |          |
| LDFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52757 |          |



### TORNADO SERIES RDFM



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52758 |          |
| RDFM/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52760 |          |
| RDFM/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52762 |          |
| RDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52764 |          |
| RDFM/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52766 |          |
| RDFM/U-C   | CGA      | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52768 |          |
| RDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52770 |          |
| RDFM/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52772 |          |
| RDFM/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52774 |          |
| RDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52776 |          |
| RDFM/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52778 |          |
| RDFM/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52780 |          |

### TORNADO SERIES RDFM



| Type       | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52759 |          |
| RDFM/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52761 |          |
| RDFM/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52763 |          |
| RDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52765 |          |
| RDFM/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52767 |          |
| RDFM/U-C   | CGA      | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52769 |          |
| RDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52771 |          |
| RDFM/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52773 |          |
| RDFM/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52775 |          |
| RDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52777 |          |
| RDFM/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52779 |          |
| RDFM/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52781 |          |

### TORNADO SERIES BDFM

| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| BDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52782 |          |
| BDFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52784 |          |
| BDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52786 |          |
| BDFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52788 |          |
| BDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52790 |          |
| BDFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52792 |          |
| BDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52794 |          |
| BDFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52796 |          |



### TORNADO SERIES BDFM

| Type       | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|------------|----------|----------|--------------------|--------------------|-----------|----------|
| BDFM/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52783 |          |
| BDFM/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52785 |          |
| BDFM/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52787 |          |
| BDFM/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 64 scfh | 770.52789 |          |
| BDFM/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52791 |          |
| BDFM/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52793 |          |
| BDFM/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52795 |          |
| BDFM/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52797 |          |



### TORNADO SERIES LDFM2



| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| LDFM2/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52798 |          |
| LDFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52800 |          |
| LDFM2/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52802 |          |
| LDFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52804 |          |
| LDFM2/E-C   | DIN      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52806 |          |
| LDFM2/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52808 |          |
| LDFM2/F-C   | NFE      | Carbon   | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52810 |          |
| LDFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52812 |          |
| LDFM2/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52814 |          |
| LDFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52816 |          |
| LDFM2/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52818 |          |
| LDFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52820 |          |
| LDFM2/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52822 |          |
| LDFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52824 |          |
| LDFM2/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52826 |          |
| LDFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52828 |          |

### TORNADO SERIES LDFM2



| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| LDFM2/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52799 |          |
| LDFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52801 |          |
| LDFM2/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52803 |          |
| LDFM2/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52805 |          |
| LDFM2/E-C   | DIN      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52807 |          |
| LDFM2/B-C   | BSP      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52809 |          |
| LDFM2/F-C   | NFE      | Carbon   | 100 bar/1450psi    | 32 l/min / 64 scfh | 770.52811 |          |
| LDFM2/AS-C  | AS       | Carbon   | 10000 KPa/1450 psi | 32 l/min / 64 scfh | 770.52813 |          |
| LDFM2/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52815 |          |
| LDFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52817 |          |
| LDFM2/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52819 |          |
| LDFM2/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52821 |          |
| LDFM2/E-H   | DIN      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52823 |          |
| LDFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52825 |          |
| LDFM2/F-H   | NFE      | Hydrogen | 200 bar/2900 psi   | 32 l/min / 64 scfh | 770.52827 |          |
| LDFM2/AS-H  | AS       | Hydrogen | 20000 KPa/2900 psi | 32 l/min / 64 scfh | 770.52829 |          |

### TORNADO SERIES RDFM2

| Type        | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52830 |          |
| RDFM2/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52832 |          |
| RDFM2/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52834 |          |
| RDFM2/B-C   | BSP      | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52836 |          |
| RDFM2/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52838 |          |
| RDFM2/U-C   | CGA      | Carbon   | 100 bar/1450psi  | 16 l/min / 34 scfh | 770.52840 |          |
| RDFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52842 |          |
| RDFM2/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52844 |          |
| RDFM2/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52846 |          |
| RDFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52848 |          |
| RDFM2/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52850 |          |
| RDFM2/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 16 l/min / 34 scfh | 770.52852 |          |



### TORNADO SERIES RDFM2

| Type        | Standard | Gas Type | Inlet Pressure   | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|--------------------|-----------|----------|
| RDFM2/B-Ar  | BSP      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52831 |          |
| RDFM2/BU-Ar | BSP/CGA  | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52833 |          |
| RDFM2/U-Ar  | CGA      | Argon    | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52835 |          |
| RDFM2/B-C   | BSP      | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52837 |          |
| RDFM2/BU-C  | BSP/CGA  | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52839 |          |
| RDFM2/U-C   | CGA      | Carbon   | 100 bar/1450psi  | 32 l/min / 64 scfh | 770.52841 |          |
| RDFM2/B-N   | BSP      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52843 |          |
| RDFM2/BU-N  | BSP/CGA  | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52845 |          |
| RDFM2/U-N   | CGA      | Nitrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52847 |          |
| RDFM2/B-H   | BSP      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52849 |          |
| RDFM2/BU-H  | BSP/CGA  | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52851 |          |
| RDFM2/U-H   | CGA      | Hydrogen | 200 bar/2900 psi | 32 l/min / 64 scfh | 770.52853 |          |



### TORNADO SERIES BDFM2



| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| BDFM2/B-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52854 |          |
| BDFM2/AS-Ar | BSP      | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52856 |          |
| BDFM2/B-C   | NFE      | Argon    | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52858 |          |
| BDFM2/AS-C  | AS       | Argon    | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52860 |          |
| BDFM2/B-N   | DIN      | Carbon   | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52862 |          |
| BDFM2/AS-N  | BSP      | Carbon   | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52864 |          |
| BDFM2/B-H   | NFE      | Carbon   | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52866 |          |
| BDFM2/AS-H  | AS       | Carbon   | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52878 |          |

### TORNADO SERIES BDFM2



| Type        | Standard | Gas Type | Inlet Pressure     | Flow Rate          | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|--------------------|-----------|----------|
| BDFM2/B-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52855 |          |
| BDFM2/AS-Ar | BSP      | Argon    | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52857 |          |
| BDFM2/B-C   | NFE      | Argon    | 100 bar/1450psi    | 16 l/min / 34 scfh | 770.52859 |          |
| BDFM2/AS-C  | AS       | Argon    | 10000 KPa/1450 psi | 16 l/min / 34 scfh | 770.52861 |          |
| BDFM2/B-N   | DIN      | Carbon   | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52863 |          |
| BDFM2/AS-N  | BSP      | Carbon   | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52865 |          |
| BDFM2/B-H   | NFE      | Carbon   | 200 bar/2900 psi   | 16 l/min / 34 scfh | 770.52867 |          |
| BDFM2/AS-H  | AS       | Carbon   | 20000 KPa/2900 psi | 16 l/min / 34 scfh | 770.52869 |          |

### TORNADO SERIES Le/C

| Type    | Standard | Gas Type | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|---------|----------|----------|----------------|--------------------|--------------------|-----------|----------|
| Le/E-C  | DIN      | Oxygen   | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52870 |          |
| Le/B-C  | BSP      | Oxygen   | 110 V          | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52872 |          |
| Le/F-C  | NFE      | Oxygen   |                |                    |                    | 770.52880 |          |
| Le/AS-C | AS       | Oxygen   |                |                    |                    | 770.52882 |          |



### TORNADO SERIES Re/C

| Type    | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|---------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| Re/B-C  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52874 |          |
| Re/U-C  | CGA      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52876 |          |
| Re/BU-C | BSP/CGA  | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52878 |          |



### TORNADO SERIES RSe/C

| Type    | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|---------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| RS/B-O  | DIN      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52871 |          |
| RS/BU-O | BSP      | CO <sub>2</sub> | 110 V          | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52873 |          |
| RS/U-O  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52875 |          |
| RS/B-A  | CGA      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52877 |          |
| RS/BU-A | BSP/CGA  | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 100 bar / 1450 psi | 770.52879 |          |
| RS/U-A  | NFE      | CO <sub>2</sub> |                | 10000 KPa          | 1000 KPa           | 770.52881 |          |
| RS/UB-P | AS       | CO <sub>2</sub> |                | 10000 KPa          | 1000 KPa           | 770.52883 |          |





# TORNADO

## CYLINDER PRESSURE REGULATOR

### TORNADO SERIES LFGGe/C



| Type       | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|------------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| LFGGe/E-C  | DIN      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52884 |          |
| LFGGe/B-C  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52886 |          |
| LFGGe/F-C  | NFE      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52894 |          |
| LFGGe/AS-C | AS       | CO <sub>2</sub> | 200 V / 50 Hz  | 10000 KPa          | 32 l/min / 68 scfh | 770.52896 |          |

### TORNADO SERIES RFGGe/C



| Type       | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|------------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| RFGGe/B-C  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52888 |          |
| RFGGe/U-C  | CGA      | CO <sub>2</sub> | 110 V          | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52890 |          |
| RFGGe/BU-C | BSP/CGA  | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52892 |          |

### TORNADO SERIES LSFGe/C



| Type       | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|------------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| LSFGe/E-C  | DIN      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52885 |          |
| LSFGe/B-C  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52887 |          |
| LSFGe/F-C  | NFE      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52895 |          |
| LSFGe/AS-C | AS       | CO <sub>2</sub> | 200 V / 50 Hz  | 10000 KPa          | 32 l/min / 68 scfh | 770.52897 |          |

### TORNADO SERIES RSFGGe/C



| Type        | Standard | Gas Type        | Supply Voltage | Inlet P.           | Outlet P.          | Art. No.  | Cat. No. |
|-------------|----------|-----------------|----------------|--------------------|--------------------|-----------|----------|
| RSFGGe/B-C  | BSP      | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52889 |          |
| RSFGGe/U-C  | CGA      | CO <sub>2</sub> | 110 V          | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52891 |          |
| RSFGGe/BU-C | BSP/CGA  | CO <sub>2</sub> | 200 V / 50 Hz  | 100 bar / 1450 psi | 32 l/min / 68 scfh | 770.52893 |          |



### TORNADO SERIES LFMe/C

| Type      | Standard | Gas Type        | Supply Voltage | Inlet P.              | Outlet P.             | Art. No. | Cat. No. |
|-----------|----------|-----------------|----------------|-----------------------|-----------------------|----------|----------|
| LFMe/E-C  | DIN      | CO <sub>2</sub> | 200 V/50 Hz    | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52898 |          |
| LFMe/B-C  | BSP      | CO <sub>2</sub> | 200 V/50 Hz    | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52899 |          |
| LFMe/F-C  | NFE      | CO <sub>2</sub> | 200 V/50 Hz    | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52903 |          |
| LFMe/AS-C | AS       | CO <sub>2</sub> | 200 V/50 Hz    | 20000<br>KPa          | 32 l/min /<br>64 scfh | 77.52904 |          |



### TORNADO SERIES RFMe/C

| Type      | Standard | Gas Type        | Supply Voltage | Inlet P.              | Outlet P.             | Art. No. | Cat. No. |
|-----------|----------|-----------------|----------------|-----------------------|-----------------------|----------|----------|
| RFMe/B-C  | BSP      | CO <sub>2</sub> | 200 V/50 Hz    | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52900 |          |
| RFMe/U-C  | CGA      | CO <sub>2</sub> | 110 V          | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52901 |          |
| RFMe/BU-C | BSP/CGA  | CO <sub>2</sub> | 200 V/50 Hz    | 200 bar /<br>2900 psi | 32 l/min /<br>64 scfh | 77.52902 |          |



### TORNADO SERIES TL

20 bar



| Type        | Standard | Gas Type | Inlet Pressure     | Outlet Pressure | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|-----------------|-----------|----------|
| TL/E-O 20   | DIN      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21210 |          |
| TL/B-O 20   | BSP      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21222 |          |
| TL/F-O 20   | NFE      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21343 |          |
| TL/AS-O 20  | AS       | Oxygen   | 23000 KPa/3335 psi | 2000/290 psi    | 770.21345 |          |
| TL/E-H 20   | DIN      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21234 |          |
| TL/B-H 20   | BSP      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21246 |          |
| TL/F-H 20   | NFE      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21349 |          |
| TL/AS-H 20  | AS       | Hydrogen | 23000 KPa/3335 psi | 2000/290 psi    | 770.21351 |          |
| TL/E-Ar 20  | DIN      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21258 |          |
| TL/B-Ar 20  | BSP      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21270 |          |
| TL/F-Ar 20  | NFE      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21355 |          |
| TL/AS-Ar 20 | AS       | Argon    | 23000 KPa/3335 psi | 2000/290 psi    | 770.21357 |          |
| TL/E-C 20   | DIN      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21282 |          |
| TL/B-C 20   | BSP      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21286 |          |
| TL/F-C 20   | NFE      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21361 |          |
| TL/AS-C 20  | AS       | Carbon   | 10000 KPa/1450 psi | 2000/290 psi    | 770.21363 |          |
| TL/E-N 20   | DIN      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21290 |          |
| TL/B-N 20   | BSP      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21302 |          |
| TL/F-N 20   | NFE      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21367 |          |
| TL/AS-N 20  | AS       | Nitrogen | 23000 KPa/3335 psi | 2000/290 psi    | 770.21369 |          |
| TL/E-He 20  | DIN      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21314 |          |
| TL/B-He 20  | BSP      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21326 |          |
| TL/F-He 20  | NFE      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21373 |          |
| TL/AS-He 20 | AS       | Helium   | 23000 KPa/3335 psi | 2000/290 psi    | 770.21375 |          |

### TORNADO SERIES TR

20 bar



| Type       | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|-----------------|-----------|----------|
| RT/U-O 20  | CGA      | Oxygen   | 230 bar/3335 psi | 20 bar/290 psi  | 770.21341 |          |
| RT/U-H 20  | CGA      | Hydrogen | 230 bar/3335 psi | 20 bar/290 psi  | 770.21347 |          |
| RT/U-Ar 20 | CGA      | Argon    | 230 bar/3335 psi | 20 bar/290 psi  | 770.21353 |          |
| RT/U-C 20  | CGA      | Carbon   | 100 bar/1450 psi | 20 bar/290 psi  | 770.21359 |          |
| RT/U-N 20  | CGA      | Nitrogen | 230 bar/3335 psi | 20 bar/290 psi  | 770.21365 |          |
| RT/U-He 20 | CGA      | Helium   | 230 bar/3335 psi | 20 bar/290 psi  | 770.21371 |          |

### 20 bar TORNADO SERIES TLS

| Type         | Standard | Gas Type | Inlet Pressure     | Outlet Pressure | Art. No.  | Cat. No. |
|--------------|----------|----------|--------------------|-----------------|-----------|----------|
| TLS/E-O 20   | DIN      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21211 |          |
| TLS/B-O 20   | BSP      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21223 |          |
| TLS/F-O 20   | NFE      | Oxygen   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21344 |          |
| TLS/AS-O 20  | AS       | Oxygen   | 23000 KPa/3335 psi | 2000/290 psi    | 770.21346 |          |
| TLS/E-H 20   | DIN      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21235 |          |
| TLS/B-H 20   | BSP      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21247 |          |
| TLS/F-H 20   | NFE      | Hydrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21350 |          |
| TLS/AS-H 20  | AS       | Hydrogen | 23000 KPa/3335 psi | 2000/290 psi    | 770.21352 |          |
| TLS/E-Ar 20  | DIN      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21259 |          |
| TLS/B-Ar 20  | BSP      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21271 |          |
| TLS/F-Ar 20  | NFE      | Argon    | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21356 |          |
| TLS/AS-Ar 20 | AS       | Argon    | 23000 KPa/3335 psi | 2000/290 psi    | 770.21358 |          |
| TLS/E-C 20   | DIN      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21283 |          |
| TLS/B-C 20   | BSP      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21287 |          |
| TLS/F-C 20   | NFE      | Carbon   | 100 bar/1450 psi   | 20 bar/290 psi  | 770.21362 |          |
| TLS/AS-C 20  | AS       | Carbon   | 10000 KPa/1450 psi | 2000/290 psi    | 770.21364 |          |
| TLS/E-N 20   | DIN      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21291 |          |
| TLS/B-N 20   | BSP      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21303 |          |
| TLS/F-N 20   | NFE      | Nitrogen | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21368 |          |
| TLS/AS-N 20  | AS       | Nitrogen | 23000 KPa/3335 psi | 2000/290 psi    | 770.21370 |          |
| TLS/E-He 20  | DIN      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21315 |          |
| TLS/B-He 20  | BSP      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21327 |          |
| TLS/F-He 20  | NFE      | Helium   | 230 bar/3335 psi   | 20 bar/290 psi  | 770.21374 |          |
| TLS/AS-He 20 | AS       | Helium   | 23000 KPa/3335 psi | 2000/290 psi    | 770.21376 |          |



### 20 bar TORNADO SERIES TRS

| Type        | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|-----------------|-----------|----------|
| RTS/U-O 20  | CGA      | Oxygen   | 230 bar/3335 psi | 20 bar/290 psi  | 770.21342 |          |
| RTS/U-H 20  | CGA      | Hydrogen | 230 bar/3335 psi | 20 bar/290 psi  | 770.21348 |          |
| RTS/U-Ar 20 | CGA      | Argon    | 230 bar/3335 psi | 20 bar/290 psi  | 770.21354 |          |
| RTS/U-C 20  | CGA      | Carbon   | 100 bar/1450 psi | 20 bar/290 psi  | 770.21360 |          |
| RTS/U-N 20  | CGA      | Nitrogen | 230 bar/3335 psi | 20 bar/290 psi  | 770.21366 |          |
| RTS/U-He 20 | CGA      | Helium   | 230 bar/3335 psi | 20 bar/290 psi  | 770.21372 |          |



### TORNADO SERIES TL

50 bar



| Type        | Standard | Gas Type | Inlet Pressure     | Outlet Pressure | Art. No.  | Cat. No. |
|-------------|----------|----------|--------------------|-----------------|-----------|----------|
| TL/E-O 50   | DIN      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21214 |          |
| TL/B-O 50   | BSP      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21226 |          |
| TL/F-O 50   | NFE      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21379 |          |
| TL/AS-O 50  | AS       | Oxygen   | 23000 KPa/3335 psi | 50000/725 psi   | 770.21381 |          |
| TL/E-H 50   | DIN      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21238 |          |
| TL/B-H 50   | BSP      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21250 |          |
| TL/F-H 50   | NFE      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21385 |          |
| TL/AS-H 50  | AS       | Hydrogen | 23000 KPa/3335 psi | 50000/725 psi   | 770.21387 |          |
| TL/E-Ar 50  | DIN      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21262 |          |
| TL/B-Ar 50  | BSP      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21274 |          |
| TL/F-Ar 50  | NFE      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21391 |          |
| TL/AS-Ar 50 | AS       | Argon    | 23000 KPa/3335 psi | 50000/725 psi   | 770.21393 |          |
| TL/E-N 50   | DIN      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21294 |          |
| TL/B-N 50   | BSP      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21306 |          |
| TL/F-N 50   | NFE      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21397 |          |
| TL/AS-N 50  | AS       | Nitrogen | 23000 KPa/3335 psi | 50000/725 psi   | 770.21399 |          |

### TORNADO SERIES TR

50 bar



| Type       | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|------------|----------|----------|------------------|-----------------|-----------|----------|
| RT/U-O 50  | CGA      | Oxygen   | 230 bar/3335 psi | 50 bar/725 psi  | 770.21377 |          |
| RT/U-H 50  | CGA      | Hydrogen | 230 bar/3335 psi | 50 bar/725 psi  | 770.21383 |          |
| RT/U-Ar 50 | CGA      | Argon    | 230 bar/3335 psi | 50 bar/725 psi  | 770.21389 |          |
| RT/U-N 50  | CGA      | Nitrogen | 230 bar/3335 psi | 50 bar/725 psi  | 770.21395 |          |

50 bar

TORNADO SERIES TLS

| Type         | Standard | Gas Type | Inlet Pressure     | Outlet Pressure | Art. No.  | Cat. No. |
|--------------|----------|----------|--------------------|-----------------|-----------|----------|
| TLS/E-O 50   | DIN      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21215 |          |
| TLS/B-O 50   | BSP      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21227 |          |
| TLS/F-O 50   | NFE      | Oxygen   | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21380 |          |
| TLS/AS-O 50  | AS       | Oxygen   | 23000 KPa/3335 psi | 50000/725 psi   | 770.21382 |          |
| TLS/E-H 50   | DIN      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21239 |          |
| TLS/B-H 50   | BSP      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21251 |          |
| TLS/F-H 50   | NFE      | Hydrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21386 |          |
| TLS/AS-H 50  | AS       | Hydrogen | 23000 KPa/3335 psi | 50000/725 psi   | 770.21388 |          |
| TLS/E-Ar 50  | DIN      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21263 |          |
| TLS/B-Ar 50  | BSP      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21275 |          |
| TLS/F-Ar 50  | NFE      | Argon    | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21392 |          |
| TLS/AS-Ar 50 | AS       | Argon    | 23000 KPa/3335 psi | 50000/725 psi   | 770.21394 |          |
| TLS/E-N 50   | DIN      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21295 |          |
| TLS/B-N 50   | BSP      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21307 |          |
| TLS/F-N 50   | NFE      | Nitrogen | 230 bar/3335 psi   | 50 bar/725 psi  | 770.21398 |          |
| TLS/AS-N50   | AS       | Nitrogen | 23000 KPa/3335 psi | 50000/725 psi   | 770.21400 |          |



50 bar

TORNADO SERIES TRS

| Type        | Standard | Gas Type | Inlet Pressure   | Outlet Pressure | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|-----------------|-----------|----------|
| RTS/U-O 50  | CGA      | Oxygen   | 230 bar/3335 psi | 50 bar/725 psi  | 770.21378 |          |
| RTS/U-H 50  | CGA      | Hydrogen | 230 bar/3335 psi | 50 bar/725 psi  | 770.21384 |          |
| RTS/U-Ar 50 | CGA      | Argon    | 230 bar/3335 psi | 50 bar/725 psi  | 770.21390 |          |
| RTS/U-N 50  | CGA      | Nitrogen | 230 bar/3335 psi | 50 bar/725 psi  | 770.21396 |          |



### TORNADO SERIES TL

100 bar



| Type         | Standard | Gas Type | Inlet Pressure     | Outlet Pressure  | Art. No.  | Cat. No. |
|--------------|----------|----------|--------------------|------------------|-----------|----------|
| TL/E-O 100   | DIN      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21218 |          |
| TL/B-O 100   | BSP      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21230 |          |
| TL/F-O 100   | NFE      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21409 |          |
| TL/AS-O 100  | AS       | Oxygen   | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21411 |          |
| TL/E-H 100   | DIN      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21242 |          |
| TL/B-H 100   | BSP      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21254 |          |
| TL/F-H 100   | NFE      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21415 |          |
| TL/AS-H 100  | AS       | Hydrogen | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21417 |          |
| TL/E-Ar 100  | DIN      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21266 |          |
| TL/B-Ar 100  | BSP      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21278 |          |
| TL/F-Ar 100  | NFE      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21421 |          |
| TL/AS-Ar 100 | AS       | Argon    | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21423 |          |
| TL/E-N 100   | DIN      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21298 |          |
| TL/B-N 100   | BSP      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21310 |          |
| TL/F-N 100   | NFE      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21427 |          |
| TL/AS-N 100  | AS       | Nitrogen | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21429 |          |

### TORNADO SERIES TR

100 bar



| Type        | Standard | Gas Type | Inlet Pressure   | Outlet Pressure  | Art. No.  | Cat. No. |
|-------------|----------|----------|------------------|------------------|-----------|----------|
| RT/U-O 100  | CGA      | Oxygen   | 230 bar/3335 psi | 100 bar/1450 psi | 770.21407 |          |
| RT/U-H 100  | CGA      | Hydrogen | 230 bar/3335 psi | 100 bar/1450 psi | 770.21413 |          |
| RT/U-Ar 100 | CGA      | Argon    | 230 bar/3335 psi | 100 bar/1450 psi | 770.21419 |          |
| RT/U-N 100  | CGA      | Nitrogen | 230 bar/3335 psi | 100 bar/1450 psi | 770.21425 |          |

100 bar

TORNADO SERIES TLS

| Type          | Standard | Gas Type | Inlet Pressure     | Outlet Pressure  | Art. No.  | Cat. No. |
|---------------|----------|----------|--------------------|------------------|-----------|----------|
| TLS/E-O 100   | DIN      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21219 |          |
| TLS/B-O 100   | BSP      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21231 |          |
| TLS/F-O 100   | NFE      | Oxygen   | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21410 |          |
| TLS/AS-O 100  | AS       | Oxygen   | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21412 |          |
| TLS/E-H 100   | DIN      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21243 |          |
| TLS/B-H 100   | BSP      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21255 |          |
| TLS/F-H 100   | NFE      | Hydrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21416 |          |
| TLS/AS-H 100  | AS       | Hydrogen | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21418 |          |
| TLS/E-Ar 100  | DIN      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21267 |          |
| TLS/B-Ar 100  | BSP      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21279 |          |
| TLS/F-Ar 100  | NFE      | Argon    | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21422 |          |
| TLS/AS-Ar 100 | AS       | Argon    | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21424 |          |
| TLS/E-N 100   | DIN      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21299 |          |
| TLS/B-N 100   | BSP      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21311 |          |
| TLS/F-N 100   | NFE      | Nitrogen | 230 bar/3335 psi   | 100 bar/1450 psi | 770.21428 |          |
| TLS/AS-N 100  | AS       | Nitrogen | 23000 KPa/3335 psi | 10000/1450 psi   | 770.21430 |          |



100 bar

TORNADO SERIES TRS

| Type         | Standard | Gas Type | Inlet Pressure   | Outlet Pressure  | Art. No.  | Cat. No. |
|--------------|----------|----------|------------------|------------------|-----------|----------|
| RTS/U-O 100  | CGA      | Oxygen   | 230 bar/3335 psi | 100 bar/1450 psi | 770.21408 |          |
| RTS/U-H 100  | CGA      | Hydrogen | 230 bar/3335 psi | 100 bar/1450 psi | 770.21414 |          |
| RTS/U-Ar 100 | CGA      | Argon    | 230 bar/3335 psi | 100 bar/1450 psi | 770.21420 |          |
| RTS/U-N 100  | CGA      | Nitrogen | 230 bar/3335 psi | 100 bar/1450 psi | 770.21426 |          |





# TORNADO

CYLINDER PRESSURE REGULATOR

Stand: 08/2013

### TORNADO 300 SERIES RH

| Type     | Standard | Gas Type  | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|-----------|--------------------|------------------|-----------|----------|
| RH/E-O   | DIN      | Oxygen    | 200 bar/2900psi    | 10 bar/145 psi   | 770.53038 |          |
| RH/B-O   | BSP      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53030 |          |
| RH/U-O   | CGA      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53032 |          |
| RH/F-O   | NFE      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53040 |          |
| RH/AS-O  | AS       | Oxygen    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53042 |          |
| RH/E-A   | DIN      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53044 |          |
| RH/B-A   | BSP      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53046 |          |
| RH/U-A   | CGA      | Acetylene | 25 bar/360 psi     | 1,0 bar/14,5 psi | 770.53048 |          |
| RH/F-A   | NFE      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53050 |          |
| RH/AS-A  | AS       | Acetylene | 2500 KPa/360 psi   | 150 KPa/22 psi   | 770.53052 |          |
| RH/E-P   | DIN      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53054 |          |
| RH/B-P   | BSP      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53056 |          |
| RH/U-P   | CGA      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53034 |          |
| RH/F-P   | NFE      | Propane   | 2500 bar/360 psi   | 250 KPa/36 psi   | 770.53058 |          |
| RH/AS-P  | AS       | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53060 |          |
| RH/E-Ar  | DIN      | Argon     | 200 bar/2900psi    | 10 bar/145 psi   | 770.53062 |          |
| RH/B-Ar  | BSP      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53064 |          |
| RH/U-Ar  | CGA      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53066 |          |
| RH/F-Ar  | NFE      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53068 |          |
| RH/AS-Ar | AS       | Argon     | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53070 |          |
| RH/E-C   | DIN      | Carbon    | 100 bar/2900 psi   | 10 bar/145 psi   | 770.53072 |          |
| RH/B-C   | BSP      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53074 |          |
| RH/U-C   | CGA      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53076 |          |
| RH/F-C   | NFE      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53078 |          |
| RH/AS-C  | AS       | Carbon    | 10000 KPa/2900 psi | 1000 KPa/145 psi | 770.53080 |          |
| RH/E-N   | DIN      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 psi   | 770.53082 |          |
| RH/B-N   | BSP      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53084 |          |
| RH/U-N   | CGA      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53086 |          |
| RH/F-N   | NFE      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53088 |          |
| RH/AS-N  | AS       | Nitrogen  | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53090 |          |



### TORNADO 300 SERIES RSH



| Type    | Standard | Gas Type  | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|---------|----------|-----------|--------------------|------------------|-----------|----------|
| RSH/E-  | DIN      | Oxygen    | 200 bar/2900psi    | 10 bar/145 psi   | 770.53039 |          |
| RSH/B-  | BSP      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53031 |          |
| RSH/U-  | CGA      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53033 |          |
| RSH/F-  | NFE      | Oxygen    | 200 bar/2900psi    | 10 bar/145 ps    | 770.53041 |          |
| RSH/AS- | AS       | Oxygen    | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53043 |          |
| RSH/E-  | DIN      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53045 |          |
| RSH/B-  | BSP      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53047 |          |
| RSH/U-  | CGA      | Acetylene | 25 bar/360 psi     | 1,0 bar/14,5 psi | 770.53049 |          |
| RSH/F-  | NFE      | Acetylene | 25 bar/360 psi     | 1,5 bar/22 psi   | 770.53051 |          |
| RSH/AS- | AS       | Acetylene | 2500 KPa/360 psi   | 150 KPa/22 psi   | 770.53053 |          |
| RSH/E-  | DIN      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53055 |          |
| RSH/B-  | BSP      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53057 |          |
| RSH/U-  | CGA      | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53035 |          |
| RSH/F-  | NFE      | Propane   | 2500 bar/360 psi   | 250 KPa/36 psi   | 770.53059 |          |
| RSH/AS- | AS       | Propane   | 25 bar/360 psi     | 2,5 bar/36 psi   | 770.53061 |          |
| RSH/E-  | DIN      | Argon     | 200 bar/2900psi    | 10 bar/145 psi   | 770.53063 |          |
| RSH/B-  | BSP      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53065 |          |
| RSH/U-  | CGA      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53067 |          |
| RSH/F-  | NFE      | Argon     | 200 bar/2900psi    | 10 bar/145 ps    | 770.53069 |          |
| RSH/AS- | AS       | Argon     | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53071 |          |
| RSH/E-  | DIN      | Carbon    | 100 bar/2900 psi   | 10 bar/145 psi   | 770.53073 |          |
| RSH/B-  | BSP      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53075 |          |
| RSH/U-  | CGA      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53077 |          |
| RSH/F-  | NFE      | Carbon    | 100 bar/2900 psi   | 10 bar/145 ps    | 770.53079 |          |
| RSH/AS- | AS       | Carbon    | 10000 KPa/2900 psi | 1000 KPa/145 psi | 770.53081 |          |
| RSH/E-  | DIN      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 psi   | 770.53083 |          |
| RSH/B-  | BSP      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53085 |          |
| RSH/U-  | CGA      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53087 |          |
| RSH/F-  | NFE      | Nitrogen  | 200 bar/2900psi    | 10 bar/145 ps    | 770.53089 |          |
| RSH/AS- | AS       | Nitrogen  | 20000 KPa/2900 psi | 1000 KPa/145 psi | 770.53091 |          |

### TORNADO 300 SERIES RN

| Type     | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|----------|--------------------|------------------|-----------|----------|
| RN/E-O   | DIN      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53224 |          |
| RN/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53226 |          |
| RN/U-O   | CGA      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53228 |          |
| RN/F-O   | NFE      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53230 |          |
| RN/AS-O  | AS       | Oxygen   | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53232 |          |
| RN/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53234 |          |
| RN/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53236 |          |
| RN/U-Ar  | CGA      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53238 |          |
| RN/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53240 |          |
| RN/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53242 |          |
| RN/E-C   | DIN      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53244 |          |
| RN/B-C   | BSP      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53246 |          |
| RN/U-C   | CGA      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53248 |          |
| RN/F-C   | NFE      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53250 |          |
| RN/AS-C  | AS       | Carbon   | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53252 |          |
| RN/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53254 |          |
| RN/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53256 |          |
| RN/U-N   | CGA      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53258 |          |
| RN/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53260 |          |
| RN/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53262 |          |



### TORNADO 300 SERIES RSN



| Type      | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|------------------|-----------|----------|
| RSN/E-O   | DIN      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53225 |          |
| RSN/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53227 |          |
| RSN/U-O   | CGA      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53229 |          |
| RSN/F-O   | NFE      | Oxygen   | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53231 |          |
| RSN/AS-O  | AS       | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53233 |          |
| RSN/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53235 |          |
| RSN/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53237 |          |
| RSN/U-Ar  | CGA      | Argon    | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53239 |          |
| RSN/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53241 |          |
| RSN/AS-Ar | AS       | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53243 |          |
| RSN/E-C   | DIN      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53245 |          |
| RSN/B-C   | BSP      | Carbon   | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53247 |          |
| RSN/U-C   | CGA      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53249 |          |
| RSN/F-C   | NFE      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53251 |          |
| RSN/AS-C  | AS       | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53253 |          |
| RSN/E-N   | DIN      | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53255 |          |
| RSN/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53257 |          |
| RSN/U-N   | CGA      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53259 |          |
| RSN/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53261 |          |
| RSN/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53263 |          |

### TORNADO 300 SERIES RT

| Type     | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|----------|--------------------|------------------|-----------|----------|
| RT/E-O   | DIN      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53092 |          |
| RT/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53036 |          |
| RT/U-O   | CGA      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53094 |          |
| RT/F-O   | NFE      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53096 |          |
| RT/AS-O  | AS       | Oxygen   | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53098 |          |
| RT/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53100 |          |
| RT/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53102 |          |
| RT/U-Ar  | CGA      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53104 |          |
| RT/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53200 |          |
| RT/AS-Ar | AS       | Argon    | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53202 |          |
| RT/E-C   | DIN      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53204 |          |
| RT/B-C   | BSP      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53206 |          |
| RT/U-C   | CGA      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53208 |          |
| RT/F-C   | NFE      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53210 |          |
| RT/AS-C  | AS       | Carbon   | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53212 |          |
| RT/E-N   | DIN      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53214 |          |
| RT/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53216 |          |
| RT/U-N   | CGA      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53218 |          |
| RT/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53220 |          |
| RT/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290psi  | 770.53222 |          |



### TORNADO 300 SERIES RST



| Type      | Standard | Gas Type | Inlet Pressure     | Working Pressure | Art. No.  | Cat. No. |
|-----------|----------|----------|--------------------|------------------|-----------|----------|
| RST/E-O   | DIN      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53093 |          |
| RST/B-O   | BSP      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53037 |          |
| RST/U-O   | CGA      | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53095 |          |
| RST/F-O   | NFE      | Oxygen   | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53097 |          |
| RST/AS-O  | AS       | Oxygen   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53099 |          |
| RST/E-Ar  | DIN      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53101 |          |
| RST/B-Ar  | BSP      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53103 |          |
| RST/U-Ar  | CGA      | Argon    | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53105 |          |
| RST/F-Ar  | NFE      | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53201 |          |
| RST/AS-Ar | AS       | Argon    | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53203 |          |
| RST/E-C   | DIN      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53205 |          |
| RST/B-C   | BSP      | Carbon   | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53207 |          |
| RST/U-C   | CGA      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53209 |          |
| RST/F-C   | NFE      | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53211 |          |
| RST/AS-C  | AS       | Carbon   | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53213 |          |
| RST/E-N   | DIN      | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53215 |          |
| RST/B-N   | BSP      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53217 |          |
| RST/U-N   | CGA      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53219 |          |
| RST/F-N   | NFE      | Nitrogen | 200 bar/2900 psi   | 20 bar/290 psi   | 770.53221 |          |
| RST/AS-N  | AS       | Nitrogen | 20000 KPa/2900 psi | 2000 KPa/290 psi | 770.53223 |          |



### TORNADO 300 SERIES HS

| Type     | Standard | Gas Type  | Inlet Pressure   | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|-----------|------------------|------------------|-----------|----------|
| HS/I-O   | Intern.  | Oxygen    | 200 bar/2900 psi | 10 bar/145 psi   | 770.53264 |          |
| HS/ASO-  | AS       | Oxygen    | 20000 KPa/       | 10000 KPa        | 770.53265 |          |
| HS/I-A   | Intern.  | Acetylene | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21157 |          |
| HS/AS-A  | AS       | Acetylene | 2500 KPa         | 150 KPa          | 770.21158 |          |
| HS/I-P   | Intern.  | Propane   | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21163 |          |
| HS/AS-P  | AS       | Propane   | 2500 KPa         | 250 KPa          | 770.21164 |          |
| HS/I-H   | Intern.  | Hydrogen  | 200 bar/2900 psi | 10 bar/145 psi   | 770.21169 |          |
| HS/AS-H  | AS       | Hydrogen  | 20000 KPa/       | 1000 KPa         | 770.21170 |          |
| HS/I-Ar  | Intern.  | Argon     | 200 bar/2900 psi | 10 bar/145 psi   | 770.21175 |          |
| HS/AS-Ar | AS       | Argon     | 20000 KPa/       | 10000 KPa        | 770.21176 |          |
| HS/I-C   | Intern.  | Carbon    | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21181 |          |
| HS/AS-C  | AS       | Carbon    | 2500 KPa         | 150 KPa          | 770.21182 |          |
| HS/I-N   | Intern.  | Nitrogen  | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21187 |          |
| HS/AS-N  | AS       | Nitrogen  | 2500 KPa         | 250 KPa          | 770.21188 |          |
| HS/I-He  | Intern.  | Helium    | 200 bar/2900 psi | 10 bar/145 psi   | 770.21193 |          |
| HS/AS-He | AS       | Helium    | 20000 KPa/       | 1000 KPa         | 770.21194 |          |



### TORNADO 300 SERIES TS

| Type     | Standard | Gas Type  | Inlet Pressure   | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|-----------|------------------|------------------|-----------|----------|
| TS/I-O   | Intern.  | Oxygen    | 200 bar/2900 psi | 20 bar/145 psi   | 770.53266 |          |
| TS/ASO-  | AS       | Oxygen    | 20000 KPa/       | 2000 KPa         | 770.53267 |          |
| TS/I-A   | Intern.  | Acetylene | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21159 |          |
| TS/AS-A  | AS       | Acetylene | 2500 KPa         | 150 KPa          | 770.21160 |          |
| TS/I-P   | Intern.  | Propane   | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21165 |          |
| TS/AS-P  | AS       | Propane   | 2500 KPa         | 250 KPa          | 770.21166 |          |
| TS/I-H   | Intern.  | Hydrogen  | 200 bar/2900 psi | 20 bar/145 psi   | 770.21171 |          |
| TS/AS-H  | AS       | Hydrogen  | 20000 KPa/       | 2000 KPa         | 770.21172 |          |
| TS/I-Ar  | Intern.  | Argon     | 200 bar/2900 psi | 20 bar/145 psi   | 770.21177 |          |
| TS/AS-Ar | AS       | Argon     | 20000 KPa/       | 2000 KPa         | 770.21178 |          |
| TS/I-C   | Intern.  | Carbon    | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21183 |          |
| TS/AS-C  | AS       | Carbon    | 2500 KPa         | 150 KPa          | 770.21184 |          |
| TS/I-N   | Intern.  | Nitrogen  | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21189 |          |
| TS/AS-N  | AS       | Nitrogen  | 2500 KPa         | 250 KPa          | 770.21190 |          |
| TS/I-He  | Intern.  | Helium    | 200 bar/2900 psi | 20 bar/145 psi   | 770.21195 |          |
| TS/AS-He | AS       | Helium    | 20000 KPa/       | 2000 KPa         | 770.21196 |          |



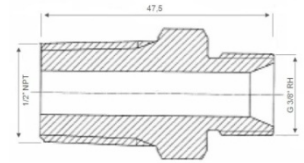
### TORNADO 300 SERIES NS



| Type     | Standard | Gas Type  | Inlet Pressure   | Working Pressure | Art. No.  | Cat. No. |
|----------|----------|-----------|------------------|------------------|-----------|----------|
| NS/I-O   | Intern.  | Oxygen    | 200 bar/2900 psi | 20 bar/145 psi   | 770.53268 |          |
| NS/AS-O  | AS       | Oxygen    | 20000 KPa/       | 2000 KPa         | 770.53269 |          |
| NS/I-A   | Intern.  | Acetylene | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21161 |          |
| NS/AS-A  | AS       | Acetylene | 2500 KPa         | 150 KPa          | 770.21162 |          |
| NS/I-P   | Intern.  | Propane   | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21167 |          |
| NS/AS-P  | AS       | Propane   | 2500 KPa         | 250 KPa          | 770.21168 |          |
| NS/I-H   | Intern.  | Hydrogen  | 200 bar/2900 psi | 20 bar/145 psi   | 770.21173 |          |
| NS/AS-H  | AS       | Hydrogen  | 20000 KPa/       | 2000 KPa         | 770.21174 |          |
| NS/I-Ar  | Intern.  | Argon     | 200 bar/2900 psi | 20 bar/145 psi   | 770.21179 |          |
| NS/AS-Ar | AS       | Argon     | 20000 KPa/       | 2000 KPa         | 770.21180 |          |
| NS/I-C   | Intern.  | Carbon    | 25 bar/360 psi   | 1,5 bar/22 psi   | 770.21185 |          |
| NS/AS-C  | AS       | Carbon    | 2500 KPa         | 150 KPa          | 770.21186 |          |
| NS/I-N   | Intern.  | Nitrogen  | 25 bar/360 psi   | 2,5 bar/36 psi   | 770.21191 |          |
| NS/AS-N  | AS       | Nitrogen  | 2500 KPa         | 250 KPa          | 770.21192 |          |
| NS/I-He  | Intern.  | Helium    | 200 bar/2900 psi | 20 bar/145 psi   | 770.21197 |          |
| NS/AS-He | AS       | Helium    | 20000 KPa/       | 2000 KPa         | 770.21198 |          |

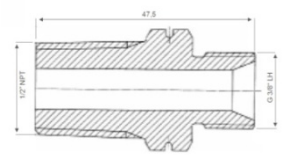
### CONNECTORS PN 40

| Connection on Regulator | Hose connection | Art. No.  | Cat. No. |
|-------------------------|-----------------|-----------|----------|
| 1/2" NPT RH             | G 3/8" RH       | 716.07157 |          |



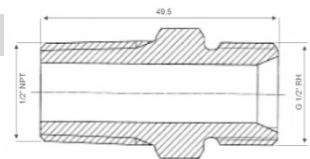
### CONNECTORS PN 40

| Connection on Regulator | Hose connection | Art. No.  | Cat. No. |
|-------------------------|-----------------|-----------|----------|
| 1/2" NPT RH             | G 3/8" LH       | 716.07158 |          |



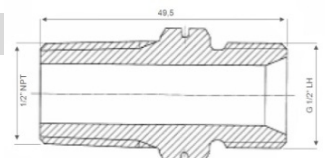
### CONNECTORS PN 40

| Connection on Regulator | Hose connection | Art. No.  | Cat. No. |
|-------------------------|-----------------|-----------|----------|
| 1/2" NPT RH             | G 1/2" RH       | 716.07159 |          |



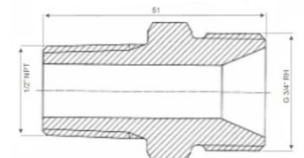
### CONNECTORS PN 40

| Connection on Regulator | Hose connection | Art. No.  | Cat. No. |
|-------------------------|-----------------|-----------|----------|
| 1/2" NPT RH             | G 1/2" LH       | 716.07160 |          |



### CONNECTORS PN 40

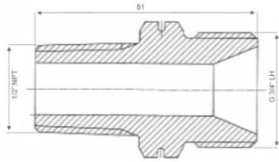
| Connection on Regulator | Hose connection | Art. No.  | Cat. No. |
|-------------------------|-----------------|-----------|----------|
| 1/2" NPT RH             | G 3/4" RH       | 716.07161 |          |



# TORNADO

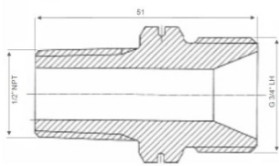
## CYLINDER PRESSURE REGULATOR

### CONNECTORS PN 40



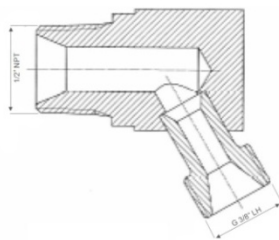
| <i>Connection on Regulator</i> | <i>Hose connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------------------|------------------------|-----------------|-----------------|
| 1/2" NPT RH                    | G 3/4" LH              | 716.07162       |                 |

### CONNECTORS PN 40



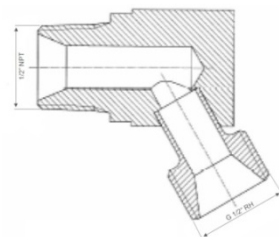
| <i>Connection on Regulator</i> | <i>Hose connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------------------|------------------------|-----------------|-----------------|
| 1/2" NPT RH                    | G 3/8" RH              | 716.07163       |                 |

### CONNECTORS PN 40



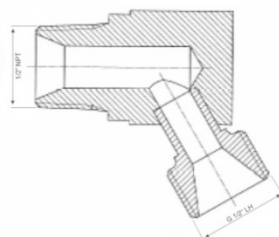
| <i>Connection on Regulator</i> | <i>Hose connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------------------|------------------------|-----------------|-----------------|
| 1/2" NPT RH                    | G 3/8" LH              | 716.07164       |                 |

### CONNECTORS PN 40



| <i>Connection on Regulator</i> | <i>Hose connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------------------|------------------------|-----------------|-----------------|
| 1/2" NPT RH                    | G 1/2" RH              | 716.07165       |                 |

### CONNECTORS PN 40



| <i>Connection on Regulator</i> | <i>Hose connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------------------|------------------------|-----------------|-----------------|
| 1/2" NPT RH                    | G 1/2" LH              | 716.07166       |                 |

### THE CYLINDER PRESSURE REGULATOR FROM MESSER — A MILLION TIMES TRIED AND TESTED

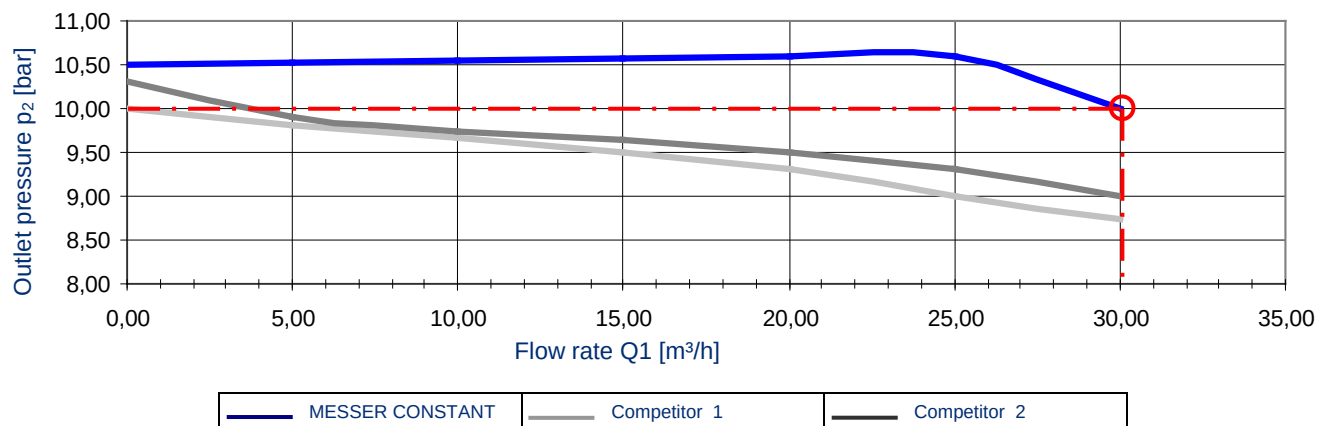
The MESSER CONSTANT 2000 cylinder pressure regulator for 200 and 300 bar, has been established on the international market for over 30 years as an absolute quality product. During this time it has been developed further and has already passed the million production units mark

The essential advantages of the CONSTANT 2000 over its competition are:

- The CONSTANT 2000 has passed the test BAM (06-BAM 0193), a product class qualification 1 BG 88 and meets the standards DIN EN ISO 2503, EN 585 as well as DIN 8546
- In contrast to competitive products, the CONSTANT 2000 has a very consistent flow performance
- The CONSTANT 2000 is characterised by a very high control accuracy even with low operating pressures and take off rates
- The CONSTANT 2000 is extremely reliable in operation through its integrated central filter
- Through the combination of a blow-off valve and ratchet stops, the CONSTANT 2000 has a double protected outlet pressure limitation
- The easy replacement of wear parts makes the CONSTANT 2000 very easy to maintain
- The specific weight of the brass housing of the CONSTANT 2000 is, at 7,9g/cm<sup>3</sup>, significantly lower than that of competitive products and makes the CONSTANT 2000 especially resistant to icing

### NOMINAL FLOW RATE Q<sub>1</sub>

Requirements according to DIN EN ISO 2503: equipment class 3 Q<sub>1</sub> = 30 m<sup>3</sup>/h at P<sub>2</sub> = 10 bar



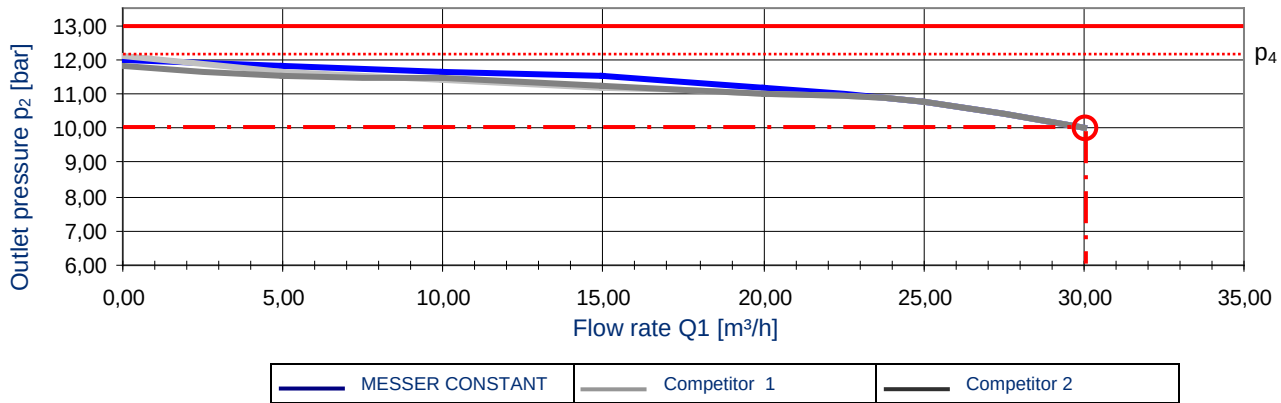
To be able to meet equipment class 3 of DIN EN ISO 2503, the cylinder pressure regulator must achieve a nominal flow rate Q<sub>1</sub> of 30 m<sup>3</sup>/h with an inlet pressure p<sub>1</sub> of 21 bar and an outlet pressure p<sub>2</sub> of 10 bar.

Expressions:

|                |   |                                                                   |
|----------------|---|-------------------------------------------------------------------|
| p <sub>1</sub> | = | Inlet pressure                                                    |
| p <sub>2</sub> | = | Outlet or operating pressure                                      |
| p <sub>3</sub> | = | Inlet pressure for the test                                       |
| p <sub>4</sub> | = | Outlet pressure for evaluation of the flow coefficient R          |
| p <sub>5</sub> | = | Outlet pressure for evaluation of the inconsistency coefficient i |
| R              | = | Flow rate coefficient                                             |
| i              | = | Inconsistency coefficient                                         |
| Q <sub>1</sub> | = | Nominal flow rate                                                 |

### PRESSURE INCREASE COEFFICIENT R

Requirements according to DIN EN ISO 2503:  $R > 0,3$

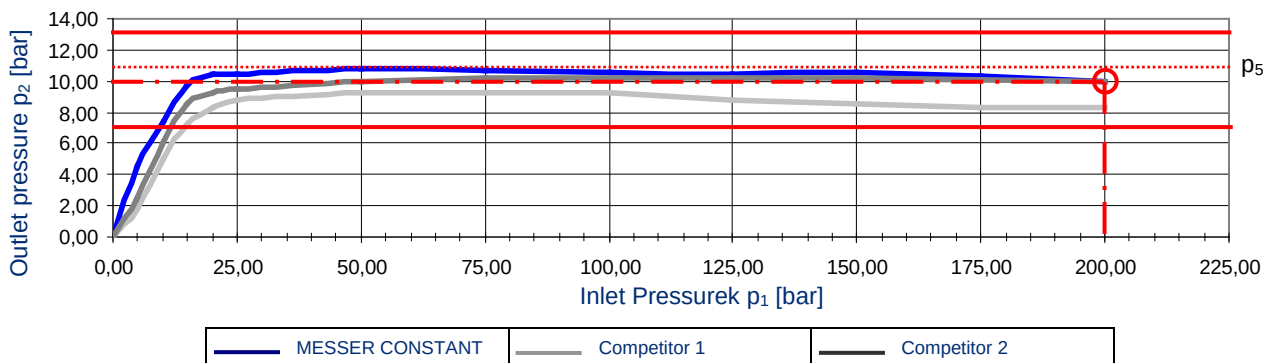


To achieve equipment class 3 to DIN EN ISO 2503, the pressure regulator is set to an inlet pressure for the test  $p_3$  ( $p_3 = 2 \times p_2 + 1 \text{ bar}$ ) = 21 bar, with an outlet pressure  $p_2 = 10 \text{ bar}$  and a nominal gas flow rate  $Q_1 = 30 \text{ m}^3/\text{h}$ . With these settings the flow rate of  $30 \text{ m}^3/\text{h}$  is evenly and steadily reduced to  $0 \text{ m}^3/\text{h}$ . During this the outlet pressure may deviate by max. 30 % from the outlet pressure  $p_2$ . This deviation pressure is defined by DIN EN ISO 2503 as the closing pressure  $p_4$ . The pressure increase coefficient  $R$  is then calculated as follows:

$$R = \frac{p_4 - p_2}{p_2} \quad R = \frac{12 \text{ bar} - 10 \text{ bar}}{10 \text{ bar}} \quad R = 0,2$$

### INCOSISTANCY COEFFICIENT I

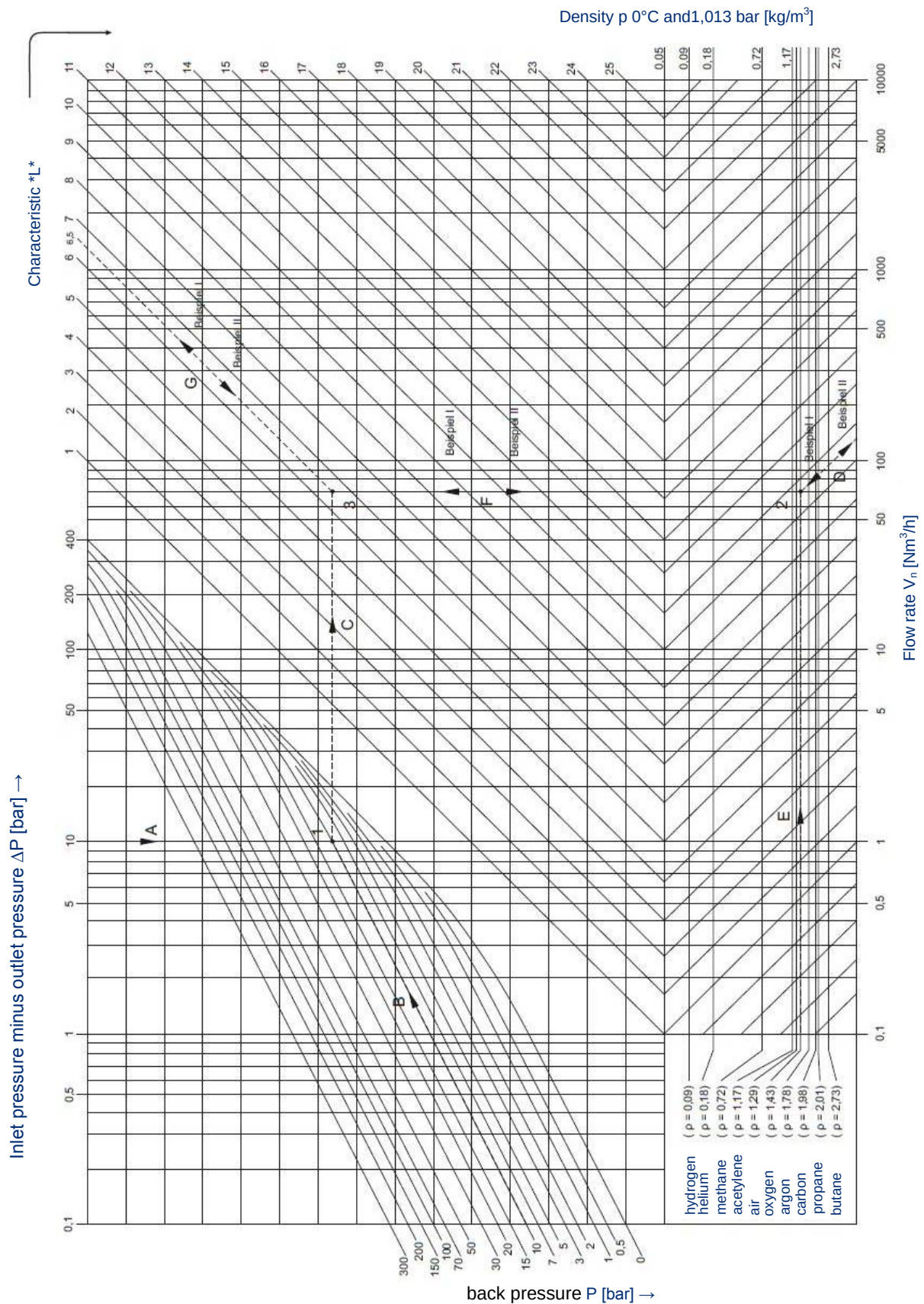
Requirements of DIN EN ISO 2503:  $-0,3 < i < +0,3$



To achieve equipment class 3 to DIN EN ISO 2503, the pressure regulator is set to an inlet pressure  $p_1 = 200 \text{ bar}$  with an outlet pressure  $p_2$  of  $10 \text{ bar}$  and a nominal flow rate  $Q_1$  of  $30 \text{ m}^3/\text{h}$ . With these settings the inlet pressure of  $p_1 = 200 \text{ bar}$  is evenly and steadily reduced to a test pressure  $p_3 = 21$ . During this the outlet pressure may deviate by max. 30 % from the outlet pressure  $p_2$ . This outlet pressure is defined by DIN EN ISO 2503 as the highest or lowest outlet pressure for establishing the inconsistency coefficient  $p_5$ .

$$i = \frac{p_5 - p_2}{p_2} \quad i = \frac{10,5 \text{ bar} - 10 \text{ bar}}{10 \text{ bar}} \quad i = 0,05$$





### EXAMPLE I DETERMINATION OF THE PERFORMANCE CHARACTERISTIC L

Inlet pressure  $P_V$ , outlet pressure  $P_H$ , flow rate  $V_n$  and gas type are known

Operating data:

- Inlet pressure varies between 30 and 20 bar
- Outlet pressure should be able to be set between 8 and 10 bar
- Flow rate required 120 m<sup>3</sup>/h
- Gas type Oxygen

The pressure regulator must be designed for the worst case, so for the minimum pressure drop.

$\Delta P = \text{Inlet pressure}_{\min.} - \text{outlet pressure}_{\max.}$

$\Delta P = 20 \text{ bar} - 10 \text{ bar}$

$\Delta P = 10 \text{ bar}$

Calculating the performance characteristic L

- Inlet pressure minus outlet pressure = 10 bar → vertically downwards (A)
- Outlet pressure = 10 bar → diagonally upwards (B)
- Intercept (1)
- Flow rate = 120 m<sup>3</sup>/h → parallel to the guide lines diagonally left upwards (D)
- Gas line OXYGEN → horizontally to the right (E)
- Intercept (2)
- From intercept (1) → horizontally to the right (C)
- From intercept (2) → vertically upwards (F) to line (C)
- Intercept (3)
- From intercept (3) → parallel to the guide lines diagonally upwards and right (G)
- Characteristic L = 6,5

If the pressure regulator type is to be selected then the gas type, inlet pressure, outlet pressure and flow rate is used to calculate the performance characteristic. It must be observed here that the pressure regulator has to be selected for the worst case, i.e. for the minimum pressure reduction. If there is doubt, it is advisable to determine the performance characteristic for several operating points and to select the pressure regulator for the largest characteristic value.

### EXAMPLE II DETERMINATION OF THE FLOW RATE

Pressure regulator type, characteristic value and gas type are known

Operating data:

- Characteristic value 6,5
- Inlet pressure varies between 30 and 20 bar
- Outlet pressure should be able to be set between 8 and 10 bar
- Gas type Oxygen

Determining the flow rate

- Inlet pressure minus outlet pressure = 10 bar → vertically downwards (A)
- Outlet pressure = 10 bar → diagonally upwards (B)
- Intercept (1)
- From intercept (1) → horizontally to the right (C)
- Characteristic L = 6,5 → parallel to the guide lines diagonally left downwards (G)
- Intercept (3)
- From intercept (3) → vertically downwards (F)
- Gas line OXYGEN → horizontally to the right (E)
- Intercept (2)
- From intercept (2) → parallel to the guidelines diagonally right downwards (D)

Flow rate = 120 m<sup>3</sup>/h



### TECHNICAL INFORMATION

**Flow table for pressure regulators in accordance with DIN EN ISO 2503**

| Oxygen <sup>1)</sup>                          |    |     |    |    |    | Acetylene                                     |     |     |     |
|-----------------------------------------------|----|-----|----|----|----|-----------------------------------------------|-----|-----|-----|
| Flow rate Q [m <sup>3</sup> /h] <sup>2)</sup> |    |     |    |    |    | Flow rate Q [m <sup>3</sup> /h] <sup>2)</sup> |     |     |     |
| Inlet P <sub>v</sub> [bar] pressure           |    |     |    |    |    | Inlet P <sub>v</sub> [bar]                    |     |     |     |
| at back pressure P <sub>H</sub> [bar]         |    |     |    |    |    | at back pressure P <sub>H</sub> [bar]         |     |     |     |
|                                               | 1  | 2,5 | 4  | 10 | 20 |                                               | 0,5 | 1   | 1,2 |
| 40                                            | 15 | 30  | 40 | 50 | 60 | 18                                            | 5   | 6   | 8   |
| 20                                            | 15 | 20  | 25 | 30 | -- | 10                                            | 4,5 | 5,5 | 6,5 |
| 10                                            | 15 | 15  | 15 | -- | -- | 4                                             | 3   | 4   | 5   |
| 5                                             | 10 | 10  | 10 | -- | -- | 2                                             | 1,5 | 2   | 3   |

<sup>1)</sup> This flow rate is multiplied by the following factors for other types of gas:

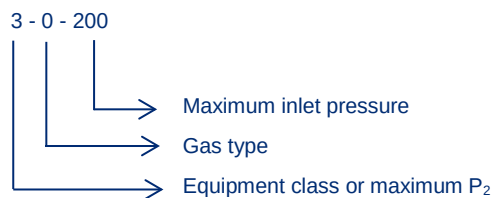
|                |      |          |      |
|----------------|------|----------|------|
| Argon          | 0,90 | Nitrogen | 1,05 |
| Compressed air | 1,05 | Methane  | 1,40 |
| Carbon dioxide | 0,85 | Hydrogen | 4,00 |

<sup>2)</sup> in normal status

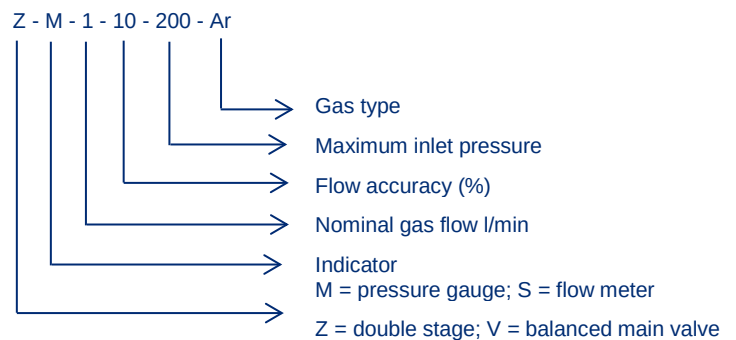
**Equipment classification for pressure regulators in accordance**

| Gas type                                        | Equipment | Maximum inlet pressure P <sub>1</sub> [bar] | Maximum outlet pressure P <sub>2</sub> [bar] | Nominal gas flow Q <sub>1</sub> [m <sup>3</sup> /h] |
|-------------------------------------------------|-----------|---------------------------------------------|----------------------------------------------|-----------------------------------------------------|
| Oxygen and other compressed gases up to 300 bar | 0         | 0 to 300                                    | 2                                            | 1,5                                                 |
|                                                 | 1         |                                             | 4                                            | 5                                                   |
|                                                 | 2         |                                             | 6                                            | 15                                                  |
|                                                 | 3         |                                             | 10                                           | 30                                                  |
|                                                 | 4         |                                             | 12,5                                         | 40                                                  |
|                                                 | 5         |                                             | 20                                           | 50                                                  |
| Dissolved acetylene                             | 1         | 25                                          | 0,8                                          | 1                                                   |
|                                                 | 2         |                                             | < 1,5                                        | 5                                                   |
| MPS (Mapp)                                      | 0         | 25                                          | 1,5                                          | 1                                                   |
|                                                 | 1         |                                             | 4                                            | 5                                                   |
| LPG                                             | 1         | 25                                          | 1,5                                          | 1                                                   |
|                                                 | 2         |                                             | 4                                            | 5                                                   |
| CO <sub>2</sub>                                 | 0         | 200                                         | 2                                            | 4                                                   |
|                                                 | 1         |                                             | 4                                            | 2                                                   |

**Identification in accordance DIN EN ISO 2503**



**Identification in accordance DIN EN 13918**



#### OXYGEN

##### single stage



| <i>Maximum<br/>working pressure</i> | <i>Cylinder<br/>connection</i> | <i>Hose<br/>connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|-------------------------------------|--------------------------------|----------------------------|-----------------|-----------------|
| 10 bar                              | G 3/4"                         | G 1/4", DN 6               | 717.05335       | 025             |
| 20 bar                              | G 3/4"                         | G 1/4", DN 6               | 717.05336       | 025             |
| 50 bar                              | G 3/4"                         | G 1/4", DN 6               | 717.05344       | 026             |

#### OXYGEN

##### double stage



| <i>Maximum<br/>working pressure</i> | <i>Cylinder<br/>connection</i> | <i>Hose<br/>connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|-------------------------------------|--------------------------------|----------------------------|-----------------|-----------------|
| 1,5 bar                             | G 3/4"                         | G 1/4", DN 6               | 717.05338       | 026             |
| 2,5 bar                             | G 3/4"                         | G 1/4", DN 6               | 717.05339       | 026             |
| 10 bar                              | G 3/4"                         | G 1/4", DN 6               | 717.05340       | 026             |

### 200 BAR- TECHNOLOGY

| single stage             |                     |                 |           |          | ACETYLENE |
|--------------------------|---------------------|-----------------|-----------|----------|-----------|
| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |           |
| 1,5 bar                  | Bracket             | G 3/8" LH, DN 8 | 717.05337 | 025      |           |



| single stage             |                     |                 |           |          | PROPANE |
|--------------------------|---------------------|-----------------|-----------|----------|---------|
| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |         |
| 2,5 bar                  | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05529 | 026      |         |



| single stage             |                     |                 |             |          | MAPP |
|--------------------------|---------------------|-----------------|-------------|----------|------|
| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |      |
| 2,5 bar                  | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05528 * | 026      |      |



| single stage             |                     |                 |             |          | FUEL GASES |
|--------------------------|---------------------|-----------------|-------------|----------|------------|
| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |            |
| 10 bar                   | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05537   | 026      |            |
| 20 bar                   | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05538   | 026      |            |
| 50 bar                   | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05539 * | 026      |            |



| double stage             |                     |                 |           |          | FUEL GASES |
|--------------------------|---------------------|-----------------|-----------|----------|------------|
| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |            |
| 2,5 bar                  | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05551 | 026      |            |
| 10 bar                   | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05552 | 026      |            |



for methane, hydrogen, Back-Shielding gas

### 200 BAR- TECHNOLOGY

#### HYDROGEN

single stage



| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05567 | 023      |

Flow rate indication with flow-meter

#### BACK-SHIELDING GAS

single stage



| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 50 l/min          | W 21,80 x 1/14" LH  | G 3/8" LH, DN 8 | 717.05563 | 023      |

Flow rate indication with flow gauges

#### SHIELDING GASES

single stage



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05522 | 026      |
| 20 bar                   | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05523 | 026      |
| 50 bar                   | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05524 | 026      |

for argon and other natural gases, Co2 (carbon dioxide), Mixed gases



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 100 bar                  | W 21,80 x 1/14"     | G 1/2"          | 717.05525 * | 004      |
| 200 bar                  | W 21,80 x 1/14"     | G 1/2"          | 717.05527 * | 004      |

for argon and other natural gases, CO<sub>2</sub> (carbon dioxide), Mixed gases

#### SHIELDING GASES

double stage



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 1,5 bar                  | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05544 * | 026      |
| 2,5 bar                  | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05545   | 026      |
| 10 bar                   | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05546   | 026      |

for argon and other natural gases, CO<sub>2</sub> (carbon dioxide), Mixed gases

### 200 BAR- TECHNOLOGY

#### single stage

ARGON / CO<sub>2</sub>

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05354 | 025      |
| 32 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05562 | 023      |

Flow rate indication with flow gauges

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05564 | 023      |
| 30 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05568 | 023      |

Flow rate indication with flow-meter

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W 21,80 x 1/14" LH  | G 3/8" LH, DN 6 | 717.05565 | 023      |

for argon / hydrogen (97% / 3%)

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|-------------------|---------------------|-----------------|-------------|----------|
| 16 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.08452 * | 023      |
| 30 l/min          | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.08453 * | 023      |

Flow rate indication with double flow-meter



#### double stage

ARGON / CO<sub>2</sub>

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 1 l/min                  | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05569 * | 023      |
| 5 l/min                  | W 21,80 x 1/14"     | G 1/4", DN 6    | 717.05570 * | 023      |

Flow rate indication with flow-meter



#### NITROGEN

#### single stage



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05531 | 026      |
| 20 bar                   | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05532 | 026      |
| 50 bar                   | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05533 | 026      |



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 100 bar                  | W 24,32 x 1/14"     | G 1/2"          | 717.05534 | 004      |
| 150 bar                  | W 24,32 x 1/14"     | G 1/2"          | 717.05535 | 004      |
| 200 bar                  | W 24,32 x 1/14"     | G 1/2"          | 717.05536 | 004      |



| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05566 | 023      |

Flow rate indication with flow-meter

#### NITROGEN

#### double stage



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 1,5 bar                  | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05547 | 026      |
| 2,5 bar                  | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05548 | 026      |
| 10 bar                   | W 24,32 x 1/14"     | G 1/4", DN 6    | 717.05549 | 026      |

### 200 BAR- TECHNOLOGY

#### single stage COMPRESSED AIR

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | G 5/8 außen         | G 1/4", DN 6    | 717.05515 | 026      |
| 20 bar                   | G 5/8 außen         | G 1/4", DN 6    | 717.05516 | 026      |
| 50 bar                   | G 5/8 außen         | G 1/4", DN 6    | 717.05517 | 026      |



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 100 bar                  | G 5/8 außen         | G 1/2"          | 717.05518 * | 004      |
| 200 bar                  | G 5/8 außen         | G 1/2"          | 717.05520 * | 004      |



#### double stage COMPRESSED AIR

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | G 5/8 außen         | G 1/4", DN 6    | 717.05543 | 026      |



## TEST GAS

single stage



| <i>Maximum<br/>working pressure</i> | <i>Cylinder<br/>connection</i> | <i>Hose<br/>connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|-------------------------------------|--------------------------------|----------------------------|-----------------|-----------------|
| 10 bar                              | M 19 x 1,5 LH                  | G 3/8", DN 8               | 717.05530       | 026             |

for test gas without corrosive components

## NITROUS OXIDE

single stage



| <i>Maximum<br/>working pressure</i> | <i>Cylinder<br/>connection</i> | <i>Hose<br/>connection</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|-------------------------------------|--------------------------------|----------------------------|-----------------|-----------------|
| 10 bar                              | G 3/8"                         | G 1/4", DN 6               | 717.05571 *     | 004             |

Inlet pressure up to 50 bar



### 300 BAR- TECHNOLOGY

#### single stage

#### OXYGEN

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 10 bar                   | W30x2 - Ø 17.3/18.3 | G 1/2"          | 717.06901 * | 004      |
| 20 bar                   | W30x2 - Ø 17.3/18.3 | G 1/2"          | 717.06902   | 004      |

High-efficiency pressure regulator for large withdrawal quantities up to 200 m³/h



#### double stage

#### OXYGEN

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | W30x2 - Ø 17.3/18.3 | G 1/4", DN 6    | 717.06716 | 026      |
| 20 bar                   | W30x2 - Ø 17.3/18.3 | G 1/4", DN 6    | 717.06717 | 026      |



#### single stage

#### FUEL GASES

| Maximum working pressure | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|--------------------------|---------------------|-----------------|-------------|----------|
| 10 bar                   | W30x2 - Ø 15.2/20.2 | G 3/8", DN 8    | 717.06732   | 026      |
| 20 bar                   | W30x2 - Ø 15.2/20.2 | G 3/8", DN 8    | 717.06733 * | 026      |

for methane, hydrogen, back-shielding gas



#### single stage

#### HYDROGEN

| Maximum flow rate | Cylinder connection   | Hose connection | Art. No.  | Cat. No. |
|-------------------|-----------------------|-----------------|-----------|----------|
| 16 l/min          | W30x2LH - Ø 15.2/20.2 | G 3/8", DN 8    | 717.07424 | 026      |

Flow rate indication with flow-meter



### 300 BAR- TECHNOLOGY

#### BACK-SHIELDING GAS

single stage



| Maximum flow rate | Cylinder connection   | Hose connection | Art. No.  | Cat. No. |
|-------------------|-----------------------|-----------------|-----------|----------|
| 50 l/min          | W30x2LH - Ø 15.2/20.2 | G 3/8", DN 8    | 717.07433 | 026      |

Flow rate indication with flow gauge

#### NITROGEN / SHIELDING GASES

single stage



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 10 bar                   | W30x2 - Ø 15.9/20.1 | G 1/4", DN 8    | 717.06707 | 026      |
| 20 bar                   | W30x2 - Ø 15.9/20.1 | G 1/4", DN 8    | 717.06708 | 026      |
| 50 bar                   | W30x2 - Ø 15.9/20.1 | G 1/4", DN 8    | 717.06709 | 026      |

for nitrogen or argon and other inert gases, CO<sub>2</sub> (carbon dioxide), mixed gases



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 100 bar                  | W30x2 - Ø 15.9/20.1 | G 1/2"          | 717.06710 | 026      |
| 200 bar                  | W30x2 - Ø 15.9/20.1 | G 1/2"          | 717.06712 | 026      |

for nitrogen or argon and other inert gases, CO<sub>2</sub> (carbon dioxide), mixed gases



| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 30 l/min          | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07429 | 026      |

### 300 BAR- TECHNOLOGY

#### single stage ARGON / CO<sub>2</sub>

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 16 l/min          | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07419 | 026      |
| 32 l/min          | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07420 | 026      |



| Maximum working pressure | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|--------------------------|---------------------|-----------------|-----------|----------|
| 16 l/min                 | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07421 | 026      |
| 30 l/min                 | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07425 | 026      |



Flow rate indication with flow-meter

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.  | Cat. No. |
|-------------------|---------------------|-----------------|-----------|----------|
| 30 l/min          | W30x2 - Ø 15.9/20.1 | G 1/4", DN 6    | 717.07429 | 026      |



#### single stage COMPRESSED AIR

| Maximum flow rate | Cylinder connection | Hose connection | Art. No.    | Cat. No. |
|-------------------|---------------------|-----------------|-------------|----------|
| 20 bar            | W30x2 - Ø 16.6/19.4 | G 1/4", DN 6    | 717.06724 * | 026      |



## GAUGES

Ø 63 mm, G 1/4" , neutral version, without gas imprint



| Medium                        | Scale<br>end value | Pressure<br>limitation | Art. No.    | Cat. No. |
|-------------------------------|--------------------|------------------------|-------------|----------|
| Oxygen                        | 2,5 bar            | 1,5 bar                | 0.640.114   | 004      |
|                               | 4 bar              | 2,5 bar                | 0.640.113   | 008      |
|                               | 16 bar             | 10 bar                 | 0.640.477   | 008      |
|                               | 25 bar             | 16 bar                 | 0.640.109   | 008      |
|                               | 40 bar             | 20 bar                 | 0.640.108   | 008      |
|                               | 100 bar            | 50 bar                 | 0.640.105   | 004      |
|                               | 315 bar            | 200 bar                | 0.640.476   | 008      |
|                               | 400 bar            | 300 bar                | 0.640.576   | 008      |
| Acetylene                     | 2,5 bar            | 1,5 bar                | 0.640.479   | 008      |
|                               | 40 bar             | without                | 0.640.478   | 008      |
| Fuel gases /<br>neutral gases | 2,5 bar            | 1,5 bar                | 0.640.070   | 004      |
|                               | 4 bar              | 2,5 bar                | 0.640.069   | 004      |
|                               | 16 bar             | 10 bar                 | 0.640.066   | 008      |
|                               | 25 bar             | 16 bar                 | 0.640.065 * | 008      |
|                               | 40 bar             | 20 bar                 | 0.640.064   | 008      |
|                               | 100 bar            | 50 bar                 | 0.640.061   | 004      |
|                               | 160 bar            | 100 bar                | 0.640.060 * | 004      |
|                               | 220 bar            | 150 bar                | 0.640.315   | 004      |
|                               | 315 bar            | 200 bar                | 0.640.059   | 008      |
|                               | 400 bar            | 300 bar                | 0.640.321 * | 008      |

### 300 BAR-TECHNOLOGY

#### with flow indication

#### GAUGES

| Gas type                | Scale end value | Maximum flow rate | Art. No.  | Cat. No. |
|-------------------------|-----------------|-------------------|-----------|----------|
| Argon / CO <sub>2</sub> | 25 l/min        | 16 l/min          | 0.640.141 | 004      |
|                         | 50 l/min        | 32 l/min          | 0.640.139 | 004      |
| Back-Shielding gas      | 70 l/min        | 50 l/min          | 0.640.142 | 004      |



#### for gauges with flow indication

#### ORIFICES

| Gas type                | Indication range | Bore diameter | Art. No.  | Cat. No. |
|-------------------------|------------------|---------------|-----------|----------|
| Argon / CO <sub>2</sub> | 0 - 16 l/min     | 0,55 mm       | 717.00753 | 004      |
| Argon / CO <sub>2</sub> | 0 - 30 l/min     | 0,75 mm       | 717.00787 | 004      |



#### with flowmeter

#### MEASURING GLASSES

| Gas type                | Indication range | Art. No.  | Cat. No. |
|-------------------------|------------------|-----------|----------|
| Argon / CO <sub>2</sub> | 1 l/min          | 717.00725 | 004      |
|                         | 16 l/min         | 717.00724 | 004      |
| Hydrogen                | 16 l/min         | 717.00726 | 004      |



#### to protect gauges against damages

#### GAUGES PROTECTING

|                             | Art. No.  | Cat. No. |
|-----------------------------|-----------|----------|
| for fuel gas, yellow design | 0.462.571 | 043      |
| for oxygen, blue design     | 0.462.572 | 043      |

## GAUGE PROTECTION



| Description                             | Art. No.  | Cat. No. |
|-----------------------------------------|-----------|----------|
| Rubber protection caps for gauges, grey | 0.647.614 | 008      |

## DOUBLE OUTLET VALVE

for oxygen and compressed gases



| Description                            | Art. No.  | Cat. No. |
|----------------------------------------|-----------|----------|
| <b>for oxygen and compressed gases</b> |           |          |
| Connection G 1/4", with union nut      | 512.11653 | 038      |
| <b>for fuel gas</b>                    |           |          |
| Connecting G 3/8" LH, with union nut   | 512.11602 | 038      |

## GAS FLOW TESTER



| Description     | Art. No.  | Cat. No. |
|-----------------|-----------|----------|
| Gas flow tester | 0.445.464 | 004      |

## SPARE PARTS

| Description   | Art. No.  | Cat. No. |
|---------------|-----------|----------|
| Gauge sealing | 452.08020 | 008      |

## MINITHERM THE FEATHERWEIGHT TORCH WITH HEAVYWEIGHT PERFORMANCE

The MINITHERM® product range has been developed in accordance with the requirements of industry and trade for a small and lightweight injector torch to cover special demands.

Compared with conventional hand torches the considerably lower weight of our MINITHERM® handles and attachments enable fatigue-free continuous working. This is of particular advantage in pipework construction, in manufacturing of jewellery, dental laboratories and precision parts as well as for mass production of hand-welded, brazed or heat-treated components.

Due to the small handle size any welding, brazing and heating work in difficult areas and hard to reach locations can usually be carried out with adequate freedom of movement. The entire MINITHERM® product range complies with the requirements of the "Accident Prevention Regulations for Welding, Cutting and Allied Processes" (BGVD1) as well as of DIN 8543.

- High level of safety thanks to the injector suction principle:  
The mixing of Oxygen with fuel gas takes place using the under-pressure mixing system. This prevents the intrusion of fuel gas into the Oxygen supply.  
MINITHERM® torches meet the requirements of the established accident prevention regulations.
- Universal range of applications:  
A wide range of torch inserts with varying flame characteristics and flame powers offers a virtually seamless range of applications from the barely visible micro flame up to the powerful welding flame.
- Large freedom of movement through small size:  
Through the compact size of the handle and inserts it is possible to carry out welding, brazing, soldering and heating tasks even at hard to access locations without any problems
- Fatigue free working through the low weight:  
The low weights of the handle and inserts make the MINITHERM® torch significantly lighter than conventional oxyfuel hand equipment. This ensures fatigue-free operation and gives high production quality.
- Comprehensive accessory program:  
The MINITHERM® program includes various pressure regulators, safety devices, hoses for Oxygen and different types of fuel gasses, torch rests, flame ignition accessories and a broad range of accessories to enable the widest variety of applications to be tackled smoothly.







## KITS, HANDLES, WELDING, BRAZING AND HEATING TIPS

### High-performance kits for welding, brazing and heating

### KITS

| Description                                                                                                                                                                          | Art. No.   | Cat. No. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| MINITHERM HA<br>for acetylene                                                                                                                                                        | 716. 01407 | 010      |
| MINITHERM PMYE<br>for propane, methane, Mapp, ethylene                                                                                                                               | 716. 01408 | 010      |
| each consisting of:<br>1 MINITHERM handle, with mounted oxygen and fuel gas hoses, length 3 m<br>5 welding, brazing and heating tips MINITHERM size 00 to 3<br>Operating instruction |            |          |



### Small handle with high flow efficiency, for welding, brazing and heating

### HANDLES

| Description                                                                                                                                                                                                                             | Art. No.   | Cat. No. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Type MINITHERM<br>with 3,2 mm hose connection                                                                                                                                                                                           | 716.06109  | 024      |
| Type MINITHERM<br>with mounted oxygen and fuel gas hoses,<br>length 3 m                                                                                                                                                                 | 716. 06111 | 024      |
| Length: 120 mm (without hose connection), shaft diameter: 10 mm, weight approx. 90 g (without hoses)                                                                                                                                    |            |          |
| The MINITHERM small handle provides the basis for particularly difficult and sensitive applications when using the oxyfuel flame constantly, in extremely small areas, and in places that are not accessible with conventional torches. |            |          |



### Welding, brazing and heating tips with central flame outlet, nozzles replaceable

### TIPS TYPE Z

| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>Type Z-HA | Art. No.<br>Type Z-PMYE | Cat. No. |
|------|-----------------------------|---------------|-----------------------|-------------------------|----------|
| 00   | 20-55 l/h                   | to 0,3 mm     | 716.00978             | 716.00988               | 024      |
| 0    | 28-72 l/h                   | 0,2-0,5 mm    | 716.00979             | 716.00989               | 024      |
| 1    | 58-150 l/h                  | 0,5-1,0 mm    | 716.00980             | 716.00990               | 024      |
| 2    | 150-285 l/h                 | 1,0-2,0 mm    | 716.00981             | 716.00991               | 024      |
| 3    | 215-440 l/h                 | 2,0-4,0 mm    | 716.00982             | 716.00992               | 024      |

MINITHERM Z-HA tips for welding, brazing and heating with acetylene  
MINITHERM Z-PMYE tips for brazing and heating with propane, methane, Mapp, ethylene



## WELDING, BRAZING AND HEATING TIPS, FORKED TORCHES

### TIPS TYPE FK

Brazing, heating and melting tips with laminar flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Art. No.<br>Type HA | Art. No.<br>Type PMYE | Cat. No. |
|------|-----------------------------|---------------------|-----------------------|----------|
| FK 1 | 210-350 l/h                 | 716.50808           | 716.50804             | 024      |
| FK 2 | 210-420 l/h                 | 716.50809           | 716.50805             | 024      |

MINITHERM FK-HA tips for brazing, heating and melting with acetylene, hydrogen  
MINITHERM FK-PMYE tips for brazing, heating and melting with propane, methane, Mapp, ethylene

### FORKED TORCH TYPE Z

For heating and brazing, with central flame outlet



| Size | O <sub>2</sub> -Consumption | Art. No.<br>Type Z-HA | Art. No.<br>Type Z-PMYE | Cat. No. |
|------|-----------------------------|-----------------------|-------------------------|----------|
| Z 0  | 56-140 l/h                  | 716.50464 *           | 716.50469 *             | 039      |
| Z 1  | 210-300 l/h                 | 716.50465 *           | 716.50470 *             | 039      |
| Z 2  | 310-570 l/h                 | 716.02560 *           | 716.50471 *             | 039      |
| Z 3  | 430-880 l/h                 | 716.50466 *           | 716.50472 *             | 039      |

Forked torch MINITHERM Z-HA for heating and brazing with acetylene, hydrogen  
Forked torch MINITHERM Z-PMYE for heating and brazing with propane, methane, Mapp, ethylene

### FORKED TORCH TYPE FK

For heating and brazing, with laminar flame outlet



| Size | O <sub>2</sub> -Consumption | Art. No.<br>Type Z-HA | Art. No.<br>Type Z-PMYE | Cat. No. |
|------|-----------------------------|-----------------------|-------------------------|----------|
| FK 1 | 420-700 l/h                 | 716.50820 *           | 716.50828 *             | 039      |
| FK 2 | 550-840 l/h                 | 716.50821 *           | 716.50829 *             | 039      |

Forked torch MINITHERM Z-HA for heating and brazing with acetylene, hydrogen  
Forked torch MINITHERM Z-PMYE for heating and brazing with propane, methane, Mapp, ethylene

### FORKED TORCH TYPE FK

Replaceable nozzles for brazing, heating and melting tips and forked torches type FK



| Size | Art. No.<br>Type HA | Art. No.<br>Type PMYE | Cat. No. |
|------|---------------------|-----------------------|----------|
| FK 1 | 716.50798           | 716.50800             | 039      |
| FK 2 | 716.50799           | 716.50810             | 039      |
| FK 3 |                     | 716.50810 *           | 039      |

Heating nozzles FK-HA, for brazing, heating and melting tips and forked torch MINITHERM FK-HA  
Heating nozzles FK-PMYE, for brazing, heating and melting tips and forked torch MINITHERM FK-PMYE

## Small tips stretched

## MICRO-TIPS M-HA

| Size | O <sub>2</sub> -Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|-----------------------------|--------------------------|-----------|-----------|----------|
| 2    | 6 -9 l/h                    | 0,2 - 0,5 bar            | 716.50813 | 716.05789 | 004      |
| 3    | 9 - 15 l/h                  | 0,5 - 1,5 bar            | 716.50813 | 716.05790 | 004      |
| 4    | 32-39 l/h                   | 0,5-0,8 bar              | 716.50814 | 716.05791 | 004      |
| 5    | 39-43 l/h                   | 0,8-1,0 bar              | 716.50814 | 716.05792 | 004      |
| 6    | 43-54 l/h                   | 1,0-1,5 bar              | 716.50814 | 716.05793 | 004      |
| 7    | 54-76 l/h                   | 1,5-2,5 bar              | 716.50814 | 716.05794 | 004      |



Tips MINITHERM M-HA will be supplied without injector.

## Small tips curved

## MICRO-TIPS MG-HA

| Size | O <sub>2</sub> -Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|-----------------------------|--------------------------|-----------|-----------|----------|
| 2    | 6 -9 l/h                    | 0,2 - 0,5 bar            | 716.50813 | 716.05783 | 004      |
| 3    | 9 - 15 l/h                  | 0,5 - 1,5 bar            | 716.50813 | 716.05784 | 004      |
| 4    | 32-39 l/h                   | 0,5-0,8 bar              | 716.50814 | 716.05785 | 004      |
| 5    | 39-43 l/h                   | 0,8-1,0 bar              | 716.50814 | 716.05786 | 004      |
| 6    | 43-54 l/h                   | 1,0-1,5 bar              | 716.50814 | 716.05787 | 004      |
| 7    | 54-76 l/h                   | 1,5-2,5 bar              | 716.50814 | 716.05788 | 004      |



Tips MINITHERM MG-HA will be supplied without injector.

## Small tips stretched

## MICRO-TIPS M-PMYE

| Size | O <sub>2</sub> -Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|-----------------------------|--------------------------|-----------|-----------|----------|
| 4    | 12-21 l/h                   | 1,5-2,5 bar              | 716.50813 | 716.05791 | 004      |
| 5    | 18-30 l/h                   | 2,0-4,0 bar              | 716.50813 | 716.05792 | 004      |
| 6    | 43-76 l/h                   | 1,0-2,5 bar              | 716.50814 | 716.05793 | 004      |
| 7    | 65-98 l/h                   | 2,0-3,5 bar              | 716.50814 | 716.05794 | 004      |



Tips MINITHERM M-PMYE will be supplied without injector.

## Small tips curved

## MICRO-TIPS MG-PMYE

| Size | O <sub>2</sub> -Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|-----------------------------|--------------------------|-----------|-----------|----------|
| 4    | 12-21 l/h                   | 1,5-2,5 bar              | 716.50813 | 716.05785 | 004      |
| 5    | 18-30 l/h                   | 2,0-4,0 bar              | 716.50813 | 716.05786 | 004      |
| 6    | 43-76 l/h                   | 1,0-2,5 bar              | 716.50814 | 716.05787 | 004      |
| 7    | 65-98 l/h                   | 2,0-3,5 bar              | 716.50814 | 716.05788 | 004      |



Tips MINITHERM MG-PMYE will be supplied without injector.

## MICRO- NEEDLE INSERTS G-H

Needle inserts stretched



| Size | O <sub>2</sub> - Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|------------------------------|--------------------------|-----------|-----------|----------|
| 1    | 9-15 l/h                     | 0,5-1,5 bar              | 716.50811 | 716.05795 | 004      |
| 2    | 9-15 l/h                     | 0,5-1,5 bar              | 716.50811 | 716.05796 | 004      |
| 3    | 9-21 l/h                     | 0,5-2,0 bar              | 716.50811 | 716.05797 | 004      |
| 4    | 9-21 l/h                     | 0,5-3,0 bar              | 716.50811 | 716.05798 | 004      |

Tips MINITHERM MG-H will be supplied without injector.

## MICRO- NEEDLE INSERTS G-PMYE

Needle inserts stretched



| Size | O <sub>2</sub> - Consumption | O <sub>2</sub> -Pressure | Injector  | Art. No.  | Cat. No. |
|------|------------------------------|--------------------------|-----------|-----------|----------|
| 2    | 9-15 l/h                     | 0,5-1,5 bar              | 716.50811 | 716.05796 | 004      |
| 3    | 9-21 l/h                     | 0,5-2,0 bar              | 716.50811 | 716.05797 | 004      |
| 4    | 9-24 l/h                     | 0,5-3,0 bar              | 716.50811 | 716.05798 | 004      |
| 5    | 9-27 l/h                     | 0,5-3,5 bar              | 716.50811 | 716.05799 | 004      |

Tips MINITHERM MG-PMYE will be supplied without injector.

## INJECTOR

Injector for Micro-Tips



| Size | Art. No.<br>Type HA | Art. No.<br>Type PMYE | Cat. No. |
|------|---------------------|-----------------------|----------|
| 000  |                     | 716.50813             | 004      |
| 0    | 716.50814           | 716.50814             | 004      |

## INJECTOR

Injector for Micro- Needle inserts



| Size | Art. No.<br>Type HA | Art. No.<br>Type PMYE | Cat. No. |
|------|---------------------|-----------------------|----------|
| 0    | 716.50811           | 716.50811             | 004      |

## MULTI-PURPOSE KITS FOR WELDING, BRAZING, HEATING AND FLAME CUTTING, WITH DIN CONNECTIONS

Powerful complete sets for welding, brazing and heating

STARLET \*A\*

| Description     | Art. No.  | Cat. No. |
|-----------------|-----------|----------|
| Kit STARLET *A* | 716.18036 | 010      |

consisting of:

- 1 handle type 1302, 1 spring lever cutting attachment type 8702-A/PMYE for all fuel gases
- 3 gas-mixing nozzles type ANME for cutting ranges 3 to 75 mm
- 7 welding tips type 321-A with hammered finish welding nozzles cleaning set, hose nipples with union nuts and operating instructions



Powerful complete sets for welding, brazing and heating

STARLET \*PMYE\*

| Description        | Art. No.  | Cat. No. |
|--------------------|-----------|----------|
| Kit STARLET *PMYE* | 716.06711 | 010      |

consisting of:

- 1 handle type 1302, 1 spring lever cutting attachment type 8702-A/PMYE for all fuel gases
- 3 gas-mixing nozzles type PNME for cutting ranges 3 to 75 mm
- 6 brazing and heating tips type Z-PMY with hammered finish brazing and heating nozzles sizes 1 to 6, torch carriage, torch spanner, gas igniter, protection goggles, nozzle cleaning set, hose nipples with union nuts and operating instruction



Powerful complete sets for welding, brazing and heating

STARLET \*WS\*1302

| Description           | Art. No.  | Cat. No. |
|-----------------------|-----------|----------|
| Kit Starlet *WS* 1302 | 716.06345 | 010      |

consisting of:

- 1 handle type 1302, 1 spring lever cutting attachment type 8702-A for all fuel gases
- 3 gas-mixing nozzles type ANME for cutting ranges 3 to 75 mm
- 3 welding tips type 321-A with hammered finish welding nozzles, for welding ranges 1,0 to 6,0 mm, operating instructions, including hose nipples with union nuts



Powerful complete sets for welding, brazing and heating

STARLET PROFIKIT \*A\*

| Description      | Inlet connections<br>Handle Oxygen | Inlet connections<br>Handle fuel gas | Art. No.  | Cat. No. |
|------------------|------------------------------------|--------------------------------------|-----------|----------|
| PROFIkit *A* ME  | G 1/4" RH                          | G 3/8" LH                            | 716.07280 | 010      |
| PROFIkit *A* MB  | G 3/8" RH                          | G 3/8" LH                            | 716.07282 | 010      |
| PROFIkit *A* MU  | 9/16" NF-RH (M)                    | 9/16" NF-LH (M)                      | 716.07283 | 010      |
| PROFIkit *A* MF  | M 16x1,5-RH (M)                    | M 16x1,5-LH (M)                      | 716.07284 | 010      |
| PROFIkit *A* MAS | 5/8 UNF-RH (M)                     | 5/8 UNF-LH (M)                       | 716.07285 | 010      |

Consisting of:

- 1 Handle STARLET 2221,
- 3 Gas mixing cutting nozzles type ANME for cutting range from 3 - 75 mm,
- One each cylinder pressure regulator CONSTANT 2000 for Oxygen (10 bar) and Acetylene (1,5 bar),
- One each flash-back arrestor DGN for Oxygen (G 1/4") and Acetylene (G 3/8" LH),
- 7 welding inserts type 321-A for welding range from 0,2 - 14,0 mm,
- 4 hose clips, twin hoses Oxygen/fuel gas 6/6 mm, length 4,5 m, multi-flame heating insert STARLET F-A 6, cutting inserts STARLET 8702, gas lighter, 10 replacement flint, protective goggles, adjustable screw spanner, set nozzle cleaners, operating manual including hose tails with connection nuts



## MULTI-PURPOSE KITS FOR WELDING, BRAZING, HEATING AND FLAME CUTTING

### SARLET \*KS\*

Powerful complete sets for welding, brazing and heating



| Description | Art. No. | Cat. No. |
|-------------|----------|----------|
|-------------|----------|----------|

|                  |                                        |           |     |
|------------------|----------------------------------------|-----------|-----|
| Kit STARLET *KS* | DIN connections: G 1/4" RH - G 3/8" LH | 716.04493 | 010 |
|------------------|----------------------------------------|-----------|-----|

BS connections: G 3/8" RH - G 3/8" LH

consisting of:

1 handle type 2211, 1 spring lever cutting attachment type 1711-A for acetylene  
3 cutting nozzles and 1 heating nozzle type A-RS for cutting ranges 3 to 40 mm  
4 welding tips type 111-A, for welding ranges 1 to 9 mm  
torch carriage, radius bar, torch spanner, set of nozzle cleaners, operating instructions, incl. hose nipples and union nuts

### SARLET \*N\*

Powerful complete sets for welding, brazing and heating



| Description | Art. No. | Cat. No. |
|-------------|----------|----------|
|-------------|----------|----------|

|                 |           |     |
|-----------------|-----------|-----|
| Kit STARLET *N* | 716.01786 | 010 |
|-----------------|-----------|-----|

consisting of:

1 handle type 2211, 1 spring lever cutting attachment type 2711-A for acetylene  
2 block nozzles type A-BK, for cutting ranges 3 to 25 mm  
4 welding tips type 111-A, for welding ranges 1 to 9 mm  
torch carriage, torch spanner, set of nozzle cleaners, operating instructions, incl. hose nipples and union nuts

### SARLET \*WS\*

Powerful complete sets for welding, brazing and heating



| Description | Art. No. | Cat. No. |
|-------------|----------|----------|
|-------------|----------|----------|

|                  |           |     |
|------------------|-----------|-----|
| Kit Starlet *WS* | 716.02262 | 010 |
|------------------|-----------|-----|

consisting of:

1 handle type 2211, 1 spring lever cutting attachment type 1711-PMYE for acetylene  
3 cutting nozzles and 1 heating nozzle type A-RS for cutting ranges 3 to 40 mm  
3 welding tips type 111-A, for welding ranges 1 to 6 mm, operating instruction, incl. hose nipples and union nuts

## HANDLES, WELDING, BRAZING AND HEATING TIPS

Handle shells replaceable, maintenance-free and easy to repair

STARLET

| Type    | Description                                         | Connections                      | Art. No.  | Cat. No. |
|---------|-----------------------------------------------------|----------------------------------|-----------|----------|
| 1302 ME | Valves V-positioned                                 | DIN:<br>G 1/4" RH - G 3/8" LH    | 716.05978 | 024      |
| 1302 MB |                                                     | BSP:<br>G 3/8" RH - G 3/8" LH    | 716.05976 | 024      |
| 1302 MU |                                                     | CGA:<br>9/16" RH - 9/16" LH      | 716.05977 | 050      |
| 1302 MF |                                                     | NFE: M16x1,5 RH -<br>M16x1,5 LH  | 716.05979 | 050      |
| 1302 MN |                                                     | AS: UNF 5/8" RH -<br>UNF 5/8" LH | 716.06136 | 050      |
| 1302 S  | with built-in flashback<br>arrestors                | DIN:<br>G 1/4" RH - G 3/8" LH    | 716.06712 | 024      |
| 2221    |                                                     |                                  | 716.06815 | 024      |
| 3201    | with Conax valves                                   | Hose connection<br>6 / 6 mm      | 242.65000 | 024      |
| 6201    | with pilot flame, tipping<br>lever and Conax valves | Hose connection<br>4 / 4 mm      | 716.00200 | 004      |
| 7201    | with tipping lever on-off<br>and Conax valves       | Hose connection<br>6 / 6 mm      | 716.01115 | 004      |

Length: approx. 210 mm (without hose connections), shaft diameter: 15 mm, weight: approx. 400 g

STARLET 1302 S:

Length: approx. 250 mm (without hose nipples), shaft diameter: 15 mm, weight: approx. 480 g

The ergonomic design of the STARLET handles allows easy handling, fatigue-free working and high operation comfort. Large cross-sectional areas enable high gas flow and guarantee maximum safety against flashbacks. The sturdy and compact aluminum construction guarantees high impact resistance and long service life.

The STARLET 302 S version is additionally equipped with built-in flashback arrestors with flame trap and non-return valve for oxygen and fuel gas, and thus can be used also for high-efficiency heating tips up to oxygen flow rates of 55 m<sup>3</sup>/h.



For standard applications, nozzles replaceable

STARLET 111-A

| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>welding nozzle | Cat. No. |
|------|-----------------------------|---------------|--------------------------|----------------------------|----------|
| 0    | approx. 40 l/h              | 0,2- 0,5 mm   | 716.01600                | 716.01540                  | 024/007  |
| 1    | approx. 80 l/h              | 0,5- 1,0 mm   | 716.01601                | 716.01541                  | 024/007  |
| 2    | approx. 160 l/h             | 1,0- 2,0 mm   | 716.01602                | 716.01542                  | 024/007  |
| 3    | approx. 315 l/h             | 2,0- 4,0 mm   | 716.01603                | 716.01543                  | 024/007  |
| 3,5  | approx. 410 l/h             | 3,0- 5,0 mm   | 716.01820                | 716.01882                  | 024/007  |
| 4    | approx. 500 l/h             | 4,0- 6,0 mm   | 716.01604                | 716.01544                  | 024/007  |
| 5    | approx. 800 l/h             | 6,0- 9,0 mm   | 716.01605                | 716.01545                  | 024/007  |
| 6    | approx. 1.250 l/h           | 9,0 - 14,0 mm | 716.01606                | 716.01546                  | 024/007  |

Tips for welding, brazing and heating with acetylene, with hammered finish welding nozzle bores



## HANDLES, WELDING, BRAZING AND HEATING TIPS

### STARLET 211-A

Laminar flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>welding nozzle | Cat. No. |
|------|-----------------------------|---------------|--------------------------|----------------------------|----------|
| 1    | approx. 80 l/h              | 0,5 - 1,0 mm  | 716.01611                | 242.34110                  | 024/007  |
| 2    | approx. 160 l/h             | 1,0 - 2,0 mm  | 716.01612                | 242.34210                  | 024/007  |
| 3    | approx. 315 l/h             | 2,0 - 4,0 mm  | 716.01613                | 242.34310                  | 024/007  |
| 3,5  | approx. 410 l/h             | 3,0 - 5,0 mm  | 716.01830                | 716.00686                  | 024/007  |
| 4    | approx. 500 l/h             | 4,0 - 6,0 mm  | 716.01614                | 242.34410                  | 024/007  |
| 5    | approx. 800 l/h             | 6,0 - 9,0 mm  | 716.01615                | 242.34510                  | 024/007  |
| 6    | approx. 1.250 l/h           | 9,0 - 14,0 mm | 716.01616                | 242.34610                  | 024/007  |

Tips for welding, brazing and heating with acetylene

### STARLET 321-A

Mixing tube with hammered finish welding nozzle



| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>welding nozzle | Cat. No. |
|------|-----------------------------|---------------|--------------------------|----------------------------|----------|
| 0    | 40 l/h                      | 0,2 - 0,5 mm  | 716.06257                | 716.06258                  | 024      |
| 1    | 80 l/h                      | 0,5 - 1,0 mm  | 716.05051                | 716.05041                  | 024      |
| 2    | 160 l/h                     | 1,0 - 2,0 mm  | 716.05052                | 716.05042                  | 024      |
| 3    | 315 l/h                     | 2,0 - 4,0 mm  | 716.05053                | 716.05043                  | 024      |
| 4    | 500 l/h                     | 4,0 - 6,0 mm  | 716.05054                | 716.05044                  | 024      |
| 5    | 800 l/h                     | 6,0 - 9,0 mm  | 716.05055                | 716.05045                  | 024      |
| 6    | 1.250 l/h                   | 9,0 - 14,0 mm | 716.05056                | 716.05046                  | 024      |

Tips for acetylene, for welding, brazing and heating

### STARLET 411-A

Flexible, mixing tube with brazed-on welding nozzle replaceable



| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>mixing tube | Cat. No. |
|------|-----------------------------|---------------|--------------------------|-------------------------|----------|
| 2    | approx. 160 l/h             | 1,0 - 2,0 mm  | 716.01702                | 716.01742               | 024/007  |
| 3    | approx. 315 l/h             | 2,0 - 4,0 mm  | 716.01703                | 716.01743               | 024/007  |
| 3,5  | approx. 410 l/h             | 3,0 - 5,0 mm  | 716.01840                | 716.00461               | 024/007  |
| 4    | approx. 500 l/h             | 4,0 - 6,0 mm  | 716.01704                | 716.01744               | 024/007  |
| 5    | approx. 800 l/h             | 6,0 - 9,0 mm  | 716.01705                | 716.01745               | 024/007  |

Pipe welding tips for welding, brazing and heating in difficult areas, fuel gas acetylene



## WELDING, BRAZING AND HEATING TIPS

### Central flame outlet, nozzles replaceable

### STARLET Z-A

| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>welding nozzle | Cat. No. |
|------|-----------------------------|---------------|--------------------------|----------------------------|----------|
| 7    | max. 1,8 m <sup>3</sup> /h  | 355 mm        | 716.01837                | 242.34710                  | 004      |
| 8    | max. 2,5 m <sup>3</sup> /h  | 380 mm        | 716.01838                | 242.34810                  | 004      |

Tips for welding, brazing and heating with acetylene



### Central flame outlet, nozzles replaceable

### STARLET Z-A

| Size | O <sub>2</sub> -Consumption | Overall length<br>approx. | Art. No.<br>tip complete | Art. No.<br>heating nozzle | Cat. No. |
|------|-----------------------------|---------------------------|--------------------------|----------------------------|----------|
| 7    | 1,2 - 4,2 m <sup>3</sup> /h | 430 mm                    | 716.51805                | 242.34710                  | 024      |
| 8    | 1,8 - 4,6 m <sup>3</sup> /h | 580 mm                    | 716.51806                | 242.34810                  | 024      |

Tips for acetylene, with mixing tube made of stainless steel, and replaceable brazing and heating nozzles for brazing and spot heating



### Laminar flame outlet, nozzles replaceable

### STARLET F-A

| Size | O <sub>2</sub> -Consumption | Overall length<br>approx. | Art. No.<br>tip complete | Art. No.<br>heating nozzle | Cat. No. |
|------|-----------------------------|---------------------------|--------------------------|----------------------------|----------|
| 3    | 0,3 - 0,7 m <sup>3</sup> /h | 200 mm                    | 716.03443                | 716.02080                  | 004      |
| 4    | 0,7 - 1,2 m <sup>3</sup> /h | 275 mm                    | 716.01844                | 242.14460                  | 004      |
| 6    | 1,2 - 2,1 m <sup>3</sup> /h | 335 mm                    | 716.01846                | 242.47610                  | 004      |
| 8    | 2,3 - 4,0 m <sup>3</sup> /h | 380 mm                    | 716.01848                | 242.13811                  | 004      |

Tips for laminar brazing and heating with acetylene



### Laminar flame outlet, nozzles replaceable, particularly low noise (85 dB(A) up to size 8)

### STARLET FB-A

| Size | O <sub>2</sub> -Consumption | Overall length<br>approx. | Art. No.<br>tip complete | Art. No.<br>heating nozzle | Cat. No. |
|------|-----------------------------|---------------------------|--------------------------|----------------------------|----------|
| 5    | 0,5 - 0,9 m <sup>3</sup> /h | 430 mm                    | 716.51809                | 716.00725                  | 004      |
| 6    | 0,9 - 1,6 m <sup>3</sup> /h | 430 mm                    | 716.51810                | 716.00726                  | 004      |
| 7    | 1,2 - 2,2 m <sup>3</sup> /h | 580 mm                    | 716.51811                | 716.00727                  | 004      |
| 8    | 1,8 - 2,8 m <sup>3</sup> /h | 580 mm                    | 716.51812                | 716.00728                  | 004      |
| 9    | 3,1 - 6,7 m <sup>3</sup> /h | 880 mm                    | 716.51813                | 716.00779                  | 004      |

Tips for acetylene with mixing tube made from stainless steel and replaceable brazing and heating nozzles, for brazing and laminar heating



## WELDING, BRAZING AND HEATING TIPS

### STARLET Z-PMY

Mixing tube with hammered finish brazing and heating nozzle, central flame outlet



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. brazing nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 1    | 80 l/h                      | 157 mm                 | 716.06491             | 716.06481               | 004      |
| 2    | 160 l/h                     | 176 mm                 | 716.06492             | 716.06482               | 004      |
| 3    | 315 l/h                     | 191 mm                 | 716.06493             | 716.06483               | 004      |
| 4    | 500 l/h                     | 207 mm                 | 716.06494             | 716.06484               | 004      |
| 5    | 800 l/h                     | 245 mm                 | 716.06495             | 716.06485               | 004      |
| 6    | 1.250 l/h                   | 266 mm                 | 716.06496             | 716.06486               | 004      |

Tips for propane, methane, Mapp, with hammered finish nozzle for brazing and spot heating

### STARLET Z-PMYE

Central flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 1    | max. 0,1 m <sup>3</sup> /h  | 145 mm                 | 716.01861             | 716.00590               | 004      |
| 2    | max. 0,2 m <sup>3</sup> /h  | 175 mm                 | 716.01862             | 716.00591               | 004      |
| 3    | max. 0,4 m <sup>3</sup> /h  | 205 mm                 | 716.01863             | 716.00592               | 004      |
| 4    | max. 0,6 m <sup>3</sup> /h  | 235 mm                 | 716.01864             | 716.00593               | 004      |
| 6    | max.1,6 m <sup>3</sup> /h   | 265 mm                 | 716.01866             | 716.00594               | 004      |
| 8    | max.2,4 m <sup>3</sup> /h   | 315 mm                 | 716.01868             | 716.00595               | 004      |

Tips for spot brazing and heating with propane, methane, Mapp, ethylene

### STARLET F-PME

Laminar flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 4    | max. 0,5 m <sup>3</sup> /h  | 275 mm                 | 716.01854             | 716.00570               | 004      |
| 6    | max. 3,8 m <sup>3</sup> /h  | 335 mm                 | 716.01856             | 716.00571               | 004      |
| 8    | max. 6,1 m <sup>3</sup> /h  | 285 mm                 | 716.01858             | 716.00596               | 004      |
| 10   | max. 5,5 m <sup>3</sup> /h  | 310 mm                 | 716.01860             | 716.00597               | 004      |

Tips for laminar brazing and heating with propane, methane, ethylene

## WELDING, BRAZING AND HEATING TIPS

### Stabilised, central flame outlet, nozzles replaceable

### STARLET Z-PMEY

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 6    | 1 - 3 m <sup>3</sup> /h     | 430 mm                 | 716.51712             | 716.01233               | 004      |
| 8    | 2 - 6 m <sup>3</sup> /h     | 430 mm                 | 716.51713             | 716.01234               | 004      |
| 10   | 6 - 14 m <sup>3</sup> /h    | 580 mm                 | 716.51714             | 716.01235               | 004      |
| 12   | 11 - 35 m <sup>3</sup> /h   | 880 mm                 | 716.51715             | 716.01236               | 004      |
| 14   | 18 - 40 m <sup>3</sup> /h   | 1.090 mm               | 716.51716             | 716.01241               | 004      |

Tips for propane, methane, Mapp, ethylene, with mixing tube made of stainless steel, and replaceable brazing and heating nozzles, for brazing and stable spot heating



### Laminar flame outlet, nozzles replaceable

### STARLET F-PMEY

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 8    | 2 - 6 m <sup>3</sup> /h     | 430 mm                 | 716.51717             | 716.01237               | 004      |
| 10   | 6 - 14 m <sup>3</sup> /h    | 580 mm                 | 716.51718             | 716.01238               | 004      |
| 12   | 11 - 35 m <sup>3</sup> /h   | 580 mm                 | 716.51719             | 716.01239               | 004      |

Tips for propane, methane, Mapp, ethylene, with mixing tube made of stainless steel, and replaceable brazing and heating nozzles, for brazing and laminar heating



### Laminar flame outlet, nozzles replaceable

### STARLET HF-PM

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 12   | 5 - 12 m <sup>3</sup> /h    | 430                    | 716.51722             | 716.05646               | 004      |
| 13   | 8 - 23 m <sup>3</sup> /h    | 580                    | 716.51723             | 716.05647               | 004      |

Tips for propane, methane, with mixing tube made of stainless steel, and replaceable brazing and heating nozzles, for brazing and laminar heating



### Accessories for brazing and heating tips

### CONNECTING ADAPTER

| Nozzle thread | Mixing tube thread | Art. No.  | Cat. No. |
|---------------|--------------------|-----------|----------|
| M 12 x 1,5    | 1/2" x 25 Gg.      | 716.51705 | 039      |
| M 14 x 1,5    | 1/2" x 25 Gg.      | 716.51706 | 039      |
| M 18 x 1,5    | 1/2" x 25 Gg.      | 716.51707 | 039      |

for brazing and heating tips Z-A, FB-A, F-A, Z-PMYE and F-PMYE  
only for stainless steel mixing tubes



## FORKED TORCHES

### FORKED TORCH STARLET F

Laminar flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption<br>F-A | O <sub>2</sub> -Consumption<br>F-PM | Art. No.<br>Type F-A | Art. No.<br>Type F-PM | Cat. No. |
|------|------------------------------------|-------------------------------------|----------------------|-----------------------|----------|
| F 1  | 0,4 m <sup>3</sup> /h              | 1,1 m <sup>3</sup> /h               | 716.50766 *          | 716.50759 *           | 039      |
| F 2  | 0,7 m <sup>3</sup> /h              | 2,1 m <sup>3</sup> /h               | 716.50767 *          | 716.50760 *           | 039      |
| F 3  | 1,2 m <sup>3</sup> /h              | 2,5 m <sup>3</sup> /h               | 716.50768 *          | 716.50761 *           | 039      |
| F 4  | 1,7 m <sup>3</sup> /h              |                                     | 716.50769 *          | --                    | 039      |
| F 5  | 2,5 m <sup>3</sup> /h              |                                     | 716.50770 *          | --                    | 039      |

Overall length approx. 250 mm, nozzle distance 30 - 60 mm (flexible)

STARLET F-A forked torch for laminar heating and brazing with acetylene  
STARLET F-PM forked torch for laminar heating and brazing with propane, methane

### HEATING NOZZLES STARLET FK

Replaceable nozzles for STARLET F forked torch, laminar flame outlet



| Size | Art. No.<br>Type FK-A | Art. No.<br>Type FK-PMY | Cat. No. |
|------|-----------------------|-------------------------|----------|
| FK 1 | 716.03006             | 716.03016               | 039      |
| FK 2 | 716.03007             | 716.03017               | 039      |
| FK 3 | 716.03008             | 716.03018               | 039      |
| FK 4 | 716.52217             | --                      | 039      |
| FK 5 | 716.52270             | --                      | 039      |

Heating nozzles FK-A for forked torch STARLET F-A, fuel gas acetylene  
Heating nozzles FK-PM for forked torch STARLET F-PM, fuel gases propane, methane

## FORKED TORCHES

Central flame outlet, nozzles replaceable

### FORKED TORCH STARLET Z

| Size | O <sub>2</sub> -Consumption<br>Z-A | O <sub>2</sub> -Consumption<br>Z-PM | Art. No.<br>Type Z-A | Art. No.<br>Type Z-PM | Cat. No. |
|------|------------------------------------|-------------------------------------|----------------------|-----------------------|----------|
| Z 1  | --                                 | 0,5 m <sup>3</sup> /h               | --                   | 716.50756 *           | 039      |
| Z 2  | 0,3 m <sup>3</sup> /h              | 1,1 m <sup>3</sup> /h               | 716.50762 *          | 716.50757 *           | 039      |
| Z 3  | 0,7 m <sup>3</sup> /h              | 1,4 m <sup>3</sup> /h               | 716.50763 *          | 716.50758 *           | 039      |
| Z 4  | 1,2 m <sup>3</sup> /h              | --                                  | 716.50764 *          | --                    | 039      |
| Z 5  | 2,5 m <sup>3</sup> /h              | --                                  | 716.50765 *          | --                    | 039      |

Overall length approx.. 250 mm, nozzle distance 30 - 60 mm (flexible)

STARLET Z-A forked torch for spot heating and brazing with acetylene  
STARLET Z-PM forked torch for spot heating and brazing with propane, methane



Replaceable nozzles for STARLET Z forked torch, central flame outlet

### HEATING NOZZLES STARLET ZK

| Size | Art. No.<br>Type ZK-A | Art. No.<br>Type ZK-PMY | Cat. No. |
|------|-----------------------|-------------------------|----------|
| ZK 1 | --                    | 716.03011               | 039      |
| ZK 2 | 257. 26232            | 716.03012               | 039      |
| ZK 3 | 257.26332             | 716.03013               | 039      |
| ZK 4 | 257.26432             | --                      | 039      |
| ZK 5 | 257.26532             | --                      | 039      |

Heating nozzles ZK-A for forked torch STARLET Z-A, fuel gas acetylene

Heating nozzles ZK-PM for forked torch STARLET Z-PM, fuel gases propane, methane



## CUTTING ATTACHMENTS

### STARLET CUTTING ATTACHMENTS

For manual flame cutting, fuel gases acetylene or propane, methane, Mapp

|                                                                                   | Description                                 | Nozzle type                                                       | Art. No.<br>Type A | Art. No.<br>Type PMYE | Cat. No. |
|-----------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------|--------------------|-----------------------|----------|
|  | STARLET 1711<br>with spring lever           | Ring/ slot nozzles                                                | 716.05168          | 716.05337             | 024      |
|  | STARLET 1211<br>with handwheel              | Ring/ slot nozzles                                                | 716.05338          | 716.05333             | 024      |
|  | STARLET 2711<br>with spring lever           | Block nozzles                                                     | 716.05329          | --                    | 024      |
|  | STARLET 8702<br>with spring lever           | Gas-mixing nozzles<br>with international 30°<br>nozzle connection |                    | 716.05960             | 024      |
|   | STARLET<br>8711-A/PMEY<br>with spring lever | Gas-mixing nozzles                                                | 716.05335          | 716.05335             | 024      |

Cutting attachments for ethylene gases available on request

### Calculation of fuel gas consumption

Mixing ratio during torch operation in atmosphere  
and maximum flame temperature of different gases

|                                           | Acetylene | Propane  | Methane<br>(Natural gas) | Mapp    | Ethylene | Hydrogen |
|-------------------------------------------|-----------|----------|--------------------------|---------|----------|----------|
| Fuel gas: oxygen [ $m^3 : m^3$ ]          | 1 : 1,1   | 1 : 3,75 | 1 : 1,6                  | 1 : 3,0 | 1 : 1,9  | 1 : 0,36 |
| maximum flame temperature [ $^{\circ}C$ ] | 3.160     | 2.820    | 2.780                    | 2.910   | 2.940    | 2.860    |
| Fuel gas: compressed air [ $m^3 : m^3$ ]  | 1 : 5,5   | 1 : 19   | 1 : 8                    | 1 : 15  | 1 : 9,5  | 1 : 1,8  |
| maximum flame temperature [ $^{\circ}C$ ] | 2.330     | 1.990    | 1.950                    | 1.995   | 2.120    | 2.280    |

## MULTI-PRUPOSE KITS FOR WELDING, BRAZING, HEATING AND FLAME CUTTING

### Professional kit for acetylene with slot nozzles

STAR \*A\*

| Description  | Art. No.  | Cat. No. |
|--------------|-----------|----------|
| STAR *A* kit | 716.01800 | 010      |

consisting of:  
 1 handle type 2210, 1 spring lever cutting attachment type 1730-A for acetylene  
 5 cutting nozzles and 1 heating nozzle type A-RS for cutting ranges 3 to 100 mm  
 6 welding tips type 210-A, for welding ranges 0,5 to 14 mm  
 Torch carriage, radius bar, torch spanner, set of nozzle cleaners, operating instructions  
 Incl. hose nipples and union nuts



### Professional kit for acetylene with block nozzles

STAR \*B\*

| Description  | Art. No.  | Cat. No. |
|--------------|-----------|----------|
| STAR *B* kit | 716.01801 | 010      |

consisting of:  
 1 handle type 2210, 1 spring lever cutting attachment type 2730-A for acetylene  
 5 block nozzles type A-B, for cutting ranges 3 to 100 mm  
 6 welding tips type 210-A, for welding ranges 0,5 to 14 mm  
 Torch carriage, radius bar, torch spanner, set of nozzle cleaners, operating instructions  
 Incl. hose nipples and union nuts



### Assembly kit for welding, brazing, heating and flame cutting, for acetylene

ASSEMBLY KIT STAR

| Description       | Art. No.  | Cat. No. |
|-------------------|-----------|----------|
| Assembly kit STAR | 716.01806 | 010      |

consisting of:  
 1 handle type 2210, 1 spring lever cutting attachment type 1730-A for acetylene  
 6 cutting nozzles and 2 heating nozzles type A-RS, for cutting ranges 3 to 200 mm  
 8 welding tips type 210-A, for welding ranges 0,5 to 30 mm  
 2 pressure regulators CONSTANT 2000 each for oxygen and acetylene  
 Each 10 m hose for oxygen and fuel gas, incl. hose clamps  
 Torch carriage, torch spanner, set of nozzle cleaners, gas ignitor, protection goggles  
 Operating instruction, incl. hose nipples and union nuts



## HANDLES, WELDING, BRAZING AND HEATING TIPS

### HANDLES

Handles shells replaceable, particularly robust, maintenance free and easy to repair



| Type | Description                    | Connections                                           | Art. No.  | Cat. No. |
|------|--------------------------------|-------------------------------------------------------|-----------|----------|
| 2020 | Valve arrangement lateral      | DIN: G 1/4" - G 3/8" LH<br>BSP: G 3/8" LH - G 3/8" LH | 716.06820 | 024      |
| 1000 | Sturdy handle made of aluminum | DIN: G 1/4" RH - G 3/8" LH                            | 716.05994 | 024      |

Length: approx. 230 mm, shaft diameter: 20 mm, weight: approx. 550 g

The ergonomic, especially sturdy design of our STAR handles allows easy handling, fatigue-free working and high operation comfort. Self-tensioning radial seals enable fast and safe sealing, the union nut can easily be tightened by hand.

### STAR 210-A

For standard applications, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Welding range  | Art. No.<br>tip complete | Art. No.<br>mixing tube | Cat. No. |
|------|-----------------------------|----------------|--------------------------|-------------------------|----------|
| 1    | approx. 80 l/h              | 0,5 - 1,0 mm   | 716.01621                | 242.34110               | 024/007  |
| 2    | approx. 160 l/h             | 1,0 - 2,0 mm   | 716.01622                | 242.34210               | 024/007  |
| 3    | approx. 315 l/h             | 2,0 - 4,0 mm   | 716.01623                | 242.34310               | 024/007  |
| 4    | approx. 500 l/h             | 4,0 - 6,0 mm   | 716.01624                | 242.34410               | 024/007  |
| 5    | approx. 800 l/h             | 6,0 - 9,0 mm   | 716.01625                | 242.34510               | 024/007  |
| 6    | approx. 1.250 l/h           | 9,0 - 14,0 mm  | 716.01626                | 242.34610               | 024/007  |
| 7    | approx. 1.800 l/h           | 14,0 - 20,0 mm | 716.01627                | 242.34710               | 024/007  |
| 8    | approx. 2.500 l/h           | 20,0 - 30,0 mm | 716.01628                | 242.34810               | 024/007  |

Tips for welding, brazing and heating, with hammered finish welding nozzle bores, fuel gas acetylene

### STAR 410-A

Flexible, mixing tube with brazed-on nozzle replaceable



| Size | O <sub>2</sub> -Consumption | Welding range | Art. No.<br>tip complete | Art. No.<br>mixing tube | Cat. No. |
|------|-----------------------------|---------------|--------------------------|-------------------------|----------|
| 2    | approx. 160 l/h             | 1,0 - 2,0 mm  | 716.01712                | 716.01752               | 024/007  |
| 3    | approx. 315 l/h             | 2,0 - 4,0 mm  | 716.01713                | 716.01753               | 024/007  |
| 4    | approx. 500 l/h             | 4,0 - 6,0 mm  | 716.01714                | 716.01544               | 024/007  |
| 5    | approx. 800 l/h             | 6,0 - 9,0 mm  | 716.01715                | 716.01755               | 024/007  |

Pipe welding tips for welding, brazing and heating in difficult areas, fuel gas acetylene



**WELDING, BRAZING AND HEATING TIPS**
**Central flame outlet, nozzles replaceable**
**STAR Z-A**

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 9    | max. 4,7 m <sup>3</sup> /h  | 695 mm                 | 716.00863             | 716.00170               | 004      |
| 10   | max. 5,8 m <sup>3</sup> /h  | 695 mm                 | 716.00865             | 716.00171               | 004      |

Tips for laminar brazing and heating with acetylene


**Laminar flame outlet, nozzles replaceable, particularly low noise**
**STAR FB-A**

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 5    | max. 1,1 m <sup>3</sup> /h  | 310 mm                 | 716.01915             | 716.00725               | 004      |
| 6    | max. 1,9 m <sup>3</sup> /h  | 340 mm                 | 716.01916             | 716.00726               | 004      |
| 7    | max. 2,3 m <sup>3</sup> /h  | 390 mm                 | 716.00757             | 716.00727               | 004      |
| 8    | max. 3,3 m <sup>3</sup> /h  | 410 mm                 | 716.00758             | 716.00728               | 004      |
| 9    | max. 5,5 m <sup>3</sup> /h  | 675 mm                 | 716.00759             | 716.00779               | 004      |
| 10   | max. 6,1 m <sup>3</sup> /h  | 675 mm                 | 716.00772             | 716.00780               | 004      |

Tips for laminar brazing and heating with acetylene, noise level up to size 8 below 85 dB(A)


**Laminar flame outlet, nozzles replaceable**
**STAR F-A**

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle      | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|------------------------------|----------|
| 8    | max. 2,7 m <sup>3</sup> /h  | 415 mm                 | 242.54800             | 242.13811                    | 004      |
| 9    | max. 4,2 m <sup>3</sup> /h  | 685 mm                 | 716.00864             | 716.00422 (with mixing tube) | 004      |

Tips for laminar brazing and heating with acetylene



## WELDING, BRAZING AND HEATING TIPS

### STAR KONSTANTHERM

Central flame outlet, protection sleeve replaceable



| Size | O <sub>2</sub> -Consumption | Overall length approx.        | Art. No. tip complete | Art. No. protection sleeve | Cat. No. |
|------|-----------------------------|-------------------------------|-----------------------|----------------------------|----------|
| 6    | 1,25 m <sup>3</sup> /h      | 9,0 - 14,0 m <sup>3</sup> /h  | 242.56600             | 677.51963                  | 004      |
| 8    | 2,50 m <sup>3</sup> /h      | 20,0 - 30,0 m <sup>3</sup> /h | 242.56800             | 677.51965                  | 004      |

Special tips for welding and heating under high thermal load, fuel gas acetylene

### STAR Z-PM

Central flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 8    | max. 6,0 m <sup>3</sup> /h  | 430 mm                 | 716.00042             | 716.00032               | 004      |
| 10   | max. 14,0 m <sup>3</sup> /h | 430 mm                 | 716.00043             | 716.00033               | 004      |
| 12   | max. 33,0 m <sup>3</sup> /h | 430 mm                 | 716.00044             | 716.00034               | 004      |

Tips for spot brazing and heating, fuel gases propane, methane

### STAR Z-PMY

Central flame outlet, nozzles replaceable



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 6    | max. 3,0 m <sup>3</sup> /h  | 325 mm                 | 716.01926             | 716.01233               | 004      |
| 8    | max. 6,0 m <sup>3</sup> /h  | 425 mm                 | 716.01251             | 716.01234               | 004      |
| 10   | max. 14,0 m <sup>3</sup> /h | 425 mm                 | 716.01252             | 716.01235               | 004      |
| 12   | max. 35,0 m <sup>3</sup> /h | 425 mm                 | 716.01253             | 716.01236               | 004      |

Tips for brazing and spot heating, fuel gases propane, methane, Mapp

## WELDING, BRAZING AND HEATING TIPS

### Laminar flame outlet, nozzles replaceable

### STAR F-PMY

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 8    | max. 6,0 m <sup>3</sup> /h  | 420 mm                 | 716.01254             | 716.01237               | 004      |
| 10   | max. 14,0 m <sup>3</sup> /h | 420 mm                 | 716.01255             | 716.01238               | 004      |
| 12   | max. 33,0 m <sup>3</sup> /h | 420 mm                 | 716.01256             | 716.01239               | 004      |

Tips for laminar brazing and heating, fuel gases propane, methane, Mapp



### Central flame outlet, nozzles replaceable

### STAR Z-F

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 8    | max. 3,6 m <sup>3</sup> /h  | 425 mm                 | 716.05364             | 716.01234               | 004      |
| 10   | max. 5,0 m <sup>3</sup> /h  | 425 mm                 | 716.05365             | 716.01235               | 004      |
| 12   | max. 6,0 m <sup>3</sup> /h  | 425 mm                 | 716.05366             | 716.01236               | 004      |

Tips for brazing and spot heating, fuel gas ethylene



### Laminar flame outlet, nozzles replaceable

### STAR F-F

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 10   | max. 5,0 m <sup>3</sup> /h  | 420 mm                 | 716.05361             | 716.01238               | 004      |
| 12   | max. 6,0 m <sup>3</sup> /h  | 420 mm                 | 716.05362             | 716.01239               | 004      |

Tips for laminar brazing and heating, fuel gas ethylene



### Laminar flame outlet, nozzles replaceable

### STAR HF-PMYE

| Size  | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|-------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| HF 12 | max. 12,0 m <sup>3</sup> /h | 420 mm                 | 716.05642             | 716.05646               | 039      |
| HF 13 | max. 23,0 m <sup>3</sup> /h | 510 mm                 | 716.05643             | 716.05647               | 039      |
| HF 14 | max. 35,3 m <sup>3</sup> /h | 720 mm                 | 716.05644             | 716.05648               | 039      |
| HF 15 | max. 54,2 m <sup>3</sup> /h | 830 mm                 | 716.05645             | 716.05649               | 039      |

Tips for laminar heating, fuel gases propane, methane, Mapp, ethylene



## Cutting Attachments

### STAR CUTTING ATTACHMENTS

For manual flame cutting, fuel gases acetylene or propane / methane / Mapp / ethylene

|                                                                                    | Description                                                    | Nozzle type        | Art. No.<br>Type A | Art. No.<br>Type PMY | Cat. No. |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------|--------------------|----------------------|----------|
|    | STAR 1730<br>with spring lever                                 | Ring-/slot nozzles | 716.05137          | 716.05294            | 024      |
|    | STAR 1730-F<br>with spring lever<br>only for fuel gas ethylene | Ring-/slot nozzles | --                 | 716.05367            | 024      |
|    | STAR 1230<br>with handwheel                                    | Ring-/slot nozzles | 716.05284          | 716.05295            | 024      |
|    | STAR 2730<br>with spring lever                                 | Block nozzles      | 716.05288          | --                   | 024      |
|  | STAR 2230<br>with handwheel                                    | Block nozzles      | 716.05292          | --                   | 024      |
|  | STAR 8730<br>with spring lever                                 | Gas mixing nozzles | 716.05165          | 716.05165            | 024      |
|  | STAR 9230<br>with handwheel<br>straight torch head             | Gas mixing nozzles | 716.05286          | 716.05286            | 024      |

## FLAME STRAIGHTENING AND FLAME CLEANING ATTACHMENTS

For flame straightening, reversible for 3/2" or 5/3" flames, fuel gas acetylene

### FLAME STRAIGHTENING ATTACHMENT STAR

| Type                       | Overall length approx. | Size     | Art. No.  | Cat. No. |
|----------------------------|------------------------|----------|-----------|----------|
| STAR 3/2"                  | 505 mm                 | 2 - 4 mm | 716.01760 | 004      |
| reversible for 3/2" flames | 540 mm                 | 4 - 6 mm | 716.01761 | 004      |
| reversible for 5/2" flames | 550 mm                 | 4 - 6 mm | 716.01763 | 004      |



Replaceable nozzles for flame straightening attachments A 3/2" and 5/3", fuel gas acetylene

### HEATING NOZZLE STAR

| Type   | Size     | Art. No.  | Cat. No. |
|--------|----------|-----------|----------|
| STAR A | 2 - 4 mm | 242.34310 | 004      |
|        | 4 - 6 mm | 242.34410 | 004      |



For flame cleaning, fuel gases acetylene or propane / methane

### FLAME CLEANING ATTACHMENT STAR

| Torch width | Overall length approx. | Art. No. type T-A | Art. No.    | Cat. No. |
|-------------|------------------------|-------------------|-------------|----------|
| 50 mm       | 505 mm                 | 716.00520         | 716.00523 * | 004      |
| 100 mm      | 525 mm                 | 716.00521         | 716.00524 * | 004      |
| 150 mm      | 535 mm                 | 716.00522         | 716.00525 * | 004      |





## HANDLES, HEATING TIPS

High safety against flashbacks, ergonomic design, easy to regulate

### SUPERTHERM HANDLE

| Type       | Description                   | DIN Connections                                                | Art. No.  | Cat. No. |
|------------|-------------------------------|----------------------------------------------------------------|-----------|----------|
| SUPERTHERM | Valve arrangement rectangular | Oxygen:<br>G 3/8"/DN 9<br><br>Fuel gas:<br>G 1/2"LH / DN 11 mm | 716.01818 | 004      |



Length: approx. 300 mm, shaft diameter: 22 mm, weight: approx. 915 g

The rectangular valve arrangement of the robust designed SUPERTHERM handle enables easy medium control, the monoblock valves are maintenance-free and guarantee long service life. The handle body is made of light metal with hard coating and is thus resistant against corrosion from sea water and other aggressive substances at the workplace. Hose and inlet connections, monoblock valves and shaft connection are easy to replace.

Laminar flame outlet, nozzles replaceable, fuel gas acetylene

### SUPERTHERM F-A

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 9    | max. 4,8 m <sup>3</sup> /h  | 650 mm                 | 716.02090             | 716.00422               | 004      |
| 11   | max. 9,4 m <sup>3</sup> /h  | 650 mm                 | 716.02091             | 716.00423               | 004      |



Tips for laminar heating

Central flame outlet, nozzles replaceable, fuel gas acetylene

### SUPERTHERM Z-A

| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 9    | max. 4,4 m <sup>3</sup> /h  | 670 mm                 | 716.02092             | 716.00170               | 004      |
| 11   | max. 5,9 m <sup>3</sup> /h  | 670 mm                 | 716.02093             | 716.00171               | 004      |



Tips for spot heating

## HEATING TIPS AND FLAME CLEANING ATTACHMENTS

### SUPERTHERM F-PMY

Laminar flame outlet, nozzles replaceable, fuel gases propane, methane, Mapp



| Size | O <sub>2</sub> -Consumption | Overall length approx. | Art. No. tip complete | Art. No. heating nozzle | Cat. No. |
|------|-----------------------------|------------------------|-----------------------|-------------------------|----------|
| 12   | max. 18,0 m <sup>3</sup> /h | 680 mm                 | 716.02100 *           | 716.01153 *             | 004      |
|      | max. 18,0 m <sup>3</sup> /h | 805 mm                 | 716.03577 *           | 716.01153 *             | 004      |
|      | max. 18,0 m <sup>3</sup> /h | 930 mm                 | 716.03582 *           | 716.01153 *             | 004      |
| 14   | max. 40,0 m <sup>3</sup> /h | 680 mm                 | 716.02101 *           | 716.01154 *             | 004      |
|      | max. 40,0 m <sup>3</sup> /h | 805 mm                 | 716.03578 *           | 716.01154 *             | 004      |
|      | max. 40,0 m <sup>3</sup> /h | 930 mm                 | 716.03583 *           | 716.01154 *             | 004      |
| 16   | max. 52,0 m <sup>3</sup> /h | 680 mm                 | 716.02102 *           | 716.01155 *             | 004      |
|      | max. 52,0 m <sup>3</sup> /h | 805 mm                 | 716.03579 *           | 716.01155 *             | 004      |
|      | max. 52,0 m <sup>3</sup> /h | 930 mm                 | 716.03584 *           | 716.01155 *             | 004      |

Tips for laminar heating

### SUPERTHERM T-A/T-PM

Flame cleaning attachment for fuel gases acetylene or propane, methane



| Torch width | Overall length | Art. No. Type T-A | Art. No. Type T-PMY | Cat. No. |
|-------------|----------------|-------------------|---------------------|----------|
| 200 mm      | 1.300/650 mm   | 716.02105 *       | 716.02107 *         | 004      |
| 250 mm      | 1.300/650 mm   | 716.02106 *       | 716.02108 *         | 004      |

Overall lengths: SUPERTHERM T-A approx. 1.300 mm, SUPERTHERM T-PM: approx. 650 mm

Tip SUPERTHERM T-A for flame cleaning with acetylene

Tip SUPERTHERM T-PM for flame cleaning with propane, methane





### PROFICUT H AND HB 8607-A/PMYE

The new range of **ProfiCut H and HB** heavy duty hand cutting torches for nozzle-mix (3-seat) nozzles continues the tradition of Messer torches with the quality and reliability which is synonymous with Messer. **ProfiCut H and HB** is a proven design incorporating the latest technical features necessary to meet the ever- changing applications and requirements of the hand cutting market.

It's ergonomic and modern functional design permits steady, effortless control by hand and its balanced weight enables the operator positive and comfortable working conditions for a continuous operation.

The cutting and gouging torch range **ProfiCut H and HB** is the low cost alternative for high quality value.

- Designed in accordance to the most current internationally recognized standards EN ISO, BSP, CGA and NFS.
- Manufactured under the quality management system of EN ISO 9001
- 100% tested before dispatch.
- Principally designed for general workshop cutting up to 300 mm / 14 inches capacity.
- Torch length of 510 mm / 20 inches ensures optimal balanced weight distribution increasing operator efficiency and comfort.
- 1050 g / 2.3 lbs weight enables controlled movements and makes it ideally suited for a wide range of industrial applications.
- 90° solid forged head withstands toughest working conditions.
- Large cross-sectional areas enable high gas flow and ensure(s) that the required oxygen and fuel flow gas rates, even on heavy duty applications with low gas pressure, are still maintained.
- In-plane parallel arranged stainless steel tube and rugged design ensures maximum strength.
- Suitable for use with all types of fuel gases simply by changing the cutting nozzle.
- Adjustable gland packed gas valves allow precise and sensitive adjusting as well as accurate control of the flame.
- Colour coded adjusting valves for easy identification.
- Top mounted stainless steel lever with the benefit of an unique cutting oxygen flow valve operated by the cutting lever acts indirectly to bring in the oxygen stream. This important features gives a true "bleed characteristic" to create splash free starts and progressive, controlled piercing and the smoothest possible cutting conditions.
- Cutting oxygen lever incorporates a locking lug for maximum operator comfort.
- Modular design reduces maintenance cost and downtime.

### ProfiCut H and HB 8607-A/PMYE

| Model    | Standard | Gas Service | Cutting rang<br>[mm]/[inch] | Oxygen/<br>Fuel gas<br>Ident. colour | Nozzle<br>Connection | Inlet Connection<br>Oxygen | Inlet Connection<br>Fuel gas | Art. No.  | Cat.<br>No. |
|----------|----------|-------------|-----------------------------|--------------------------------------|----------------------|----------------------------|------------------------------|-----------|-------------|
| H 8607E  | DIN      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 1/4"-RH (M)              | G 3/8"-LH (M)                | 716.06004 |             |
| HB 8607E | DIN      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 1/4"-RH (M)              | G 3/8"-LH (M)                | 716.07124 |             |
| H 8607B  | BSP      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 3/4"-RH (M)              | G 3/8"-LH (M)                | 716.06005 |             |
| HB 8607B | BSP      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 3/4"-RH (M)              | G 3/8"-LH (M)                | 716.07125 |             |
| H 8607U  | CGA      | A/PMYE      | 3-300 / 1/8-12              | green/red                            | Intern. 30°          | 9/16"NF-RH(M)              | 9/16"NF-LH(M)                | 716.06006 |             |
| HB 8607U | CGA      | A/PMYE      | 3-300 / 1/8-12              | green/red                            | Intern. 30°          | 9/16"NF-RH(M)              | 9/16"NF-LH(M)                | 716.07126 |             |
| H 8607F  | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.06007 |             |
| HB 8607F | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.07127 |             |
| H 8607G  | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | G 1                  | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.06008 |             |
| HB 8607G | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | G 1                  | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.07128 |             |
| H 8607S  | AS       | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | 5/8 UNF-RH(M)              | 5/8 UNF-LH(M)                | 716.06135 |             |
| HB 8607S | AS       | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | 5/8 UNF-RH(M)              | 5/8 UNF-LH(M)                | 716.07129 |             |



## PROFICUT L 8707-A/PMY

The new range of **ProfiCut L** hand cutting torches for nozzle-mix (3-seat) nozzles continues the tradition of Messer torches with the quality and reliability which is synonymous with Messer. **ProfiCut L** is a proven design incorporating the latest technical features necessary to meet the ever-changing applications and requirements of the hand cutting market.

It's ergonomic and modern functional design permits steady, effortless control by hand and its balanced weight enables the operator positive and comfortable working conditions for a continuous operation.

The cutting and gouging torch range **ProfiCut L** is the low cost alternative for high quality value.

- Designed in accordance to the most current internationally recognized standards EN ISO, BSP, CGA and NFS.
- Manufactured under the quality management system of EN ISO 9001
- 100% tested before dispatch.
- Principally designed for general workshop cutting up to 200 mm / 8 inches capacity.
- Torch length of 460 mm / 18 inches ensures optimal balanced weight distribution increasing operator efficiency and comfort.
- 900 g / 2 lbs weight enables controlled movements and makes it ideally suited for a wide range of industrial applications.
- 90° solid forged head withstands toughest working conditions.
- Large cross-sectional areas enable high gas flow and ensure(s) that the required oxygen and fuel flow gas rates, even on heavy duty applications with low gas pressure, are still maintained.
- In-plane parallel arranged stainless steel tube and rugged design ensures maximum strength.
- Suitable for use with all types of fuel gases simply by changing the cutting nozzle.
- Adjustable gland packed gas valves allow precise and sensitive adjusting as well as accurate control of the flame.
- Colour coded adjusting valves for easy identification.
- Top mounted stainless steel lever with the benefit of a unique cutting oxygen flow valve operated by the cutting lever acts indirectly to bring in the oxygen stream. This important features gives a true "bleed characteristic" to create splash free starts and progressive, controlled piercing and the smoothest possible cutting conditions.
- Modular design reduces maintenance cost and downtime.

## ProfiCut H and HB 8607-A/PMYE

| Model   | Standard | Gas Service | Cutting rang<br>[mm]/[inch] | Oxygen/<br>Fuel gas<br>Ident. colour | Nozzle<br>Connection | Inlet Connection<br>Oxygen | Inlet Connection<br>Fuel gas | Art. No.  | Cat.<br>No. |
|---------|----------|-------------|-----------------------------|--------------------------------------|----------------------|----------------------------|------------------------------|-----------|-------------|
| L 8707E | DIN      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 1/4"-RH (M)              | G 3/8"-LH (M)                | 716.06126 |             |
| L 8707B | BSP      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | G 3/8"-RH (M)              | G 3/8"-LH (M)                | 716.06000 |             |
| L 8707U | CGA      | A/PMYE      | 3-300 / 1/8-12              | green/red                            | Intern. 30°          | 9/16"NF-RH(M)              | 9/16"NF-LH(M)                | 716.06001 |             |
| L 8707F | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.06002 |             |
| L 8707G | NFE      | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | G 1                  | M 16x1,5-RH(M)             | M 16x1,5-LH(M)               | 716.06003 |             |
| L 8707N | NZ       | A/PMYE      | 3-300 / 1/8-12              | blue/red                             | Intern. 30°          | 5/8 UNF-RH(M)              | 5/8 UNF-LH(M)                | 716.06133 |             |

## CUTTING RANGE UP TO 500 MM

For ring nozzles, cutting oxygen regulation with spring lever

### STARCUT / RING NOZZLES

| Description | Torch head | Length   | Connection | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|-------------|------------|----------|------------|--------------------|-----------------------|----------|
| 1622        | 95°        | 530 mm   | DIN        | 716.06880          | 716.06882             | 003      |
| 1622        | 95°        | 530 mm   | BSP        | 716.06895          | 716.06897             | 003      |
| 1622        | 95°        | 530 mm   | CGA        | 716.06898          | 716.06899             | 003      |
| 1622        | 95°        | 530 mm   | NFE        | 716.06907          | 716.06908             | 003      |
| 1622        | 135°       | 1.000 mm | DIN        | on request         | 716.06893             | 003      |
| 1622        | 135°       | 1.000 mm | BSP        | on request         | 716.06944             | 003      |
| 1622        | 135°       | 1.000 mm | CGA        | on request         | on request            | 003      |
| 1622        | 135°       | 1.000 mm | NFE        | on request         | on request            | 003      |
| 3622        | 180°       | 540 mm   | DIN        | 716.06894          | on request            | 003      |
| 3622        | 180°       | 540 mm   | BSP        | on request         | on request            | 003      |
| 3622        | 180°       | 540 mm   | CGA        | on request         | on request            | 003      |
| 3622        | 180°       | 540 mm   | NFE        | on request         | on request            | 003      |



Hand cutting torch STARCUT type A for acetylene

Hand cutting torch STARCUT type PMEY for propane, methane, Mapp, ethylene

For ring nozzles, cutting oxygen regulation with handwheel

### STARCUT / RING NOZZLES

| Description  | Torch head | Length | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|--------------|------------|--------|--------------------|-----------------------|----------|
| STARCUT 1222 | 95°        | 530 mm | 716.06881          | 716.06885             | 003      |



Hand cutting torch STARCUT type A for acetylene

Hand cutting torch STARCUT type PMEY for propane, methane, Mapp, ethylene

Versions with BSP / CGA / NFE connections on request

For block nozzles, cutting oxygen regulation with spring lever

### STARCUT / BLOCK NOZZLES

| Description  | Torch head | Length | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|--------------|------------|--------|--------------------|-----------------------|----------|
| STARCUT 2622 | 95°        | 530 mm | 716.06883          | 716.06910             | 003      |



Hand cutting torch STARCUT type A for acetylene

Hand cutting torch STARCUT type PMEY for propane, methane, Mapp, ethylene

Versions with BSP / CGA / NFE connections on request

### CUTTING RANGE UP TO 500 MM

#### STARCUT / BLOCK NOZZLES

For block nozzles, cutting oxygen regulation with handwheel

| Description  | Torch head | Length | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|--------------|------------|--------|--------------------|-----------------------|----------|
| STARCUT 2222 | 95°        | 530 mm | 716.06886          | 716.06911             | 003      |



Hand cutting torch STARCUT type A for acetylene

Hand cutting torch STARCUT type PMEY for propane, methane, Mapp, ethylene

Versions with BSP / CGA / NFE connections on request

#### STARCUT / GAS-MIXING NOZZLES

For gas-mixing cutting nozzles, cutting oxygen regulation with spring lever

| Description | Torch head | Length   | Connection | Art. No.<br>Type A/PMEY | Cat. No. |
|-------------|------------|----------|------------|-------------------------|----------|
| 8622        | 95°        | 530 mm   | DIN        | 716.06884               | 003      |
| 8622        | 95°        | 530 mm   | BSP        | 716.06896               | 003      |
| 8622        | 95°        | 530 mm   | CGA        | 716.06900               | 003      |
| 8622        | 95°        | 530 mm   | NFE        | 716.06914               | 003      |
| G 1         | G 1        |          | NFE        | 716.06909               | 003      |
| 8622        | 95°        | 800 mm   | DIN        | 716.06913               | 003      |
| 8622        | 95°        | 800 mm   | BSP        | 716.07498               | 003      |
| 8622        | 95°        | 800 mm   | CGA        | on request              | 003      |
| 8622        | 95°        | 800 mm   | NFE        | on request              | 003      |
| 8622        | 95°        | 1.000 mm | DIN        | 716.06892               | 003      |
| 8622        | 95°        | 1.000 mm | BSP        | 716.06902               | 003      |
| 8622        | 95°        | 1.000 mm | CGA        | 716.06901               | 003      |
| 8622        | 95°        | 1.000 mm | NFE        | on request              | 003      |
| 8622        | 135°       | 1.000 mm | DIN        | 716.06888               | 003      |
| 8622        | 135°       | 1.000 mm | BSP        | 716.06903               | 003      |
| 8622        | 135°       | 1.000 mm | CGA        | 716.06904               | 003      |
| 8622        | 135°       | 1.000 mm | NFE        | on request              | 003      |
| 9622        | 180°       | 540 mm   | DIN        | 716.06912               | 003      |
| 9622        | 180°       | 540 mm   | BSP        | 716.07490               | 003      |
| 9622        | 180°       | 540 mm   | CGA        | on request              | 003      |
| 9622        | 180°       | 540 mm   | NFE        | on request              | 003      |



Hand cutting torch STARCUT type A/PMEY for acetylene or propane, methane, Mapp, ethylene

### CUTTING RANGE UP TO 500 MM

For gas-mixing cutting nozzles, cutting oxygen regulation with handwheel

#### STARCUT / GAS-MIXING NOZZLES

| Description | Torch head | Length   | Connection | Art. No.<br>Type A/PMEY. | Cat. No. |
|-------------|------------|----------|------------|--------------------------|----------|
| 8222        | 95°        | 530 mm   | DIN        | 716.06887                | 003      |
| 8222        | 95°        | 530 mm   | BSP        | 716.07491                | 003      |
| 8222        | 135°       | 1.000 mm | DIN        | 716.06889                | 003      |
| 8222        | 135°       | 1.000 mm | BSP        | 716.07492                | 003      |
| 8222        | 135°       | 1.500 mm | DIN        | 716.06890                | 003      |
| 9222        | 180°       | 1.000 mm | DIN        | 716.06891                | 003      |
| 9222        | 180°       | 1.000 mm | BSP        | 716.07493                | 003      |



Hand cutting torch STARCUT type A/PMEY for acetylene or propane, methane, Mapp, ethylene

For ring gouging nozzles, cutting oxygen regulation with spring lever

#### STARCUT / RING NOZZLES

| Description | Torch head | Length | Connection | Art. No.<br>Type A | Cat. No. |
|-------------|------------|--------|------------|--------------------|----------|
| 1622        | 95°        | 530 mm | DIN        | 716.06880          | 003      |
| 1622        | 95°        | 530 mm | BSP        | 716.06895          | 003      |
| 1622        | 95°        | 530 mm | CGA        | 716.06898          | 003      |
| 1622        | 95°        | 530 mm | NFE        | 716.06907          | 003      |
| 3622        | 180°       | 540 mm | DIN        | 716.06884          | 003      |
| 3622        | 180°       | 540 mm | BSP        | on request         | 003      |
| 3622        | 180°       | 540 mm | CGA        | on request         | 003      |
| 3622        | 180°       | 540 mm | NFE        | on request         | 003      |



Hand gouging torch STARCUT type A for acetylene

Hand gouging torch STARCUT type PMEY for propane, methane, Mapp, ethylene

For block gouging nozzles, cutting oxygen regulation with spring lever

#### STARCUT / BLOCK NOZZLES

| Description | Torch head | Length | Connection | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|-------------|------------|--------|------------|--------------------|-----------------------|----------|
| 2622        | 95°        | 530 mm | DIN        | --                 | 716.06910             | 003      |
| 2628        | 95°        | 530 mm | DIN        | 716.06905          | --                    | 003      |
| 7628        | 180°       | 540 mm | DIN        | 716.06906          | --                    | 003      |



Hand gouging torch STARCUT type A for acetylene

Hand gouging torch STARCUT type PMEY for propane, methane, Mapp, ethylene

Versions with BSP / CGA / NFE connections on request

CUTTING RANGE UP TO 500 MM

### STARCUT / GAS-MIXING NOZZLES

For gas-mixing gouging nozzles, cutting oxygen regulation with spring lever



| <i>Description</i> | <i>Torch head</i> | <i>Length</i> | <i>Connection</i> | <i>Art. No.<br/>Type A/PMY</i> | <i>Cat. No.</i> |
|--------------------|-------------------|---------------|-------------------|--------------------------------|-----------------|
| 8622               | 95°               | 530 mm        | DIN               | 716.06884                      | 003             |
| 8622               | 95°               | 530 mm        | BSP               | 716.06896                      | 003             |
| 8622               | 95°               | 530 mm        | CGA               | 716.06900                      | 003             |
| 8622               | 95°               | 530 mm        | NFE               | 716.06914                      | 003             |
| 8622               | 95°               | 530 mm        | NFE               | 716.06909                      | 003             |
| 9622               | 180°              | 540 mm        | DIN               | 716.06912                      | 003             |
| 9622               | 180°              | 540 mm        | BSP               | on request                     | 003             |
| 9622               | 180°              | 540 mm        | CGA               | on request                     | 003             |
| 9622               | 180°              | 540 mm        | NFE               | on request                     | 003             |

Hand cutting torch STARCUT type A/PMY for acetylene or propane, methane, Mapp, ethylene

### DIN CONNECTIONS, CUTTING RANGE UP TO 500 MM

For ring nozzles, cutting oxygen regulation with spring lever

**ESSEN /  
RING NOZZLES**

| Type | Torch head | Length | Connection | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|------|------------|--------|------------|--------------------|-----------------------|----------|
| 1625 | 95°        | 530 mm | DIN        | 716.06601          | 716.06602             | 003      |
|      |            |        | BSP        | 716.06830          | 716.06834             | 003      |
|      |            |        | CGA        | 716.06831          | 716.06835             | 003      |
|      |            |        | NFE        | 716.06832          | 716.06836             | 003      |
|      |            |        | AS         | 716.06833          | 716.06837             | 003      |



Hand cutting torch ESSEN for acetylene

Hand cutting torch ESSEN for propane, methane, Mapp, ethylene

For block nozzles, cutting oxygen regulation with spring lever

**ESSEN /  
BLOCK NOZZLES**

| Type | Torch head | Length | Connection | Art. No.<br>Type A | Art. No.<br>Type PMEY | Cat. No. |
|------|------------|--------|------------|--------------------|-----------------------|----------|
| 2625 | 95°        | 530 mm | DIN        | 716.06802          | 716.06803             | 003      |
|      |            |        | BSP        | 716.06838          | 716.06842             | 003      |
|      |            |        | CGA        | 716.06839          | 716.06843             | 003      |
|      |            |        | NFE        | 716.06840          | 716.06844             | 003      |
|      |            |        | AS         | 716.06841          | 716.06845             | 003      |



Hand cutting torch ESSEN type A for acetylene

Hand cutting torch ESSEN type PMYE for propane, methane, Mapp, ethylene

For gas-mixing nozzles, cutting oxygen regulation with spring lever

**ESSEN /  
GAS-MIXING NOZZLES**

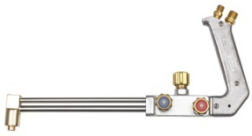
| Type                         | Torch head | Length | Connection | Art. No.<br>Type A/P;YF | Cat. No. |
|------------------------------|------------|--------|------------|-------------------------|----------|
| 8625                         | 95°        | 530 mm | DIN        | 716.06600               | 003      |
|                              |            |        | BSP        | 716.06846               | 003      |
|                              |            |        | CGA        | 716.06847               | 003      |
|                              |            |        | NFE        | 716.06848               | 003      |
|                              |            |        | AS         | 716.06849               | 003      |
| 8625                         | 95°        | 800 mm | DIN        | 716.06800               | 003      |
| other connections on request |            |        |            |                         |          |
| 9625                         | 180°       | 530 mm | DIN        | 716.06801               | 003      |
|                              |            |        | BSP        | 716.06850               | 003      |
|                              |            |        | CGA        | 716.06851               | 003      |
|                              |            |        | NFE        | 716.06852               | 003      |
|                              |            |        | AS         | 716.06853               | 003      |
| 9625                         | 180°       | 800 mm | BSP        | 716.07496               | 003      |



### DIN CONNECTIONS, CUTTING RANGE UP TO 500 MM

#### ESSEN / SPECIAL VERSION

With angled handle, cutting oxygen regulation with hand wheel



| Type                               | Torch head | Length | Connection | Art. No. Type A | Art. No. Type PMYE | Cat. No. |
|------------------------------------|------------|--------|------------|-----------------|--------------------|----------|
| 1216<br>for ring nozzles           | 95°        | 450 mm | DIN        | 716.00712       | 716.00713          | 003      |
| 1216<br>for ring nozzles           | 95°        | 450 mm | BSP        | 716.07494       | 716.07495          | 003      |
| Type                               | Torch head | Length | Connection | Art. No. Type A | Art. No. Type PMYE | Cat. No. |
| 8216                               | 95°        | 450 mm | DIN        | 716.00709       | --                 | 003      |
| 8216<br>(for gas mixing<br>nozzle) | 95°        | 450 mm | BSP        | 716.07497       | --                 | 003      |



# HAND CUTTING NOZZLES

## APPLICATION OVERVIEW

| Cutting Nozzles for<br>Acetylene | A-RS | A-R | A-BF / A-BK | A-B | ANME | VADURA<br>8317 A-GN | NK-<br>Block | NK 8310-A |
|----------------------------------|------|-----|-------------|-----|------|---------------------|--------------|-----------|
| Torch system:                    |      |     |             |     |      |                     |              |           |
| <b>STARLET</b>                   |      |     |             |     |      |                     |              |           |
| 1711-A / 1211-A                  | •    | •   |             |     |      |                     |              |           |
| 2711-A                           |      |     | •           |     |      |                     | •            |           |
| 8711-A/PMYE                      |      |     |             |     | •    | •                   |              | •         |
| 8702-A/PMYE                      |      |     |             |     | •    | •                   |              | •         |
| <b>STAR</b>                      |      |     |             |     |      |                     |              |           |
| 1730-A / 1230-A                  | •    | •   |             |     |      |                     |              |           |
| 2730-A / 2230-A                  |      |     |             | •   |      |                     | •            |           |
| 8730-A/PMY / 9230-A/PMY          |      |     |             |     | •    | •                   |              | •         |
| <b>STARCUT</b>                   |      |     |             |     |      |                     |              |           |
| 1622-A / 1222-A / 3622-A         | •    | •   |             |     |      |                     |              |           |
| 2622-A / 2222-A                  |      |     |             | •   |      |                     | •            |           |
| 8622-A/PMYE / 9622-A/PMYE        |      |     |             |     | •    | •                   |              | •         |
| 8222-A/PMYE / 9222-A/PMYE        |      |     |             |     | •    | •                   |              | •         |
| <b>ESSEN</b>                     |      |     |             |     |      |                     |              |           |
| 1625-A / 1216-A / 2625-A         | •    | •   |             | •   |      |                     |              |           |
| 8625-A/PMY / 8216-A/PMY          |      |     |             |     | •    | •                   |              | •         |

# HAND CUTTING NOZZLES

## APPLICATION OVERVIEW

| Cutting Nozzles for<br>Acetylene | PL-<br>RC | L-<br>PN | GRICUT<br>1230 | GRICUT<br>1233 | GRICUT<br>1280 | GRICUT<br>2280 | PNME | GRICUT<br>8281<br>PMYE | GRICUT<br>8281 PM |
|----------------------------------|-----------|----------|----------------|----------------|----------------|----------------|------|------------------------|-------------------|
|----------------------------------|-----------|----------|----------------|----------------|----------------|----------------|------|------------------------|-------------------|

Torch system:

### STARLET

|                     |   |   |   |  |  |  |   |   |  |
|---------------------|---|---|---|--|--|--|---|---|--|
| 1711-PMY / 1211-PMY | ● | ● | ● |  |  |  |   |   |  |
| 8711-A/PMYE         |   |   |   |  |  |  | ● | ● |  |
| 8702-APMYE          |   |   |   |  |  |  | ● | ● |  |

### STAR

|                         |   |   |   |  |   |  |   |   |  |
|-------------------------|---|---|---|--|---|--|---|---|--|
| 1730-PMY / 1230-PMY     | ● | ● | ● |  | ● |  |   |   |  |
| 1730-F                  | ● |   | ● |  | ● |  |   |   |  |
| 8730-A/PMY / 9230-A/PMY |   |   |   |  |   |  | ● | ● |  |

### STARCUT

|                          |   |   |   |   |   |   |   |   |   |
|--------------------------|---|---|---|---|---|---|---|---|---|
| 1622-PMY / 1222-PMYE     | ● | ● | ● | ● | ● |   |   |   |   |
| 2622-PMYE / 2222-PMYE    |   |   |   |   |   | ● |   |   |   |
| 8622-A/PMYE / 9622-APMYE |   |   |   |   |   |   | ● | ● | ● |
| 8222-A/PMYE / 9222-APMYE |   |   |   |   |   |   | ● | ● | ● |

### ESSEN

|                         |   |   |   |   |   |  |   |   |   |
|-------------------------|---|---|---|---|---|--|---|---|---|
| 1625-PMY / 1216-PMY     | ● | ● | ● | ● | ● |  |   |   |   |
| 8625-A/PMY / 8216-A/PMY |   |   |   |   |   |  | ● | ● | ● |

# HAND CUTTING NOZZLES

## FOR ACETYLENE

### Ring / slot nozzles for cutting attachments and hand cutting torches

### CUTTING NOZZLES A-RS

| Type            | Cutting range | Art. No.  | Cat. No. |
|-----------------|---------------|-----------|----------|
| A-RS            | 2 - 8 mm      | 666.17101 | 007      |
|                 | 3 - 10 mm     | 666.17102 | 007      |
|                 | 10 - 25 mm    | 666.17103 | 007      |
|                 | 25 - 40 mm    | 666.17104 | 007      |
|                 | 40 - 60 mm    | 666.17105 | 007      |
|                 | 60 - 100 mm   | 666.17106 | 007      |
|                 | 100 - 200 mm  | 666.17107 | 007      |
|                 | 200 - 300 mm  | 666.17108 | 007      |
| Heating nozzles | 2 - 100 mm    | 666.17115 | 007      |
|                 | 100 - 300 mm  | 666.17116 | 007      |



### Ring nozzles for cutting attachments and hand cutting torches

### CUTTING NOZZLES A-R

| Type                     | Cutting range | Art. No.  | Cat. No. |
|--------------------------|---------------|-----------|----------|
| A-R                      | 3 - 10 mm     | 540.02710 | 007      |
|                          | 10 - 25 mm    | 540.02720 | 007      |
|                          | 25 - 40 mm    | 540.02730 | 007      |
|                          | 40 - 60 mm    | 540.02740 | 007      |
|                          | 60 - 100 mm   | 540.02750 | 007      |
| Heating nozzles          | 3 - 100 mm    | 540.02780 | 007      |
| Cam heating nozzles A-NR | 3 - 100 mm    | 716.15751 | 007      |



### Block nozzles for STARLET cutting attachments

### CUTTING NOZZLES A-BF / A-BK

| Type | Cutting range | Art. No.  | Cat. No. |
|------|---------------|-----------|----------|
| A-BF | 0,5 - 3 mm    | 716.00291 | 024      |
| A-BK | 3 - 10 mm     | 716.00503 | 024      |
|      | 10 - 25 mm    | 716.00504 | 024      |



# HAND CUTTING NOZZLES

## FOR ACETYLENE

### CUTTING NOZZLES A-B

Block nozzles for cutting attachments and hand cutting torches



| Type | Cutting range | Art. No.  | Cat. No. |
|------|---------------|-----------|----------|
| A-B  | 3 - 10 mm     | 540.01312 | 007      |
|      | 10 - 25 mm    | 540.01322 | 007      |
|      | 25 - 40 mm    | 540.01300 | 007      |
|      | 40 - 60 mm    | 540.01332 | 007      |
|      | 60 - 100 mm   | 540.01342 | 007      |
|      | 100 - 200 mm  | 540.01352 | 007      |
|      | 200 - 300 mm  | 540.01362 | 007      |

### CUTTING NOZZLES ANME

Gas-mixing nozzles for cutting attachments and hand cutting torches



| Type | Cutting range | Art. No.  | Cat. No. |
|------|---------------|-----------|----------|
| A-B  | 3 - 6 mm      | 716.16122 | 007      |
|      | 6 - 20 mm     | 716.16123 | 007      |
|      | 20 - 75 mm    | 716.16124 | 007      |
|      | 75 - 125 mm   | 716.16125 | 007      |
|      | 125 - 175 mm  | 716.16126 | 007      |
|      | 175 - 225 mm  | 716.16128 | 007      |
|      | 225 - 300 mm  | 716.16127 | 007      |

### VADURA 8317 A-GN

Gas-mixing nozzles for cutting attachments and hand cutting torches



| Type             | Cutting range | Art. No.    | Cat. No. |
|------------------|---------------|-------------|----------|
| VADURA 8317 A-GN | 0,5 - 3 mm    | 540.07490 * | 007      |
|                  | 3 - 10 mm     | 716.16001   | 007      |
|                  | 10 - 25 mm    | 716.16002   | 007      |
|                  | 25 - 40 mm    | 716.16003   | 007      |
|                  | 40 - 60 mm    | 716.16004   | 007      |
|                  | 60 - 100 mm   | 716.16005   | 007      |
|                  | 100 - 200 mm  | 716.16006   | 007      |
|                  | 200 - 300 mm  | 716.16007   | 007      |
|                  | 300 - 500 mm  | 716.16010   | 007      |

# HAND CUTTING NOZZLES

## FOR ACETYLENE

Special block nozzle for flame cutting of rivet heads, screw and profile webs

### CUTTING NOZZLE NK-BLOCK

| Type     | Material thickness | Art. No.  | Cat. No. |
|----------|--------------------|-----------|----------|
| NK-BLOCK | 10 - 25 mm         | 540.04001 | 007      |



Special gas-mixing nozzle for flame cutting of rivet heads, screw and profile webs

### CUTTING NOZZLE NK 8310-A

| Type      | Material thickness | Art. No.  | Cat. No. |
|-----------|--------------------|-----------|----------|
| NK-8310-A | bis 40 mm          | 716.16102 | 007      |



# HAND CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## CUTTING NOZZLES PL-RC

Ring nozzles for cutting attachments and hand cutting torches



| Type                 | Cutting range | Art. No.    | Cat. No. |
|----------------------|---------------|-------------|----------|
| PL-RC                | 3 - 10 mm     | 666.17226   | 007      |
|                      | 10 - 25 mm    | 666.17227   | 007      |
|                      | 25 - 40 mm    | 666.17228   | 007      |
|                      | 40 - 60 mm    | 666.17229   | 007      |
|                      | 60 - 100 mm   | 666.17230   | 007      |
|                      | 100 - 200 mm  | 666.17231   | 007      |
| Heating nozzles      | 200 - 300 mm  | 666.17232   | 007      |
|                      | 3 - 100 mm    | 666.17235   | 007      |
| GRICUT 1283 PMY      | 100 - 300 mm  | 666.17236   | 007      |
|                      | 10 - 60 mm    | 716.15952 * | 007      |
| Scrap cutting nozzle | 60 - 200 mm   | 716.15953 * | 007      |
| Heating nozzle       | 10 - 200 mm   | 716.15954   | 007      |

for fuel gases propane, methane, Mapp, ethylene

## CUTTING NOZZLES LP-N

Ring nozzles for low fuel gas pressures, for cutting attachments and hand cutting torches



| Type            | Cutting range | Art. No.  | Cat. No. |
|-----------------|---------------|-----------|----------|
| LP-N            | 3 - 10 mm     | 666.17202 | 007      |
|                 | 10 - 25 mm    | 666.17203 | 007      |
|                 | 25 - 40 mm    | 666.17204 | 007      |
|                 | 40 - 60 mm    | 666.17205 | 007      |
|                 | 60 - 100 mm   | 666.17206 | 007      |
|                 | 100 - 200 mm  | 666.17207 | 007      |
| Heating nozzles | 200 - 300 mm  | 666.17208 | 007      |
|                 | 3 - 100 mm    | 666.17215 | 007      |
|                 | 100 - 300 mm  | 666.17216 | 007      |

for fuel gases propane, methane, Mapp

# HAND CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## High efficiency ring nozzles for hand cutting torches

## GRICUT 1230-PMYE

| Type              | Cutting range | Art. No.  | Cat. No. |
|-------------------|---------------|-----------|----------|
| GRINCUT 1230 PMYE | 3 - 10 mm     | 716.15901 | 007      |
|                   | 7 - 15 mm     | 716.15902 | 007      |
|                   | 15 - 25 mm    | 716.15903 | 007      |
|                   | 25 - 40 mm    | 716.15904 | 007      |
|                   | 40 - 60 mm    | 716.15905 | 007      |
|                   | 60 - 100 mm   | 716.15906 | 007      |
|                   | 3 - 100 mm    | 716.15900 | 007      |

for fuel gases propane, methane, Mapp, ethylene



## High-speed ring nozzles for hand cutting torches

## GRICUT 1280-PMYE

| Type             | Cutting range | Art. No.  | Cat. No. |
|------------------|---------------|-----------|----------|
| GRICUT 1280 PMYE | 100 - 200 mm  | 716.15927 | 032      |
|                  | 200 - 225 mm  | 716.15928 | 032      |
|                  | 250 - 300 mm  | 716.15929 | 032      |
| Heating nozzle   | 100 - 300 mm  | 716.15931 | 032      |

for fuel gases propane, methane, Mapp, ethylene



## Special scrap cutting nozzles for hand cutting torches

## GRICUT 2280 PMY

| Type             | Cutting range | Art. No.    | Cat. No. |
|------------------|---------------|-------------|----------|
| GRICUT 1233-PMYE | 10 - 60 mm    | 716.15968 * | 007      |
|                  | 60 - 100 mm   | 716.15969 * | 007      |
| Heating nozzle   | 10 - 200 mm   | 716.15970 * | 007      |

for fuel gases propane, methane, Mapp, ethylene



# HAND CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## GRINCUT 2280-PMYE

Block nozzles for hand cutting torches



| Type              | Cutting range   | Art. No.   | Cat. No.  |
|-------------------|-----------------|------------|-----------|
| GRINCUT 2280 PMYE | 3 - 7 mm        | 716.15911  | 007       |
|                   | 7 - 15 mm       | 716.15912  | 007       |
|                   | 15 - 25 mm      | 716.15913  | 007       |
|                   | 25 - 40 mm      | 716.15914  | 007       |
|                   | 40 - 60 mm      | 716.15915  | 007       |
|                   | 60 - 100 mm     | 716.15916  | 007       |
|                   | 100 - 200 mm    | 716.15934  | 007       |
|                   | 200 - 250 mm    | 716.15935  | 007       |
|                   | 250 - 300 mm    | 716.15936  | 007       |
|                   | Heating nozzles | 3 - 100 mm | 716.15909 |
|                   | 100 - 300 mm    | 716.15917  | 007       |

for fuel gases propane, methane, Mapp

## PNME, TWO-PIECE

Gas-mixing nozzles for cutting attachments and hand cutting torches



| Type | Cutting range | Art. No.  | Cat. No. |
|------|---------------|-----------|----------|
| PNME | 3 - 6 mm      | 716.16140 | 007      |
|      | 6 - 20 mm     | 716.16141 | 007      |
|      | 20 - 75 mm    | 716.16142 | 007      |
|      | 75 - 125 mm   | 716.16143 | 007      |
|      | 125 - 175 mm  | 716.16144 | 007      |
|      | 175 - 225 mm  | 716.16145 | 007      |
|      | 225 - 300 mm  | 716.16146 | 007      |
|      |               |           |          |

for fuel gases propane, methane, Mapp, ethylene



# HAND CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## Gas-mixing nozzles for cutting attachments and hand cutting torches

**GRICUT 8281-PMYE**

| Type                 | Cutting range | Art. No.  | Cat. No. |
|----------------------|---------------|-----------|----------|
| GRICUT 8281-PMYE     | 3 - 10 mm     | 716.16038 | 007      |
|                      | 10 - 25 mm    | 716.16039 | 007      |
|                      | 25 - 40 mm    | 716.16040 | 007      |
|                      | 40 - 60 mm    | 716.16041 | 007      |
|                      | 60 - 100 mm   | 716.16042 | 007      |
|                      | 100 - 200 mm  | 716.16043 | 007      |
|                      | 200 - 300 mm  | 716.16044 | 007      |
| Heating nozzles:     |               |           | 007      |
| for propane, methane | 3 - 100 mm    | 716.15988 | 007      |
|                      | 100 - 300 mm  | 716.15989 | 007      |
| for Mapp, ethylene   | 3 - 100 mm    | 716.15978 | 007      |
|                      | 100 - 300 mm  | 716.15979 | 007      |

for fuel gases propane, methane, Mapp, ethylene



## Gas-mixing nozzles with mixers, for hand cutting torches

**GRICUT 8281-PM**

| Type           | Cutting range | Art. No.  | Cat. No. |
|----------------|---------------|-----------|----------|
| GRICUT 8281-PM | 200 - 500 mm  | 716.16400 | 006      |
| Heating nozzle | 200 - 500 mm  | 546.12340 | 006      |

for fuel gases propane, methane



# HAND CUTTING NOZZLES

GOUGING NOZZLES

FOR GOUGING TORCHES STARCUT / ESSEN

| Gouging Nozzles              | Acetylene |         |     |      | Propane / Methane / Mapp / Ethylene |          |          |
|------------------------------|-----------|---------|-----|------|-------------------------------------|----------|----------|
|                              | FD-A      | Block-A | FAG | AGNM | FD-PM                               | Block-PM | Block-YF |
| STARCUT                      |           |         |     |      |                                     |          |          |
| 1622-A / 3622-A              | ●         |         |     |      |                                     |          |          |
| 1622-PMYE                    |           |         |     |      | ●                                   |          |          |
| 2628-A / 7628-A              |           | ●       |     |      |                                     |          |          |
| 2622-PMYE                    |           |         |     |      |                                     | ●        | ●        |
| 8622-A/PMYE /<br>9622-A/PMYE |           |         | ●   | ●    |                                     |          |          |
| ESSEN                        |           |         |     |      |                                     |          |          |
| 8625-A/PMYE                  |           |         | ●   | ●    |                                     |          |          |
| 9625-A/PMYE                  |           |         |     |      |                                     |          |          |

## GOUGING NOZZLES FD

Ring nozzles for STARCUT 1615-A / 3615-A and STARUT 1615-PMYE



| Type           | Size | Art. No.<br>type A | Art. No.<br>type PM | Cat. No. |
|----------------|------|--------------------|---------------------|----------|
| FD             | 1    | 666.17722          | 666.17727 *         | 007      |
|                | 2    | 666.17723          | 666.17728 *         | 007      |
|                | 3    | 666.17724          | 666.17729 *         | 007      |
| Heating nozzle | 0/1  | 666.17731          | 666.17731           | 007      |
|                | 2/3  | 666.17732          | 666.17732           | 007      |

Type FD-A for fuel gas acetylene  
Type FD-PM for fuel gases propane, methane

## BLOCK GOUGING NOZZLES

Block gouging nozzles for STARCUT 2618-A / 7618-A and STARCUT 2615-PMYE



| Type           | Size | Art. No.<br>Typ A | Art. No.<br>Typ PM | Cat. No. |
|----------------|------|-------------------|--------------------|----------|
| Block straight | 1    | 702.05102         | --                 | 007      |
|                | 2    | 702.05202         | --                 | 007      |
|                | 3    | 702.05302         | --                 | 007      |
| Block curved   | 1    | 702.05602         | 702.06202          | 007      |
|                | 2    | 702.05702         | 702.06302          | 007      |
|                | 3    | 702.05802         | 702.06402          | 007      |

Block GR 25  
Special nozzle  
for gouging in  
higher ranges

Type Block-A for fuel gas acetylene  
Type Block-PM for fuel gases propane, methane

# HAND CUTTING NOZZLES

GOUGING NOZZLES

FOR GOUGING TORCHES STARCUT / ESSEN

Gas-mixing gouging nozzles for STARCUT 8615 and 9615-A/PMYE / ESSEN 8625-A/PMYE

GOUGING NOZZLES FAG

| Type         | Size | Art. No.    | Cat. No. |
|--------------|------|-------------|----------|
| FAG straight | 1    | 540.07270 * | 007      |
|              | 2    | 540.07280 * | 007      |
|              | 3    | 540.07290 * | 007      |
| FAG curved   | 1    | 540.07070   | 007      |
|              | 2    | 540.07080   | 007      |
|              | 3    | 540.07090   | 007      |

for fuel gas acetylene



Gas-mixing gouging nozzles for STARCUT / ESSEN, non-suction design

GOUGING NOZZLES AGNM

| Type            | Size | Art. No.  | Cat. No. |
|-----------------|------|-----------|----------|
| AGNM-S straight | 1    | 716.16230 | 007      |
|                 | 2    | 716.16231 | 007      |
|                 | 3    | 716.16232 | 007      |
| AGNM-S curved   | 1    | 716.16233 | 007      |
|                 | 2    | 716.16234 | 007      |
|                 | 3    | 716.16235 | 007      |

for fuel gas acetylene



# HAND CUTTING NOZZLES

# MACHINE CUTTING TORCHES

## FOR AUTOMATED CUTTING PROCESSES IN FLAME CUTTING PLANTS

### Thee-hose machine cutting torch for ring/slot nozzles

**MS 832**

| Type         | Shaft length | Art. No.<br>Type A | Art. No.<br>Type PMYE | Cat. No. |
|--------------|--------------|--------------------|-----------------------|----------|
| MS 832 / 110 | 110 mm       | 716.11147          | 716.11148             | 005      |
| MS 832 / 160 | 160 mm       | 716.11149          | 716.11150             | 005      |
| MS 832 / 250 | 250 mm       | 716.11127          | 716.11142             | 005      |

Shaft diameter: 32 mm / Cutting range: up to 300 mm

for flame cutting machines of series

**MINISEC, SECATOR, CORTA, STATOSEC, MULTISEC, OMNIMAT, SICOMAT, CORTINA, SANCUT, COMCUT, EASYTHERM**

Type A for acetylene / Type PMYE for propane, methane, Mapp, ethylene



### Thee-hose machine cutting torch with toothed rack, for ring/slot nozzles

**MSZ 832**

| Type          | Shaft length | Art. No.<br>Type A | Art. No.<br>Type PMYE | Cat. No. |
|---------------|--------------|--------------------|-----------------------|----------|
| MSZ 832 / 320 | 320 mm       | 716.11170          | 716.11171             | 005      |
| MSZ 832/110   | 110 mm       | 716.51787          | 716.51788             | 005      |
| MSZ 832/160   | 160 mm       |                    |                       | 005      |

Shaft diameter: 32 mm / Cutting range: up to 300 mm

for flame cutting machine **CORTA SM**

for hand cutting machine **PORTACUT, TURBOCUT**

Type A for acetylene / Type PMYE for propane, methane, Mapp, ethylene



### Thee-hose machine cutting torch for ring/slot nozzles

**MS 932**

| Type         | Shaft length | Art. No.<br>Type A | Art. No.<br>Type PMYE | Cat. No. |
|--------------|--------------|--------------------|-----------------------|----------|
| MS 932 / 110 | 110 mm       | 716.11412          | 716.11413             | 005      |
| MS 932 / 160 | 160 mm       | 716.11414          | 716.11415             | 005      |
| MS 932 / 250 | 250 mm       | 716.11315          | 716.11317             | 005      |

Shaft diameter: 32 mm / Cutting range: up to 300 mm

f for flame cutting machines of series

**MINISEC, SECATOR, CORTA, STATOSEC, MULTISEC, OMNIMAT, SICOMAT, CORTINA, SANCUT, COMCUT, EASYTHERM**

Type A for Fuel gas acetylene / Type PMYE for Fuel gas propane, methane, Mapp, ethylene



### Thee-hose machine cutting torch for ring/slot nozzles

**MSZ 932**

| Type          | Shaft length | Art. No.<br>Type A | Art. No.<br>Type PMYE | Cat. No. |
|---------------|--------------|--------------------|-----------------------|----------|
| MSZ 932 / 320 | 320 mm       | 716.11410          | 716.11411             | 005      |

Shaft diameter: 32 mm / Cutting range: up to 300 mm

for flame cutting machines of series

**MINISEC, SECATOR, CORTA, STATOSEC, MULTISEC, OMNIMAT, SICOMAT, CORTINA, SANCUT, COMCUT, EASYTHERM**

Type A for Fuel gas acetylene / Type PMYE for Fuel gas propane, methane, Mapp, ethylene



# MACHINE CUTTING TORCHES

## FOR AUTOMATED CUTTING PROCESSES IN FLAME CUTTING PLANTS

### MS 3450 / 250

Four-hose machine cutting torch with internal electrical ignition, for ring/slot nozzles



| Type          | Shaft length | Art. No.<br>type A | Art. No.<br>type PMYE | Cat. No. |
|---------------|--------------|--------------------|-----------------------|----------|
| MS 3450 / 250 | 250          | 716.51310 *        | 716.51320 *           | 005      |

Shaft diameter: 45 mm / Cutting range: up to 300 mm

**for flame cutting machines of series:**  
**CORTA, STATOSEC, OMNIMAT**

Torch cannot be fitted to swivel-type and rotating triple-type torch assemblies !

Type A for acetylene / Type PMYE for propane, methane, Mapp, ethylene

### MS 3452 / 250

Four-hose machine cutting torch with internal electrical ignition, for ring/slot nozzles



| Type          | Shaft length | Art. No.<br>type A | Art. No.<br>type PMYE | Cat. No. |
|---------------|--------------|--------------------|-----------------------|----------|
| MS 3452 / 250 | 250 mm       | 716.11010 *        | 716.11011 *           | 005      |

Shaft diameter: 45 mm / Cutting range: up to 300 mm

**for flame cutting machines of series:**  
**CORTA, STATOSEC, OMNIMAT, CORTINA, COMCUT, EASYTHERM**

Torch cannot be fitted to swivel-type and rotating triple-type torch assemblies !

#### Dosing unit for machine cutting torch MS 3452 A / PMYE

|                     |             |             |     |
|---------------------|-------------|-------------|-----|
| for MS 3452 / 60 Hz | 716.11177 * | 716.11177 * | 005 |
| for MS 3452 / 50 Hz | 716.11176 * | 716.11176 * | 005 |



Type A for acetylene / Type PMYE for propane, methane, Mapp, ethylene

### MSID 100 K

Three-hose machine cutting torch for gas-mixing nozzles with 30° sealing cone



| Type              | Shaft length | Art. No.  | Cat. No. |
|-------------------|--------------|-----------|----------|
| MSDI 100 K-A/PMYE | 100 mm       | 716.51356 | 005      |

Shaft diameter: 14 mm / Cutting range: up to 300 mm

**for flame cutting machines with automatic bevel-angle adjustment or rotating triple-type torch assembly DAFL**

for acetylene or propane, methane, Mapp, ethylene

# MACHINE CUTTING TORCHES

## FOR AUTOMATED CUTTING PROCESSES IN FLAME CUTTING PLANTS

Three-hose machine cutting torch for gas-mixing nozzles with 30° sealing cone

**MSID 100 - 450**

| Type              | Shaft length | Art. No.    | Cat. No. |
|-------------------|--------------|-------------|----------|
| MSID 110-A/PMYE * | 110 mm       | 554.90230 * | 005      |
| MSID 160-A/PMYE   | 160 mm       | 554.90210 * | 005      |
| MSID 180-A/PMYE   | 180 mm       | 554.90200 * | 005      |
| MSID 250-A/PMYE   | 250 mm       | 716.51241 * | 005      |
| MSID 450-A/PMYE   | 450 mm       | 716.51082 * | 005      |

\* for flame cutting machines of series PROCUT, TURBOCUT

Shaft diameter: 32 mm / Cutting range: up to 300 mm (MSID 450: up to 500 mm)

for flame cutting machines of series:  
MULTISEC, OMNIMAT, SICOMAT

for acetylene or propane, methane, Mapp, ethylene



Three-hose machine cutting torch with toothed rack, for gas-mixing nozzles with 30° sealing cone

**MSIDZ 160**

| Type               | Shaft length | Art. No.    | Cat. No. |
|--------------------|--------------|-------------|----------|
| MSIDZ 160-A/PMYE * | 160 mm       | 554.90220 * | 005      |
| MSIDZ 110-A/PMY    | 110 mm       | 716.51789   |          |

\* for flame cutting machines of series PORTACUT, TURBOCUT

Shaft diameter: 32 mm / Cutting range: up to 300 mm

for flame cutting machines of series:  
MULTISEC, OMNIMAT, SICOMAT

for acetylene or propane, methane, Mapp, ethylene



Three-hose heavy-duty machine cutting torch for post mixing nozzles with 30° sealing cone

**MSAP 6320**

| Type      | Shaft length | Art. No.  | Cat. No. |
|-----------|--------------|-----------|----------|
| MSAP 6320 | 250 mm       | 716.11104 | 005      |

Shaft diameter: 32 mm / Cutting range: up to 300 mm

for flame cutting machines of series:  
SECATOR, CORTA, CORTINA, STATOSET, MULTISEC,  
OMNIMAT, SICOMAT, SCANCUT, COMCUT, EASYTHERM

for acetylene or propane, methane, Mapp, ethylene



# MACHINE CUTTING TORCHES

## FOR AUTOMATED CUTTING PROCESSES IN FLAME CUTTING PLANTS

### MSD 250

Three-hose heavy-duty machine cutting torch for gas-mixing nozzles

| Type              | Shaft length | Art. No.    | Cat. No. |
|-------------------|--------------|-------------|----------|
| MSID 250-A/PMYE * | 250 mm       | 716.01365 * | 005      |

Shaft diameter: 32 mm

Cutting range: 100 to 500 mm with acetylene

Cutting range: 100 to 600 mm with propane, methane, Mapp

for flame cutting machines of series:

**SECATOR, CORTA, CORTINA, STATOSEC, MULTISEC, OMNIMAT, SICOMAT, SCANCUT, COMCUT, EASYTHERM**

for acetylene or propane, methane, Mapp

### STRIP CUTTING TORCH

Accessories for machine cutting torches series MS 832

| Description                | Working radius | Cutting range | Art. No.  | Cat. No. |
|----------------------------|----------------|---------------|-----------|----------|
| Strip cutting torch MS 832 | 30 - 400 mm    | 3 - 60 mm     | 716.51155 | 005      |



|                            |             |           |           |     |
|----------------------------|-------------|-----------|-----------|-----|
| Strip cutting torch MS 932 | 30 - 400 mm | 3 - 60 mm | 716.11322 | 005 |
|----------------------------|-------------|-----------|-----------|-----|



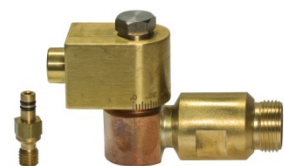
Additional device for increasing of cutting efficiency and to reduce warping on cutting of sheet strips

for acetylene or propane, methane, Mapp, ethylene

### SWIVELLING TORCH HEAD

Accessories for machine cutting torches series MS 832

| Description                                  | Swivel range | Cutting range | Art. No.  | Cat. No. |
|----------------------------------------------|--------------|---------------|-----------|----------|
| Swivelling torch head MS 832                 | ± 90°        | 3 - 300 mm    | 716.51295 | 005      |
| Swivelling torch head MS 832 with preheating | ± 90°        | 3 - 300 mm    | 716.52032 | 005      |
| Swivelling torch head MS 932                 | ± 90°        | 3 - 300 mm    | 716.11425 | 005      |



Additional device for carrying out bevel cuts in length and cross directions



# MACHINE CUTTING TORCHES

FOR AUTOMATED CUTTING PROCESSES IN FLAME CUTTING PLANTS

## Round head two-hose machine cutting torch

**QUICKY**

| Type                      | Nozzle type         | Art. No.<br>type A | Art. No.<br>type PMYE | Cat. No. |
|---------------------------|---------------------|--------------------|-----------------------|----------|
| Quicky A /<br>Quicky PMYE | Ring / slot nozzles | 540.93330          | 545.93330             | 005      |
| QICKY-<br>A/PMYE          | Gas-mixing nozzles  | 716.11040          | 716.11040             | 005      |

Cutting range: up to 100 mm / with adjusting valves, flashback arrestors and connecting hoses

**for hand cutting machine QUICKY**

Type A acetylene / Type PMYE for propane, methane, Mapp, ethylene



## Accessories for machine cutting torches series MS

**AIR COOLING  
ATTACHMENT**

| Description                                  | Art. No.    | Cat. No. |
|----------------------------------------------|-------------|----------|
| Air cooling attachment                       | 716.51251 * | 005      |
| Air shut-off valve G 1/4" for compressed air | 718.00668 * | 005      |

Additional device for cutting oft thin sheet

for acetylene or propane, methane, Mapp, ethylene



# MACHINE CUTTING TORCHES

# MACHINE CUTTING NOZZLES

## APPLICATION OVERVIEW

| Torch Series                                                    | QUICKY | MS / MSZ<br>832 | MS / MSZ<br>932 | MS 3450 /<br>MS 3452 | MSID /<br>MSIDZ | MSAP | MSD<br>250 |
|-----------------------------------------------------------------|--------|-----------------|-----------------|----------------------|-----------------|------|------------|
| Machine Cutting Nozzles<br>for acetylene                        |        |                 |                 |                      |                 |      |            |
| A-RS                                                            | •      | •               |                 | •                    |                 |      |            |
| VADURA 1210-A / +PLUS+ 1210-A                                   | •      | •               |                 | •                    |                 |      |            |
| VADURA 1215-A / +PLUS+ 1215-A                                   | •      | •               |                 | •                    |                 |      |            |
| VADURA 9215-A                                                   |        |                 | •               |                      |                 |      |            |
| A-CID                                                           | •      |                 |                 |                      | •               |      |            |
| GRICUT 5310-A                                                   |        |                 |                 |                      |                 |      | •          |
| Machine Cutting Nozzles<br>for propane, methane, Mapp, ethylene |        |                 |                 |                      |                 |      |            |
| PL-RC                                                           | •      | •               |                 | •                    |                 |      |            |
| GRICUT 1230 PMYE / +PLUS+ 1230 PMYE                             | •      | •               |                 | •                    |                 |      |            |
| GRICUT 1270-PY / +PLUS+ / 1270-PY                               | •      | •               |                 | •                    |                 |      |            |
| GRICUT 1280-PMYE / +PLUS+ 1280-PMYE                             |        | •               |                 | •                    |                 |      |            |
| GRICUT 5281-PMY                                                 |        |                 |                 |                      |                 |      | •          |
| GRICUT 8281-PMYE                                                | •      |                 |                 |                      | •               |      |            |
| GRICUT 8281-PM                                                  |        |                 |                 |                      | •               |      |            |
| GRICUT 8280-PMYE                                                |        |                 |                 |                      | •               |      |            |
| GRICUT 8480-PMYE                                                |        |                 |                 |                      |                 | •    |            |
| GRICUT 9230-PMYE                                                |        |                 | •               |                      |                 |      |            |

Stand: 04/2013

# MACHINE CUTTING NOZZLES

## FOR ACETYLENE

### CUTTING NOZZLES A-RS

Standard ring/slot nozzles for machine cutting torches Quicky and MS/MSZ



| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| A-RS            | 2 - 8 mm      | 2,0 - 2,5 bar                    | 666.17101 | 007      |
|                 | 3 - 10 mm     | 2,0 - 2,5 bar                    | 666.17102 | 007      |
|                 | 10 - 25 mm    | 2,0 - 2,5 bar                    | 666.17103 | 007      |
|                 | 25 - 40 mm    | 4,0 - 5,0 bar                    | 666.17104 | 007      |
|                 | 40 - 60 mm    | 4,0 - 5,0 bar                    | 666.17105 | 007      |
|                 | 60 - 100 mm   | 4,0 - 5,0 bar                    | 666.17106 | 007      |
|                 | 100 - 200 mm  | 5,0 - 6,0 bar                    | 666.17107 | 007      |
|                 | 200 - 300 mm  | 5,0 - 6,0 bar                    | 666.17108 | 007      |
| Heating nozzles | 2 - 100 mm    |                                  | 666.17115 | 007      |
|                 | 100 - 300 mm  |                                  | 666.17116 | 007      |

### VADURA 1215-A

High-speed ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ



| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| VADURA 1215-A   | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.15941 | 032      |
|                 | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.15942 | 032      |
|                 | 10 - 25 mm    | 6,5 - 7,5 bar                    | 716.15943 | 032      |
|                 | 25 - 40 mm    | 6,5 - 8,0 bar                    | 716.15944 | 032      |
|                 | 40 - 60 mm    | 6,5 - 8,5 bar                    | 716.15945 | 032      |
|                 | 60 - 100 mm   | 6,5 - 8,0 bar                    | 716.15946 | 032      |
|                 | 100 - 150 mm  | 6,5 - 7,0 bar                    | 716.15947 | 032      |
|                 | 150 - 230 mm  | 6,0 - 7,5 bar                    | 716.15948 | 032      |
| Heating nozzles | 230 - 300 mm  | 7,0 - 8,5 bar                    | 716.15949 | 032      |
|                 | 3 - 150 mm    |                                  | 716.15950 | 032      |
|                 | 150 - 300 mm  |                                  | 716.15951 | 032      |

# MACHINE CUTTING NOZZLES

Ring-/Schlitz-Schnellschneiddüsen für Maschinen-Schneidbrenner QUICKY und MS / MSZ

VADURA +PLUS+ 1215-A

| Type                    | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|-------------------------|---------------|----------------------------------|-------------|----------|
| VADURA<br>+PLUS+ 1215-A | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.16161 * | 032      |
|                         | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.16162 * | 032      |
|                         | 10 - 25 mm    | 6,5 - 7,5 bar                    | 716.16163 * | 032      |
|                         | 25 - 40 mm    | 6,5 - 8,0 bar                    | 716.16164 * | 032      |
|                         | 40 - 60 mm    | 6,5 - 8,5 bar                    | 716.16165 * | 032      |
|                         | 60 - 100 mm   | 6,5 - 8,0 bar                    | 716.16166 * | 032      |
|                         | 100 - 150 mm  | 6,5 - 7,0 bar                    | 716.16167 * | 032      |
|                         | 150 - 230 mm  | 6,0 - 7,5 bar                    | 716.16179 * | 032      |
|                         | 230 - 300 mm  | 7,0 - 8,5 bar                    | 716.16180 * | 032      |
| Heating nozzles         | 3 - 150 mm    |                                  | 716.16170 * | 032      |
|                         | 150 - 300 mm  |                                  | 716.16182 * | 032      |



Ring-/Schlitz-Hochleistungsschneiddüsen für Maschinen-Schneidbrenner QUICKY und MS / MSZ

VADURA 1210-A

| Type             | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|------------------|---------------|----------------------------------|-----------|----------|
| VADURA<br>1210-A | 2 - 5 mm      | 2,0 - 3,0 bar                    | 716.15760 | 032      |
|                  | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.15761 | 032      |
|                  | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.15762 | 032      |
|                  | 10 - 25 mm    | 9,0 - 12,0 bar                   | 716.15763 | 032      |
|                  | 25 - 50 mm    | 7,5 - 11,0 bar                   | 716.15764 | 032      |
|                  | 50 - 80 mm    | 9,0 - 12,0 bar                   | 716.15765 | 032      |
|                  | 80 - 100 mm   | 9,5 - 11,0 bar                   | 716.15766 | 032      |
|                  | 100 - 150 mm  | 6,5 - 7,0 bar                    | 716.15769 | 032      |
|                  | 150 - 230 mm  | 6,5 - 7,5 bar                    | 716.15948 | 032      |
| Heating nozzles  | 230 - 300 mm  | 7,0 - 8,5 bar                    | 716.15949 | 032      |
|                  | 3 - 150 mm    |                                  | 716.15770 | 032      |
|                  | 150 - 300 mm  |                                  | 716.15951 | 032      |



# MACHINE CUTTING NOZZLES

## FOR ACETYLENE

### VADURA +PLUS+ 1210-A

Ring-/Schlitz-Hochleistungsschneiddüsen für Maschinen-Schneidbrenner QUICKY und MS / MSZ



| Type                    | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|-------------------------|---------------|----------------------------------|-------------|----------|
| VADURA<br>+PLUS+ 1210-A | 2 - 5 mm      | 2,0 - 3,0 bar                    | 716.16171 * | 032      |
|                         | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.16172 * | 032      |
|                         | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.16173 * | 032      |
|                         | 10 - 25 mm    | 9,0 - 12,0 bar                   | 716.16174 * | 032      |
|                         | 25 - 50 mm    | 7,5 - 11,0 bar                   | 716.16175 * | 032      |
|                         | 50 - 80 mm    | 9,0 - 12,0 bar                   | 716.16176 * | 032      |
|                         | 80 - 100 mm   | 9,5 - 11,0 bar                   | 716.16177 * | 032      |
|                         | 100 - 150 mm  | 6,5 - 7,0 bar                    | 716.16178 * | 032      |
|                         | 150 - 230 mm  | 6,5 - 7,5 bar                    | 716.16179 * | 032      |
|                         | 230 - 300 mm  | 7,0 - 8,5 bar                    | 716.16180 * | 032      |
| Heating nozzles         | 3 - 150 mm    |                                  | 716.16181 * | 032      |
|                         | 150 - 300 mm  |                                  | 716.16182 * | 032      |

### VADURA 9215-A

Ring-/Schlitzdüsen für Maschinenschneidbrenner MS 932



| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| VADURA 9215-A   | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.16561 | 032      |
|                 | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.16562 | 032      |
|                 | 10 - 25 mm    | 6,5 - 7,5 bar                    | 716.16563 | 032      |
|                 | 25 - 40 mm    | 6,5 - 8,0 bar                    | 716.16564 | 032      |
|                 | 40 - 60 mm    | 6,5 - 8,5 bar                    | 716.16565 | 032      |
|                 | 60 - 100 mm   | 6,5 - 8,0 bar                    | 716.16566 | 032      |
|                 | 100 - 150 mm  | 6,5 - 7,0 bar                    | 716.16567 | 032      |
|                 | 150 - 230 mm  | 6,5 - 7,5 bar                    | 716.16568 | 032      |
|                 | 230 - 300 mm  | 6,5 - 7,5 bar                    | 716.16569 | 032      |
| Heating nozzles | 3 - 100 mm    |                                  | 716.16550 | 032      |
|                 | 100 - 300 mm  |                                  | 716.16560 | 032      |

# MACHINE CUTTING NOZZLES

Gas mixing high speed cutting nozzles for machine torches QUICKY and MSID / MSIDZ

**CUTTING NOZZLES A-CID**

| Type  | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-------|---------------|----------------------------------|-----------|----------|
| A-CID | 3 - 5 mm      | 2,0 - 3,0 bar                    | 716.16020 | 007      |
|       | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.16021 | 007      |
|       | 10 - 25 mm    | 6,0 - 7,0 bar                    | 716.16022 | 007      |
|       | 25 - 40 mm    | 6,0 - 7,0 bar                    | 716.16023 | 007      |
|       | 40 - 60 mm    | 5,5 - 7,0 bar                    | 716.16024 | 007      |
|       | 60 - 80 mm    | 2,0 - 2,5 bar                    | 716.16025 | 007      |
|       | 80 - 100 mm   | 5,0 - 6,0 bar                    | 716.16026 | 007      |
|       | 100 - 200 mm  | 3,0 - 6,0 bar                    | 716.16027 | 007      |
|       | 200 - 300 mm  | 4,0 - 6,0 bar                    | 716.16028 | 007      |



Heavy-duty gas-mixing nozzles for machine cutting torch MSD

**GRICUT 5310-A**

| Type          | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|---------------|---------------|----------------------------------|-------------|----------|
| GRICUT 5310-A | 100 - 300 mm  | 3,5 - 7,0 bar                    | 716.50103 * | 006      |
|               | 300 - 500 mm  | 3,5 - 10,0 bar                   | 716.50104 * | 006      |



# MACHINE CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## CUTTING NOZZLES PL-RC

Standard ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ



| Type                            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|---------------------------------|---------------|----------------------------------|-----------|----------|
| PL-RC                           | 2 - 8 mm      | 2,0 - 2,5 bar                    | 666.17225 | 007      |
|                                 | 3 - 10 mm     | 2,0 - 3,0 bar                    | 666.17226 | 007      |
|                                 | 10 - 25 mm    | 4,0 - 5,0 bar                    | 666.17227 | 007      |
|                                 | 25 - 40 mm    | 4,0 - 5,0 bar                    | 666.17228 | 007      |
|                                 | 40 - 60 mm    | 4,0 - 5,0 bar                    | 666.17229 | 007      |
|                                 | 60 - 100 mm   | 5,0 - 6,0 bar                    | 666.17230 | 007      |
|                                 | 100 - 200 mm  | 5,5 - 6,5 bar                    | 666.17231 | 007      |
|                                 | 200 - 300 mm  | 6,5 - 8,5 bar                    | 666.17232 | 007      |
| Heating nozzles propane/methane | 2 - 100 mm    |                                  | 666.17235 | 007      |
|                                 | 100 - 300 mm  |                                  | 666.17236 | 007      |
| Heating nozzles Mapp/ethylene   | 2 - 100 mm    |                                  | 716.15919 | 007      |
|                                 | 100 - 300 mm  |                                  | 716.15920 | 007      |

for fuel gases propane, methane, Mapp, ethylene

## GRICUT 1230-PMYE

High-speed ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ



| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| GRICUT 123-PMYE | 3 - 10 mm     | 1,0 - 5,0 bar                    | 716.15901 | 032      |
|                 | 7 - 15 mm     | 5,0 - 7,0 bar                    | 716.15902 | 032      |
|                 | 15 - 25 mm    | 6,0 - 7,0 bar                    | 716.15903 | 032      |
|                 | 25 - 40 mm    | 6,0 - 7,5 bar                    | 716.15904 | 032      |
|                 | 40 - 60 mm    | 5,5 - 7,5 bar                    | 716.15905 | 032      |
|                 | 60 - 100 mm   | 6,0 - 8,5 bar                    | 716.15906 | 032      |
| Heating nozzles | 3 - 100 mm    |                                  | 716.15900 | 032      |

for propane, methane, Mapp, ethylene

## GRICUT +PLUS+1230-PMYE

High-speed ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ



| Type                   | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|------------------------|---------------|----------------------------------|-------------|----------|
| GRICUT +PLUS+ 123-PMYE | 3 - 10 mm     | 1,0 - 5,0 bar                    | 716.16147 * | 032      |
|                        | 7 - 15 mm     | 5,0 - 7,0 bar                    | 716.16148 * | 032      |
|                        | 15 - 25 mm    | 6,0 - 7,0 bar                    | 716.16149 * | 032      |
|                        | 25 - 40 mm    | 6,0 - 7,5 bar                    | 716.16150 * | 032      |
|                        | 40 - 60 mm    | 5,5 - 7,5 bar                    | 716.16151 * | 032      |
|                        | 60 - 100 mm   | 6,0 - 8,5 bar                    | 716.16152 * | 032      |
| Heating nozzles        | 3 - 100 mm    |                                  | 716.16156 * | 032      |

for propane, methane, Mapp, ethylene



# MACHINE CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

High-efficiency ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ

GRICUT 1270-PY

| Type                   | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|------------------------|---------------|----------------------------------|-----------|----------|
| GRICUT 1270-PY         | 2 - 5 mm      | 2,0 - 5,0 bar                    | 716.15910 | 032      |
|                        | 3 - 5 mm      | 3,0 - 5,0 bar                    | 716.15921 | 032      |
|                        | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.15922 | 032      |
|                        | 10 - 25 mm    | 9,0 - 12,0 bar                   | 716.15923 | 032      |
|                        | 25 - 50 mm    | 7,5 - 11,0 bar                   | 716.15924 | 032      |
|                        | 50 - 80 mm    | 9,0 - 12,0 bar                   | 716.15925 | 032      |
|                        | 80 - 100 mm   | 9,5 - 11,0 bar                   | 716.15926 | 032      |
| Heating nozzle propane | 2 - 100 mm    |                                  | 716.15930 | 032      |
| Heating nozzle Mapp    | 2 - 100 mm    |                                  | 716.15932 | 032      |

for fuel gases propane, Mapp



High-efficiency ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ

GRICUT +PLUS+ 1270-PY

| Type                   | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|------------------------|---------------|----------------------------------|-------------|----------|
| GRICUT +PLUS+ 1270-PY  | 3 - 5 mm      | 2,0 - 5,0 bar                    | 716.16184 * | 032      |
|                        | 6 - 10 mm     | 4,0 - 5,0 bar                    | 716.16185 * | 032      |
|                        | 10 - 25 mm    | 9,0 - 12,0 bar                   | 716.16186 * | 032      |
|                        | 25 - 50 mm    | 7,5 - 11,0 bar                   | 716.16187 * | 032      |
|                        | 50 - 80 mm    | 9,0 - 12,0 bar                   | 716.16188 * | 032      |
|                        | 80 - 100 mm   | 9,5 - 11,0 bar                   | 716.16189 * | 032      |
| Heating nozzle propane | 2 - 100 mm    |                                  | 716.16190 * | 032      |
| Heating nozzle Mapp    | 2 - 100 mm    |                                  | 716.16191 * | 032      |

for fuel gases propane, Mapp



High-speed ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ

GRICUT 1280-PMYE

| Type                            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|---------------------------------|---------------|----------------------------------|-----------|----------|
| GRICUT 1280-PMYE                | 100 - 200 mm  | 7,5 - 9,5 bar                    | 716.15927 | 032      |
|                                 | 200 - 250 mm  | 6,5 - 8,5 bar                    | 716.15928 | 032      |
|                                 | 250 - 300 mm  | 6,5 - 8,5 bar                    | 716.15929 | 032      |
| Heating nozzle                  | 100 - 300 mm  |                                  | 716.15931 | 032      |
| Special nozzles for the cutting | 60 - 100 mm   | 6,0 - 8,5 bar                    | 716.15938 | 032      |
| of stone moulds                 | 100 - 150 mm  | 4,0 - 5,5 bar                    | 716.15933 | 032      |

for fuel propane, methane, Mapp, ethylene



# MACHINE CUTTING NOZZLES

FOR PROPANE / METHANE / MAPP / ETHYLENE

## GRICUT +PLUS+ 1280-PMYE

High-speed ring/slot nozzles for machine cutting torches QUICKY and MS/MSZ



| Type                          | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.    | Cat. No. |
|-------------------------------|---------------|----------------------------------|-------------|----------|
| GRICUT<br>+PLUS+<br>1280-PMYE | 100 - 200 mm  | 7,5 - 9,5 bar                    | 716.16192 * | 032      |
|                               | 200 - 250 mm  | 6,5 - 8,5 mm                     | 716.16193 * | 032      |
|                               | 250 - 300 mm  | 6,5 - 8,5 mm                     | 716.16194 * | 032      |
| Heating nozzle                | 100 - 300 mm  |                                  | 716.16195 * | 032      |

for fuel gasses Propane, Methane, Mapp, Ethylene

## GRICUT 9230-PMYE

Ring/slot nozzles for machine cutting torches MS 932



| Type                | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|---------------------|---------------|----------------------------------|-----------|----------|
| GRICUT<br>9230-PMYE | 3 - 10 mm     | 1,0 - 5,0 bar                    | 716.16551 | 032      |
|                     | 7 - 15 mm     | 5,0 - 7,0 bar                    | 716.16552 | 032      |
|                     | 15 - 25 mm    | 6,0 - 7,0 bar                    | 716.16553 | 032      |
|                     | 25 - 40 mm    | 6,0 - 7,5 bar                    | 716.16554 | 032      |
|                     | 40 - 60 mm    | 5,5 - 7,5 bar                    | 716.16555 | 032      |
|                     | 60 - 100 mm   | 6,0 - 8,5 bar                    | 716.16556 | 032      |
|                     | 100 - 200 mm  | 7,5 - 9,5 bar                    | 716.16557 | 032      |
|                     | 200 - 250 mm  | 6,5 - 8,5 bar                    | 716.16558 | 032      |
|                     | 250 - 300 mm  | 6,5 - 8,5 bar                    | 716.16559 | 032      |
| Heating nozzles     | 3 - 100 mm    |                                  | 716.16550 | 032      |
|                     | 100 - 300 mm  |                                  | 716.16560 | 032      |

# MACHINE CUTTING NOZZLES

FOR PROPANE, METHANE, MAPP, ETHYLENE

Standard gas-mixing, standard nozzles with 30° cone, for QUICKY and MSID/MSIDZ

GRICUT 8281-PMYE

| Type                              | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------------------------|---------------|----------------------------------|-----------|----------|
| GRICUT 8281-PMYE                  | 3 - 10 mm     | 2,0 - 3,0 bar                    | 716.16038 | 032      |
|                                   | 10 - 25 mm    | 3,0 - 4,5 bar                    | 716.16039 | 032      |
|                                   | 25 - 40 mm    | 4,0 - 5,0 bar                    | 716.16040 | 032      |
|                                   | 40 - 60 mm    | 4,5 - 5,5 bar                    | 716.16041 | 032      |
|                                   | 60 - 100 mm   | 5,0 - 6,0 bar                    | 716.16042 | 032      |
|                                   | 100 - 200 mm  | 5,5 - 6,5 bar                    | 716.16043 | 032      |
|                                   | 200 - 300 mm  | 6,5 - 8,5 bar                    | 716.16044 | 032      |
| Heating nozzles propane / methane | 3 - 100 mm    |                                  | 716.15988 | 032      |
|                                   | 100 - 300 mm  |                                  | 716.15989 | 032      |
| Heating nozzles Mapp / ethylene   | 3 - 100 mm    |                                  | 716.15978 | 032      |
|                                   | 100 - 300 mm  |                                  | 716.15979 | 032      |

for fuel propane, methane, Mapp, ethylene



Gas-mixing nozzles with mixers, for machine cutting torches MSID/MSIDZ

GRICUT 8281-PM

| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| GRICUT 8281-PM  | 200 - 500 mm  | 6,0 - 12,0 bar                   | 716.16400 | 006      |
| Heating nozzles | 200 - 500 mm  |                                  | 546.12340 | 006      |

for fuel propane, methane



# MACHINE CUTTING NOZZLES

FOR PROPANE, METHANE, MAPP, ETHYLENE

## GRICUT 8280-PMYE

High-speed gas-mixing nozzles with 30° cone, for machine torches MSID/MSIDZ



| Type             | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|------------------|---------------|----------------------------------|-----------|----------|
| GRICUT 8280-PMYE | 3 - 7 mm      | 1,0 - 5,0 bar                    | 716.16071 | 032      |
|                  | 7 - 15 mm     | 5,0 - 7,0 bar                    | 716.16072 | 032      |
|                  | 15 - 25 mm    | 5,5 - 7,0 bar                    | 716.16073 | 032      |
|                  | 25 - 40 mm    | 5,0 - 7,0 bar                    | 716.16074 | 032      |
|                  | 40 - 60 mm    | 6,0 - 7,5 bar                    | 716.16075 | 032      |
|                  | 60 - 100 mm   | 6,0 - 8,5 bar                    | 716.16076 | 032      |
|                  | 100 - 200 mm  | 7,5 - 9,5 bar                    | 716.16077 | 032      |
|                  | 200 - 250 mm  | 6,5 - 8,5 bar                    | 716.16078 | 032      |
|                  | 250 - 300 mm  | 6,5 - 8,5 bar                    | 716.16079 | 032      |
|                  | 3 - 100 mm    |                                  | 716.16080 | 032      |
| Heating nozzle   | 100 - 300 mm  |                                  | 716.16100 | 032      |

for fuel propane, methane, Mapp, ethylene

## GRICUT 8480-PMYE

Heavy-duty post mixing nozzles for machine cutting torch MSAP



| Type             | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|------------------|---------------|----------------------------------|-----------|----------|
| GRICUT 8480-PMYE | 100 - 300 mm  | 8,0 - 9,0 bar                    | 716.16415 | 006      |
|                  | 300 - 450 mm  | 8,0 - 9,0 bar                    | 716.16416 | 006      |
|                  | 450 - 600 mm  | 8,0 - 9,0 bar                    | 716.16417 | 006      |

for fuel propane, methane, Mapp, ethylene

## GRICUT 5281-PMY

Heavy-duty post mixing nozzles for machine cutting torch MSD



| Type            | Cutting range | Cutting O <sub>2</sub> -pressure | Art. No.  | Cat. No. |
|-----------------|---------------|----------------------------------|-----------|----------|
| GRICUT 5281-PMY | 100 - 300 mm  | 3,0 - 7,0 bar                    | 716.50100 | 006      |
|                 | 300 - 450 mm  | 7,0 - 9,0 bar                    | 716.50101 | 006      |
|                 | 450 - 600 mm  | 8,0 - 12,0 bar                   | 716.50209 | 006      |
| Heating nozzles | 100 - 450 mm  |                                  | 716.50236 | 006      |
|                 | 450 - 600 mm  |                                  | 716.50211 | 006      |

for propane, methane, Mapp

for the protection of working equipment

DGN

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 25 bar                    | 0.463.386 | 041      |
| Oxygen   | G 3/8" RH  | 25 bar                    | 0.463.387 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.385 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, Hydrogen 3,5 bar



for the protection of working equipment

DG 91 N

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 15 bar                    | 0.463.831 | 041      |
| Oxygen   | G 3/8" RH  | 15 bar                    | 0.463.832 | 041      |
| Oxygen   | G 1/2" RH  | 15 bar                    | 0.463.833 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.829 | 041      |
| Fuel gas | G 1/2" LH  | 5,0 bar                   | 0.463.830 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar



for the protection of working equipment

DS 1000

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 15 bar                    | 0.463.835 | 041      |
| Oxygen   | G 3/8" RH  | 15 bar                    | 0.463.836 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.834 | 041      |

Safety units: FA, NV, TV, PV  
with gas after flow cut-off

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



for the protection of working equipment

DS 2000

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 15 bar                    | 0.463.838 | 041      |
| Oxygen   | G 3/8" RH  | 15 bar                    | 0.463.839 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.837 | 041      |

Safety units: FA, NV, TV, PV  
with gas after flow cut-off

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar



## DEMAX 5

to protect cylinder regulators and take-off points



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1" RH    | 15 bar                    | 0.463.841 | 041      |
| Fuel gas | G 1" RH    | 5,0 bar                   | 0.463.840 | 041      |

Safety units: FA, NV, TV  
for high flow rates

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar

for connection required see next page

## SIMAX 3

to protect cylinder regulators and take-off points



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1" RH    | 15 bar                    | 0.463.843 | 041      |
| Fuel gas | G 1" RH    | 5,0 bar                   | 0.463.842 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar

for connection required see next page

## SIMAX 5

to protect cylinder regulators and take-off points



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1" RH    | 15 bar                    | 0.463.845 | 041      |
| Fuel gas | G 1" RH    | 5,0 bar                   | 0.463.844 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar

for connection required see next page

## SIMAX 8

to protect cylinder regulators and take-off points



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1" RH    | 15 bar                    | 0.463.847 | 041      |
| Fuel gas | G 1" RH    | 5,0 bar                   | 0.463.846 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 4,0 bar

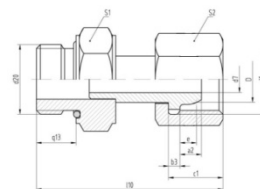
b for connection required see next page

## Inlet connection nipple for non-flammable gasses

DEMAX / SIMAX

| Connection on DEMAX / SIMAX | Hose connection | Art. No.  | Cat. No. |
|-----------------------------|-----------------|-----------|----------|
| G 1"                        | G 3/8" RH       | 0.463.410 | 041      |
| G 1                         | G 1/2" RH       | 0.463.408 | 041      |
| G 1                         | G 3/4" RH       | 0.463.380 | 041      |
| G 1                         | G 1" RH         | 0.463.339 | 041      |

Including O ring seal between connection nipple and safety unit

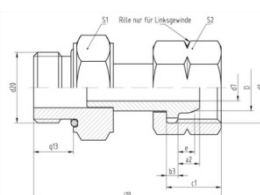


## Inlet connection nipple for flammable gasses

DEMAX / SIMAX

| Connection on DEMAX / SIMAX | Hose connection | Art. No.  | Cat. No. |
|-----------------------------|-----------------|-----------|----------|
| G 1"                        | G 3/8" LH       | 0.463.411 | 041      |
| G 1                         | G 1/2" LH       | 0.463.409 | 041      |
| G 1                         | G 3/4" LH       | 0.463.338 | 041      |
| G 1                         | G 1" LH         | 0.463.340 | 041      |

Including O ring seal between connection nipple and safety unit

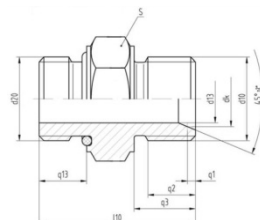


## Outlet connection nipple for non-flammable gasses

DEMAX / SIMAX

| Connection on DEMAX / SIMAX | Hose connection | Art. No.  | Cat. No. |
|-----------------------------|-----------------|-----------|----------|
| G 1"                        | G 3/8" RH       | 0.463.414 | 041      |
| G 1                         | G 1/2" RH       | 0.463.412 | 041      |
| G 1                         | G 3/4" RH       | 0.463.341 | 041      |
| G 1                         | G 1" RH         | 0.463.343 | 041      |

Including O ring seal between connection nipple and safety unit

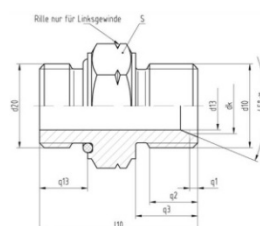


## Outlet connection nipple for flammable gasses

DEMAX / SIMAX

| Connection on DEMAX / SIMAX | Hose connection | Art. No.  | Cat. No. |
|-----------------------------|-----------------|-----------|----------|
| G 1"                        | G 3/8" LH       | 0.463.415 | 041      |
| G 1                         | G 1/2" LH       | 0.463.413 | 041      |
| G 1                         | G 3/4" LH       | 0.463.342 | 041      |
| G 1                         | G 1" LH         | 0.463.344 | 041      |

Including O ring seal between connection nipple and safety unit



## ATEX

for individual cylinder regulators and take-off points



| Model   | Gas type | Connection               | Operating pressure (max.) | Art. No.  | Cat. No. |
|---------|----------|--------------------------|---------------------------|-----------|----------|
| ATEX 10 | Fuel gas | G 3/8" F LH / G 3/8" LH" | 5,0                       | 0.463.848 | 041      |
| ATEX 20 | Fuel gas | G 3/8" F LH / G 3/8" LH" | 5,0                       | 0.463.849 | 041      |

Safety units: FA, NV, TV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar

## IGG

for the protection of working equipment



| Gas type | Connection              | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|-------------------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH - M 11 x 1 RH | 10                        | 770.20114 | 041      |
| Fuel gas | G 3/8" LH - M 14 x 1 LH | 5,0                       | 770.20115 | 041      |

Safety units: FA, NV, integrated protection in handle STARLET 1302 S

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar

## GT

for the protection of working equipment



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 20 bar                    | 0.463.856 | 041      |
| Oxygen   | G 3/8" RH  | 20 bar                    | 0.463.394 | 041      |
| Oxygen   | G 3/8" RH  | 20 bar                    | 0.463.382 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.628 | 041      |
| Fuel gas | G 3/8" LH  | 5,0 bar                   | 0.463.391 | 041      |

Safety units: FA, NV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar

## TT

to be fitted into hose lines



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | 3,2        | 20                        | 0.462.853 | 041      |
| Oxygen   | 6,3        | 20                        | 0.463.854 | 041      |
| Oxygen   | 9,0        | 20                        | 0.463.855 | 041      |
| Fuel gas | 3,2        | 5,0                       | 0.462.850 | 041      |
| Fuel gas | 6,3        | 5,0                       | 0.463.851 | 041      |
| Fuel gas | 9,0        | 5,0                       | 0.463.852 | 041      |

Safety units: FA, NV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



for the protection of working equipment

DGN-DK

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 15                        | 0.463.827 | 041      |
| Oxygen   | G 3/8" RH  | 15                        | 0.463.828 | 041      |
| Fuel gas | G 3/8" LH  | 5,0                       | 0.463.826 | 041      |

Safety units: FA, NV, TV  
with hose coupling

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



for the protection of working equipment

DKST

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | 6,3        | 15                        | 0.463.863 | 041      |
| Oxygen   | 9,0        | 15                        | 0.463.864 | 041      |
| Fuel gas | 9,0        | 5,0                       | 0.463.862 | 041      |

Safety units: FA, NV  
reverse flow direction

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



for the protection of working equipment

DKSG

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 20                        | 0.463.866 | 041      |
| Oxygen   | G 3/8" RH  | 20                        | 0.463.867 | 041      |
| Fuel gas | G 3/8" LH  | 5,0                       | 0.463.865 | 041      |

Safety units: FA, NV  
with hose coupling

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



for the protection of working equipment

GG

| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 20                        | 0.463.389 | 041      |
| Oxygen   | G 3/8" RH  | 20                        | 0.463.390 | 041      |
| Fuel gas | G 3/8" LH  | 5,0                       | 0.463.388 | 041      |

Safety units: FA, NV

Fuel gas Operating pressure (max.): Acetylene 1,5 bar, hydrogen 3,5 bar



## QUICKY

### Safety devices for machine cutting torches



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | M 7 x 0,75 | 15                        | 716.11130 | 041      |
| Fuel gas | M 7 x 0,75 | 5,0                       | 716.11129 | 041      |

Fuel gas Operating pressure (max.): acetylene 1,5 bar, hydrogen 3,5 bar

## MS / MSID / MSAP

### Safety devices for machine cutting torches



| Gas type                         | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------------------------------|------------|---------------------------|-----------|----------|
| Heating oxygen                   | G 1/4"     | 15                        | 0.647.583 | 041      |
| Cutting oxygen                   | G 3/8"     | 15                        | 0.647.584 | 041      |
| Fuel gas                         | G 3/8" LH  | 5,0                       | 0.346.364 | 041      |
| Ignition gas mixture for MS 3450 | G 1/4" LH  | 5,0                       | 716.51362 | 041      |
| Ignition gas mixture for MS 3452 | G 3/8" LH  | 5,0                       | 716.11048 | 041      |
| Ignition gas mixture for MS 3452 | G 1/4" LH  | 5,0                       | 716.11173 | 041      |

Fuel gas Operating pressure (max.): acetylene 1,5 bar, hydrogen 3,5 bar

## MSD

### Safety devices for machine cutting torches



| Gas type       | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------------|------------|---------------------------|-----------|----------|
| Heiz-Oxygen    | G 3/8"     | 15                        | 0.647.584 | 041      |
| Schneid-Oxygen | G 1/2"     | 15                        | 0.346.020 | 041      |
| Fuel gas       | G 3/8" LH  | 5,0                       | 0.346.364 | 041      |

Fuel gas Operating pressure (max.): acetylene 1,5 bar, hydrogen 3,5 bar

## DG 91 UA

### Safety devices for machine cutting torches



| Gas type | Connection | Operating pressure (max.) | Art. No.  | Cat. No. |
|----------|------------|---------------------------|-----------|----------|
| Oxygen   | G 1/4" RH  | 15                        | 0.463.372 | 041      |
| Oxygen   | G 3/8" RH  | 15                        | 0.463.373 | 041      |
| Oxygen   | G 1/2" RH  | 15                        | 0.463.734 | 041      |
| Fuel gas | G 3/8" LH  | 5,0                       | 0.463.857 | 041      |
| Fuel gas | G 1/2" LH  | 5,0                       | 0.463.858 | 041      |

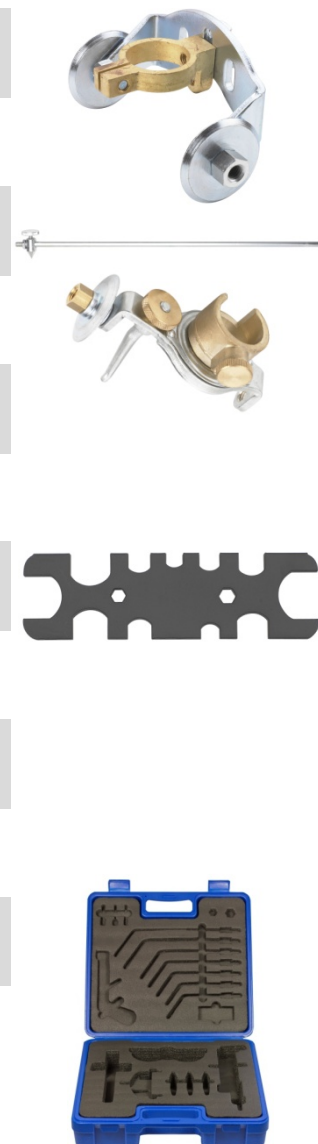
Safety units: FA, NV  
reverse flow direction

Fuel gas Operating pressure (max.): acetylene 1,5 bar, hydrogen 3,5 bar

## SPARE PARTS AND ACCESSORIES FOR MULTI-PURPOSE TORCH SYSTEM AND HAND TORCHES

Spare party for multi-purpose torch systems and hand torch

| Description              | Torch system                                                                  | Art. No.  | Cat. No. |
|--------------------------|-------------------------------------------------------------------------------|-----------|----------|
| Torch carriage           | STARLET/STAR/NORM/STARCUT/<br>ESSEN<br>to be fixed at torch head              | 716.00485 | 024      |
| Torch carriage           | STARLIGHT and cutting nozzles<br>ANME / PNME<br>to be fixed at cutting nozzle | 716.06660 | 024      |
| Radius bar               | for circular cuts Ø 140 to 800 mm                                             | 716.00699 | 038      |
| Ball bearing radius bar  | for circular cuts Ø 20 to 120 mm<br>only for STARLET-A attachments            | 716.00584 | 024      |
| Ball bearing radius bar  | for circular cuts Ø 20 to 120 mm                                              | 320.61000 | 038      |
| Radius bar               | for straight cutting attachments                                              | 551.22300 | 004      |
| Torch spanner            |                                                                               | 186.58074 | 038      |
| Steel case               | for STARLET / STAR                                                            | 716.01842 | 038      |
| Steel case *WS*          | for STARLET *WS* kit                                                          | 716.02649 | 038      |
| Steel case *WS*          | for STARLIGHT *WS* kit                                                        | 716.06344 | 038      |
| Plastic case with insert | for STARLIGHT assembly kit                                                    | 716.06442 | 038      |



## ACCESSORIES FOR MACHINE CUTTING TORCHES

### Euro-connections for the connection of hoses to the torch handle



| Description                        | Gas type | Connection | Hose tail | Art. No.  | Cat. No. |
|------------------------------------|----------|------------|-----------|-----------|----------|
| DKG                                | Fuel gas | G 3/8" LH  | 8 mm      | 0.463.305 | 041      |
|                                    | Oxygen   | G 1/4"     | 6,3 mm    | 0.463.306 | 041      |
| DKT                                | Fuel gas | G 3/8" LH  | 8 mm      | 0.463.308 | 041      |
|                                    | Fuel gas | G 3/8" LH  | 6,3 mm    | 0.463.360 | 041      |
|                                    | Oxygen   | G 1/4"     | 6,3 mm    | 0.463.309 | 041      |
| Coupling pin D 1<br>with union nut | Fuel gas |            | 8 mm      | 0.463.299 | 041      |
|                                    | Oxygen   |            | 6,3 mm    | 0.463.300 | 041      |

### Euro-connections for the connection of hoses to the pressure regulator



| Description      | Gas type | Connection | Hose tail | Art.-Nr.  | Kat.-Nr. |
|------------------|----------|------------|-----------|-----------|----------|
| DKD              | Fuel gas | G 3/8" LH  |           | 0.463.311 | 041      |
|                  | Oxygen   | G 1/4"     |           | 0.463.312 | 041      |
| Coupling pin D 2 | Fuel gas |            | 8 mm      | 0.463.302 | 041      |
|                  | Fuel gas |            | 6,3 mm    | 0.463.365 | 041      |
|                  | Oxygen   |            | 6,3 mm    | 0.463.303 | 041      |

### Accessories for machine cutting torches



| Description                |                  | Art. No.    | Cat. No. |
|----------------------------|------------------|-------------|----------|
| Heating oxygen             | G 1/4", DN 6     | 718.00500   | 005      |
| Cutting oxygen             | G 3/8", DN 9     | 718.00501   | 005      |
| Fuel gas                   | G 3/8" LH, DN 9  | 718.00502   | 005      |
| Hose nipple with union nut | DN 6 / G 1/4"    | 666.12317 * | 000      |
| Hose nipple with union nut | DN 9 / G 3/8"    | 666.12319 * | 000      |
| Hose nipple with union nut | DN 9 / G 3/8" LH | 666.12320 * | 000      |

Adjusting valves for machine cutting torches MS / MSID / MSAP



|                            |                 |             |     |
|----------------------------|-----------------|-------------|-----|
| Heating oxygen             | G 3/8", DN 9    | 718.00501   | 005 |
| Cutting oxygen             | G 1/2", DN 11   | 718.03691   | 000 |
| Fuel gas                   | G 3/8" LH, DN 9 | 718.00502   | 005 |
| Hose nipple with union nut | DN 9 / G 3/8"   | 666.12319 * | 000 |
| Hose nipple with union nut | DN 11 / G 3/8"  | 666.12321 * | 000 |
| Hose nipple with union nut | DN 9 / 3/8" LH  | 666.12320 * | 000 |

Adjusting valves for machine cutting torch MSD

## ACCESSORIES FOR MACHINE CUTTING TORCHES

### Accessories for machine cutting torches

| Description    |           | Art. No.    | Cat. No. |
|----------------|-----------|-------------|----------|
| Heating oxygen | G 1/4"    | 718.25530 * | 004      |
| Cutting oxygen | G 3/8"    | 718.25532 * | 004      |
| Fuel gas       | G 3/8" LH | 718.25534 * | 004      |
| Gauge seal     |           | 452.08020   | 008      |



Tees for pressure test gauges, for machine torches MS / MSID / MSD

|                             |                                           |           |     |
|-----------------------------|-------------------------------------------|-----------|-----|
| Oxygen                      | Scale 0 - 16 bar / working range 10 bar   | 0.640.477 | 008 |
|                             | Scale 0 - 25 bar / working range 16 bar   | 0.640.109 | 008 |
| Acetylene                   | Scale 0 - 2,5 bar / working range 1,5 bar | 0.640.101 | 008 |
| Mapp /<br>propane / methane | Scale 0 - 4 bar / working range 2,5 bar   | 0.640.069 | 004 |
| Propane /<br>methane / Mapp | Scale 0 - 2,5 bar / working range 1,5 bar | 0.640.070 | 004 |



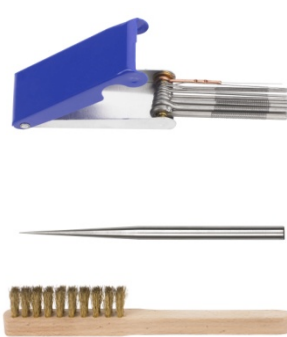
Pressure test gauges for machine cutting torches MS / MSID / MSID / MSAP / MSD according to DIN 8549, housing diam. 63 mm, connection G 1/4":

|                                                |             |     |
|------------------------------------------------|-------------|-----|
| Nozzle seat milling tool<br>for types MS / MSZ | 0.939.005 * | 000 |
| Nozzle seat milling tool<br>for types MSID     | 0.912.001 * | 000 |



Tools

## ACCESSORIES FOR CUTTING NOZZLES

| Accessories for cutting nozzles                                                  |                                                         |                            |             |          |
|----------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------|-------------|----------|
|  | Description                                             |                            | Art. No.    | Cat. No. |
|                                                                                  | Nozzle cleaner set complete for hand cutting nozzles    | with slot cleaners, in box | 052.29201   | 038      |
|                                                                                  | Nozzle cleaner set complete for machine cutting torches | with slot cleaners, in box | 716.01085   | 004      |
|                                                                                  | Nozzle cleaning drill 0,3                               | for thin sheet nozzles     | 716.03330   | 008      |
|                                                                                  | Nozzle cleaning needle conical                          | for cutting channel        | 716.01879   | 004      |
|                                                                                  | Nozzle cleaning brush                                   |                            | 052.04020   | 004      |
|                                                                                  | Nozzle box                                              | for cutting nozzles        | 666.16243 * | 008      |
|                                                                                  | Nozzle box insert sheet                                 | for ring/slot nozzles      | 050.02920 * | 008      |
|                                                                                  |                                                         | for block nozzles          | 050.02940 * | 008      |
|                                                                                  | for gas-mixing nozzles                                  | 050.02950 *                | 008         |          |
|                                                                                  |                                                         | for VEDURA 1210-A / 1215-A | 716.02548 * | 008      |

## HOSE LINES AND ACCESSORIES

### Oxygen hose acc. to EN 559 (DIN 8541), identification color blue

| Dimensions   | Identification | Torch system           | Art. No.    | Cat. No. |
|--------------|----------------|------------------------|-------------|----------|
| DN 3,2 x 1,8 | Messer         | MINITHERM              | 0.140.079   | 043      |
| DN 6,3 x 3,5 | Messer         | STARLET                | 051.00510 * | 043      |
| DN 6 x 5     | Messer         | STAR / STARCUT / ESSEN | 051.01010   | 043      |
| DN 8 x 3,5   | Messer         |                        | 0.469.033   | 000      |
| DN 9 x 5,5   | Messer         | SUPERTHERM             | 051.01060   | 043      |
| DN 11 x 5,5  | Messer         |                        | 051.01200 * | 043      |



### Fuel gas hoses acc. to EN 559 (DIN 8541), identification color red

| Dimensions   | Identification | Torch system                     | Art. No.    | Cat. No. |
|--------------|----------------|----------------------------------|-------------|----------|
| DN 3,2 x 1,8 | Messer         | MINITHERM                        | 0.140.078   | 043      |
| DN 6,3 x 3,5 | Messer         | STARLET                          | 051.00010 * | 043      |
| DN 8 x 3,5   | Messer         | STARLET / STAR / STARCUT / ESSEN | 051.00040   | 043      |
| DN 11 x 5,5  | --             | SUPERTHERM                       | 051.00050   | 043      |
| DN 12 x 5,5  | --             |                                  | 051.00130 * | 043      |



### Propane hoses acc. to DIN 4815, identification color orange

| Dimensions   | Identification | Torch system                     | Art. No.  | Cat. No. |
|--------------|----------------|----------------------------------|-----------|----------|
| DN 6,3 x 3,5 | Messer         | STARLET                          | 0.462.863 | 043      |
| DN 8 x 3,5   | Messer         | STARLET / STAR / STARCUT / ESSEN | 0.462.859 | 043      |
| DN 10 x 4    | Messer         | SUPERTHERM                       | 0.462.860 | 043      |



### Twin hose oxygen / fuel gas acc. to EN 559 (DIN 8541), identification blue / red

| Dimensions              | Identification             | Torch system                     | Art. No.  | Cat. No. |
|-------------------------|----------------------------|----------------------------------|-----------|----------|
| DN 6,3 x 5 / DN 9 x 3,5 | Oxygen blue / fuel gas red | STARLET / STAR / STARCUT / ESSEN | 0.462.147 | 043      |



## HOSE LINES AND ACCESSORIES

Oxy-fuel hoses complete acc to EN 559 (DIN 8541) and DIN 4815



| <i>Hose length</i> | <i>Oxygen G 1/4"</i> | <i>Fuel gas G 3/8" LH</i> | <i>Art. No.</i> | <i>Cat. No.</i> |
|--------------------|----------------------|---------------------------|-----------------|-----------------|
| 5 m                | DN 6 x 5             | DN 8 x 3,5                | 0.469.013 *     | 043             |
| 10 m               | DN 6 x 5             | DN 8 x 3,5                | 0.469.014       | 043             |
| 20 m               | DN 6 x 5             | DN 8 x 3,5                | 0.469.015 *     | 043             |
| 40 m               | DN 6 x 5             | DN 8 x 3,5                | 0.469.016 *     | 043             |
| 5 m                | DN 6 x 3,5           | DN 6 x 3,5                | 0.469.017 *     | 043             |
| 10 m               | DN 6 x 3,5           | DN 6 x 3,5                | 0.469.018       | 043             |
| 20 m               | DN 6 x 3,5           | DN 6 x 3,5                | 0.469.019 *     | 043             |
| 40 m               | DN 6 x 3,5           | DN 6 x 3,5                | 0.469.020 *     | 043             |

Hose dimension PN 40, acc. to EN 560



| <i>Hose dimension</i> | <i>Union nut</i> | <i>For hoses on torch system</i>       | <i>Art. No.</i> | <i>Cat. No.</i> |
|-----------------------|------------------|----------------------------------------|-----------------|-----------------|
| DN 3,2                | G 1/4"           | MINITHERM                              | 716.01160       | 008             |
| DN 3,2                | G 3/8"           | MINITHERM                              | 716.01161       | 008             |
| DN 4                  | G 1/4"           | STARLET                                | 471.40820 *     | 008             |
| DN 4                  | G 3/8"           | STARLET                                | 471.40890 *     | 008             |
| DN 6                  | G 1/4"           | ALL (apart from MINITHERM, SUPERTHERM) | 700.50050       | 008             |
| DN 6                  | G 3/8"           | STARLET                                | 700.50060       | 008             |
| DN 6                  | G 1/2"           |                                        | 749.114         | 039             |
| DN 8                  | G 3/8"           | ALL (apart from MINITHERM, SUPERTHERM) | 471.40770       | 008             |
| DN 9                  | G 3/8"           | SUPERTHERM                             | 471.40090       | 008             |
| DN 9                  | G 1/2"           |                                        | 749.111         | 039             |
| DN 11                 | G 1/2"           | SUPERTHERM                             | 471.40230       | 004             |
| DN 13                 | G 1/2"           |                                        | 702.03581       | 006             |



## HOSE LINES AND ACCESSORIES

### Union nut for hose nipples PN 40, acc. to EN 560

| Hose dimension | Spanner width | For hoses on torch system              | Art. No.  | Cat. No. |
|----------------|---------------|----------------------------------------|-----------|----------|
| G 1/4"         | 17 mm         | ALL (apart from SUPERTHERM)            | 700.50030 | 008      |
| G 1/4" LH      | 17 mm         |                                        | 471.30250 | 004      |
| G 3/8"         | 19 mm         | ALL (except MINITHERM)                 | 700.50130 | 008      |
| G 3/8" LH      | 19 mm         | ALL (apart from MINITHERM, SUPERTHERM) | 700.50040 | 008      |
| G 1/2"         | 24 mm         |                                        | 286.256   | 000      |
| G 1/2" LH      | 24 mm         | SUPERTHERM                             | 286.327   | 000      |



### Hose connection PN 40, acc. to EN 560

| Hose dimension | Union nut | Art. No.  | Cat. No. |
|----------------|-----------|-----------|----------|
| DN 8           | G 1/4"    | 471.40751 | 008      |
| DN 9           | G 1/4"    | 471.41701 | 008      |
| DN 11          | G 3/8"    | 471.42101 | 039      |
| DN 11          | G 3/8" LH | 471.40401 | 004      |



### Hose coupling (double nipple), acc. to EN 560

| Hose dimension | Art. No.  | Cat. No. |
|----------------|-----------|----------|
| DN 6           | 471.41130 | 043      |
| DN 8           | 0.462.949 | 043      |
| DN 9           | 471.41140 | 043      |



### Double thread connection

| Dimension        | Gas type | Art. No.  | Cat. No. |
|------------------|----------|-----------|----------|
| G 1/4" - DN 6    | Oxygen   | 718.26006 | 043      |
| G 3/8" LH - DN 9 | Fuel gas | 718.26008 | 043      |



## HOSE LINES AND ACCESSORIES



### Hose clamps for oxyfuel hoses

| Type / description                                  | Clamping range                           | Art. No.               | Cat. No.   |
|-----------------------------------------------------|------------------------------------------|------------------------|------------|
| <b>Mini hose clamp</b><br>for MINITHERM hoses       | 7 - 8,2 mm                               | 0.800.487              | 043        |
| <b>Clamping wrench KL</b><br>for mini hose clamps   |                                          | 0.994.052              | 043        |
| <b>ASS hose clamp</b><br>for joining hoses in pairs | Plastic 2 x 16 mm<br>Aluminium 2 x 13 mm | 052.05341<br>0.462.552 | 043<br>043 |

## GAS ECONOMISER, CYLINDER TROLLEYS

### Gas economiser with ignition flame and safety suspension, for MINITHERM

| Type / description        | Gas type                      | Art. No.  | Cat. No. |
|---------------------------|-------------------------------|-----------|----------|
| Mechanical gas economiser | propane / methane / Mapp etc. | 716.07015 | 004      |
|                           | acetylene                     | 716.07014 | 004      |



### Gas economiser with ignition flame and safety suspension, for STARLET / STARLIGHT / STAR

| Type / description                  | Gas type                      | Art. No.  | Cat. No. |
|-------------------------------------|-------------------------------|-----------|----------|
| Mechanical gas economiser           | acetylene                     | 716.00140 | 004      |
|                                     | propane / methane / Mapp etc. | 716.00139 | 004      |
| gas economiser with safety shutdown | acetylene                     | 716.07025 | 004      |
|                                     | propane / methane / Mapp      | 716.07026 | 004      |



Gas supply will be interrupted automatically when the torch is placed onto the hook, and will be switched on automatically when the torch is removed from the hook.

### Gas economiser with electrical ignition, for MINITHERM, STARLET, STARLIGHT, STAR

| Type / description                       | Connection voltage | Art. No.    | Cat. No. |
|------------------------------------------|--------------------|-------------|----------|
| Mechanical gas economiser                | 24 V, 50 / 60 Hz   | 716.05756 * | 039      |
| for acetylene / propane / methane / Mapp | 230 V, 50 / 60 Hz  | 716.05755   | 039      |

with table stand, electrical switch box with ON/OFF button, adjustable timing elements for setting the ignition time and the oxygen after-flow time



## AUXILIARIES

### Gas igniter

*Type / description*

*Art. No.*

*Cat. No.*



#### Gas igniter

staple brass frame, wing nut nickel plated, with friction wheel and guard rail

052.02900

043

Spare flints 3 x 20 mm

052.02710

043

### Electrical automatic table lighter

*Type / description*

*Art. No.*

*Cat. No.*



#### Electrical automatic table lighter

Battery powered one handed ignition box with easily accessible ignition spark button and main on/off switch  
Batteries required: 2x Monocell 1,5V (not included in supply)

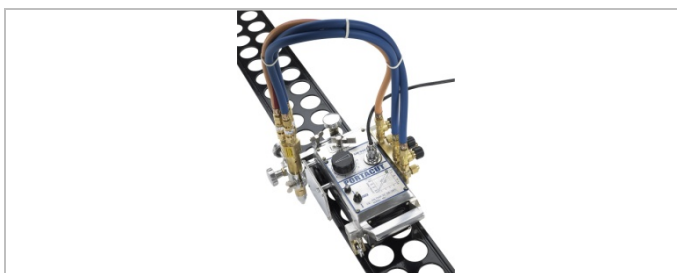
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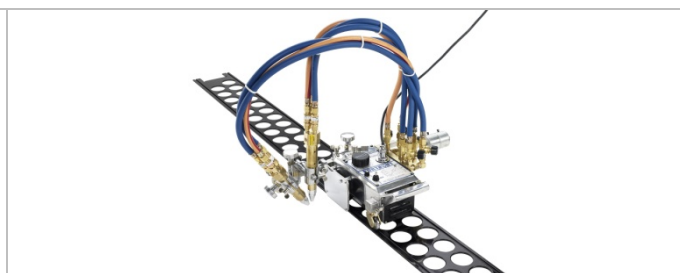
# PORTABLE FLAME CUTTING MACHINES

## HAND FLAME CUTTING MACHINE PORTACUT

| Description            | Drive                                     | Connected voltage | Speed range     | Cutting thickness | Strip cutting width | Weight |
|------------------------|-------------------------------------------|-------------------|-----------------|-------------------|---------------------|--------|
| With one cutting torch | Condensor induction motor, 230 V, 50/60Hz | 230V, 50/60Hz     | 50 - 800 mm/min | 3 - 300 mm        | 80 - 300 mm         | 9,5kg  |



mit einem Schneidbrenner



mit zwei Schneidbrennern

## FOR ACETYLEN

| Description              | Art. No.  | Cat. No. |
|--------------------------|-----------|----------|
| with one cutting torch   | 716.51782 | 006      |
| with two cutting torches | 716.11443 | 006      |

without runner

## FOR PROPAN OR ERDGAS

| Description              | Art. No.  | Cat. No. |
|--------------------------|-----------|----------|
| with one cutting torch   | 716.51783 | 006      |
| with two cutting torches | 716.11444 | 006      |

without runner

## DÜSENMISCHEND

| Description              | Art. No.  | Cat. No. |
|--------------------------|-----------|----------|
| with one cutting torch   | 716.51784 | 006      |
| with two cutting torches | 716.11445 | 006      |

without runner

# PORTABLE FLAME CUTTING MACHINES

## GUIDE RAIL



| Description    | Art. No.  | Cat. No. |
|----------------|-----------|----------|
| Runner 1200 mm | 716.51790 | 006      |
| Runner 1800 mm | 716.52018 | 006      |

## CIRCLWE TRAMMEL



| Description                                              | Art. No.  | Cat. No. |
|----------------------------------------------------------|-----------|----------|
| Trammel bar for circular cuts $\varnothing 30 - 2400$ mm | 716.51793 | 006      |