



Star Heating Torch Inserts – Modular Design

Product Presentation | Tony Low

OVERVIEW

With begin of 2019 Messer Cutting Systems completed their existing product range of STAR heating inserts with stainless-steel versions. Those are marked with ES behind the product size name.

Due to a new modular design, it is possible to get different length of heating inserts by just changing the mixing pipe.

The product will be supplied with standard length and different mixing pipe length can be ordered optional. The length can be changed easily by screwing in the new mixing pipes.

The following presentation will show the article numbers of standard heating inserts including their length in stainless steel version. Furthermore, it will show the suitable mixing inserts and their effect on the overall length compared to the standard version.

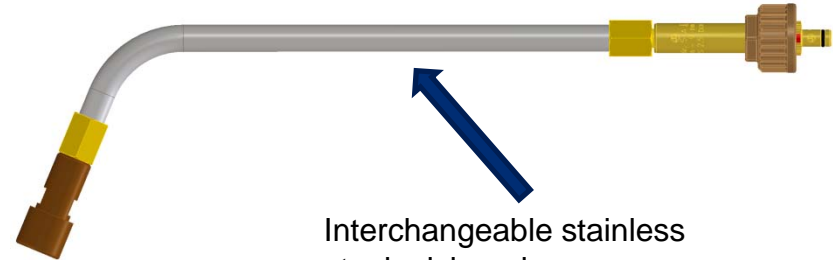


HEATING TORCH INSERT Type : STAR FB-A *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR FB-A heating insert with multi-jets flame outlet nozzle, interchangeable stainless steel mixing-pipe to fit STAR series handle type
For use with **fuel gas Acetylene**

Applications:

- Pre and post heating when welding and flame cutting
- Brazing and soft soldering
- Forming, annealing and flanging
- Straightening, shrinking, stretching
- Buring-off, drying, tinning



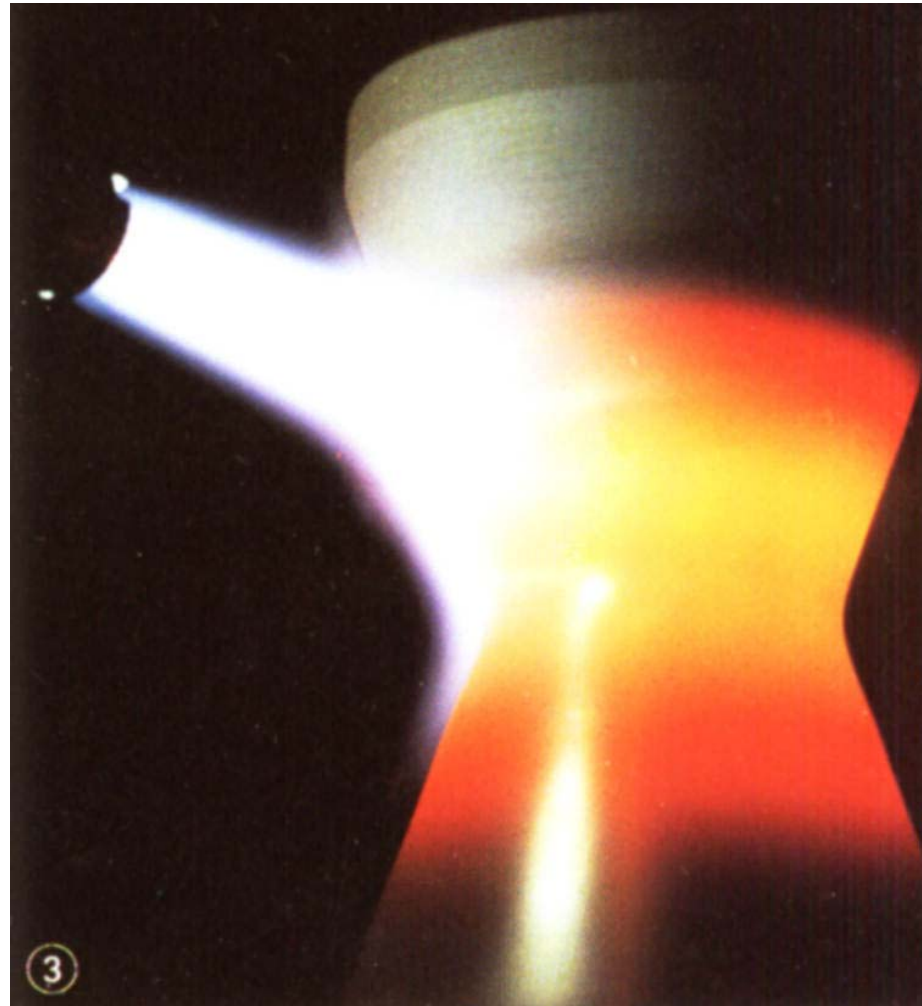
Interchangeable stainless steel mixing-pipe

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

| Type / Size | Art.-No.: | Standard Length |
|-----------------|-----------|-----------------|
| Star FB-A 5 ES | 71607845 | 370 |
| Star FB-A 6 ES | 71607846 | 390 |
| Star FB-A 7 ES | 71607847 | 425 |
| Star FB-A 8 ES | 71607848 | 435 |
| Star FB-A 9 ES | 71607298 | 940 |
| Star FB-A 10 ES | 71607299 | 1140 |

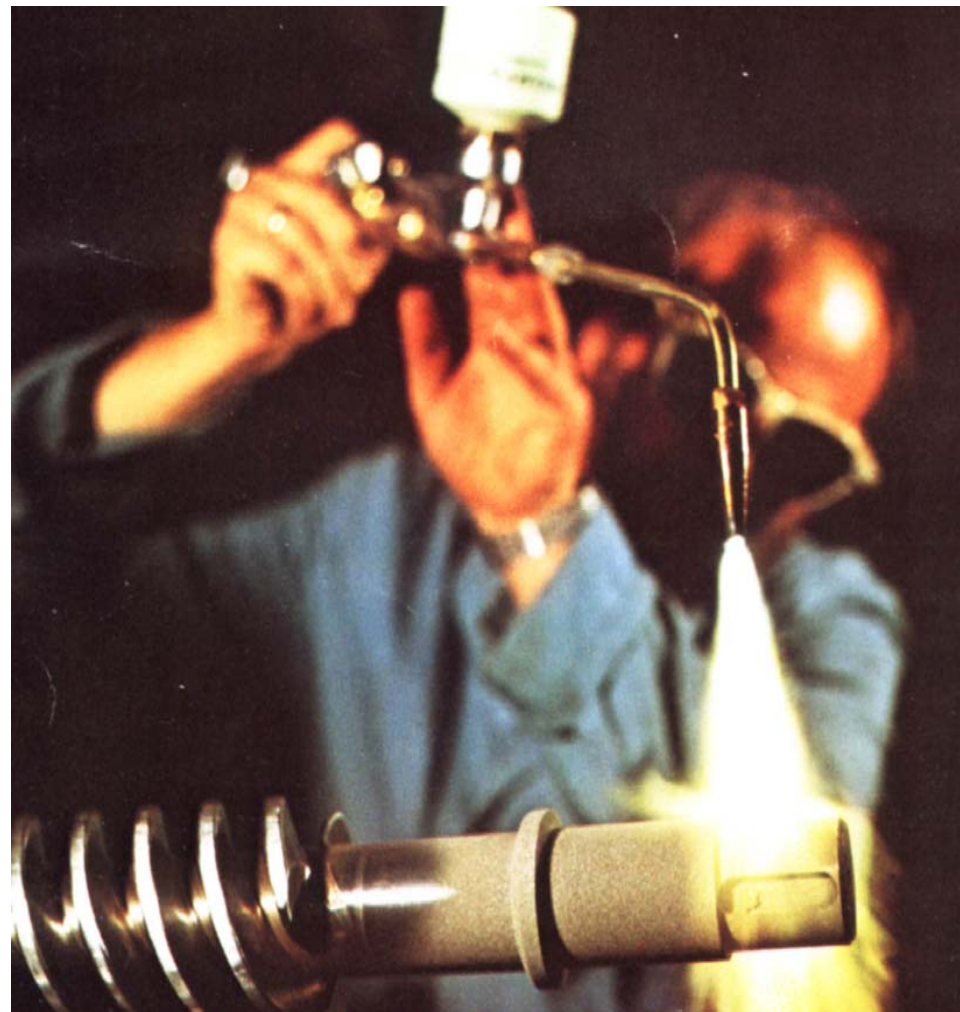
Flame sintering of spray metal powder

Heating torch for sintering wear-resistant CrNi BoSi-coat by a temperature of 1050 °C



FLAME SPRAYING PROCESS

Flame spraying for coating the bearing pin of a transport snail with wear resistant material



STAR FB-A HEATING NOZZLES OPERATING DATA

Version:

- Low noise copper multi-jet nozzle (chromed) with two rings of flame outlet jets and additional central jet from size 8.
- Noise level under 85 dB with optimum flame setting

Heating nozzle STAR FB-A 9

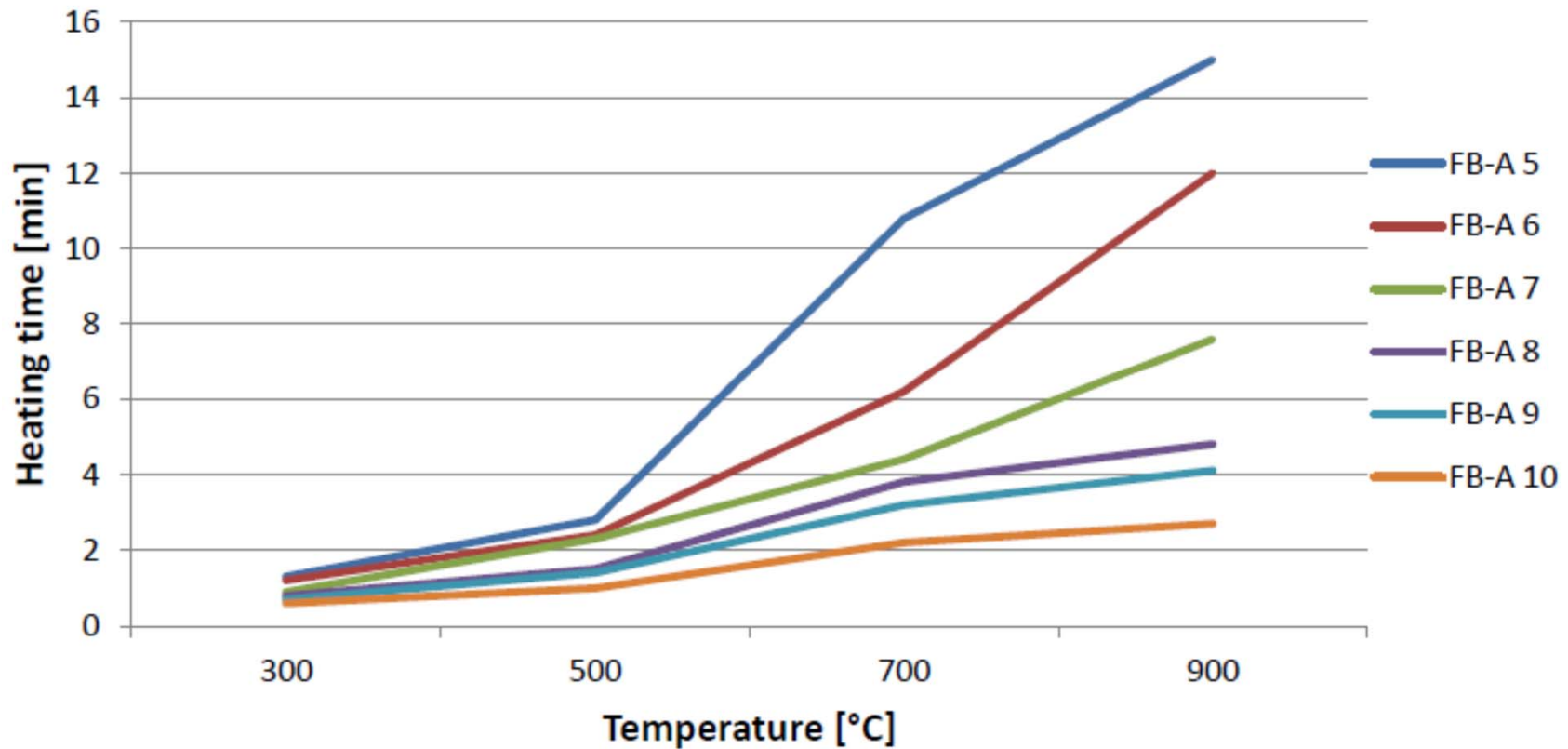


Operating data for gas type: Acetylene (A) / Oxygen

| Type / size | Pressure [bar] | | Consumption [m ³ /h] | |
|-------------|----------------|---------------|---------------------------------|---------------|
| | Oxygen | Acetylene (A) | Oxygen | Acetylene (A) |
| FB-A 5 | 2,5 – 4,0 | 0,2 | 0,75 – 1,10 | 0,68 – 1,00 |
| FB-A 6 | 2,5 – 4,0 | 0,2 | 1,15 – 1,66 | 1,05 – 1,50 |
| FB-A 7 | 2,5 – 4,0 | 0,2 | 1,63 – 2,30 | 1,48 – 2,10 |
| FB-A 8 | 2,5 – 4,0 | 0,4 | 2,30 -3,32 | 2,10 – 3,00 |
| FB-A 9 | 2,5 – 4,0 | 0,4 – 0,7 | 3,90 – 5,00 | 3,55 – 5,00 |
| FB-A 10 | 2,5 – 4,0 | 0,6 – 0,7 | 4,50 – 6,10 | 4,10 – 5,50 |

STAR FB-A HEATING PERFORMANCE

Heating of 15mm thick material

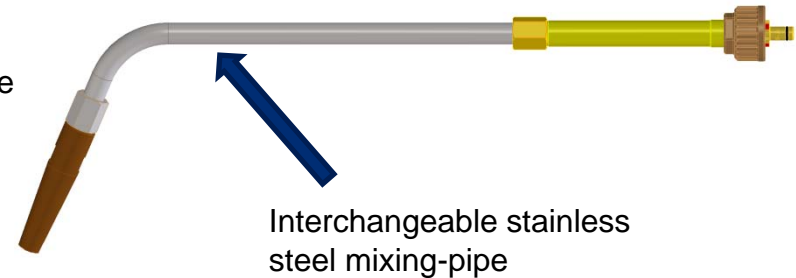


HEATING TORCH INSERT Type : STAR F-A *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR F-A heating insert with multi-jets flame outlet nozzle, interchangeable stainless steel mixing-pipe to fit STAR series handle
For use with **fuel gas Acetylene**

Applications

- Welding, brazing and soft soldering
- Pre and post heating when welding and flame cutting
- Forming, annealing and flanging
- Straightening, shrinking, stretching
- Buring-off, drying, tinning



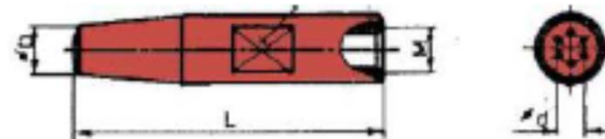
| Type / Size | Art.-No.: | Standard Length |
|---------------|-----------|-----------------|
| Star F-A 8 ES | 71607839 | 440 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR F-A HEATING NOZZLE OPERATING DATA

Version:

- Multi-jet nozzle made of copper with a ring of flame outlets



Operating data for gas type: Acetylene (A) / Oxygen

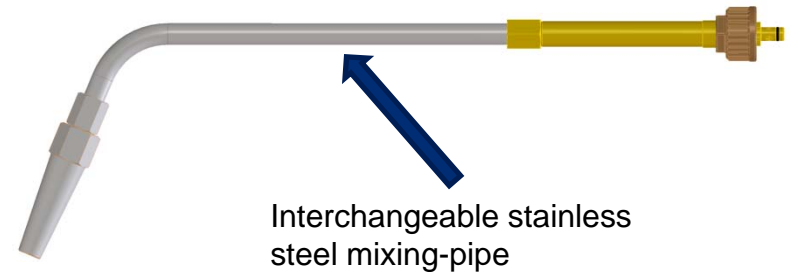
| Type | Pressure [bar] | | Consumption [m ³] | |
|-------|----------------|---------------|-------------------------------|---------------|
| | Oxygen | Acetylene (A) | Oxygen | Acetylene (A) |
| F-A 8 | 2,5 – 3,0 | 0,3 | 2,3 – 2,7 | 2,1 – 2,5 |

HEATING TORCH INSERT Type : STAR Z-PM *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR Z-PM heating insert with central flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
For **fuel gases propane and methane**

Applications:

- Flame straightening – thanks to the central flame outlet with stabilise jets concentrating to a point make it particularly suitable for flame straightening.
- Point or line heating of non-ferrous metals, glass & quartz glass
- Shaping of steels and non-ferrous metals
- Melting, heating and flanging
- Brazing and soft soldering
- Deburring of lead crystal



| Type / Size | Art.-No.: | Standard Length |
|-----------------|-----------|-----------------|
| Star Z-PM 8 ES | 71607842 | 445 |
| Star Z-PM 10 ES | 71607843 | 450 |
| Star Z-PM 12 ES | 71607844 | 450 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR Z-PM HEATING NOZZLES OPERATING DATA

Nozzle Z-PM

Version:

- One-piece chrome plated copper heating nozzle with central jet and flame stabilization jets



Operating data for gas type: Propane (P), Methane (M) / Oxygen

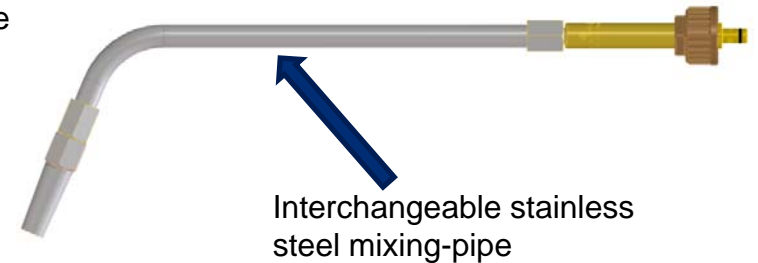
| Type | Pressure [bar] | | Consumption [m³/h] | | Pressure [bar] | | Consumption [m³/h] | |
|---------|----------------|-------------|--------------------|-------------|----------------|-------------|--------------------|-------------|
| | Oxygen | Propane (P) | Oxygen | Propane (P) | Oxygen | Methane (M) | Oxygen | Methane (M) |
| Z-PM 8 | 1,0 – 5,0 | 0,1 – 0,3 | 2,5 – 6,5 | 0,67 – 1,6 | 1,0 – 4,0 | 0,1 – 0,2 | 2,5 – 5,1 | 1,85 – 3,8 |
| Z-PM 10 | 1,5 – 5,0 | 0,1 – 0,6 | 5,7 – 14,0 | 1,52 – 3,73 | 1,5 – 4,0 | 0,1 – 0,4 | 5,7 – 11,0 | 4,2 – 8,1 |
| Z-PM 12 | 2,5 – 8,5 | 0,4 – 1,6 | 11,0 – 33,0 | 2,83 – 8,80 | 2,5 – 4,0 | 0,5 – 1,2 | 11,0 – 21,0 | 8,1 – 15,5 |

HEATING TORCH INSERT Type : STAR Z-PMY *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR Z-PMY heating insert with central flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
For **fuel gases propane, methane and mapp**

Applications:

- Flame straightening
- Point or line heating of non-ferrous metals, glass & quartz glass
- Shaping of steels and non-ferrous metals
- Melting, heating and flanging
- Brazing and soft soldering
- Deburring of lead crystal



| Type / Size | Art.-No.: | Standard Length |
|------------------|-----------|-----------------|
| Star Z-PMY 6 ES | 71607836 | 395 |
| Star Z-PMY 8 ES | 71607837 | 440 |
| Star Z-PMY 10 ES | 71607838 | 440 |
| Star Z-PMY 12 ES | 71607290 | 880 |
| Star Z-PMY 14 ES | 71607291 | 1095 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR Z-PMY HEATING NOZZLES OPERATING DATA

Version:

- One-piece chrome plated copper heating nozzle with central jet and flame stabilization jets



Operating data for gas type: Propane (P), Methane (M) / Oxygen

| Type | Pressure [bar] | | Consumption [m ³ /h] | | Pressure [bar] | | Consumption [m ³ /h] | |
|----------|----------------|-------------|---------------------------------|-------------|----------------|-------------|---------------------------------|-------------|
| | Oxygen | Propane (P) | Oxygen | Propane (P) | Oxygen | Methane (M) | Oxygen | Methane (M) |
| Z-PMY 6 | 1,0 – 3,5 | 0,1 – 0,3 | 1,3-3,0 | 0,3 – 0,8 | 1,0 – 3,5 | 0,2 – 0,4 | 1,3–3,0 | 1,0-2,2 |
| Z-PMY 8 | 1,0 – 5,0 | 0,1 – 0,5 | 1,9-6,0 | 0,5 – 0,8 | 1,0 – 5,0 | 0,2 – 0,5 | 1,9– 6,0 | 1,4-4,4 |
| Z-PMY 10 | 1,5 – 5,0 | 0,3 – 1,0 | 5,7-14,0 | 1,5 – 3,7 | 1,5 – 5,0 | 0,3 – 1,0 | 5,7–14,0 | 4,2-10,4 |
| Z-PMY 12 | 2,5 – 8,5 | 0,5 – 1,7 | 13,0-35,0 | 3,4 – 9,2 | 2,5 – 5,0 | 0,5 – 1,7 | 13,0–21,0 | 9,6-16,2 |
| Z-PMY 14 | 4,0 – 9,0 | 0,3 – 1,2 | 18,0-40,0 | 4,6 – 10,3 | 4,0 – 7,0 | 0,8 – 1,8 | 18,0–31,0 | 13,3-22,9 |

STAR Z-PMY HEATING NOZZLES OPERATING DATA

Version:

- One-piece chrome plated copper heating nozzle with central jet and flame stabilization jets



Operating data for gas type: MAPP (Y) / Oxygen

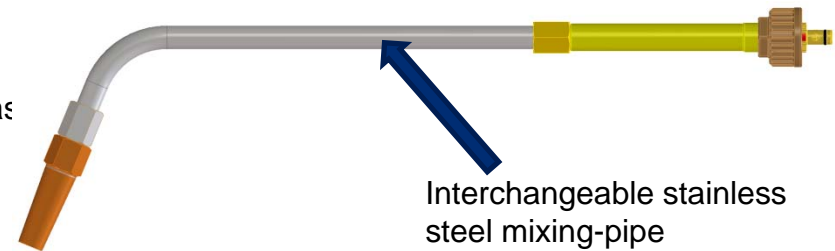
| Type | Pressure [bar] | | Consumption [m³/h] | |
|----------|----------------|-----------|--------------------|------------|
| | Oxygen | MAPP (Y) | Oxygen | MAPP (Y) |
| Z-PMY 6 | 1,0 – 3,5 | 0,1 – 0,3 | 1,3 - 3,0 | 0,43 – 1,0 |
| Z-PMY 8 | 1,0 – 5,0 | 0,1 – 0,5 | 1,9 - 6,0 | 0,6 – 2,0 |
| Z-PMY 10 | 1,5 – 5,0 | 0,3 – 1,0 | 5,7 - 14,0 | 1,9 – 4,7 |
| Z-PMY 12 | 2,5 – 8,5 | 0,5 – 1,7 | 13,0 - 35,0 | 4,3 – 11,7 |
| Z-PMY 14 | 4,0 – 9,0 | 0,2– 1,1 | 18,0 - 40,0 | 6,0 – 13,3 |

HEATING TORCH INSERT Type : STAR Z-E *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR Z-E heating insert with central flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
With special pressure nozzle for use with **fuel gas Ethylene**

Applications:

- Flame straightening
- Point or line heating of non-ferrous metals, glass & quartz glass
- Shaping of steels and non-ferrous metals
- Melting, heating and flanging
- Brazing and soft soldering
- Deburring of lead crystal



| Type / Size | Art.-No.: | Standard Length |
|----------------|-----------|-----------------|
| Star Z-E 8 ES | 71607857 | 440 |
| Star Z-E 10 ES | 71607858 | 440 |
| Star Z-E 12 ES | 71607859 | 440 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR Z - E HEATING NOZZLES OPERATING DATA

Version:

- One-piece chrome plated copper heating nozzle with central jet and flame stabilization jets



Operating data for gas type: MAPP (Y) / Oxygen

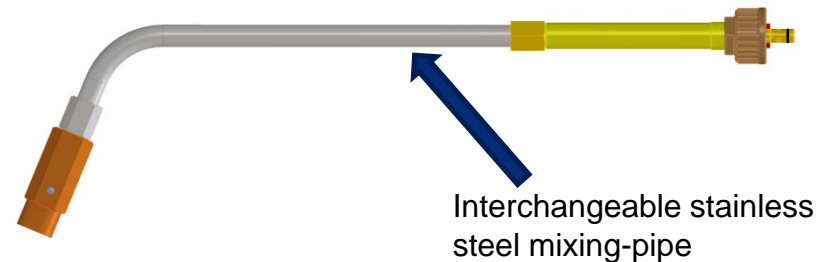
| Type | Pressure [bar] | | Consumption [m ³ /h] | |
|--------|----------------|--------------|---------------------------------|--------------|
| | Oxygen | Ethylene (E) | Oxygen | Ethylene (E) |
| Z-E 8 | 2,0 – 2,5 | 0,5 – 0,8 | 3,0 – 4,0 | 1,8 – 2,1 |
| Z-E 10 | 2,0 – 2,5 | 0,5 – 0,8 | 4,0 – 5,0 | 2,3 – 2,8 |
| Z-E 12 | 2,0 – 2,5 | 0,5 – 0,8 | 5,0 - 6,0 | 2,7 – 3,2 |

HEATING TORCH INSERT Type : STAR F-PMY *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR F-PMY heating insert with multi-jets flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
For **fuel gases propane, methane and mapp**

Applications:

- Heating surface area
- Forming of steels and non-ferrous materials
- Melting and annealing
- Flanging and flame straightening
- Brazing and soft soldering
- Pre and Post heating when welding and flame cutting



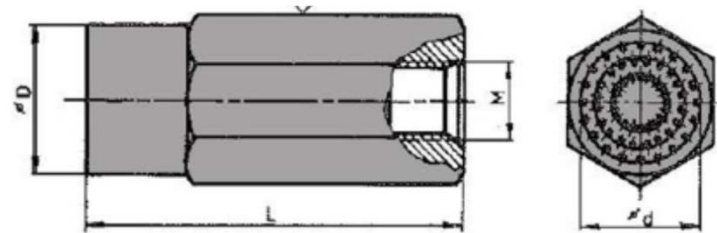
| Type / Size | Art.-No.: | Standard Length |
|------------------|-----------|-----------------|
| Star F-PMY 8 ES | 71607854 | 435 |
| Star F-PMY 10 ES | 71607855 | 440 |
| Star F-PMY 12 ES | 71607856 | 440 |
| Star F-PMY 14 ES | 71607292 | 885 |
| Star F-PMY 12 ES | 71607856 | 1090 |

| Art.-No. of Mixing-Pipes: | Increase of standard-length in mm |
|---------------------------|-----------------------------------|
| 71651709 | + 139 |
| 71651710 | + 444 |
| 71651711 | + 647 |

STAR F-PMY HEATING NOZZLES OPERATING DATA

Version:

- Chrome plated copper heating nozzle with concentric slit rings flame outlet
- Star F-PMY 8 – One ring
- Star F-PMY 10 – Two rings
- Star F-PMY 12 – Three rings
- Star F-PMY 14 – Four rings
- Star F-PMY 16 – Five rings



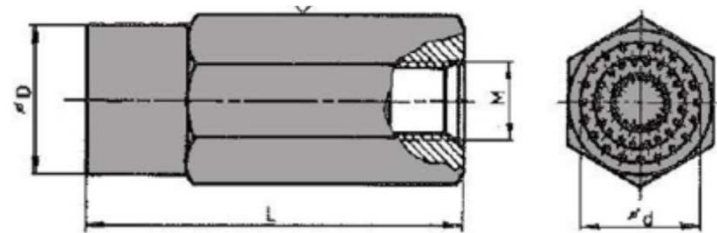
Operating data for gas type: Propane (P), Methane (M) / Oxygen

| Type | Pressure [bar] | | Consumption [m ³ /h] | | Pressure [bar] | | Consumption [m ³ /h] | |
|----------|----------------|-------------|---------------------------------|-------------|----------------|-------------|---------------------------------|-------------|
| | Oxygen | Propane (P) | Oxygen | Propane (P) | Oxygen | Methane (M) | Oxygen | Methane (M) |
| F-PMY 8 | 1,0 – 5,0 | 0,1 – 0,5 | 1,9-6,0 | 0,5-1,6 | 1,0 – 5,0 | 0,2 – 0,5 | 1,9-6,0 | 1,4-4,4 |
| F-PMY 10 | 1,5 – 5,0 | 0,3 – 1,0 | 5,7-14,0 | 1,5-3,7 | 1,5,5,0 | 0,3 – 1,0 | 5,7-14,0 | 4,2-10,4 |
| F-PMY 12 | 2,5 – 8,5 | 0,5 – 1,7 | 13,0-35,0 | 3,4-9,2 | 2,5-8,5 | 0,5 – 1,7 | 13,0-35,0 | 9,6-25,9 |
| F-PMY 14 | 4,0 – 9,0 | 0,3 – 1,2 | 18,0-40,0 | 4,6-10,3 | 4,0-7,0 | 0,8 – 2,0 | 18,0-31,0 | 13,3-22,9 |
| F-PMY 16 | 9,0 – 12,0 | 1,2 – 1,8 | 40,0-52,0 | 10,3-13,3 | 9,0-12,0 | 1,2 – 1,8 | 40,0–52,0 | 25,0-32,5 |

STAR F-PMY HEATING NOZZLES OPERATING DATA

Version:

- Chrome plated copper heating nozzle with concentric slit rings flame outlet
- Star F-PMY 8 – One ring
- Star F-PMY 10 – Two rings
- Star F-PMY 12 – Three rings
- Star F-PMY 14 – Four rings
- Star F-PMY 16 – Five rings



Operating data for gas type: MAPP (Y) / Oxygen

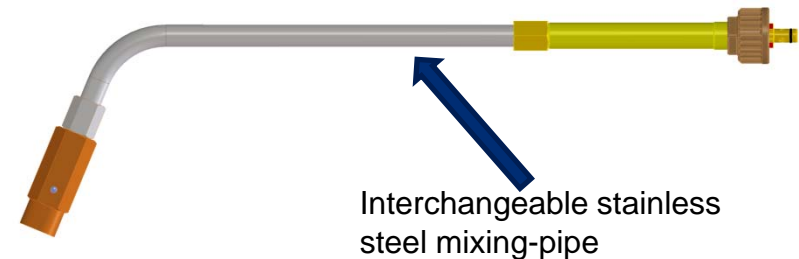
| Type | Pressure [bar] | | Consumption [m³/h] | |
|----------|----------------|-----------|--------------------|-------------|
| | Oxygen | MAPP (Y) | Oxygen | MAPP (Y) |
| F-PMY 8 | 1,0 – 5,0 | 0,1 – 0,5 | 1,9 – 6,0 | 0,6 – 2,0 |
| F-PMY 10 | 1,5 – 5,0 | 0,3 – 1,0 | 5,7 – 14,0 | 1,9 – 4,7 |
| F-PMY 12 | 2,5 – 8,5 | 0,5 – 1,7 | 13,0 – 35,0 | 4,3 – 11,7 |
| F-PMY 14 | 4,0 – 9,0 | 0,2 – 1,1 | 18,0 – 40,0 | 5,1 – 11,4 |
| F-PMY 16 | 9,0 – 12,0 | 1,0 – 1,4 | 40,0 – 52,0 | 11,4 – 14,6 |

HEATING TORCH INSERT Type : STAR F-E *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR F-E heating insert with multi-jets flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
For **fuel gas ethylene**

Applications:

- Heating surface area
- Forming of steels and non-ferrous materials
- Melting and annealing
- Flanging and flame straightening
- Brazing and soft soldering
- Pre and Post heating when welding and flame cutting



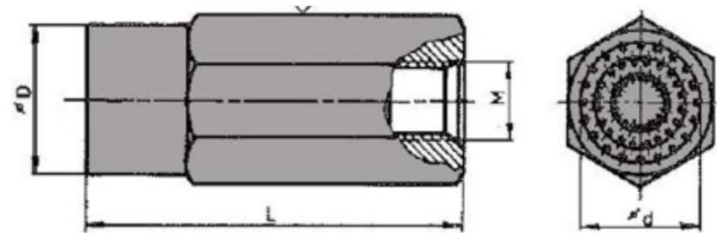
| Type / Size | Art.-No.: | Standard Length |
|----------------|-----------|-----------------|
| Star F-E 10 ES | 71607851 | 440 |
| Star F-E 12 ES | 71607852 | 440 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR F-E HEATING NOZZLES OPERATING DATA

Version:

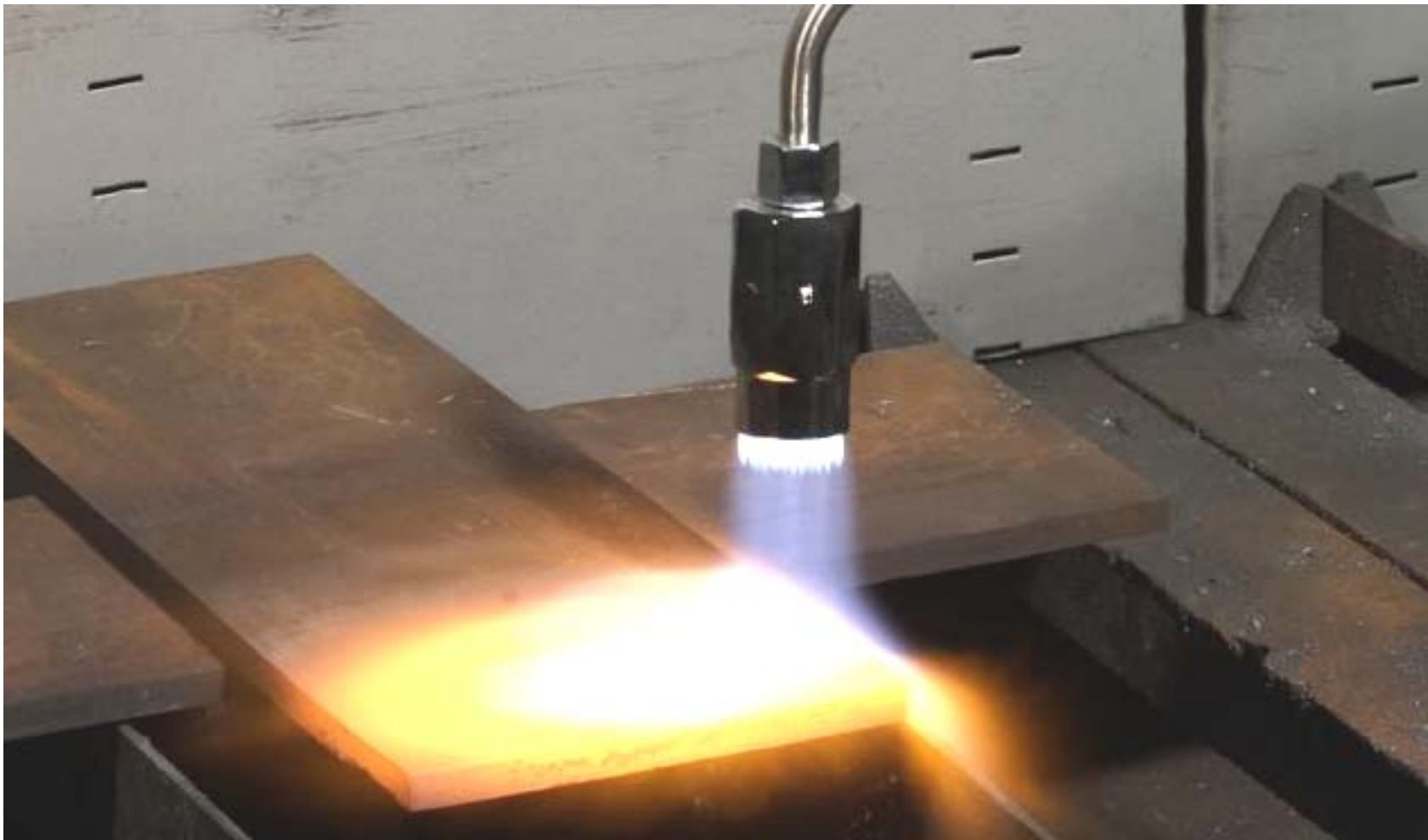
- Chrome plated copper heating nozzle with concentric slit rings flame outlet
- Star F-E 8 – One ring
- Star F-E 10 – Two rings
- Star F-E 12 – Three rings



Operating data for gas type: Ethylene (E) / Oxygen

| Type | Pressure [bar] | | Consumption [m ³ /h] | |
|--------|----------------|--------------|---------------------------------|--------------|
| | Oxygen | Ethylene (E) | Oxygen | Ethylene (E) |
| F-E 8 | 2,0 – 2,5 | 0,5 – 0,8 | 3,0 – 3,6 | 1,7 – 2,0 |
| F-E 10 | 2,0 – 2,5 | 0,5 – 0,8 | 4,0 – 5,0 | 2,3 – 2,8 |
| F-E 12 | 2,0 – 2,5 | 0,5 – 0,8 | 5,0 – 6,0 | 2,8 – 3,2 |

STAR[®] Heavy Duty Heating Inserts Series F-PMY



STAR[®] Heavy Duty Heating Inserts Series F-PMY

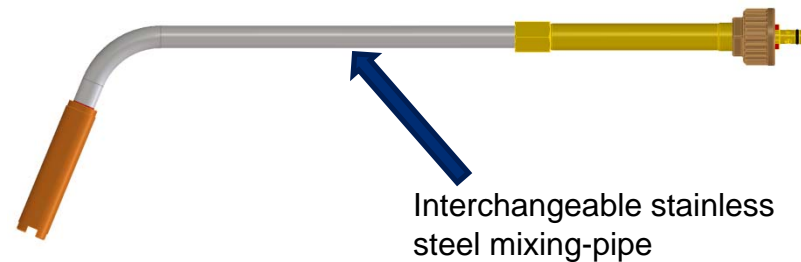


HEATING TORCH INSERT Type : STAR HF-PMY *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR HF-PMY heating insert with multi-jets flame outlet,
interchangeable stainless steel mixing-pipe to fit STAR series handle type
For fuel gases propane, methane and mapp

Applications:

- Forming of steels and non-ferrous metals
- Melting and annealing
- Flanging and flame straightening
- Brazing and soft soldering
- Pre and Post heating when welding and flame cutting



| Type / Size | Art.-No.: | Standard Length |
|-------------------|-----------|-----------------|
| Star HF-PMY 12 ES | 71607849 | 440 |
| Star HF-PMY 13 ES | 71607850 | 435 |
| Star HF-PMY 14 ES | 71607294 | 880 |
| Star HF-PMY 15 ES | 71607295 | 1085 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR HF-PMY HEATING NOZZLES OPERATING DATA

Version:

- Multi-jets heating nozzle, body made of brass and jacket copper
- 1 flame outlet jet ring for size HF-PMY 12
- 2 flame outlet jet rings for size HF-PMY 13 - 15
- Stand-off spacer integrated into nozzle jacket to maintain minimum flame gap



Operating data for gas type: Propane (P), Methane (M) / Oxygen

| Type/Size | Pressure [bar] | | Consumption [m ³ /h] | | Pressure [bar] | | Consumption [m ³ /h] | |
|-----------|----------------|-------------|---------------------------------|-------------|----------------|-------------|---------------------------------|-------------|
| | Oxygen | Propane (P) | Oxygen | Propane (P) | Oxygen | Methane (M) | Oxygen | Methane (M) |
| HF-PMY 12 | 1,5 - 5,0 | 0,5 | 4,9-12,0 | 1,3-3,2 | 1,5 - 5,0 | 0,5 | 4,9-12,0 | 3,1-7,5 |
| HF-PMY 13 | 1,5 - 6,5 | 0,5 | 7,7-23,0 | 2,1-6,1 | 1,5 - 6,5 | 0,5 | 7,7-23,0 | 4,6-14,4 |
| HF-PMY 14 | 2,0 - 7,0 | 0,5 | 13,2-35,3 | 3,5-9,4 | 2,0 - 7,0 | 0,5 | 13,2-35,3 | 8,3-22,1 |
| HF-PMY 15 | 2,5 - 8,0 | 0,5 | 21,2-54,2 | 5,7-14,5 | 2,5 - 8,0 | 0,5 | 21,2-54,2 | 13,3-33,9 |

STAR HF-PMY HEATING NOZZLES OPERATING DATA

Version:

- Multi-jets heating nozzle, body made of brass and jacket copper
- 1 flame outlet jet ring for size HF-PMY 12
- 2 flame outlet jet rings for size HF-PMY 13 - 15
- Stand-off spacer integrated into nozzle jacket to maintain minimum flame gap



Operating data for gas type: MAPP (Y) / Oxygen

| Type | Pressure [bar] | | Consumption [m³/h] | |
|-----------|----------------|----------|--------------------|------------|
| | Oxygen | MAPP (Y) | Oxygen | MAPP (Y) |
| HF-PMY 12 | 1,5 – 5,0 | 0,5 | 4,9 – 12,0 | 1,8 – 4,4 |
| HF-PMY 13 | 1,5 – 6,5 | 0,5 | 7,7 – 23,0 | 2,9 – 8,5 |
| HF-PMY 14 | 2,0 – 7,0 | 0,5 | 13,2 – 35,3 | 4,9 – 13,1 |
| HF-PMY 15 | 2,5 – 8,0 | 0,5 | 21,2 – 54,2 | 7,8 – 20,1 |

STAR[®] Heavy Duty Heating Inserts Series F-PMY



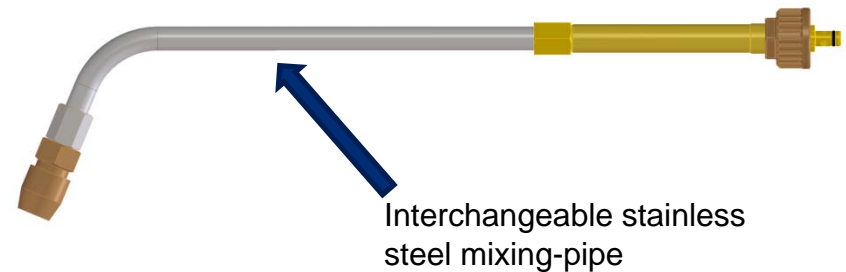
HEATING TORCH INSERT Type : STAR F-PM *ES* WITH STAINLESS-STEEL MIXING-PIPE

STAR F-PM heating insert with multi-jets radial flame outlet slots arrangement, interchangeable stainless steel mixing-pipe to fit STAR series handle type

For **fuel gases propane, methane and mapp**

Applications:

- Flame straightening – thanks to the radial flame outlet slots concentrating to a point make it particularly suitable for flame straightening
- Forming of steels and non-ferrous metals
- Melting and annealing
- Flanging and flame straightening
- Brazing and soft soldering
- Pre and Post heating when welding and flame cutting



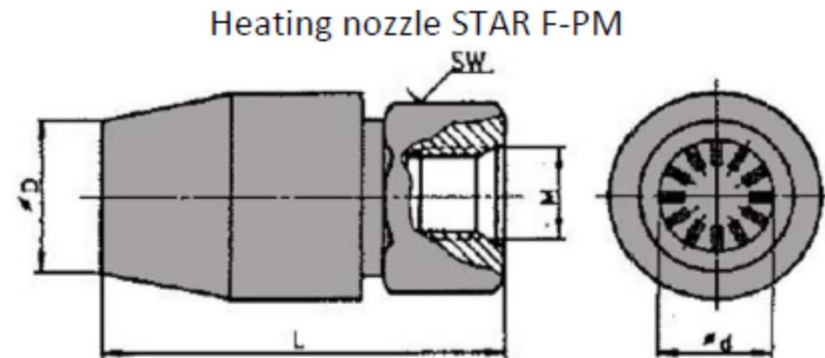
| Size | Art.-No.: | Standard Length |
|-------|-----------|-----------------|
| 8 ES | 71607860 | 430 |
| 10 ES | 71607861 | 430 |
| 12 ES | 71607862 | 440 |

| Art.-No. of Mixing-Pipes: | Standard-length in mm |
|---------------------------|-----------------------|
| 71651708 | 267 |
| 71651709 | 406 |
| 71651710 | 711 |
| 71651711 | 914 |

STAR F-PM HEATING NOZZLES OPERATING DATA

Version:

- Chrome plated copper heating nozzle with radial flame outlet slots arrangement

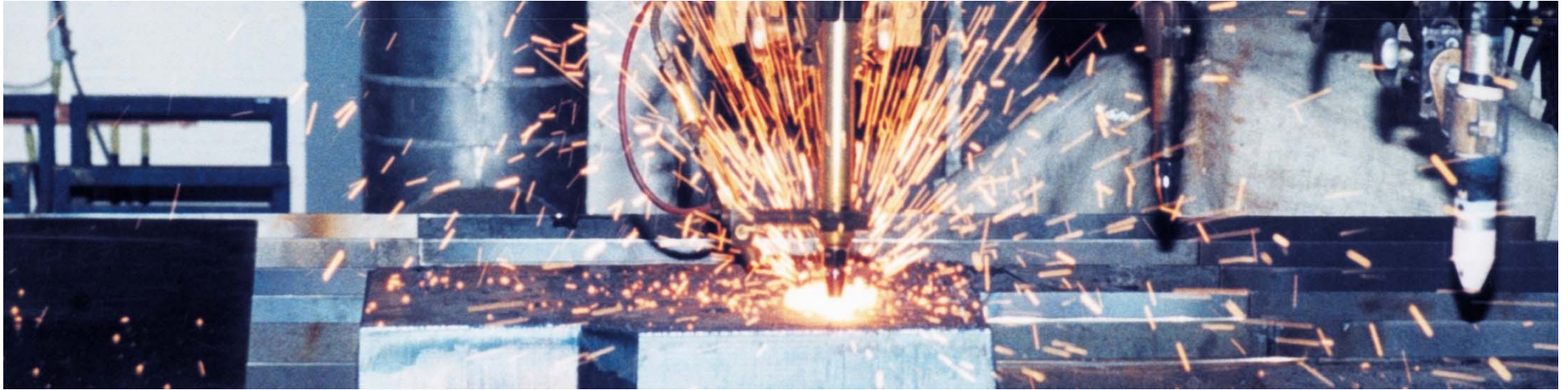


Operating data for gas type: Propane (P), Methane (M) / Oxygen

| Type/Size | Pressure [bar] | | Consumption [m³/h] | | Pressure [bar] | | Consumption [m³/h] | |
|-----------|----------------|-------------|--------------------|-------------|----------------|-------------|--------------------|-------------|
| | Oxygen | Propane (P) | Oxygen | Propane (P) | Oxygen | Methane (M) | Oxygen | Methane (M) |
| F-PM 8 | 1,0 - 5,0 | 0,1 - 0,6 | 2,5 - 6,0 | 0,67-1,60 | 1,0 - 4,0 | 0,2 - 0,5 | 2,5 - 5,1 | 1,85-3,8 |
| F-PM 10 | 1,5 - 5,0 | 0,3 - 1,6 | 5,7 - 14,0 | 1,52-3,73 | 1,5 - 4,0 | 0,4 - 1,0 | 5,7 - 11,0 | 4,20-8,10 |
| F-PM 12 | 2,5 - 8,5 | 0,5 - 2,0 | 11,0-33,0 | 2,83-8,80 | 2,5 - 5,0 | 0,8 - 1,6 | 11,0- 21,0 | 8,10-15,5 |

STAR[®] Heavy Duty Heating Inserts Series F-PM





MESSER 
Cutting Systems

Thank you for your attention!

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