

GRIFLAM®
HEATING TECHNOLOGY
MESSER CUTTING SYSTEMS



Please contact us, if you require the following for our GRIFLAM® heating products:

- To receive contact details for your local distributor or salesman: **E-Mail**
- To receive price information or a quotation: **E-Mail**
- To receive spare part list: **E-Mail**
- To report a repair or a complaint: **E-Mail**
- To receive in depth technical information for special heating processes: **E-Mail**
- To receive our GRIFLAM® catalogue in printed form: **E-Mail**

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The manufacturer reserves the right to make alterations to products without notice.

The GRIFLAM® product range includes a large number of heating torches for all heating applications and heating processes.

Catalogue GRIFLAM® Heating Technology

Art. No.: 0816109

Examples:

° C	Application
2200	Melting of quartz glass
1800	Shaping quartz glass
1100	Fusing of powder coatings
1000	Shaping of steel
850	Flame hardening
800	Shaping of copper
700	Preheating of copper for welding Hard soldering (Flame brazing)
600	Flame straightening and normalising of steel Heat treatment of copper
400	Shaping aluminum alloys
200	Preheating of steel for welding and cutting Preheating of aluminum alloys for welding

The selection of the optimal heating torch is depending on the following factors:

- Material to be heated up.
- Final heating temperature.
- Heating depth (e. g. Surface heating, through heating).
- Time for heating process.
- Available fuel gas mixed with oxygen, compressed air or siphoned air.

Our GRIFLAM® project team will offer to you the optimum heating torch or automated heating system according to your application.

To calculate the right heating torch or automated system, refer to the characteristics of the different fuel gases and oxyfuel as shown on the following page.

Maximum flame temperature of different fuel gases mixed with oxygen or compressed air:

Oxyfuel:	Temp. [° C]
Propane (P) / Oxygen	2850
Propane (P) / Compr. air	1925
Methane (M) / Oxygen	2860
Methane (M) / Compr. air	1970
Acetylene (A) / Oxygen	3030
Acetylene (A) / Compr. air	2250
Hydrogen (H) / Oxygen	3080
Hydrogen (H) / Compr. air	2130

Mixing ratio of fuel gas with oxygen or compressed air:

	Ratio
Propane (P) / Oxygen	1 : 3,75
Propane (P) / Compr. air	1 : 19
Methane (M) / Oxygen	1 : 1,6
Methane (M) / Compr. air	1 : 8
Acetylene (A) / Oxygen	1 : 1,1
Acetylene (A) / Compr. air	1 : 5,5
Hydrogen (H) / Oxygen	1 : 0,36
Hydrogen (H) / Compr. air	1 : 1,8

Lower thermal value of fuel gases :

	[kJ/m³]
Propane (P)	93557
Methane (M)	31814
Acetylene (A)	56930
Hydrogen (H)	10758

Exit speed of oxyfuel from torch nozzle [m/s]:

	Comparison [%]
Propane (P) / Oxygen	31
Propane (P) / Compr. air	6
Methane (M) / Oxygen	56
Methane (M) / Compr. air	11
Acetylene (A) / Oxygen	100
Acetylene (A) / Compr. air	19
Hydrogen (H) / Oxygen	75
Hydrogen (H) / Compr. air	14

Sensitivity of oxyfuel to flashbacks (Torch-shoot down):

Acetylene (A) / Oxygen	very high	Acetylene (A) / Compr. air	low
Propane (P) / Oxygen	high	Propane (P) / Compr. air	low
Methane (M) / Oxygen	medium	Methane (M) / Compr. air	very low
Hydrogen (H) / Oxygen	low	Hydrogen (H) / Compr. air	very low

The bigger the difference of the operation data, the higher the sensitivity to flashbacks!

(See also Maximum take-off quantity from single cylinders, on page 114).

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Handle MINITHERM



Handle MINITHERM with 3m hoses



Version:

- MINITHERM handle with shaped grip for a secure grip position.
- One-handed operation thanks to V shaped valve arrangement.
- Fine adjustment spindles in Oxygen and fuel gas valves.
- Can be used with all fuel gasses.

Application:

- For use with brazing heating and welding inserts type MINITHERM with Fuel gas/Oxygen or fuel gas/compressed air.

Technical Data:

Type MINITHERM	Weight [g]	Grip Ø [mm]	Grip length: [mm] (without hose tails)	Connections – Ø Hose tail	
				Oxygen / Compressed air	Fuel gas
Without hoses	77	16	120	3,2 mm	3,2 mm

Handle complete with 3m hoses:

Hose connections EH	390	16	120	G1/4" RH	G3/8" LH
Hose connections BH	390	16	120	G3/8" RH	G3/8" LH
Hose connections FH	390	16	120	M16x1,5 RH	M16x1,5 LH

Part Numbers:

Handle Type	Handle without hoses	Handle with 3m hose-pack
Standard	71606109	-
With hanging knob	71605770	-
Chemically Nickel plated	71651665	-
Hose connections EH	-	71606111
Hose connections BH	-	71606112
Hose connections FH	-	71606114

Spare parts/ Accessories:

Hanging Knob	71606336	
Connection nut	71605980	
	Oxygen	Fuel gas
Hose DN 3,2 mm	0140079	0140078
Hose tail 3,2	71601160	71601161
Cap nut (EH)	70050030	70050040
Cap nut (BH)	70050130	70050040
Cap nut (FH)	71602051	71602052
Hose clamp	0800487	0800487

Handle MINITHERM fitted with other hose lengths available on request.

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Handle STARLET 1302



Handle STARLET 2221



Version:

- Robust handle in compact construction for manual welding, brazing, heating and flame cutting.
- STARLET 1302 with V shaped valve layout.
- STARLET 1302 S with additional built in back-flow protection.
- STARLET 2221 with valves on the side.
- Suitable for all fuel gasses.
- Exchangeable inlet threads, coupling adapter and monoblock valves.
- Solid Aluminum design ensures high impact resistance and long life.

Application:

- For manual operation for all welding, brazing and heating torches with STARLET connections.
- For welding range up to 14 mm.

Technical Data:

Type STARLET 1302 o. 2221	Inlet connections to	Ident colour Oxygen / Fuel gas	Connection Oxygen	Connection Fuel gas
ME	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)
NI* - ME	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)
S* - ME	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)

*NI = Only type 2221: Chemically Nickel plated

*S = Only type 1302: with additional built-in backflow arrestors, equipped with flame trap and gas outlet valve for Oxygen and fuel gas.

MB	BSP	blue / red	G3/8" RH (M)	G3/8" LH (M)
MU	CGA	blue / red	9/16" NF RH (M)	9/16" NF LH (M)
MF	NFE	blue / red	M 16x1,5 RH (M)	M 16x1,5 LH (M)
MAS	AS	blue / red	5/8" UNF-RH (M)	5/8" UNF-LH (M)

Type STARLET	Weight [g]	Length [mm] (without hose tails)	Shaft diameter [mm]
1302 / 2221	470	210	15
1302 S	698	250	15

Part Numbers:

Type	STARLET 1302	STARLET 2221
ME	71605978	71606815
NI – ME	-	71653658
S – ME	71606712	-
MB	71605976	71607120
MU	71605977	71607121
MF	71605979	71607122
MAS	71606136	71607123

Spare connection nut STARLET for STARLET handles:

24249970

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Handle STAR 2020



Handle STAR 1010



Version:

- Robust handle in compact construction for manual welding, brazing, heating and flame cutting.
- STAR 2020 with valves on the side.
- STAR 1010 and STAR 1300 with V shaped valve layout.
- STAR 2020 and STAR 130 plastic handle shells.
- Suitable for all fuel gasses.
- Exchangeable inlet threads, coupling adapter and monoblock valves.

Application:

- For manual operation for all welding, brazing and heating torches with STAR connection.
- For welding range up to 30mm.

Technical Data:

Technical Data:

Type STAR	Inlet connections to	Ident colour Oxygen / Fuel gas	Connection Oxygen	Connection Fuel gas
2020 ¹⁾				
1000 ME ²⁾				
ME ¹⁾ and 2)	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)
*NI – ME ¹⁾	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)
*NI = chemically nickel plated				
MB ¹⁾	BSP	blue / red	G3/8" RH (M)	G3/8" LH (M)
MU ¹⁾	CGA	green / red	9/16" NF RH (M)	9/16" NF LH (M)
MF ¹⁾	NFE	blue / red	M 16x1,5 RH (M)	M 16x1,5 LH (M)
MAS ¹⁾	AS	blue / red	5/8" UNF-RH (M)	5/8" UNF-LH (M)
STAR 1300				
ME	DIN	blue / red	G1/4" RH (M)	G3/8" LH (M)
MB	BSP	blue / red	G3/8" RH (M)	G3/8" LH (M)
Type STAR	Weight [g]		Length [mm] (without hose tails)	Shaft diameter [mm]
2020	458		230	20
1010	567		210	20
1300	548		210	20
Part Numbers:				
Type	STAR 2020		STAR 1010	STAR 1300
ME	71606820		71607725	71607304
NI – ME	71653659		-	-
MB	71607230		-	71607330
MU	71607231		-	-
MF	71607232		-	-
MAS	71607233		-	-
Spare connection nut STAR for STAR handles:			24252020	Index

Handle SUPERTHERM



Version:

- Handle for operation of high power heating torches with SUPERTHERM connections.

Application:

- For manual operation for all heating torches with SUPERTHERM 20 connections.

Technical Data:

Type	Inlet connections to	Ident colour Oxygen / Fuel gas	Connection Oxygen	Connection Fuel gas
SUPERTHERM	DIN	blue / red	G3/8" RH (M)	G1/2" LH (M)
	Weight [g]		Length [mm] (without hose tails)	Shaft Ø [mm]
	920		250	22

Part Numbers:

SUPERTHERM 71601818

Replacement connection nut for handle SUPERTHERM:

71601756

Handle AIRTHERM



Version:

- With fuel gas valve for exact dosage for flame setting.
- Shaped handle made of impact resistant plastic.

Application:

- Use of brazing and heating inserts type AIRTHERM with under pressure air injector in the nozzle or in the mixing tube.

Hose connection fuel gas:	G3/8" LH	Connection torch pipe AIRTHERM:	M14x1
Part number:	0463452		
			Index

Valve shaft MINITHERM



Clamping shaft STARLET / STAR



Clamping shaft SUPERTHERM



Clamping shaft SUPERTHERM 30



Version:

- Stable brass construction (MINITHERM Aluminum valve shaft).
- Adjustment valves to set the flame need to be mounted onto the inlet threads (except for the valve shaft type MINITHERM).

Application:

- For use in mechanised (automated) operation of heating, welding and brazing torches.

Technical Data:				
Type	Connection Oxygen	Connection Fuel gas	Clamping Ø [mm]	Length [mm] Clamping shaft
MINITHERM	Hose tail - DN 3,2 mm	Hose tail - DN 3,2 mm	15	8
STARLET	G1/4" RH - DN 6 mm	G3/8" LH - DN 9 mm	30	35
STAR	G1/4" RH - DN 6 mm	G3/8" LH - DN 9 mm	30	35
SUPERTHERM	G3/8" RH - DN 9 mm	G1/2" LH - DN 11 mm	32	54
SUPERTHERM 30	G1/2" RH - DN 11 mm	G1/2" LH - DN 11 mm	36	29
SUPERTHERM 30	G1/2" RH - DN 13 mm	G3/4" LH - DN 16 mm	36	29
Part numbers:		Accessories:		
Type	Shaft	Adjustment valve Oxygen	Adjustment valve fuel gas	
MINITHERM	71602852	-	-	
STARLET	71607678	71800500	71800502	
STAR	71607677	71800500	71800502	
SUPERTHERM	71602190	71800501	71800855	
SUPERTHERM 30	71650947	71804290	71800855	
SUPERTHERM 30	71602830	-	-	
			Adjustment valves see also page 105	
				Index

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
Allgas 2003	25-P	0,65	-	-	71651675	16
Allgas 2003	50-P	0,91	-	-	71651676	16
Allgas 2003	75-P	1,43	-	-	71651677	16
Allgas 2003	100-P	1,82	-	-	71651678	16
Allgas 2003	150-P	2,16	-	-	71651679	16
Allgas 2003	25-A	-	-	1,42	71651670	16
Allgas 2003	50-A	-	-	2,06	71651671	16
Allgas 2003	75-A	-	-	3,16	71651672	16
Allgas 2003	100-A	-	-	3,95	71651673	16
Allgas 2003	150-A	-	-	4,74	71651674	16
MINITHERM: Propane, Methane / Oxygen – multi-hole nozzles						
MINITHERM	Z-PM 00	0,34	0,21	-	71600988	19
MINITHERM	Z-PM 0	0,52	0,36	-	71600989	19
MINITHERM	Z-PM 1	1,07	0,84	-	71600990	19
MINITHERM	Z-PM 2	2,00	1,86	-	71600991	19
MINITHERM	Z-PM 3	3,09	2,88	-	71600992	19
MINITHERM: Acetylene / Oxygen – single-hole nozzles						
MINITHERM	Z-A 00	-	-	0,87	71600978	20
MINITHERM	Z-A 0	-	-	1,14	71600979	20
MINITHERM	Z-A 1	-	-	2,37	71600980	20
MINITHERM	Z-A 2	-	-	4,51	71600981	20
MINITHERM	Z-A 3	-	-	6,96	71600982	20
MINITHERM: Propane, Methane / Oxygen - multi-hole nozzles						
MINITHERM	FKZ-PMY 1	2,42	1,94	-	71650804	21
MINITHERM	FKZ-PMY 2	2,91	2,32	-	71650805	21
MINITHERM*	FK-PMY 6*	9,62	7,78	-	71651639	21
MINITHERM: Acetylene /Oxygen - multi-hole nozzles						
MINITHERM	FKZ-AH 1	-	-	5,06	71650808	22
MINITHERM	FKZ-AH 2	-	-	6,01	71650809	22
MINITHERM	FK-AH 3	-	-	7,75	71650810	22
MINITHERM: Acetylene / Oxygen - single-hole nozzles						
MINITHERM	B3-AH	-	-	6,96	71604348	22
MINITHERM: Propane, Methane /Compressed air - single-hole nozzles						
MINITHERM	ZD 8/2 PM	0,25	0,20	-	71651600	23
MINITHERM	ZD 11/4 PM	0,78	0,63	-	71651602	23
STARLET: Propane, Methane /Oxygen - single-hole nozzles						
STARLET	Z-PM 1	0,55	0,53	-	71606491	25
STARLET	Z-PM 2	1,12	1,05	-	71606492	25
STARLET	Z-PM 3	2,18	2,06	-	71606493	25
STARLET	Z-PM 4	3,38	3,27	-	71606494	25
STARLET	Z-PM 5	5,46	5,11	-	71606495	25
STARLET	Z-PM 6	8,58	8,18	-	71606496	25
* Stainless steel mixing tube					Index	

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
STARLET; STAR; SUPERTHERM: Acetylene / Oxygen - single-hole nozzles						
STARLET	<u>Z-A 0</u>	-	-	0,63	71606257	26
STARLET	<u>Z-A 1</u>	-	-	1,27	71605051	26
STARLET	<u>Z-A 2</u>	-	-	2,53	71605052	26
STARLET	<u>Z-A 3</u>	-	-	4,98	71605053	26
STARLET	<u>Z-A 4</u>	-	-	7,91	71605054	26
STARLET	<u>Z-A 5</u>	-	-	12,65	71605055	26
STARLET	<u>Z-A 6</u>	-	-	19,77	71605056	26
STARLET	<u>Z-A 0</u>	-	-	0,79	71601600	27
STARLET	<u>Z-A 1 (1)</u>	-	-	1,58	71601601	27
STARLET	<u>Z-A 1 (2)</u>	-	-	1,58	71601611	27
STARLET	<u>Z-A 2 (1)</u>	-	-	2,85	71601602	27
STARLET	<u>Z-A 2 (2)</u>	-	-	2,85	71601612	27
STARLET	<u>Z-A 3 (1)</u>	-	-	5,06	71601603	27
STARLET	<u>Z-A 3 (2)</u>	-	-	5,06	71601613	27
STARLET	<u>Z-A 3,5 (1)</u>	-	-	8,38	71601820	27
STARLET	<u>Z-A 3,5 (2)</u>	-	-	8,38	71601830	27
STARLET	<u>Z-A 4 (1)</u>	-	-	7,75	71601604	27
STARLET	<u>Z-A 4 (2)</u>	-	-	7,75	71601614	27
STARLET	<u>Z-A 5 (1)</u>	-	-	13,13	71601605	27
STARLET	<u>Z-A 5 (2)</u>	-	-	13,13	71601615	27
STARLET	<u>Z-A 6 (1)</u>	-	-	22,61	71601606	27
STARLET	<u>Z-A 6 (2)</u>	-	-	22,61	71601616	27
STARLET	<u>Z-A 7 (2)</u>	-	-	31,15	71601837	27
STARLET	<u>Z-A 8 (2)</u>	-	-	44,91	71601838	27
STAR	<u>Z-A 1 (2)</u>	-	-	1,58	71601621	27
STAR	<u>Z-A 2 (2)</u>	-	-	2,85	71601622	27
STAR	<u>Z-A 3 (2)</u>	-	-	5,06	71601623	27
STAR	<u>Z-A 4 (2)</u>	-	-	7,75	71601624	27
STAR	<u>Z-A 5 (2)</u>	-	-	13,13	71601625	27
STAR	<u>Z-A 6 (2)</u>	-	-	22,61	71601626	27
STAR	<u>Z-A 7 (2)</u>	-	-	31,15	71601627	27
STAR	<u>Z-A 8 (2)</u>	-	-	44,91	71601628	27
STARLET*	<u>Z-A 7*</u>	-	-	28,47	71651805	28
STARLET*	<u>Z-A 8*</u>	-	-	39,53	71651806	28
STAR	<u>Z-A 9</u>	-	-	68,00	71600863	28
STAR*	<u>Z-A 9*</u>	-	-	68,00	71607296	28
STAR	<u>Z-A 10</u>	-	-	83,81	71600865	28
STAR*	<u>Z-A 10*</u>	-	-	83,81	71607297	28
* Stainless steel mixing tube					<u>Index</u>	

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
SUPERTHERM	<u>Z-A 9</u>	-	-	68,00	71602092	28
SUPERTHERM	<u>Z-A 10</u>	-	-	83,81	71602093	28
MINITHERM; STARLET; STAR: Acetylene /Oxygen – single-hole nozzles, flexibel						
MINITHERM	<u>Z-A 2</u>	-	-	2,85	71651834	29
MINITHERM	<u>Z-A 3</u>	-	-	5,06	71651835	29
STARLET	<u>Z-A 2</u>	-	-	2,85	71601702	29
STARLET	<u>Z-A 3</u>	-	-	5,06	71601703	29
STARLET	<u>Z-A 3,5</u>	-	-	8,38	71601840	29
STARLET	<u>Z-A 4</u>	-	-	7,75	71601704	29
STARLET	<u>Z-A 5</u>	-	-	13,13	71601705	29
STAR	<u>Z-A 2</u>	-	-	2,85	71601712	29
STAR	<u>Z-A 3</u>	-	-	5,06	71601713	29
STAR	<u>Z-A 4</u>	-	-	7,75	71601714	29
STAR	<u>Z-A 5</u>	-	-	13,13	71601715	29
STAR	<u>Z-A 7</u>	-	-	31,15	71654280	29
STAR; SUPERTHERM – Type KONSTANTHERM: Acetylene / Oxygen						
STAR	<u>Z-A 6</u>	-	-	22,61	24256600	30
STAR	<u>Z-A 8</u>	-	-	44,91	24256800	30
SUPERTHERM	<u>Z-A 10</u>	-	-	79,86	71602094	30
SUPERTHERM	<u>F-A 11</u>	-	-	112,59	71650978	30
STARLET; STAR; SUPERTHERM: Propane, Methane / Oxygen - single-hole nozzles						
STARLET	<u>Z-PMYE 2 90°</u>	1,56	1,06	-	71604605	31
STARLET	<u>Z-PMYE 3 90°</u>	2,60	1,86	-	71604606	31
STARLET	<u>Z-PMYE 1</u>	1,04	0,71	-	71601861	32
STARLET	<u>Z-PMYE 2</u>	1,56	1,06	-	71601862	32
STARLET	<u>Z-PMYE 3</u>	2,60	1,86	-	71601863	32
STARLET	<u>Z-PMYE 4</u>	4,68	3,36	-	71601864	32
STARLET	<u>Z-PMYE 6</u>	11,43	8,13	-	71601866	32
STARLET*	<u>Z-PMYE 6*</u>	11,43	8,13	-	71651712	32
STARLET	<u>Z-PMYE 8</u>	24,95	12,81	-	71601868	32
STARLET*	<u>Z-PMYE 8*</u>	24,95	12,81	-	71651713	32
STARLET*	<u>Z-PMYE 10*</u>	96,16	91,91	-	71651714	32
STAR	<u>Z-PMY 6</u>	20,79	19,44	-	71601926	33
STAR	<u>Z-PMY 8</u>	20,79	38,88	-	71601251	33
STAR	<u>Z-PMY 10</u>	96,16	91,91	-	71601252	33
STAR	<u>Z-PMY 12</u>	239,09	143,16	-	71601253	33
STAR*	<u>Z-PMY 12*</u>	239,09	143,16	-	71607290	33
STAR*	<u>Z-PMY 14*</u>	267,68	202,37	-	71607291	33
SUPERTHERM	<u>Z-PMY 14</u>	267,68	202,37	-	71602104	33
STAR	<u>Z-PM 8</u>	41,58	33,58	-	71600042	36
STAR	<u>Z-PM 10</u>	96,94	71,58	-	71600043	36
STAR	<u>Z-PM 12</u>	228,69	136,98	-	71600044	36
SUPERTHERM	<u>Z-PM 12</u>	139,04	130,79	-	71602098	36
SUPERTHERM	<u>Z-PM 14</u>	278,07	203,26	-	71602099	36
* Stainless steel mixing tube					<u>Index</u>	

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
STARLET; STAR; SUPERTHERM: Propan, Methan / Sauerstoff - Mehrlochdüsen						
STARLET	F-PME 4	3,90	2,65	-	71601854	37
STARLET	F-PME 6	27,55	20,86	-	71601856	37
STARLET	F-PME 8	44,44	39,59	-	71601858	37
STARLET	F-PME 10	40,02	36,50	-	71601860	37
STARLET*	F-PMYE 8*	38,98	38,88	-	71651717	39
STARLET*	F-PMYE 10*	93,56	91,91	-	71651718	39
STARLET*	F-PMYE 12*	231,29	229,78	-	71651719	39
STAR	F-PMY 8	41,58	38,88	-	71601254	40
STAR	F-PMY 10	96,16	91,91	-	71601255	40
STAR	F-PMY 12	267,68	228,88	-	71601256	40
STAR*	F-PMYE 14*	345,64	202,37	-	71607292	40
STAR*	F-PMYE 16*	345,64	287,21	-	71607292	40
SUPERTHERM	F-PMY 12	119,55	117,54	-	71602100	40
SUPERTHERM	F-PMY 14	267,68	202,37	-	71602101	40
SUPERTHERM	F-PMY 16	345,64	287,21	-	71602102	40
STAR	F-PM 8	41,58	33,58	-	71600045	42
STAR	F-PM 10	96,94	71,58	-	71600046	42
STAR	F-PM 12	228,69	136,98	-	71600047	42
STARLET*	HF-PM 12*	83,16	66,28	-	71651722	43
STARLET*	HF-PM 13*	158,53	127,26	-	71651723	43
STAR*	HF-PMY 14*	244,29	195,30	-	71607294	43
STAR*	HF-PMY 15*	376,83	299,58	-	71607295	43
STAR	HF-PMY 12	83,16	66,28	-	71605642	43
STAR	HF-PMY 13	158,53	127,26	-	71605643	43
STAR	HF-PMY 14	244,29	195,30	-	71605644	43
STAR	HF-PMY 15	376,83	299,58	-	71605645	43
STAR	F-PM 12-w	166,32	133,44	-	71652288	45
SUPERTHERM	F-PM 14-w	278,07	171,44	-	71600785	45
SUPERTHERM	F-PM 16-w	348,24	276,61	-	71601212	45
STARLET; STAR; SUPERTHERM: Acetylene / Oxygen – multi-hole nozzles						
STARLET	F-A 3	-	-	9,45	71603443	46
STARLET	F-A 4	-	-	17,40	71603444	46
STARLET	F-A 6	-	-	30,05	71603446	46
STARLET	F-A 8	-	-	56,93	71603448	46
STAR	F-A 8	-	-	39,53	24254800	46
STAR	F-A 9	-	-	55,35	71600864	46
SUPERTHERM	F-A 9	-	-	68,95	71602090	46
SUPERTHERM	F-A 11	-	-	135,21	71602091	46
STARLET*	FB-A 5*	-	-	12,65	71651809	47
STARLET*	FB-A 6*	-	-	23,72	71651810	47
STARLET*	FB-A 7*	-	-	31,63	71651811	47
STARLET*	FB-A 8*	-	-	41,12	71651812	47
* Stainless steel mixing tube					Index	

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
STAR	<u>FB-A 5</u>	-	-	15,81	71601915	47
STAR	<u>FB-A 6</u>	-	-	23,72	71601916	47
STAR	<u>FB-A 7</u>	-	-	33,21	71600757	47
STAR	<u>FB-A 8</u>	-	-	47,44	71600758	47
STAR	<u>FB-A 9</u>	-	-	79,07	71600759	47
STAR*	<u>FB-A 9*</u>	-	-	79,07	71607298	47
STAR	<u>FB-A 10</u>	-	-	86,98	71600772	47
STAR*	<u>FB-A 10*</u>	-	-	86,98	71607299	47
STAR	<u>F 18 A</u>	-	-	94,88	71604599	49
SUPERTHERM	<u>F 28 A</u>	-	-	189,77	71604421	49
SUPERTHERM	<u>F 25 A-w</u>	-	-	189,77	71604411	49
SUPERTHERM: for gas-mixing nozzles						
SUPERTHERM	<u>FG-PMY 20</u>	285,87	194,42	-	71602125	50
SUPERTHERM	<u>FG-A 20/12</u>	-	-	101,21	71602125	50
SUPERTHERM	<u>FG-A 20/15</u>	-	-	211,91	71602125	50
MACHINE TORCH: for gas-mixing nozzles						
Anschlussplatte	<u>FG-PMY</u>	285,87	194,42	-	71652365	51
Anschlussplatte	<u>FG-A 20/12</u>	-	-	101,21	71652365	51
Anschlussplatte	<u>FG-A 20/15</u>	-	-	211,91	71652365	51
Anschlussplatte	<u>FGZ-PMY</u>	285,87	194,42	-	71652327	52
Anschlussplatte	<u>FGZ-A 20/12</u>	-	-	101,21	71652327	52
Anschlussplatte	<u>FGZ-A 20/12</u>	-	-	211,91	71652327	52
STARLET; STAR: Propane / Compressed air						
STARLET	<u>ZD-P 26/4</u>	20,53	-	-	71653318	53
STAR	<u>ZF-PM/D 20/2</u>	2,86	2,21	-	44140932	54
STAR	<u>ZF-PM/D 20/3</u>	3,64	2,92	-	44140933	54
STAR	<u>ZF-PM/D 20/4</u>	4,42	3,53	-	44140934	54
STAR	<u>ZF-PM/D 20/5</u>	5,20	4,15	-	44140935	54
STAR	<u>ZF-PM/D 20/6</u>	5,46	4,51	-	44140936	54
GVEN: Propane, Methane /Compressed air						
GVEN	<u>ZF-PM/D- 50/16</u>	62,37	38,88	-	44140972	55
GVEN	<u>ZF-PM/D- 70/20</u>	129,94	83,07	-	44140973	55
GVEN	<u>ZF-PM/D- 100/30</u>	337,84	203,26	-	44140974	55
SL: Propane, Methane /Siphoned air						
SL	<u>ZF-PM/S- 50/16</u>	15,59	9,72	-	44140976	55
SL	<u>ZF-PM/S- 70/20</u>	33,78	21,21	-	44140977	55
SL	<u>ZF-PM/S- 100/30</u>	85,76	51,26	-	44140978	55
STAR: Propane, Methane / Compressed air						
STAR	<u>ZL-PM/D 30/07</u>	12,99	7,07	-	44140943	56
STAR	<u>ZL-PM/D 35/08</u>	18,19	10,60	-	44140944	56
STAR	<u>ZL-PM/D 40/10</u>	23,39	14,14	-	44140945	56
* Stainless steel mixing tube					<u>Index</u>	

Max. flame power [KW] – overall view brazing-, welding- and heating inserts:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
SUPERTHERM: Propane, Methane / Compressed air						
SUPERTHERM	<u>ZL-PM/D 40/12</u>	20,79	17,67	-	44140946	56
SUPERTHERM	<u>ZL-PM/D 50/10</u>	23,39	20,33	-	44140947	56
SUPERTHERM	<u>ZL-PM/D 50/13</u>	33,78	26,51	-	44140948	56
SUPERTHERM	<u>ZL-PM/D 50/16</u>	41,58	33,58	-	44140949	56
SUPERTHERM	<u>ZL-PM/D 50/17</u>	44,18	35,35	-	44140950	56
SUPERTHERM: Acetylene / Compressed air						
SUPERTHERM	<u>F 28 A/D-5</u>	-	-	15,81	71654736	57
SUPERTHERM	<u>F 28 A/D-7</u>	-	-	22,14	71654737	57
SUPERTHERM	<u>F 28 A/D-9</u>	-	-	28,47	71653510	57
AIRTHERM: Fuel gas / Siphoned air						
AIRTHERM	<u>FS 12-P</u>	1,51	-	-	71651910	58
AIRTHERM	<u>FS 14-P</u>	2,21	-	-	71651911	58
AIRTHERM	<u>FS 17-P</u>	3,22	-	-	71651912	58
AIRTHERM	<u>FS 20-P</u>	6,55	-	-	71651913	58
AIRTHERM	<u>ZS 12/1,4-P</u>	0,60	-	-	71651914	58
AIRTHERM	<u>ZS 14/3,5-P</u>	1,04	-	-	71651915	58
AIRTHERM	<u>ZS 14/6,0-P</u>	3,22	-	-	71651916	58
AIRTHERM	<u>FSH-P 30</u>	27,03	-	-	71651918	59
AIRTHERM	<u>FSH-P 40</u>	54,06	-	-	71651919	59
AIRTHERM	<u>FSH-P 50</u>	97,72	-	-	71651920	59
AIRTHERM	<u>FSH-P 60</u>	126,04	-	-	71651921	59
AIRTHERM	<u>FSH-P 80</u>	139,04	-	-	71651922	59
AIRTHERM	<u>ZS 4 PMY 61</u>	21,31	4,95	-	71654750	60
AIRTHERM	<u>ZS-A 1</u>	-	-	0,22	71602581	61
AIRTHERM	<u>ZS-A 2</u>	-	-	0,44	71602582	61
AIRTHERM	<u>ZS-A 3</u>	-	-	2,61	71602583	61
AIRTHERM	<u>ZS-A 4</u>	-	-	4,90	71602584	61
AIRTHERM	<u>ZS-A 5</u>	-	-	13,44	71602585	61
FLAMMRICHTEINSÄTZE:						
STARLET	<u>Z-A 4/2</u>	-	-	10,12	71607287	63
STARLET	<u>Z-A 3/3</u>	-	-	15,18	71606810	63
STARLET	<u>Z-A 4/3</u>	-	-	23,72	71606811	63
STARLET	<u>Z-A 3/5</u>	-	-	25,30	71606812	63
STARLET	<u>Z-A 4/5</u>	-	-	39,53	71606813	63
STAR	<u>Z-A 3/3</u>	-	-	15,18	71607336	63
STAR	<u>Z-A 3 – 3/2</u>	-	-	15,18	71607337	63
STAR	<u>Z-A 4 – 3/2</u>	-	-	23,72	71607664	63
STAR	<u>Z-A 3 – 5/3</u>	-	-	25,30	71601760	63
STAR	<u>Z-A 4 5/3</u>	-	-	39,53	71601761	63
STARLET	<u>Z-PMY 4/3</u>	14,55	11,58	-	71601762	63
STARLET	<u>Z-PMY 4/5</u>	24,17	19,35	-	71601763	63
STAR	<u>Z-PMY 4/3</u>	14,55	11,58	-	71601765	63
					Index	

Hand torch type Allgas 2003



Version:

- Compact and lightweight hand torch with integrated handle.
- Additional injector adjustment valve with hand wheel for optimum flame adjustment.
- Optionally with nozzles for Acetylene/Oxygen or Propane/ Oxygen as inserts.
- Hose connections DN 6.

Application:

- Heating of small parts.
- Brazing.
- Welding in the range 0,2 – 2,5 mm with Acetylene/ Oxygen.

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

Nozzle type	Pressure [bar]			Consumption [l/h]			Welding range [mm] Acetylene/ Oxygen
	Oxygen	Propane (P)	Acetylene (A)	Oxygen	Propane (P)	Acetylene (A)	
25-	0,5 - 0,8	0,2	0,3	30 - 90	1 - 25	30 - 90	0,2 - 0,5
50-	0,8 - 1,0	0,2	0,3	40 - 130	11 - 35	40 - 130	0,5 - 0,8
75-	1,0 - 1,5	0,2	0,3	60 - 200	16 - 55	60 - 200	1,0 - 1,5
100-	1,5 - 2,0	0,2	0,3	80 - 250	22 - 70	80 - 250	1,5 - 2,0
150-	2,0 - 2,5	0,2	0,3	100 - 300	27 - 83	100 - 300	2,0 - 2,5

Part Numbers:

Type	Hand torch + nozzle set Propane	Type	Hand torch + nozzle set Acetylene
ALLGAS 2003-P	71651669	ALLGAS 2003-A	71651668

Nozzle type (P) Propane



Nozzle type (A) Acetylene



25-P	71651675	25-A	71651670
50-P	71651676	50-A	71651671
75-P	71651677	75-A	71651672
100-P	71651678	100-A	71651673
150-P	71651679	150-A	71651674

Accessory: Nozzle holder to hold 5 nozzles

For Propane nozzles	For Acetylene nozzles
71651739	71651739

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Needle insert MINITHERM G3



Injector MINITHERM G



Version:

- One piece injector (Messing chromed) with cone connection adapter for micro needle inserts Type G. The one-piece needle insert consists of a Luer Lock brass cone adaptor piece, Nickel plated, with a brazed capillary tube stainless steel nozzle.
- Fits all handles type MINITHERM.

Application:

- Processing fine sheets in toy and model building.
- Production of jewellery, dental products and small components.
- Processing printed circuits and wire in the electro industry.

Operating data for gas type: Hydrogen (H) / Oxygen

Type	Pressure [bar]		Consumption [l/h]	
	Oxygen	Hydrogen	Oxygen	Hydrogen (H)
G1 H	0,5 - 1,5	> 1,0	9 - 15	25 - 42
G2 H	0,5 - 1,5	> 1,0	9 - 15	25 - 50
G3 H	0,5 - 2,0	> 0,5	9 - 21	25 - 67
G4 H	0,5 - 3,0	> 0,5	9 - 24	25 - 75

Operating data for Gas types: Propane (P), Methane (M), MAPP (Y) / Oxygen

	Oxygen	(P M Y)	Oxygen	(P)	(M)	(Y)
G2-PMY	0,5 - 1,5	> 1,0	9 - 15	2,5 - 4,0	5,6 - 9,4	3,3 - 4,6
G3-PMY	0,5 - 2,0	> 0,5	9 - 21	2,5 - 5,6	5,6 - 13,1	3,3 - 7,8
G4-PMY	0,5 - 3,0	> 0,5	9 - 24	2,5 - 6,4	5,6 - 15,0	3,3 - 8,9
G5-PMY	0,5 - 3,5	> 0,5	9 - 27	2,5 - 7,2	5,6 - 16,9	3,3 - 10,0

Part Numbers:

Part Numbers:		Accessories		
Type	Insert (Length: 41 mm)	Injector Type G	O-Ring 7x1,5	O-Ring 2,5x1,2
G1 H	71605795	71650811	67330008	67330009
G2 H/PMY	71605796	71650811	67330008	67330009
G3 H/PMY	71605797	71650811	67330008	67330009
G4 H/PMY	71605798	71650811	67330008	67330009
G5 PMY	71605799	71650811	67330008	67330009

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Micro insert MINITHERM



Injector MINITHERM for Micro insert

**Version:**

- Single piece injector (chromed brass) with threaded connection adaptor for micro inserts Type M. Copper inserts with hammered nozzle.
- Fits all handles type MINITHERM.

Application:

- Processing fine sheets in toy and model building.
- Production of jewellery, dental products and small components.
- Processing printed circuits and wire in the electro industry.

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

Type	Pressure [bar]		Consumption [l/h]		
	Oxygen	(A H)	Oxygen	(A)	(H)
MG-AH 2	0,2 - 0,5	> 0,5	6 - 9	6 - 9	17 - 25
MG-AH 3	0,5 - 1,5	> 0,5	9 - 15	9 - 15	25 - 42
MG-AH 4	0,5 - 0,8	> 0,5	32 - 39	32 - 39	89 - 108
MG-AH 5	0,8 - 1,0	> 0,5	39 - 43	39 - 43	108 - 120
MG-AH 6	1,0 - 1,5	> 0,5	43 - 54	43 - 54	120 - 150
MG-AH 7	1,5 - 2,5	> 0,5	54 - 76	54 - 76	150 - 210

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

	Oxygen	(P M Y)	Oxygen	(P)	(M)	(Y)
MG-PMY 4	1,0 - 2,5	> 0,5	12 - 21	3 - 6	8 - 13	4 - 8
MG-PMY 5	2,0 - 4,0	> 0,5	18 - 30	5 - 8	11 - 19	6 - 11
MG-PMY 6	1,0 - 2,5	> 0,5	43 - 76	11 - 20	27 - 48	15 - 27
MG-PMY 7	2,0 - 3,5	> 0,5	65 - 98	17 - 26	41 - 60	23 - 35

Part Numbers:**Accessories**

Type	Insert (Length: 38 mm)	Injector (A H)	Injector (P M Y)	O-Ring 7x1,5	O-Ring 2,5x1,2
MG-AH 2	71605783	71650813	-	67330008	67330009
MG-AH 3	71605784	71650813	-	67330008	67330009
MG-AH/PMY 4	71605785	71650814	71650813	67330008	67330009
MG-AH/PMY 5	71605786	71650814	71650813	67330008	67330009
MG-AH/PMY 6	71605787	71650814	71650814	67330008	67330009
MG-AH/PMY 7	71605788	71650814	71650814	67330008	67330009

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Heating insert MINITHERM Z-PM



Version:

- Chromed brass injector with O-Ring handle seals.
- Pacified Copper heating nozzle (alternatively: chemically Nickel plated), with hammered mouthpiece.
- With central flame outlet (single jet nozzle) and mixing system (injector) using under pressure mixing principle.
- Fits all handles type MINITHERM.

Application:

- Heating and brazing applications even in out of position and hard to access places. Welding only with Acetylene.
- Production of jewellery, dental products and small components.
- Mass production hand-made or heat treated work-pieces.

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

Type	Pressure [bar]			Consumption [l/h]		
	Oxygen	Propane (P)	Methane (M)	Oxygen	Propane (P)	Methane (M)
Z-PM 00	0,5 - 2,5	> 0,2	> 0,1	20 - 55	6 - 13	15 - 24
Z-PM 0	0,5 - 2,5	> 0,2	> 0,1	28 - 72	8 - 20	21 - 41
Z-PM 1	0,5 - 2,5	> 0,2	> 0,1	58 - 150	16 - 41	43 - 95
Z-PM 2	1,0 - 2,5	> 0,2	> 0,1	155 - 285	42 - 77	115 - 211
Z-PM 3	1,0 - 3,0	> 0,2	> 0,1	215 - 440	58 - 119	159 - 326

Part Numbers:

Type	Insert compl.		Spare Parts			
	with Copper nozzle	Chemically Nickel plated	Heating nozzle Copper	Injector chromed	O-Ring 7x1,5	O-Ring 2,5x1,2
Z-PM 00	71600988	71650401	71600993	71600998	67330008	67330009
Z-PM 0	71600989	71650402	71600994	71600999	67330008	67330009
Z-PM 1	71600990	71650403	71600995	71601001	67330008	67330009
Z-PM 2	71600991	71650404	71600996	71601002	67330008	67330009
Z-PM 3	71600992	71650405	71600997	71601003	67330008	67330009

MINITHERM KIT:



Comprising MINITHERM handle with connected hoses, 3m long, connections G1/4"RH for Oxygen and G3/8" LH for fuel gas and five inserts type PMYE sizes 00 to 3 in a plastic case.

Technical Data		Part No.
Insert	Length	
Z-PM 00	113 mm	71601408
Z-PM 0	123 mm	
Z-PM 1	133 mm	
Z-PM 2	143 mm	
Z-PM 3	153 mm	

Other lengths available on request.

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Heating Insert MINITHERM Z-A



Version:

- Chromed brass injector with O-Ring handle seals.
- Pacified Copper heating nozzle (alternative: chemically Nickel plated), with hammered mouthpiece.
- With central flame outlet (single jet nozzle) and under pressure mixing system (injector).
- Fits all handles type MINITHERM.

Application:

- Heating and brazing applications even in out of position and hard to access places. Welding only with Acetylene.
- Production of jewellery, dental products and small components.
- Mass production hand-made or heat treated work-pieces.

Operating data for gas type: Acetylene (A) / Oxygen						
Type	Pressure [bar]		Consumption [l/h]			
	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)		
Z-A 00	0,5 - 2,5	> 0,2	20 - 55	20 - 55		
Z-A 0	0,5 - 2,5	> 0,2	28 - 72	28 - 72		
Z-A 1	0,5 - 2,5	> 0,2	58 - 150	58 - 150		
Z-A 2	1,0 - 2,5	> 0,2	155 - 285	155 - 285		
Z-A 3	1,0 - 3,0	> 0,2	215 - 440	215 - 440		
Part Numbers:			Spare Parts			
Type	Insert complete with Copper nozzle	Insert complete chemically Nickel plated	Heating nozzle Copper	Injector Chrome plated	O-Ring 7x1,5	O-Ring 2,5x1,2
Z-A 00	71600978	71650394	71600983	71600998	67330008	67330009
Z-A 0	71600979	71650395	71600984	71600999	67330008	67330009
Z-A 1	71600980	71650396	71600985	71601001	67330008	67330009
Z-A 2	71600981	71650397	71600986	71601002	67330008	67330009
Z-A 3	71600982	71650398	71600987	71601003	67330008	67330009
MINITHERM Kit:				Technical Data		Part No.
		Comprising MINITHERM handle with connected hoses, 3m long, connections G1/4"RH for Oxygen and G3/8"LH for fuel gas and five inserts type AH sizes 00 to 3 in a plastic case.		Insert	Length	71601407
				Z-A 00	113 mm	
				Z-A 0	123 mm	
				Z-A 1	133 mm	
				Z-A 2	143 mm	
				Z-A 3	153 mm	
Other lengths available on request (not as kit in case).						Index

Heating Insert MINITHERM FKZ-PMY 1 and 2



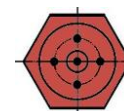
Version FKZ-PMY 1 and FKZ-PMY 2:

- Brass, chromed insert.
- Interchangeable Copper multi-jet heating nozzle FKZ.
- Fits all handles type MINITHERM.

Application:

- Making pipelines and heat exchangers.
- Installation and assembly work.
- Production lines and assembly belts.
- Processing laboratory (quartz) glass.
- Making jewellery.
- Assembly of household equipment.
- Producing water and gas manifolds.

FKZ-PMY 1



FKZ-PMY 2



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

Type	Pressure [bar]		Consumption [l/h]			
	Oxygen	(P M Y)	Oxygen	(P)	(M)	(Y)
FKZ-PMY 1	0,5 - 1,5	> 0,5	210 - 350	56 - 93	131 - 219	75 - 125
FKZ-PMY 2	0,5 - 2,0	> 0,5	280 - 420	75 - 112	175 - 263	100 - 150

Part Numbers:

Spare Parts

Technical Data

Type	Insert complete	Heating nozzle Copper	Injector chromed	Connection nut	Length [mm]	Number of jets
FKZ-PMY 1	71650804	71650800	71601001	71605980	175	5
FKZ-PMY 2	71650805	71650801	71601002	71605980	175	7

Other lengths available on request.

Heating Insert MINITHERM FK-PMY 6



Version FK-PMY 6:

- Stainless steel insert with interchangeable multi-jet stainless steel nozzle.
- Insert is wear resistant even under high radiant heat.

Application:

- Glass industry.
- Dental laboratory.
- Heating small parts.

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

Type	Pressure [bar]		Consumption [l/h]			
	Oxygen	(P M Y)	Oxygen	(P)	(M)	(Y)
FK-PMY 6	2,5	0,5 - 1,0	1400	370	880	467

Part Numbers:

Spare Parts

Technical Data

Type	Insert complete.	Heating nozzle Stainless steel	Injector Ni plated	Connection nut	Length [mm]	Number of jets
FK-PMY 6	71651639	71651641	71651643	71605980	255	6

Other lengths available on request.

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Heating Insert MINITHERM FKZ-AH



Version FKZ-AH :

- Brass, chromed insert.
- Interchangeable Copper multi-jet heating nozzle FK or FKZ.
- Fits all handles type MINITHERM.

FKZ-AH 1



FKZ-AH 2



Applications:

- Making pipelines and heat exchangers.
- Installation and assembly work.
- Production lines and assembly belts.
- Processing laboratory (quartz) glass.
- Jewellery making.
- Assembly of household equipment.
- Producing water and gas manifolds.

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

Type	Pressure [bar]		Consumption [l/h]		
	Oxygen	(A H)	Oxygen	Acetylene (A)	Hydrogen (H)
FKZ-AH 1	0,5 - 1,5	> 0,5	210 - 350	190 - 320	580 - 970
FKZ-AH 2	0,5 - 2,0	> 0,5	210 - 420	190 - 380	580 - 1170
FK-AH 3	1,0 - 3,0	> 0,2	270 - 540	240 - 490	750 - 1500

Part Numbers:

Spare Parts

Technical Data

Type	Insert complete	Heating nozzle Copper	Injector chromed	Connection nut	Length [mm]	Number of jets
FKZ-AH 1	71650808	71650798	71601001	71605980	175	5
FKZ-AH 2	71650809	71650799	71601002	71605980	175	7
FK-AH 3	71650810	71603008	71601003	71605980	175	6

Other lengths available on request.

Heating Insert MINITHERM B3-AH



Version B3-AH:

- Brass mixing tube, interchangeable single jet, Copper nozzle.

Applications:

- Brazing, heating, welding.

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

Type	Pressure [bar]		Consumption [l/h]		
	Oxygen	(A H)	Oxygen	Acetylene (A)	Hydrogen (H)
B3-AH	1,0 - 3,0	0,5	215 - 440	215 - 440	597 - 1220

Part Numbers:

Spare Parts

Technical Data

Type	Insert complete.	Heating nozzle	Injector Chromed	Connection nut	Length [mm]
B3-AH	71604348	71604349	71601003	71605980	311

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Heating Insert MINITHERM ZD 8/2 PM



Heating Insert MINITHERM ZD 11/4 PM



Version:

- Interchangeable Copper heating nozzle (Chrome plated).
- Single jet nozzle with stabilisation holes on side.
- Fits all handles type MINITHERM.

Application:

- Soft soldering.
- Heating of small components and thin sheets.

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

Type	Pressure [bar]		Consumption [l/h]		
	Compressed air	Propane (P) Methane (M)	Compressed air	Propane (P)	Methane (M)
ZD 8/2 PM	1,0 - 3,0	> 0,02	61 - 182	3,20 - 9,60	7,60 - 22,8
ZD 11/4 PM	1,0 - 3,0	> 0,02	190 - 569	10,0 - 30,0	23,7 - 71,2

Technical Data:

Type	Length [mm]	Outer Ø nozzle [mm]	Ø Central flame jet [mm]
ZD 8/2 PM	159	11,5	2
ZD 11/4 PM	162	15	4

Part Numbers:

Type	Spare Parts					
	Insert complete	Spare nozzle	Injector	Connection nut	O-Ring 7x1,5	O-Ring 2,5x1,2
ZD 8/2 PM	71651600	71602483	71601001	71605980	67330008	67330009
ZD 11/4 PM	71651602	71602484	71601003	71605980	67330008	67330009

Other lengths available on request.

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Table torch holder MINITHERM



Table torch holder MINITHERM with insert



Application table torch holder MINITHERM:

- For MINITHERM handles with hanging knob (71605770) for comfortable storage in ready to use inclination.
- Especially suitable for use with the larger MINITHERM welding, brazing and heating inserts as well as the MINITHERM forked torches.

Part Number (without heating insert):

71605781

Magnetic table torch holder MINITHERM



Application Magnet-table torch holder MINITHERM:

- For MINITHERM standard handle without hanging knob (71606109).

Version:

- Consists of a heavy, cast steel stand foot with seven numbered magazine holes for all MINITHERM micro Inserts, 45° angles support rack with screwed on disc magnet and chromed holding plate for mounting onto the MINITHERM handle.

Part Number (without Heating insert):

71605782

Automatic table lighter MINITHERM



Version electrical automatic table lighter:

- Battery powered one handed torch ignition box with easily operating ignition function on/off button, ignition spark chamber with ignition electrode and main on/off switch.
- Dimensions: [H x W x L] 70x52x90 mm.
- Batteries: 2 Mono cells 1.5 Volt.

Part number:

71605780

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Heating insert STARLET Z-PM 3



Version:

- Hammered single jet nozzles outlet holes for soft, sharply defined primary flame cone.
- No brazed or threaded connections between nozzle and mixing tube, so good thermal conduction into nozzle tube to withstand high thermal loads.

Application:

- Welding, brazing and heating.

Operating data for gas type: Propane (P), Methane (M) / Oxygen						Tech. data
Type	Pressure [bar]		Consumption [l/h]			Length complete [mm]
	Oxygen	Propane (P) Methane (M)	Oxygen	Propane (P)	Methane (M)	
To fit handle type STARLET:						
Z-PM 1	2,5	> 0,2	80	21	60	157
Z-PM 2	2,5	> 0,2	160	43	119	176
Z-PM 3	2,5	> 0,2	315	84	233	191
Z-PM 4	2,5	> 0,2	500	130	370	207
Z-PM 5	2,5	> 0,2	780	210	578	245
Z-PM 6	2,5	> 0,2	1250	330	926	266
Part numbers:						
Type	Insert complete to suit STARLET handle			Spare nozzle		
Z-PM 1	71606491			71606481		
Z-PM 2	71606492			71606482		
Z-PM 3	71606493			71606483		
Z-PM 4	71606494			71606484		
Z-PM 5	71606495			71606485		
Z-PM 6	71606496			71606486		
= Type 321 PM						Index

Heating insert STARLET Z-A 3



Version:

- Hammered single jet nozzles outlet holes for soft, sharply defined primary flame cone.
- No brazed or threaded connections between nozzle and mixing tube, so good thermal conduction into nozzle tube to withstand high thermal loads.

Application:

- Welding, brazing and heating.

Operating data for gas type: Acetylene (A) / Oxygen			Technical data
Type	Welding range [mm]	Consumption [l/h] O ₂ (2,5 bar) and Acetylene (0,2 bar)	Length complete [mm]
To fit handle type STARLET:			
Z-A 0	0,2 - 0,5	40	157
Z-A 1	0,5 - 1,0	80	157
Z-A 2	1,0 - 2,0	160	176
Z-A 3	2,0 - 4,0	315	191
Z-A 4	4,0 - 6,0	500	207
Z-A 5	6,0 - 9,0	800	245
Z-A 6	9,0 - 14,0	1250	266
Part numbers:			
Type	Insert complete to suit STARLET handle	Spare nozzle	
Z-A 0	71606257	71606258	
Z-A 1	71605051	71605041	
Z-A 2	71605052	71605042	
Z-A 3	71605053	71605043	
Z-A 4	71605054	71605044	
Z-A 5	71605055	71605045	
Z-A 6	71605056	71605046	
= Type 321 A			<u>Index</u>

Heating insert STARLET Z-A 3; Version (2)



Heating nozzle Z-A (1)



Heating nozzle Z-A (2)



Version (1):

- Slim nozzle version (1) with interchangeable single jet Copper nozzle.
- Hammered nozzle jet, weld poll can be seen clearly.

Version (2):

- Blunt nozzle version (2) with interchangeable single jet Copper nozzle.
- Hammered nozzle jet, for high thermal loading.

Application:

- Heating, brazing and welding.
- Flame straightening.

Operating data for gas type: Acetylene (A) / Oxy.			Technical data						
Type	Welding range [mm]	Consumption [m³] O ₂ (2-3 bar) and Acetylene (0,5 bar)	Nozzle connection thread		Dimensions [mm]				
			(1)	(2)	Nozzle length		Complete insert length		
					(1)	(2)	STARLET (1)	STARLET (2)	STAR (2)
Z-A 0	0,2 - 0,5	0,04 - 0,05	M 8	M 10x1,5	40	45	141	-	-
Z-A 1	0,5 - 1,0	0,07 - 0,10	M 8	M 10x1,5	40	45	137	139	164
Z-A 2	1 - 2	0,13 - 0,18	M 8	M 10x1,5	40	45	168	170	199
Z-A 3	2 - 4	0,24 - 0,32	M 8	M 10x1,5	40	50	199	201	231
Z-A 3,5	3 - 5	0,40 - 0,53	M 8	M 10x1,5	40	50	199	204	-
Z-A 4	4 - 6	0,37 - 0,49	M 8	M 10x1,5	40	50	223	235	264
Z-A 5	6 - 9	0,63 - 0,83	M 8	M 12x1,5	56	65	260	264	297
Z-A 6	9 - 14	1,07 - 1,43	M 8	M 12x1,5	56	65	310	314	329
Z-A 7	14 - 20	1,48 - 1,97	-	M 14x1,5	-	80	-	355	399
Z-A 8	20 - 30	2,14 - 2,84	-	M 14x1,5	-	80	-	380	432

Part numbers:

Type	Insert complete for handle			Spare nozzle for insert	
	STARLET		STAR	STARLET	STARLET und STAR
	(1) slim	(2) blunt	(2) blunt	(1) slim	(2) blunt
Z-A 0	71601600	-	-	71601540	-
Z-A 1	71601601	71601611	71601621	71601541	24234110
Z-A 2	71601602	71601612	71601622	71601542	24234210
Z-A 3	71601603	71601613	71601623	71601543	24234310
Z-A 3,5	71601820	71601830	-	71601882	71600686
Z-A 4	71601604	71601614	71601624	71601544	24234410
Z-A 5	71601605	71601615	71601625	71601545	24234510
Z-A 6	71601606	71601616	71601626	71601546	24234610
Z-A 7	-	71601837	71601627	-	24234710
Z-A 8	-	71601838	71601628	-	24234810
= Type	111-A	211-A	210-A	111-A	211-A / 210-A
					Index

Heating insert STAR Z-A 9



Version:

- Blunt nozzle version with interchangeable single jet Copper nozzle.
- Hammered nozzle jets for high thermal loading.

Application:

- Heating, brazing and welding.
- Flame straightening.

Operating data for gas type: Acetylene (A) / Oxygen						Technical data			
Type	Welding range [mm]	Pressure [bar]		Consumption [m³/h]		Nozzle length [mm]	Insert length [mm] complete		
		Oxygen	Acetylene (A)	Oxygen	Acetylene (A)		STAR LET	STAR	SUPER-THERM
Z-A 7*	14 - 20	2,5	0,2 - 0,5	1,8	1,8	80	435	-	-
Z-A 8*	20 - 30	2,5	0,2 - 0,5	2,5	2,5	80	575	-	-
Z-A 9	30 - 40	2,5 - 4,0	0,2 - 0,3	3,3 - 4,7	3,0 - 4,3	100	-	695	669
Z-A 9*	30 - 40	2,5 - 4,0	0,2 - 0,3	3,3 - 4,7	3,0 - 4,3	100	-	950	-
Z-A 10	> 40	3,0 - 4,0	0,4 – 0,5	4,6 - 5,8	4,2 - 5,3	100	-	695	669
Z-A 10*	> 40	3,0 - 4,0	0,4 – 0,5	4,6 - 5,8	4,2 - 5,3	100	-	1155	-
*Stainless steel mixing tube									
Part numbers:									
Type	Insert complete for handle				Spare nozzle				
	STARLET	STAR	SUPERTHERM		STARLET	STAR and SUPERTHERM			
Z-A 7*	71651805	-	-		24234710	-			
Z-A 8*	71651806	-	-		24234810	-			
Z-A 9	-	71600863	71602092		-	71600170			
Z-A 9*	-	71607296	-		-	71600170			
Z-A 10	-	71600865	71602093		-	71600171			
Z-A 10*	-	71607297	-		-	71600171			
* Stainless steel mixing tube									
Other lengths on request.								Index	

Pipe welding insert STARLET Z-A 3,5 (flexible)



Version:

- Pipe welding insert with flexible soft Copper mixing tube.
- Sharply defined flame cone through specially processed outlet jets.

Application:

- Welding in operating range 1-9 mm.
- Type STAR size. 7 specially for flame straightening of rails and points (14-20 mm).
- Brazing and heating in hard to reach locations.

Operating data for gas type: Acetylene (A) / Oxygen			Technical data		
Type	Welding range [mm]	Consumption [m³/h] O ₂ (2-3 bar) and Acetylene (0,5 bar)	Length complete with outstretched mixing tube [mm] To fit handle		
			MINITHERM	STARLET	STAR
Z-A 2	1 - 2	0,13 - 0,18	228	265	255
Z-A 3	2 - 4	0,24 - 0,32	228	265	255
Z-A 3,5	3 - 5	0,40 - 0,53	-	265	-
Z-A 4	4 - 6	0,37 - 0,49	-	290	280
Z-A 5	6 - 9	0,63 - 0,83	-	303	293
Z-A 7	14 - 20	1,48 - 1,97	-	-	344
= Type			-	411-A	410-A

Part numbers:

Type	Insert complete for handle			Heating nozzle (Mouthpiece + flexible mixing tube with connection threads)		
	MINITHERM	STARLET	STAR	MINITHERM	STARLET	STAR
Z-A 2	71651834	71601702	71601712	71651836	71601742	71601752
Z-A 3	71651835	71601703	71601713	71651837	71601743	71601753
Z-A 3,5	-	71601840	-	-	71600461	-
Z-A 4	-	71601704	71601714	-	71601744	71601754
Z-A 5	-	71601705	71601715	-	71601745	71601755
Z-A 7	-	-	71654280	-	-	71654279

Flexible nozzle STARLET Z-A



Heating insert type KONSTANTHERM STAR Z-A 8



Version:

- Single jet nozzle with thermodynamic stabilising permits safe welding and heating under high thermal loads. The insert can even be used with a red hot nozzle safely and without backfire.

Application:

- Welding on locations with high radiant heat, e. g. in corners, in the insides of pipes or on branch points.
- Working where both sides must be welded or heated simultaneously with two inserts.
- Welding austenitic steels.
- Surface welding and hard facing.
- Armouring sensitive high alloy steels.
- Hot welds in wood ovens or coke fires.
- Welding of rail joints.
- Heating, bending and straightening work (e.g. necking of pipes).
- Preheating, post-heating and adding heat for arc welding of crack sensitive materials.

Operating data for gas type: Acetylene (A) / Oxygen			Technical data	
Type	Welding range [mm]	Consumption [m ³] O ₂ (2-3 bar) und Acetylene (0,5 bar)	Length Insert complete [mm]	
			STAR	SUPERTHERM
Z-A 6	9 - 14	1,07 - 1,43	375	-
Z-A 8	20 - 30	2,14 - 2,84	445	-
Z-A 10	> 40	3,80 - 5,05	-	620
F-A 11	-	5,35 - 7,12	-	610

Other lengths or straight version available on request.

Part numbers:

Type	Insert complete for handle	
	STAR	SUPERTHERM
Z-A 6	24256600	-
Z-A 8	24256800	-
Z-A 10	-	71602094
F-A 11	-	71650978

Other lengths or straight version available on request.

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Heating insert STARLET Z-PMYE 2 and 3 - 90° angled nozzle



Version:

- With brazed two-piece heating nozzle, bent at 90° at end of mixing tube.
- Brass mixing tube and injector.

Application:

- Point or line heating of non-ferrous metals, glass and quartz glass before welding.
- Shaping of steel and non-ferrous metals, glass and quartz glass.
- Deburring of lead crystal.
- Melting, heating, flanging and straightening.
- Pre and post heating when welding or flame cutting.
- Soft and hard soldering.
- Tinning, burning off (of paint etc.).

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)
To fit handle type STARLET:								
Z-PMYE 2	1,0 - 4,0	0,01	0,07 - 0,2	0,02-0,06	1,0 - 3,0	0,01	0,07-0,16	0,05-0,12
Z-PMYE 3	1,0 - 4,0	0,01 - 0,1	0,13 - 0,4	0,04-0,10	1,0 - 3,0	0,01	0,13-0,32	0,10-0,21

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

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Ethylene (E)	Oxygen	Ethylene (E)
To fit handle type STARLET:								
Z-PMYE 2	1,0 - 5,0	0,01-0,05	0,07-0,24	0,02-0,07	1,0 - 5,0	0,3 - 0,6	0,09-0,28	0,05-0,16
Z-PMYE 3	1,0 - 5,0	0,01-0,05	0,13-0,49	0,04-0,14	1,0 - 5,0	0,3 - 0,6	0,15-0,50	0,08-0,28

Technical data:

Type	Nozzle outer dia. [mm]	Nozzle length [mm]	Insert length complete: [mm]
Z-PMYE 2	14	22	275
Z-PMYE 3	14	22	275

Part numbers:

Type	Insert complete for handle STARLET
Z-PMYE 2	71604605
Z-PMYE 3	71604606

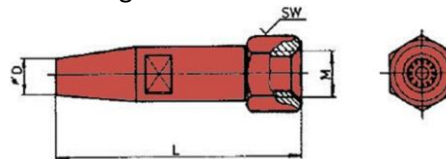
Other lengths available on request.

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Heating insert STARLET Z-PMYE 8



Heating nozzle STARLET Z-PMYE



Version:

- With two part heating nozzle: brass inner nozzle with central jet and radially arranged flame stabilisation slots and Copper outer nozzle (heating cap).
- Mixing tube of brass or stainless steel (*).

Application for STARLET, STAR and SUPERTHERM:

- Point or line heating of non-ferrous metals, glass and quartz glass before welding.
- Shaping of steel and non-ferrous metals, glass and quartz glass.
- Pre and post heating when welding or flame cutting.
- Deburring of lead crystal.
- Melting, heating, flanging and straightening.
- Soft and hard soldering.
- Tinning, burning off (of paint etc.).

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)
To fit handle type STARLET:								
Z-PMYE 1	1,0 - 4,0	0,01	0,05-0,13	0,01-0,04	1,0 - 3,0	0,01	0,05-0,10	0,03-0,08
Z-PMYE 2	1,0 - 4,0	0,01	0,07 - 0,2	0,02-0,06	1,0 - 3,0	0,01	0,07-0,16	0,05-0,12
Z-PMYE 3	1,0 - 4,0	0,01 - 0,1	0,13 - 0,4	0,04-0,10	1,0 - 3,0	0,01	0,13-0,32	0,10-0,21
Z-PMYE 4	1,0 - 4,0	0,01 - 0,1	0,25 - 0,6	0,07-0,18	1,0 - 3,0	0,01	0,25-0,51	0,19-0,38
Z-PMYE 6	1,0 - 4,0	0,01 - 0,1	0,58 - 1,6	0,16-0,44	1,0 - 3,0	0,01-0,02	0,58-1,22	0,44-0,92
Z-PMYE 6*	1,0 - 4,0	0,01 - 0,1	0,58 - 1,6	0,16-0,44	1,0 - 3,0	0,01-0,02	0,58-1,22	0,44-0,92
Z-PMYE 8	1,0 - 4,0	0,01-0,15	0,86 - 2,4	0,24-0,96	1,0 - 3,0	0,03 - 0,2	0,86-1,93	0,65-1,45
Z-PMYE 8*	1,0 - 4,0	0,01-0,15	0,86 - 2,4	0,24-0,96	1,0 - 3,0	0,03 - 0,2	0,86-1,93	0,65-1,45
Z-PMYE 10*	1,5 - 5,0	0,3 - 1,0	5,7 - 14,0	1,50-3,70	1,5 - 5,0	0,3 - 1,0	5,7-14,0	4,20-10,4

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

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Ethylene (E)	Oxygen	Ethylene (E)
To fit handle type STARLET:								
Z-PMYE 1	1,0 - 5,0	0,01-0,05	0,05-0,15	0,02-0,05	1,0 - 5,0	0,3 - 0,6	0,06-0,20	0,03-0,11
Z-PMYE 2	1,0 - 5,0	0,01-0,05	0,07-0,24	0,02-0,07	1,0 - 5,0	0,3 - 0,6	0,09-0,28	0,05-0,16
Z-PMYE 3	1,0 - 5,0	0,01-0,05	0,13-0,49	0,04-0,14	1,0 - 5,0	0,3 - 0,6	0,15-0,50	0,08-0,28
Z-PMYE 4	1,0 - 5,0	0,01-0,15	0,25-0,72	0,07-0,21	1,0 - 5,0	0,3 - 0,6	0,33-0,99	0,13-0,55
Z-PMYE 6	1,0 - 5,0	0,03-0,30	0,58-1,94	0,17-0,55	1,0 - 5,0	0,3 - 0,6	0,62-1,92	0,34-1,07
Z-PMYE 6*	1,0 - 5,0	0,03-0,30	0,58-1,94	0,17-0,55	1,0 - 5,0	0,3 - 0,6	0,62-1,92	0,34-1,07
Z-PMYE 8	1,0 - 5,0	0,01-0,30	0,86-2,78	0,25-0,80	1,0 - 5,0	0,3 - 0,6	0,90-2,70	0,53-1,50
Z-PMYE 8*	1,0 - 5,0	0,01-0,30	0,86-2,78	0,25-0,80	1,0 - 5,0	0,3 - 0,6	0,90-2,70	0,53-1,50
Z-PMYE 10*	1,5 - 5,0	0,3 - 1,0	5,70-14,0	1,90-4,70	2,0 - 2,5	0,5 - 0,8	4,00-5,00	2,30-2,80

* Stainless steel mixing tube

Operation data for Inserts to handles STAR and SUPERTHERM on the next page.

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Heating insert STAR Z-PMY 12



Heating nozzle STAR /
SUPERTHERM Z-PMY



Version:

- Copper, one-piece heating nozzle with central jet and radially arranged flame stabilisation slots, Chrome plated.
- Mixing tube and injector of brass or stainless steel (*).



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)
To fit handle type STAR: * Stainless Steel mixing tube								
Z-PMY 6	1,0 - 3,5	0,1 - 0,3	1,3 - 3,0	0,30-0,80	1,0 - 3,5	0,2 - 0,4	1,3 - 3,0	1,00-2,20
Z-PMY 8	1,0 - 5,0	0,1 - 0,5	1,9 - 6,0	0,50-0,80	1,0 - 5,0	0,2 - 0,5	1,9 - 6,0	1,40-4,40
Z-PMY 10	1,5 - 5,0	0,3 - 1,0	5,7 - 14,0	1,50-3,70	1,5 - 5,0	0,3 - 1,0	5,7 - 14,0	4,20-10,4
Z-PMY 12	2,5 - 8,5	0,5 - 1,7	13,0-35,0	3,40-9,20	2,5 - 5,0	0,5 - 1,7	13,0-21,0	9,60-16,2
Z-PMY 12*	2,5 - 8,5	0,5 - 1,7	13,0-35,0	3,40-9,20	2,5 - 5,0	0,5 - 1,7	13,0-21,0	9,60-16,2
Z-PMY 14*	4,0 - 9,0	0,3 - 1,2	18,0-40,0	4,60-10,3	4,0 - 7,0	0,8 - 1,8	18,0-31,0	13,3-22,9

To fit handle type SUPERTHERM:

Z-PMY 14	4,0 - 9,0	0,3 - 1,2	18,0-40,0	4,60-10,3	4,0 - 7,0	0,8 - 1,8	18,0-31,0	13,3-22,9
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Operating data for gas type: MAPP (Y) / Oxygen

Type	Pressure [bar]		Consumption [m³/h]	
	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)
To fit handle type STAR: * Stainless Steel mixing tube				
Z-PMY 6	1,0 - 3,5	0,1 - 0,3	1,3 - 3,0	0,43 - 1,00
Z-PMY 8	1,0 - 5,0	0,1 - 0,5	1,9 - 6,0	0,60 - 2,00
Z-PMY 10	1,5 - 5,0	0,3 - 1,0	5,7 - 14,0	1,90 - 4,70
Z-PMY 12	2,5 - 8,5	0,5 - 1,7	13,0 - 35,0	4,30 - 11,7
Z-PMY 12*	2,5 - 8,5	0,5 - 1,7	13,0 - 35,0	4,30 - 11,7
Z-PMY 14*	4,0 - 9,0	0,2 - 1,1	18,0 - 40,0	6,00 - 13,3

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

Type	Oxygen	Ethylene (E)	Oxygen	Ethylene (E)
To fit handle type STAR; Z-E with special pressure nozzle for use with Ethylene (E) / Oxygen.				
Z-E 6	2,0 - 2,5	0,5 - 0,8	2,0 - 2,5	0,30 - 0,80
Z-E 8	2,0 - 2,5	0,5 - 0,8	3,0 - 4,0	1,80 - 2,10
Z-E 10	2,0 - 2,5	0,5 - 0,8	4,0 - 5,0	2,30 - 2,80
Z-E 12	2,0 - 2,5	0,5 - 0,8	5,0 - 6,0	2,70 - 3,20

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

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)
To fit handle type SUPERTHERM:				
Z-PMY 14	4,0 - 9,0	0,2 - 1,1	18,0 - 40,0	6,00 - 13,3

Technical data for Inserts Z-PMYE, Z-PMY and Z-E on the next page.

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Heating insert STARLET Z-PMYE 8



Heating insert STAR Z-PMY 12



Technical data: Z-PMYE; Z-PMY; Z-E: Propane (P), Methane (M), MAPP (Y), Ethylene (E) / Oxygen

Type	Nozzle connection thread	Outer $\varnothing$ nozzle outlet [mm]	Nozzle length [mm]	Insert length complete [mm]
To fit handle type STARLET: *Stainless Steel mixing tube				
Z-PMYE 1	M8	5	50,6	140
Z-PMYE 2	M8	5	50,6	170
Z-PMYE 3	M8	5	50,6	200
Z-PMYE 4	M8	6	50,6	235
Z-PMYE 6	M8	6	50,6	260
Z-PMYE 6*	M12x1,5	13	57	410
Z-PMYE 8	M8	6	50,6	310
Z-PMYE 8*	M14x1,5	14	62	412
Z-PMYE 10*	M14x1,5	15	67	553
To fit handle type STAR: *Stainless Steel mixing tube				
Z-PMY 6	M12x1,5	13	57	326
Z-E 6	M12x1,5	13	57	326
Z-PMY 8	M14x1,5	14	62	423
Z-E 8	M14x1,5	14	62	423
Z-PMY 10	M14x1,5	15	67	425
Z-E 10	M14x1,5	15	67	425
Z-PMY 12	M14x1,5	16,5	72	428
Z-E 12	M14x1,5	16,5	72	428
Z-PMY 12*	M14x1,5	16,5	72	890
Z-PMY 14*	M18x1,5	17,5	83	1095
To fit handle type SUPERTHERM:				
Z-PMY 14	M18x1,5	17,5	83	680
PART NUMBERS ON NEXT PAGE.				<u>Index</u>

Heating insert STARLET Z-PMYE 8



Heating insert STAR Z-PMY 12



Part numbers:

Type	Insert complete (* Stainless Steel mixing tube)	Spare nozzle
To fit handle type STARLET:		
Z-PMYE 1	71601861	71600590
Z-PMYE 2	71601862	71600591
Z-PMYE 3	71601863	71600592
Z-PMYE 4	71601864	71600593
Z-PMYE 6	71601866	71600594
Z-PMYE 6*	71651712	71601233
Z-PMYE 8	71601868	71600595
Z-PMYE 8*	71651713	71601234
Z-PMYE 10*	71651714	71601235
To fit handle type STAR:		
Z-PMY 6	71601926	71601233
Z-E 6	71605363	71601233
Z-PMY 8	71601251	71601234
Z-E 8	71605364	71601234
Z-PMY 10	71601252	71601235
Z-E 10	71605365	71601235
Z-PMY 12	71601253	71601236
Z-E 12	71605366	71601236
Z-PMY 12*	71607290	71601236
Z-PMY 14*	71607291	71601241
To fit handle type SUPERTHERM:		
Z-PMY 14	71602104	71601241
Heating inserts with other lengths available.		<u>Index</u>

Heating insert STAR Z-PM 8



Nozzle Z-PM



Version:

- Copper, one-piece heating nozzle with central jet and flame stabilisation jets arranged concentrically, Chrome plated.
- Brass mixing tube and injector.

Application:

- Flame straightening – the flame of the Z-PM inserts, which concentrates to a point thanks to the stabilisation jets, is particularly suitable for flame straightening.
- Point or line heating of non-ferrous metals, glass and quartz glass before welding.

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)
To fit handle type STAR:								
Z-PM 8	1,0 - 5,0	0,1 - 0,3	2,5 - 6,5	0,67-1,60	1,0 - 4,0	0,1 - 0,2	2,5 - 5,1	1,85-3,80
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	4,20-8,10
Z-PM 12	2,5 - 8,5	0,4 - 1,6	11,0-33,0	2,83-8,80	2,5 - 5,0	0,5 - 1,2	11,0-21,0	8,10-15,5

To fit handle type SUPERTHERM:

Z-PM 12	2,0 - 4,0	0,3 - 0,6	11,0-20,0	2,93-5,35	2,0 - 4,0	0,3 - 0,8	11,0-20,0	8,1 - 14,8
Z-PM 14	4,0 - 9,0	0,5 - 1,5	20,0-40,0	5,35-10,7	4,0 - 7,0	0,5 - 1,5	20,0-31,0	14,8-23,0

Technical data:

Type	Nozzle connection thread	Outer Ø nozzle outlet [mm]	Nozzle length [mm]	Insert length complete [mm]
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To fit handle type STAR:

Z-PM 8	M14x1,5	14	80	425
Z-PM 10	M14x1,5	14	90	430
Z-PM 12	M14x1,5	15	100	430

To fit handle type SUPERTHERM:

Z-PM 12	M18x1,5	15	100	690
Z-PM 14	M18x1,5	16	110	696

Part numbers:

Type	Insert complete for handle		Spare nozzle	
	STAR	SUPERTHERM	STAR	SUPERTHERM
Z-PM 8	71600042	-	71600032	-
Z-PM 10	71600043	-	71600033	-
Z-PM 12	71600044	71602098	71600034	71600164
Z-PM 14	-	71602099	-	71600165

Heating inserts with other lengths available.

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Heating insert STARLET F-PME 6



Version: STARLET F-PME 4 and 6: Copper nozzle with a concentric flame outlet jet circle.	
Version: STARLET F-PME 8: Chromed Copper nozzle with two concentric rings of flame outlet jets.	
Version: STARLET F-PME 10: Chromed Copper nozzle with radial arrangement of flame outlet slots.	

Application:

- Surface area heating.
- Forming of steel and non-ferrous metals.
- Melting annealing.
- Flanging, straightening.
- Pre and post heating for welding and flame cutting.
- Hard and soft soldering.
- Buring off, drying.

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)

To fit handle type STARLET:

F-PME 4	3,0	0,02	0,55	0,15	1,5	0,02	0,4	0,3
F-PME 6	1,0 - 5,0	0,01 - 0,03	1,2 - 3,8	0,34-1,06	1,0 - 4,0	0,01 - 0,1	1,2 - 3,15	0,90-2,36
F-PME 8	1,0 - 5,0	0,05 - 0,4	2,0 - 6,1	0,55-1,71	2,0 - 5,0	0,2 - 0,8	2,0 - 6,1	1,49-4,48
F-PME 10	3,0 - 4,0	0,05 - 0,3	4,3 - 5,5	1,20-1,54	3,0 - 4,0	0,2 - 0,6	4,3 - 5,5	3,21-4,13

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

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Ethylene (E)	Oxygen	Ethylene (E)
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To fit handle type STARLET:

F-PME 4	3,0	0,02	0,55	0,16	3,0 - 4,0	0,3 - 0,8	0,54-0,67	0,30-0,37
F-PME 6	1,0 - 5,0	0,01-0,03	1,2 - 3,6	0,35-1,09	2,0 - 4,0	0,3 - 0,8	0,95-1,73	0,53-0,96
F-PME 8	1,0 - 5,0	0,05-0,30	2,0 - 6,1	0,57-1,75	2,0 - 4,0	0,3 - 0,8	1,74-3,12	0,97-1,73
F-PME 10	4,3 - 5,5	0,05-0,30	4,3 - 5,5	1,23-1,57	3,0 - 4,0	0,3 - 0,8	2,75-4,99	1,53-2,77

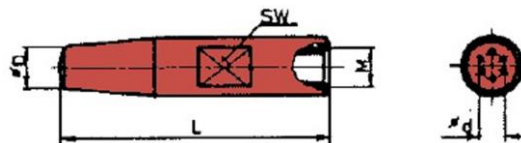
Technical data and part numbers on the next page.

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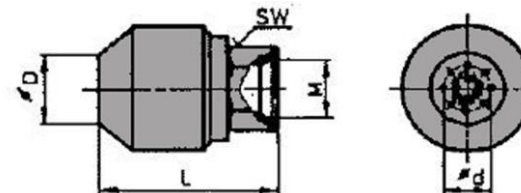
Heating insert STARLET F-PME 6



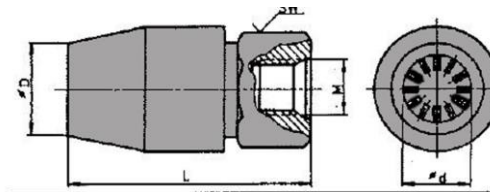
- **STARLET F-PME 4 and 6:**
With a concentric flame outlet jet ring.



- **STARLET F-PME 8:**
With two concentric flame outlet jet rings.



- **STARLET F-PME 10:**
With radial arrangement of flame outlet slots.



Technical data: F-PME: Propane (P), Methane (M), MAPP (Y), Ethylene (E) / Oxygen

Type	Nozzle connection thread	Outer Ø nozzle [mm]	Ø Outer flame ring [mm]	Nozzle length [mm]	Insert length complete [mm]
F-PME 4	M8	8	5	50	238
F-PME 6	M8	8	5	50	307
F-PME 8	M10x1,5	12	6,5	29,5	285
F-PME 10	M12x1,5	18	10	40	304

Part numbers:

Type	Insert complete To fit handle type STARLET:	Spare nozzle
F-PME 4	71601854	71600570
F-PME 6	71601856	71600571
F-PME 8	71601858	71600596
F-PME 10	71601860	71600597

Other lengths available on request.

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Heating insert STARLET F-PMYE 12



Version:

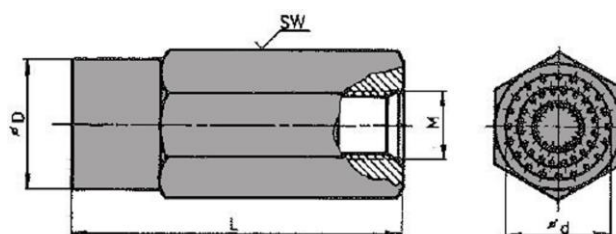
Heating nozzle chromed Copper: type

- STARLET F-PMYE 8 with **one**
 - STAR F-PMY 8 with **one**
 - STARLET and STAR F-PMY 10 with **two**
 - STARLET, STAR, SUPERTHERM F-PMY 12 with **three**
 - STAR and SUPERTHERM F-PMY 14 with **four**
 - STAR and SUPERTHERM F-PMY 16 with **five**
- concentric flame outlet slit rings.**

Mixing tube

- Type STARLET, stainless steel.
- Type STAR sizes 8, 10 and 12, brass.
- Type STAR sizes 14 and 16, stainless steel.
- Type SUPERTHERM 12, 14, 16, brass.

Heating nozzle type F-PMYE size 12



Application:

- Heating surface areas.
- Forming of steel and non-ferrous metals.
- Melting annealing.
- Flanging, straightening.
- Pre and post heating for welding and flame cutting.
- Hard and soft soldering.
- Buring off, drying.

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)
To fit handle type STARLET: * Stainless Steel mixing tube.								
F-PMYE 8*	1,0 - 5,0	0,1 - 0,5	2,0 - 6,0	0,5 - 1,5	1,0 - 5,0	0,2 - 0,5	2,0 - 6,0	1,5 - 4,4
F-PMYE 10*	1,5 - 5,0	0,3 - 1,0	6,0 - 14,0	1,5 - 3,6	1,5 - 5,0	0,3 - 1,0	6,0-14,0	4,4 - 10,4
F-PMYE 12*	2,0 - 4,0	0,5 - 1,6	11 - 35	2,8 - 8,9	2,0 - 4,0	0,5 - 1,6	11 - 35	8,1 - 26,0

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

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Ethylene (E)	Oxygen	Ethylene (E)
To fit handle type STARLET: * Stainless Steel mixing tube.								
F-PMYE 8*	1,0 - 5,0	0,1 - 0,5	2,0 - 6,0	1,3 - 3,8	2,0 - 2,5	0,5 - 0,8	2,0 - 6,0	1,1 - 3,2
F-PMYE 10*	1,5 - 5,0	0,3 - 1,0	6,0-14,0	3,8 - 8,8	2,0 - 2,5	0,5 - 0,8	6,0-14,0	3,2 - 7,4
F-PMYE 12*	2,0 - 4,0	0,5 - 1,7	11-35	6,9 - 22,0	2,0 - 2,5	0,5 - 0,8	11 - 35	5,8 - 18,4

Operating data for inserts STAR and SUPERTHERM on the next page.

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Heating insert STAR F-PMY 10



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)
To fit handle type STAR: *Stainless Steel mixing tube								
F-PMY 8	1,0 - 5,0	0,1 - 0,5	1,9 - 6,0	0,50-1,60	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	1,50-3,70	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	3,40-9,20	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
To fit handle type SUPERTHERM:								
F-PMY 12	2,0 - 4,0	0,2 - 0,5	11,0-18,0	2,8 - 4,6	2,0 - 4,0	0,3 - 1,0	11,0-18,0	8,1-13,3
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
Operating data for gas type: MAPP / Oxygen								
Type	Pressure [bar]			Consumption [m³/h]				
	Oxygen		MAPP (Y)	Oxygen		MAPP (Y)		
To fit handle type STAR; *Stainless Steel mixing tube								
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	
Operating data for gas type: Ethylene (E) / Oxygen								
Type	Oxygen		Ethylene (E)		Oxygen		Ethylene (E)	
To fit handle type STAR; F-F with special pressure nozzle for operation with Ethylene (E) / Oxygen.								
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	
Operating data for gas type MAPP (Y) / Oxygen								
To fit handle type SUPERTHERM:								
Type	Oxygen		MAPP (Y)		Oxygen		MAPP (Y)	
F-PMY 12	2,0 - 4,0		0,2 - 0,4		11,0 - 18,0		3,1 - 5,1	
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	
Technical data und part numbers for inserts F-PMYE, F-PMY, F-E on the next page.								Index

Heating insert STARLET F-PMYE 12



Technical data: F-PMYE; F-PMY: Propane (P), Methane (M), MAPP (Y), Ethylene (E) / Oxygen					
Type	Nozzle connection thread	Outer Ø nozzle outlet [mm]	Ø Outer flame ring [mm]	Nozzle length [mm]	Insert length complete [mm]
To fit handle type STARLET: *Stainless Steel mixing tube					
F-PMYE 8*	M14x1,5	18,5	10	55	430
F-PMYE 10*	M14x1,5	21,5	16	60	580
F-PMYE 12*	M14x1,5	26,5	21	65	580
To fit handle type STAR: *Stainless Steel mixing tube					
F-PMY 8	M14x1,5	18,5	10	55	419
F-PMY 10	M14x1,5	21,5	16	60	422
F-PMY 12	M14x1,5	26,5	21	65	424
F-PMY 14*	M18x1,5	31,5	26	70	885
F-PMY 16*	M18x1,5	35,5	30	75	1090
To fit handle type SUPERTHERM:					
F-PMY 12	M18x1,5	26,5	21	65	670
F-PMY 14	M18x1,5	31,5	26	70	673
F-PMY 16	M18x1,5	35,5	30	75	676
Part numbers:					
Type	Insert complete			Spare nozzle	
To fit handle type STARLET: * Stainless Steel mixing tube					
F-PMYE 8*	71651717			71601237	
F-PMYE 10*	71651718			71601238	
F-PMYE 12*	71651719			71601239	
To fit handle type STAR: * Stainless Steel mixing tube					
F-PMY 8	71601254			71601237	
F-E 8	71605360			71601237	
F-PMY 10	71601255			71601238	
F-E 10	71605361			71601238	
F-PMY 12	71601256			71601239	
F-E 12	71605362			71601239	
F-PMY 14*	71607292			71601154	
F-PMY 16*	71607293			71601155	
To fit handle type SUPERTHERM:					
F-PMY 12	71602100			71601153	
F-PMY 14	71602101			71601154	
F-PMY 16	71602102			71601155	
Heating inserts in other lengths available on request.				Index	

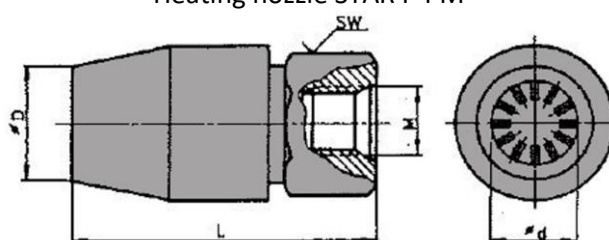
Heating insert STAR F-PM 10



Version:

- Chromed Copper heating nozzle with radial flame outlet slots arrangement.
- Brass mixing tube and injector.

Heating nozzle STAR F-PM



Application:

- Heating surface areas and forming steel and non-ferrous metals.
- Pre and post heating when welding and flame cutting.
- Soft and hard soldering.
- Melting, annealing, straightening, shrinking, stretching, drying, burning off, tinning, etc.

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)
To fit handle type STAR:								
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	1,85-3,80
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

Technical data:

Type	Nozzle connection thread	Outer Ø nozzle outlet [mm]	Nozzle length [mm]	Insert length complete [mm]
To fit handle type STAR:				
F-PM 8	M14x1,5	18	40	420
F-PM 10	M14x1,5	20	47	410
F-PM 12	M14x1,5	23	60	420

Part numbers:

Type	Insert complete	Spare nozzle
F-PM 8	71600045	71600035
F-PM 10	71600046	71600036
F-PM 12	71600047	71600037

Heating inserts in other lengths available on request.

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Heating insert STAR HF-PMY 15



Version:

- Brass or Stainless Steel mixing tube.
- Multi-jet heating nozzle, nozzle jacket Copper, nozzle body brass.
- 1 flame outlet jet ring for size HF-PMY 12.
- 2 flame outlet jet rings for sizes HF-PMY 13 – 15.
- Stand-off spacer integrated into nozzle jacket to maintain minimum flame gap.

Application:

- Forming of steel and non-ferrous metals.
- Pre and post heating when welding and flame cutting.
- Hard and soft soldering.
- Melting and annealing.
- Flanging and straightening.
- Tinning, burning off.
- Drying.

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)
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

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

Technical data und Part numbers for inserts STARLET and STAR on the next page.

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Heating insert STAR HF-PMY 15



Heating nozzle HF-PMY 15



Technical data: F-PMYE: Propane (P), Methane (M), MAPP (Y) / Oxygen

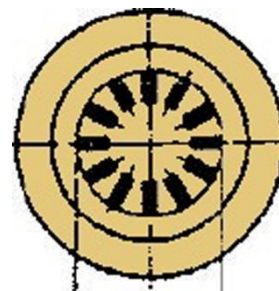
Type	Nozzle connection thread	Outer Ø nozzle [mm]	Ø Outer flame ring [mm]	Nozzle length [mm]	Insert length complete [mm]
To fit handle type STARLET: *Stainless Steel mixing tube					
HF-PMY 12	1/2" x 25 Gang	18	10	81	430
HF-PMY 13	1/2" x 25 Gang	25	15	76,5	580
To fit handle type STAR: *Stainless Steel mixing tube					
HF-PMY 14	1/2" x 25 Gang	34	23	78,5	880
HF-PMY 15	1/2" x 25 Gang	44	30	78,5	1085
To fit handle type STAR: Brass mixing tube					
HF-PMY 12	1/2" x 25 Gang	18	10	81	420
HF-PMY 13	1/2" x 25 Gang	25	15	76,5	510
HF-PMY 14	1/2" x 25 Gang	34	23	78,5	720
HF-PMY 15	1/2" x 25 Gang	44	30	78,5	830
Part numbers:					
Type	Insert complete			Spare nozzle	
To fit handle type STARLET: * Stainless Steel mixing tube					
HF-PMY 12	71651722			71605646	
HF-PMY 13	71651723			71605647	
To fit handle type STAR: * Stainless Steel mixing tube					
HF-PMY 14	71607294			71605648	
HF-PMY 15	71607295			71605649	
To fit handle type STAR: brass mixing tube					
HF-PMY 12	71605642			71605646	
HF-PMY 13	71605643			71605647	
HF-PMY 14	71605644			71605648	
HF-PMY 15	71605645			71605649	
Heating inserts available in other lengths.					Index

Heating insert SUPERTHERM F-PM 14-w



Version:

- Water cooled heating insert (mixing tube and heating nozzle).
- Ring shaped flame outlet from radial aligned flame outlet slots.
- Mixing tube, cooling water jacket and injector of brass.



Application:

- Surface area heating of steel and non-ferrous metals.
- Insert for applications with high heat reflection.
- Melting of Aluminum residue in foundry runners.

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)

To fit handle type STAR:

F-PM 12-w	2,5 - 3,0	ca. 1,0	21,2-24,2	5,6 - 6,4	2,5 - 3,0	1,0	21,2-24,2	13,2-15,1
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To fit handle type SUPERTHERM:

F-PM 14-w	4,0 - 9,0	1,0 - 2,4	20,0-40,0	5,4 - 10,7	4,0 - 9,0	1,0 - 2,4	20,0-40,0	12,5-19,4
F-PM 16-w	9,0-12,0	1,0 - 2,4	40,0-50,0	10,7 -13,4	9,0-12,0	1,3 - 2,5	40,0-50,0	25,0-31,3

Technical data:

Type	Cooling water			Flame outlet Ø [mm]	Insert length complete [mm] - without coolant pipe
	Pressure [bar]	Consumption [l/min]	Hose connections		

To fit handle type STAR:

F-PM 12-w	4,0	40	G 3/8" RH	20	480
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To fit handle type SUPERTHERM:

F-PM 14-w	4,0	40	G 3/8" RH	22	615
F-PM 16-w	4,0	40	G 3/8" RH	26	625

Part numbers:

Type	STAR	SUPERTHERM
F-PM 12-w	71652288	-
F-PM 14-w	-	71600785
F-PM 16-w	-	71601212

Heating inserts available in other lengths.

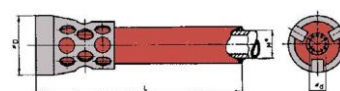
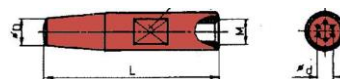
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Heating insert STAR F-A 9



Version:

- **Type STARLET:** Copper multi-jet nozzle with a ring of flame outlet jets.
- **Type STAR u. SUPERTHERM:** Copper multi-jet nozzle with a ring of flame outlet jets and additional heat resistant steel wear protection ring (beside Sz. 8).



Application:

- Pre and post heating when welding and flame cutting.
- Hard and soft soldering.
- Forming, melting, annealing, flanging.
- Straightening, shrinking, stretching.
- Burning off, drying tinning.

Operating data for gas type: Acetylene (A) / Oxygen					Technical data		
Type	Pressure [bar]		Consumption [m³/h]		Nozzle connection thread	Nozzle length [mm]	Insert length complete [mm]
	Oxygen	Acetylene	Oxygen	Acetylene			
To fit handle type STARLET:							
F-A 3	2,5 - 5,0	0,1 - 0,4	0,3 - 0,7	0,2 - 0,6	M 8	40	199
F-A 4	2,5 - 5,0	0,1 - 0,4	0,7 - 1,2	0,6 - 1,1	M 8	50	275
F-A 6	2,5 - 5,0	0,2 - 0,4	1,2 - 2,1	1,1 - 1,9	M 8	50	345
F-A 8	2,5 - 5,0	0,25 - 0,6	2,3 - 4,0	2,0 - 3,6	M 8	80	380
To fit handle type STAR:							
F-A 8	2,5 - 3,0	0,3	2,3 - 2,7	2,1 - 2,5	M14x1,5	80	435
F-A 9	2,5 - 3,0	0,3 - 0,4	3,2 - 4,9	2,9 - 3,5	Ø 14	103	685
To fit handle type SUPERTHERM:							
F-A 9	2,5 - 4,0	0,9	3,4 - 4,8	3,1 - 4,36	Ø 14	103	660
F-A 11	3,5 - 5,0	1,0	7,0 - 9,4	6,3 - 8,55	Ø 14	103	660
Part numbers:							
Type	Insert complete				Spare nozzle		
To fit handle type STARLET:							
F-A 3	71603443				71602080		
F-A 4	71601844				24114460		
F-A 6	71601846				24247610		
F-A 8	71601848				24213811		
To fit handle type STAR:							
F-A 8	24254800				24213811		
F-A 9	71600864				71600422 (Nozzle + Mixing pipe)		
To fit handle type SUPERTHERM:							
F-A 9	71602090				71600422 (Nozzle + Mixing pipe)		
F-A 11	71602091				71600423 (Nozzle + Mixing pipe)		
Heating inserts available in other lengths.							Index

Heating insert STAR FB-A 7



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.
- Mixing tube of brass or stainless steel (*).

Heating nozzle STAR FB-A 9



Application:

- Pre and post heating when welding and flame cutting.
- Hard and soft soldering.
- Forming, melting, annealing, flanging.
- Straightening, shrinking, stretching.
- Burning off, drying, tinning.

Operating data for gas type: Acetylene (A) / Oxygen					Technical data		
Type	Pressure [bar]		Consumption [m³/h]		Nozzle connection thread	Nozzle length [mm]	Insert length complete [mm]
	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)			
To fit handle type STARLET: * Stainless Steel mixing tube							
FB-A 5*	2,5 - 4,0	min. 0,5	0,5 - 0,9	0,5 - 0,8	M12x1,5	47	430
FB-A 6*	2,5 - 4,0	min. 0,5	0,9 - 1,6	0,8 - 1,5	M12x1,5	47	430
FB-A 7*	2,5 - 4,0	min. 0,5	1,2 - 2,2	1,1 - 2,0	M14x1,5	54	580
FB-A 8*	2,5 - 4,0	min. 0,5	1,8 - 2,8	1,6 - 2,6	M14x1,5	54	580
To fit handle type STAR: *Stainless Steel mixing tube							
FB-A 5	2,5 - 4,0	0,2	0,75 - 1,10	0,68 - 1,00	M12x1,5	47	310
FB-A 6	2,5 - 4,0	0,2	1,15 - 1,66	1,05 - 1,50	M12x1,5	47	325
FB-A 7	2,5 - 4,0	0,2	1,63 - 2,30	1,48 - 2,10	M14x1,5	54	390
FB-A 8	2,5 - 4,0	0,4	2,30 - 3,32	2,10 - 3,00	M14x1,5	54	410
FB-A 9	2,5 - 4,0	0,4 - 0,7	3,90 - 5,50	3,55 - 5,00	M18x1,5	61,5	675
FB-A 9*	2,5 - 4,0	0,4 - 0,7	3,90 - 5,50	3,55 - 5,00	M18x1,5	61,5	940
FB-A 10	3,0 - 4,0	0,6 - 0,7	4,50 - 6,10	4,10 - 5,50	M18x1,5	61,5	675
FB-A 10*	3,0 - 4,0	0,6 - 0,7	4,50 - 6,10	4,10 - 5,50	M18x1,5	61,5	1140
Other lengths on request.							
Part numbers for inserts and nozzles FB-A on the next page.							Index

Heating insert STAR FB-A



Nozzle FB-A 8

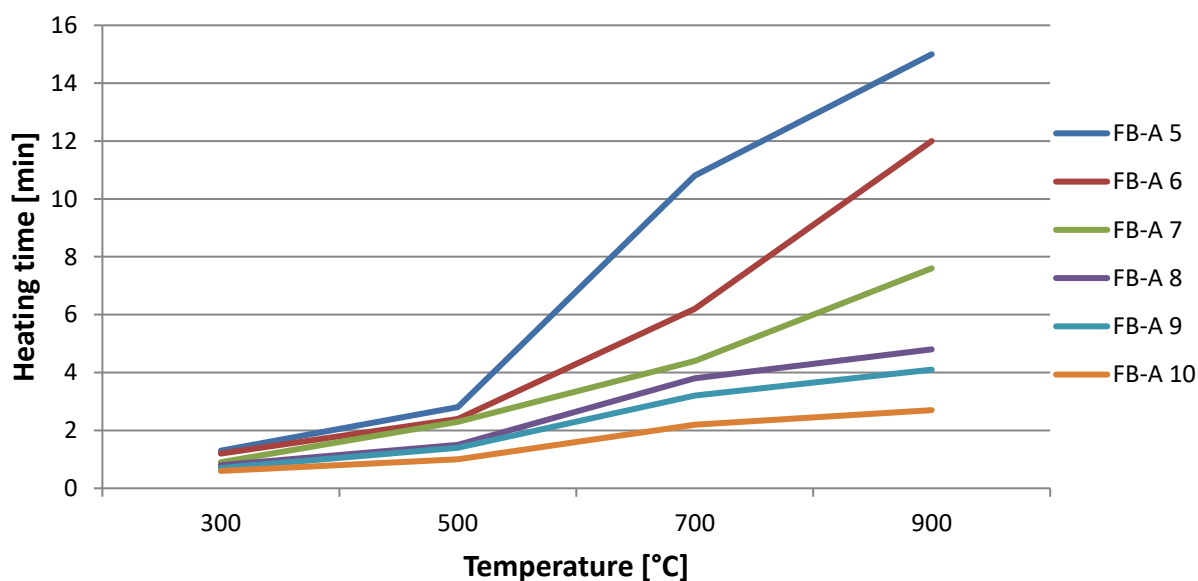


Part numbers:

Type	Insert complete	Spare nozzle
To fit handle type STARLET: *Stainless Steel mixing tube.		
FB-A 5*	71651809	71600725
FB-A 6*	71651810	71600726
FB-A 7*	71651811	71600727
FB-A 8*	71651812	71600728
To fit handle type STAR: *Stainless Steel mixing tube.		
FB-A 5	71601915	71600725
FB-A 6	71601916	71600726
FB-A 7	71600757	71600727
FB-A 8	71600758	71600728
FB-A 9	71600759	71600779
FB-A 9*	71607298	71600779
FB-A 10	71600772	71600780
FB-A 10*	71607299	71600780

Heating inserts available in other lengths.

Heating of 15 mm thick material



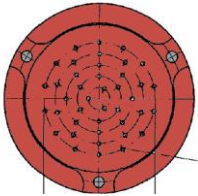
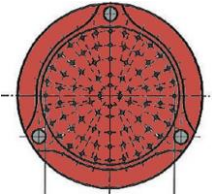
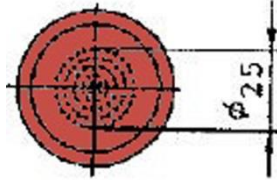
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Heating insert SUPERTHERM F 28 A



Version:

- With brazed, non-replaceable multi-jet Copper heating.
- Integrated pre-set mix distribution.
- Brass mixing tube.

		
• Typ F 18 A: With 5 flame outlet rings and a total of 60 jets.	• Typ F 28 A: With 5 flame outlet rings and a total of 78 jets.	• Typ F 25 A-w With water cooled heating nozzle.

Application:

- Pre and post heating when welding and flame cutting.
- Hard and soft soldering.
- Forming, melting, annealing, flanging.
- Straightening, shrinking, stretching.
- Burning off, drying, tinning.

Operating data for gas type: Acetylene (A) / Oxygen					Technical data			
Type	Pressure [bar]		Consumption [m³/h]		Outer ø nozzle [mm]	ø [mm] outer flame ring	Nozzle length [mm]	Insert length complete [mm]
	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)				
To fit handle type STAR:								
F 18 A	2,0 - 4,0	0,5 - 1,0	3,0 - 6,0	3,0 - 6,0	35	20	50	675
To fit handle type SUPERTHERM:								
F 28 A	2,0 - 4,0	0,5 - 1,0	10,0 - 12,0	10,0 - 12,0	40	28	80	800
F 25 A-w	2,0 - 4,0	0,5 - 1,0	10,0 - 12,0	10,0 - 12,0	63	25	50	700
Part numbers:								
Type	Heating insert complete				Spare nozzle (brazed onto mixing tube)			
To fit handle STAR:								
F 18 A	71604599				71605093			
To fit handle SUPERTHERM:								
F 28 A	71604421				71604406			
F 25 A-w	71604411				On request			
Heating inserts available in other lengths.								Index

Heating insert SUPERTHERM FG 20



Heating insert FG with heating nozzle FD 20/21 PMY



Heating nozzle FD



Version:

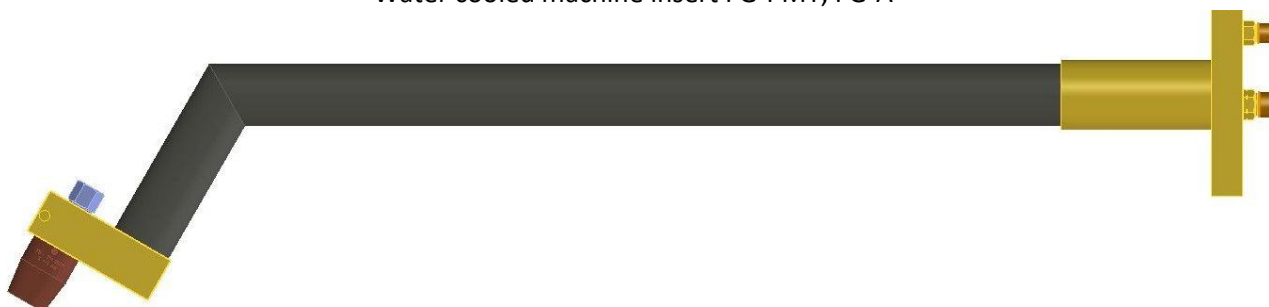
- High output torch for insert with gas mixing heating nozzles.
- With separate fuel gas and Oxygen feeds through two pipes one above the other. Fuel gas and Oxygen are not mixed until in the heating nozzle. This means that the torch is extremely back-fire resistant, even at high surrounding temperatures through radiant heat.
- Pipes and nozzle receptacle are stainless steel.
- The heating nozzle is fixed and adjusted in the nozzle receptacle by threaded bolts.

Applications:

- Forming of steels and non-ferrous metals.
- Pre and post heating when welding and flame cutting.
- Hard and soft soldering.
- Melting and annealing.
- Flanging, straightening.
- Tinning, burning off.
- Drying.

Heating insert SUPERTHERM FG 20; To fit handle SUPERTHERM.							Length: 920 mm	
Heating nozzles: 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)
FD 20/21 PMY	2,0-5,0	0,3-1,0	20,0-42,7	5,1-11,0	1,0 - 4,0	0,2 - 1,0	12,9-35,3	8,0 - 22,0
Heating nozzles: Operating data for gas type: MAPP (Y) / Oxygen und Acetylene (A) / Oxygen								
Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
FD 20/21 PMY	2,0-5,0	0,3-1,0	20,0-42,7	6,7-14,2	-	-	-	-
FD 20/12 A	-	-	-	-	2,0 - 4,0	0,3 - 1,0	4,2 - 7,0	3,8 - 6,4
FD 20/15 A	-	-	-	-	2,0 - 4,5	0,5 - 1,0	7,9 - 14,7	7,2 - 13,4
Part numbers:								
Heating insert SUPERTHERM FG-A 20 : FG-PMY 20				71602125 (without heating nozzle)				
Heating nozzles:								
Heating nozzle Type FD20/21 PMY				71602081				
Heating nozzle Type FD 20/12 A				71600765				
Heating nozzle Type FD 20/15 A				71600967				
Water cooled inserts for machine operation on the next page.								Index

Water cooled machine insert FG-PMY, FG-A



Version:

- High power torch for insert with gas mixing heating nozzles in mechanised operation.
- Fuel gas and Oxygen are not mixed until the heating nozzle.
- Water cooled torch tube made of stainless steel.
- The torch is extremely back-fire resistant, even at high surrounding temperatures through radiant heat.
- The heating nozzle is fixed and adjusted in the nozzle receptacle by threaded bolts.

Heating nozzle type FD



Application:

- Automated heating. Torch is used e.g. in presses to deform pipes.

Heating nozzles: 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)
FD 20/21 PMY	2,0-5,0	0,3 - 1,0	20,0-42,7	5,1-11,0	1,0-4,0	0,2-1,0	12,9-35,3	8,0 - 22,0

Heating nozzles: Operating data for gas type: MAPP (Y) / Oxygen and Acetylene / Oxygen

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
FD 20/21 PMY	2,0-5,0	0,3-1,0	20,0-42,7	6,7-14,2	-	-	-	-
FD 20/12 A	-	-	-	-	2,0-4,0	0,3 - 1,0	4,2 - 7,0	3,8 - 6,4
FD 20/15 A	-	-	-	-	2,0-4,5	0,5 - 1,0	7,9 - 14,7	7,2 - 13,4

Technical Data Heating Torch:

Connections:	Oxygen: G3/8" RH	Fuel gas: G3/8" LH	Cooling water: G1/4" RH
Dimensions:	Ø Torch pipe: 40 mm	Angle: 120°	Length: 655-120°-140

Other lengths, angles on request. Torch with multiple heating nozzles see chapter line torches.

Part numbers:

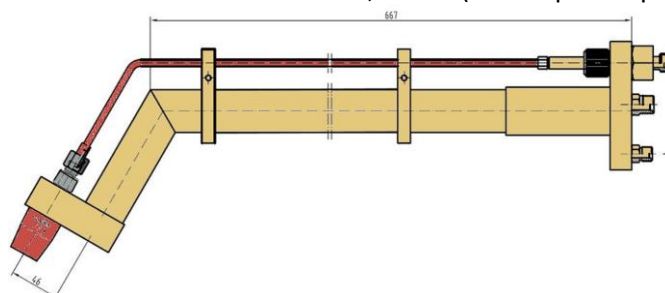
Heating insert FG-PMY und FG-A 71652365 (without heating nozzle)

Heating nozzles:

Heating nozzle type FD 20/21 PMY	71602081
Heating nozzle type FD 20/12 A	71600765
Heating nozzle type FD 20/15 A	71600967

Machine insert FGZ-PMY, FGZ-A with separate pilot flame on the next page.

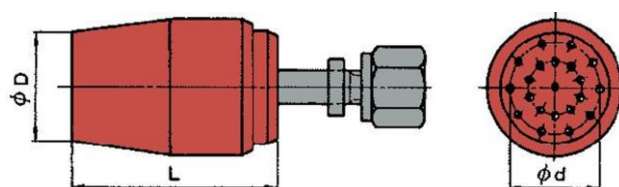
Water cooled machine insert FGZ-PMY, FGZ-A (with separate pilot flame)



Version:

- High power torch for insert with gas mixing heating nozzles in mechanised operation. Fuel gas and Oxygen are not mixed until the heating nozzle. Water cooled mixing tube. The torch is extremely back-fire resistant, even at high surrounding temperatures through radiant heat. The heating nozzle is fixed and adjusted in the nozzle receptacle by threaded bolts. Separately fed pilot ignition flame.

Heating nozzle type FDZ with central jet for separate pilot flame



Application:

- Automated heating. Torch is used e.g. in presses to deform pipes.

Heating nozzles: 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)
FDZ 20/21 PMY	2,0-5,0	0,3-1,0	20,0-42,7	5,1-11,0	1,0-4,0	0,2-1,0	12,9-35,3	8,0-22,0

Heating nozzles: Operating data for gas type: MAPP (Y) / Oxygen and Acetylene / Oxygen

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
FDZ 20/21 PMY	2,0-5,0	0,3-1,0	20,0-42,7	6,7-14,2	-	-	-	-
FDZ 20/12 A	-	-	-	-	2,0-4,0	0,3-1,0	4,2-7,0	3,8-6,4
FDZ 20/15 A	-	-	-	-	2,0-4,5	0,5-1,0	7,9-14,7	7,2-13,4

Technical Data Heating Torch:

Connections:	Oxygen: G3/8" RH	Fuel gas: G3/8" LH	Cooling water: G1/4" RH
	Ignition Oxygen: G1/4RH	Ignition fuel gas: G3/8LH	-
Dimensions:	Ø Torch pipe: 40 mm		Angle: 120° Length: 667-120°-140

Other lengths, angles on request. Torch with multiple heating nozzles see chapter line torches.

Part numbers:

Heating insert FGZ-PMY und FGZ-A 71652327 (without heating nozzle)

Heating nozzles:

Heating nozzle type FDZ 20/21 PMY	71603127
Heating nozzle type FDZ 20/12 A	71603125
Heating nozzle type FDZ 20/15 A	71603126

Different lengths and angles available on request.

Index

Heating insert STARLET ZD-P 26/4



Heating nozzle ZD-P 26/4

Version:

- Single jet, brass heating nozzle with flame stabilisation through corrugated Copper insert for a powerful flame picture.
- Brass injector and mixing tube.



Application:

- Hard soldering, annealing, burning off, heating.
- Melting torch in dental workshops.
- Pre and post heating when welding and flame cutting.

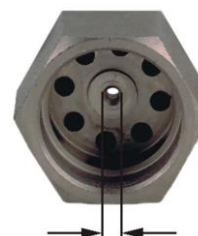
Operating data for gas type: Propane (P) / Compressed air					Technical data		
Type	Pressure [bar]		Consumption [m³/h]		Inner ø nozzle [mm]	ø Central flame outlet [mm]	Length Insert Complete [mm]
	Compressed air	Propane (P)	Compressed air	Propane (P)			
To fit handle type STARLET:							
ZD-P 26/4	3,0 - 5,0	0,5 - 1,0	8,2 - 15,0	0,43 - 0,79	26	4	270
Part numbers:							
Type	Insert complete			Spare nozzle			
ZD-P 26/4	71653318			71654740			
Heating inserts with different lengths and angles available on request.							Index

Heating insert STAR ZF-PM/D



- **Version:**
- Single jet heating nozzle with additional concentric stabilisation jets.
- One piece heating nozzle comprising inner nozzle welded to outer nozzle.
- Steel nozzle body, chemically Ni plated.
- Brass injector and mixing tube.

Heating nozzle ZF-PM/D



Application:

- Heating surfaces.
- Pre and post heating when welding and flame cutting.
- Soft soldering.

Operating data for gas type: Propane (P), Methane (M) / Compressed air						Technical data		
Type	Pressure [bar]		Consumption [m³/h]			Outer ø nozzle [mm]	ø [mm] Central flame outlet	Length Insert Complete [mm]
	Com- pressed air	Propane Methane (P M)	Com- pressed air	Propane (P)	Methane (M)			
To fit handle type STAR:								
ZF-PM/D 20/2	> 2,5	> 0,5	2,00	0,11	0,25	20	2	250
ZF-PM/D 20/3	> 2,5	> 0,5	2,64	0,14	0,33	20	3	250
ZF-PM/D 20/4	> 2,5	> 0,5	3,20	0,17	0,40	20	4	250
ZF-PM/D 20/5	> 2,5	> 0,5	3,76	0,20	0,47	20	5	250
ZF-PM/D 20/6	> 2,5	> 0,5	4,08	0,21	0,51	20	6	250
Part numbers:								
Type	Insert complete for Handle STAR				Spare nozzle Connection G1/4" (AG)			
ZF-PM/D 20/2	44140932				40141125			
ZF-PM/D 20/3	44140933				40141244			
ZF-PM/D 20/4	44140934				40140727			
ZF-PM/D 20/5	44140935				40140857			
ZF-PM/D 20/6	44140936				40140713			
Heating inserts with different lengths and angles available on request.								Index

Heating insert SL type ZF-PM/S or GVEN type ZF-PM/D (Picture: SL Siphon injector)



Version:

- Single jet heating nozzle with additional concentric stabilisation jets.
- One piece heating nozzle comprising inner nozzle welded to outer nozzle, nozzle body of heat resistant stainless steel.
- Steel mixing tube, chemically Ni plated, straight version.
- Type SL: with siphon air injector SL and ballcock (see picture).
- Type GVEN: with compressed air injector type GVEN.

Heating nozzle
ZF-PM/D 100/30



Application:

- Surface heating.
- Pre and post heating when welding and flame cutting.
- Drying.

Injector type GVEN



Operating data for gas type: Propane (P), Methane (M) / Compressed air						Technical data		
Type	Pressure [bar]		Consumption [m³/h]			Outer Ø nozzle [mm]	Ø [mm] Central jet nozzle	Length Insert [mm]
	Com- pressed air	Propane Methane (P M)	Com- pressed air	Propane (P)	Methane (M)			
Siphoned air injector SL and ballcock:								
ZF-PM/S 50/16	-	> 0,5	5 - 9	0,4 - 0,6	0,7 - 1,1	50	16	880
ZF-PM/S 70/20	-	> 0,5	11 - 19	0,8 - 1,3	1,4 - 2,4	70	20	920
ZF-PM/S 100/30	-	> 0,5	28 - 47	2,0 - 3,3	3,5 -5,8	100	30	1100
Compressed air with injector GVEN:								
ZF-PM/D 50/16	2-5 - 5,0	> 0,5	21 - 35	1,4 - 2,4	2,6 - 4,4	50	16	700
ZF-PM/D 70/20	2-5 - 5,0	> 0,5	45 - 75	3,0 - 5,0	5,6 - 9,4	70	20	892
ZF-PM/D 100/30	2-5 - 5,0	> 0,5	112-188	7,8-13,0	14,0-23,0	100	30	1379
Part numbers:				Spare parts				
Type	Heating insert complete for		Heating nozzle	Injector SL for siphoned air	Injector for compressed air		Type	Part No.
	ZF-PM/S: Siphoned air	ZF-PM/D: Compressed air						
ZF-PM/- 50/16	44140976	44140972	40140898	41340196	GVEN 15			44130234
ZF-PM/- 70/20	44140977	44140973	40141087	41340197	GEHV 20			71300172
ZF-PM/- 100/30	44140978	44140974	40140785	41340199	GEHV 25			71300313
Heating inserts with different lengths and angles available on request.								Index

Heating insert STAR ZL-PM/D



Version:

- Single jet heating nozzle with triple concentric stabilisation jets for a long, pointed flame.
- Brass nozzle body, chemically Ni plated.
- Brass mixing tube and injector.

Heating nozzle ZL-PM/D



Application:

- Surface heating.
- Soft soldering.
- Pre and post heating when welding and flame cutting.

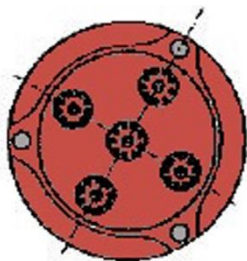
Operating data for gas type: Propane (P), Methane (M) / Compr. air						Technical data		
Type	Pressure [bar]		Consumption [m³/h]			Outer Ø nozzle [mm]	Ø [mm] Central flame outlet	Length Insert Complete [mm]
	Com- pressed air	Propane Methane (P M)	Com- pressed air	Propane (P)	Methane (M)			
To fit handle type STAR:								
ZL-PM/D 30/07	2,0 - 5,0	> 0,5	3,1 - 6,7	0,2 - 0,5	0,4 - 0,8	30	7	250
ZL-PM/D 35/08	2,0 - 5,0	> 0,5	4,4 - 9,6	0,3 - 0,7	0,6 - 1,2	35	8	250
ZL-PM/D 40/10	2,0 - 5,0	> 0,5	6,4 - 13	0,4 - 0,9	0,8 -1,6	40	10	250
To fit handle type SUPERTHERM:								
ZL-PM/D 40/12	2,0 - 5,0	> 0,5	8 - 16	0,4 - 0,8	1,0 - 2,0	40	12	250
ZL-PM/D 50/10	2,0 - 5,0	> 0,5	9 - 18	0,5 - 0,9	1,1 - 2,3	50	10	500
ZL-PM/D 50/13	2,0 - 5,0	> 0,5	12 - 24	0,6 - 1,3	1,5 - 3,0	50	13	500
ZL-PM/D 50/16	2,0 - 5,0	> 0,5	15 - 30	0,8 - 1,6	1,9 - 3,8	50	16	500
ZL-PM/D 50/17	2,0 - 5,0	> 0,5	1 6 - 32	0,8 - 1,7	2,0 - 4,0	50	17	500
Part numbers:								
Type	Insert complete for handle		Spare nozzle			Nozzle connection		
	STAR	SUPERTHERM						
ZL-PM/D 30/07	44140943		-			40140694		M14x1,5
ZL-PM/D 35/08	44140944		-			40140695		M14x1,5
ZL-PM/D 40/10	44140945		-			40140696		M14x1,5
ZL-PM/D 40/12	-		44140946			40140697		M14x1,5
ZL-PM/D 50/10	-		44140947			40140941		G 3/4"
ZL-PM/D 50/13	-		44140948			40140905		G 3/4"
ZL-PM/D 50/16	-		44140949			40140939		G 3/4"
ZL-PM/D 50/17	-		44140950			40140915		G 3/4"
Heating inserts with different lengths and angles available on request.								Index

Heating insert SUPERTHERM F 28 A/D

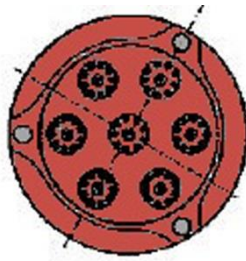


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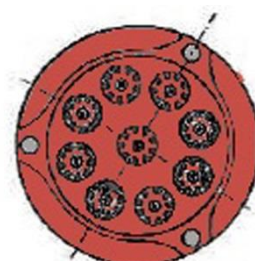
- Brazed Copper heating nozzle. Inner nozzle comprises brazed inner nozzle each with a central jet and concentrically arranged stabilisation jets.
- Brass mixing tube and injector.



5 inner nozzles: F 28 A/D-5



7 inner nozzles: F 28 A/D-7



9 inner nozzles: F 28 A/D-9

Application:

- Pre and post heating when welding and flame cutting.
- Drying.
- Pre and post heating up to ca. 500° C.

Operating data for gas type: Acetylene (A) / Compressed air					Technical data			
Type	Pressure [bar]		Consumption [m³/h]		Outer ø nozzle [mm]	Ø [mm] outer flame ring	Nozzle length [mm]	Insert length complete [mm]
	Com- pressed air	Acetylene (A)	Com- pressed air	Acetylene (A)				
To fit handle type SUPERTHERM:								
F 28 A/D-5	2,5 - 4,0	0,6	0,8 - 7,0	0,25 - 1,0	40	23	70	650
F 28 A/D-7	2,5 - 4,0	0,6	2,4 - 11,5	0,35 - 1,4	40	23	70	650
F 28 A/D-9	2,5 - 4,0	0,6	4,0 - 16,0	0,45 - 1,8	40	23	70	650
Part numbers:								
Type	Heating insert complete				Spare nozzle (brazed onto mixing tube)			
F 28 A/D-5	71654736				71654738			
F 28 A/D-7	71654737				71654739			
F 28 A/D-9	71653510				71653515			
Heating inserts with different lengths and angles available on request.								Index

Heating insert AIRTHERM FS-P



Heating insert AIRTHERM ZS-P



Version:

- Wide area flame outlet.
- Air siphon injector in torch tube.
- Steel nozzle.
- For connection to handle type AIRTHERM.

Version:

- Central flame outlet (Single jet nozzle).
- Air siphon injector in torch tube.
- Steel nozzle.
- For connection to handle type AIRTHERM.

Application:

- Hard and soft soldering.
- Pre and post heating when welding and flame cutting.
- Tinning, burning off.

Operating data for gas type: Propane (P) / Siphoned air			Technical data	
Type	Propane (P)		Inner Ø Nozzle [mm]	Ø Central jet flame outlet [mm]
	Pressure [bar]	Consumption [l/h]		
To fit handle type AIRTHERM:				
FS 12-P	1,5 - 2,0	50 - 58	12	-
FS 14-P	1,5 - 2,0	73 - 85	14	-
FS 17-P	1,5 - 2,0	107 - 124	17	-
FS 20-P	1,5 - 2,0	218 - 252	20	-
To fit handle type AIRTHERM:				
ZS 12/1,4-P	1,5 - 2,0	20 - 23	12	1,4
ZS 14/3,5-P	1,5 - 2,0	35 - 40	14	3,5
ZS 14/6,0-P	1,5 - 2,0	187 - 124	17	6,0
Part numbers:				
Type	Heating insert complete			
FS 12-P	71651910			
FS 14-P	71651911			
FS 17-P	71651912			
FS 20-P	71651913			
ZS 12/1,4-P	71651914			
ZS 14/3,5-P	71651915			
ZS 14/6,0-P	71651916			
				Index

Heating insert AIRTHERM FSH-P



Version:

- Siphoned air high power stainless steel injector nozzle.
- Can be used individually with various nozzle diameters and torch pipe lengths with the same handle type AIRTHERM. Simple assembly of handle, torch pipe and heating nozzle. Torch will be supplied in individual parts.

Heating nozzle FSH-P 60



Application:

- Hard and soft soldering.
- Pre and post heating when welding and flame cutting.
- Tinning, burning off, drying, pre-heating.

- The AIRTHERM heating nozzles can also be used in larger quantities for strip torches, ring torches and special torches. Torch layout on request.

Operating data for gas type: Propane (P) / Siphoned air			Technical data	Part number
Nozzle Type	Propane (P)		Ø Nozzle [mm]	Heating nozzle
	Pressure [bar]	Consumption [m³/h]		
Suitable for torch pipe type AIRTHERM:				
FSH-P 30	1,5 - 4,0	0,59 - 1,04	30	71651918
FSH-P 40	1,5 - 4,0	1,04 - 2,08	40	71651919
FSH-P 50	1,5 - 4,0	1,83 - 3,76	50	71651920
FSH-P 60	1,5 - 4,0	2,72 - 4,85	60	71651921
FSH-P 80	1,5 - 4,0	3,22 - 5,35	80	71651922
Torch pipe AIRTHERM	Torch pipe AIRTHERM curved Part number			
To fit handle type AIRTHERM:				
50 mm	05321250			
100 mm	05321240			
200 mm	05321260			
350 mm	05321270			
600 mm	05321280			
750 mm	05321290			
1000 mm	05321300			
Accessories	Part number			
Handle AIRTHERM	0463452			
Spare seal	71651917			
				Index

Heating insert AIRTHERM ZS 4 PMY 61



Version:

- Chrome plated steel air suction injector nozzle.
- Can be used individually with torch pipe lengths with the type AIRTHERM handle. Simple assembly of handle, torch pipe and heating nozzle. Torch will be supplied in individual parts.

Application:

- Hard and soft soldering.
- Pre and post heating when welding and flame cutting.
- Tinning, burning off, drying roughing, bending, forming, etc.
- Annealing of weld seams.
- Especially suitable for use with Methane (Natural gas) / siphoned air.

- The AIRTHERM heating nozzles can also be used in larger quantities for strip torches, ring torches and special torches. Torch layout on request.

Operating data for gas type: Propane (P) , Methane (M), MAPP (Y) / Siphoned air						
Nozzle Type	Pressure [bar]			Consumption [m3/h]		
	Propane (P)	Methane (M)	MAPP (Y)	Propane (P)	Methane (M)	MAPP (Y)
To fit torch pipe type AIRTHERM:						
ZS 4 PMY 61	1,5	0,2	1,0	0,82	0,56	0,72
Part No.	71654750					
Torch pipe AIRTHERM	Torch pipe AIRTHERM curved Part number					
To fit handle type AIRTHERM:						
50 mm	05321250					
100 mm	05321240					
200 mm	05321260					
350 mm	05321270					
600 mm	05321280					
750 mm	05321290					
1000 mm	05321300					
Accessories	Part number					
Handle AIRTHERM	0463452					
Nozzle Nipple	71602997					
Spare seal	71651917					
						Index

Heating insert AIRTHERM ZS-A 3



Version:

- Brass siphon injector nozzle, chromed.
- Can be used individually with nozzles and torch pipe lengths with the type AIRTHERM handle. Simple assembly of handle, torch pipe and heating nozzle.
- Torch will be supplied in individual parts.

Heating nozzle ZS-A 3



Application:

- Hard and soft soldering.
- Pre and post heating when welding and flame cutting.
- Tinning, burning off, drying, pre-heating.

- The AIRTHERM heating nozzles can also be used in larger quantities for strip torches, ring torches and special torches. Torch layout on request.

Operating data for gas type: Acetylene (A) / Siphoned air			Technical data	Part number
Nozzle Type	Acetylene		Length Nozzle [mm]	Heating nozzle
	Pressure [bar]	Consumption [m³/h]		
Suitable for torch pipe type AIRTHERM:				
ZS-A 1	0,5	0,014	72	71602581
ZS A-2	0,5	0,028	72	71602582
ZS A-3	0,5	0,165	74	71602583
ZS-A 4	0,5	0,310	76	71602584
ZS-A 5	0,5	0,850	79	71602585
Torch pipe AIRTHERM	Torch pipe AIRTHERM angled Part number			
To fit handle type AIRTHERM:				
50 mm	05321250			
100 mm	05321240			
200 mm	05321260			
350 mm	05321270			
600 mm	05321280			
750 mm	05321290			
1000 mm	05321300			
Accessories	Part number			
Handle AIRTHERM	0463452			
Nozzle nipple	71603146			
Spare seal	71651917			
				Index

MINITHERM Glass top piece with clamping ring threads



STARLET Glass top piece with clamping ring threads



Version:

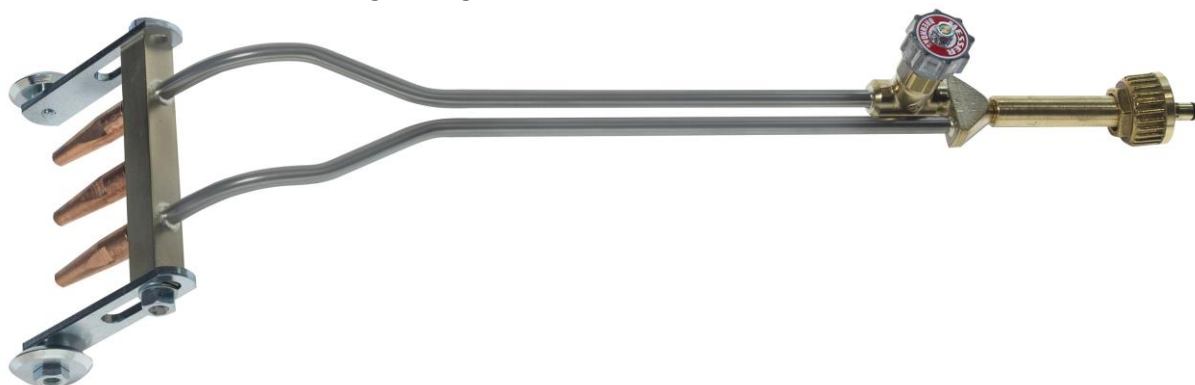
- **MINITHERM:**
Injector chemically Ni plated, stainless steel threads, clamping ring of stainless steel.
- **STARLET and STAR:**
Injector chemically Ni plated, clamping ring threads of stainless steel with three O ring seals.

Application:

- For clamping quartz glass nozzles (Nozzles are not in our scope of supply).
- Heating and melting of quartz and Quartz glass.

To fit handle	Size	Clamping Ø [mm]	Total length [mm]	Ø [mm] Nozzle outlet	Part No.
MINITHERM	00	6	69	0,50	71650485
MINITHERM	0	6	69	0,63	71650486
MINITHERM	1	6	69	0,74	71650487
MINITHERM	2	6	69	0,93	71650488
MINITHERM	3	6	69	1,35	71650489
STARLET	0	8	127	0,90	71650900
STARLET	1	8	127	1,10	71650901
STARLET	2	8	127	1,60	71650902
STARLET	3	8	127	2,40	71650903
STARLET	4	8	127	3,10	71650904
STARLET	5	10	143	3,80	71650905
STARLET	6	10	160	4,40	71650906
STARLET	7	12	167	4,90	71650907
STARLET	8	12	167	5,40	71650908
STAR	7	12	177	4,90	71650895
STAR	8	12	187	5,40	71650896
					Index

Flame straightening torch STAR Z-A 3 – switchable 3/2 nozzles



Version:

- Switchable torch for use with either two or three nozzles as selected or non-switchable torch with 2, 3 or 5 nozzles.
- Running wheels on side on longitudinally adjustable guide rail ensure consistent torch guidance over the workpiece.

Application:

- Flame straightening, e.g. in shipbuilding, vehicle building, crane making or in the metalworking industry. To combat angular deformation when welding plates.

Industry: To connect angular deformation when welding plates.

Operating data for gas type: Acetylene (A) / Oxygen						Tech. data	
Type number of nozzles	Pressure [bar]		Consumption [m³/h]		Welding range [mm]	Length Insert complete [mm]	
	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)			
To fit handle type STARLET - with 2, 3 or 5 nozzles (not switchable):							
Z-A 4/2	2,5 - 3,5	0,2 - 0,5	0,9	0,64	4 - 6	1075	
Z-A 3/3	2,5 - 3,5	0,2 - 0,5	1,35	0,96	2 - 4	1075	
Z-A 4/3	2,5 - 3,5	0,2 - 0,5	2,10	1,50	4 - 6	1075	
Z-A 3/5	2,5 - 3,5	0,2 - 0,5	2,25	1,60	2 - 4	1075	
Z-A 4/5	2,5 - 3,5	0,2 - 0,5	3,50	2,50	4 - 6	1075	
To fit handle type STAR - with 3 nozzles (not switchable):							
Z-A 3/3	2,5 - 3,5	0,2 - 0,5	1,35	0,96	2 - 4	500	
To fit handle type STAR - switchable for use with 3 or 2 alternatively 5 or 3 nozzles:							
Z-A 3 - 3/2	2,5 - 3,5	0,2 - 0,5	1,35	0,96	2 - 4	505	
Z-A 4 - 3/2	2,5 - 3,5	0,2 - 0,5	2,10	1,50	4 - 6	540	
Z-A 3 - 5/3	2,5 - 3,5	0,2 - 0,5	2,25	1,60	2 - 4	540	
Z-A 4 - 5/3	2,5 - 3,5	0,2 - 0,5	3,50	2,50	4 - 6	550	
Operating data for gas type: Propane (P), Methane (M), MAPP (Y) / Oxygen						Tech. data	
Type number of nozzles	Pressure [bar]		Consumption [m³/h]				Length Insert complete [mm]
	Oxygen	Fuel gas (P M Y)	Oxygen	Propane (P)	Methane (M)	MAPP (Y)	
To fit handle type STARLET - 3 or 5 nozzles (not switchable):							
Z-PMY 4/3	2,5 - 3,5	ca. 0,5	2,10	0,56	1,31	0,70	1075
Z-PMY 4/5	2,5 - 3,5	ca. 0,5	3,50	0,93	2,19	1,17	1075
To fit handle type STAR - 3 nozzles (not switchable):							
Z-PMY 4/3	2,5 - 3,5	ca. 0,5	2,10	0,56	1,31	0,70	500
Flame straightening kit and part numbers on the next page.						Index	

Flame straightening kit contents



Flame straightening kit case



• Version for Acetylene / Oxygen:

- Handle STAR 2020.
- Welding insert STAR 210, Z-A size 2.
- Welding insert STAR 210, Z-A size 3.
- Welding insert STAR 210, Z-A size 6.
- Welding insert STAR 210, Z-A size 7.
- Heating insert STAR FB-A size 7.
- Flame straightening insert STAR Z-A 3 /3.
- Nozzle cleaning set.
- Gas lighter.
- Complete in Aluminum system case with foam inlay. (62 x 43 x 22 cm).

• Version for Propane / Oxygen

- Handle STAR 2020.
- Heating insert STAR Z-PMY size 6.
- Heating insert STAR Z-PMY size 10.
- Heating insert STAR F-PM size 8.
- Heating insert STAR F-PM size 12.
- Flame straightening insert STAR Z-PMY 4 /3.
- Nozzle cleaning set.
- Gas lighter.
- Complete in Aluminum system case with foam inlay. (62 x 43 x 22 cm).

Part numbers:		
Type	Flame straightening insert	Spare nozzle
To fit handle type STARLET: Acetylene / Oxygen		
Z-A 4/2	71607287	24234410
Z-A 3/3	71606810	24234310
Z-A 4/3	71606811	24234410
Z-A 3/5	71606812	24234310
Z-A 4/5	71606813	24234410
To fit handle type STARLET: Propane / Oxygen		
Z- PMY 4/3	71607336	71616714
Z-PMY 4/5	71607337	71616714
To fit handle type STAR: Acetylene / Oxygen		
Z-A 3/3	71607664	24234310
Z-A 3 – 3/2	71601760	24234310
Z-A 4 – 3/2	71601761	24234410
Z-A 3 – 5/3	71601762	24234310
Z-A 4 – 5/3	71601763	24234410
To fit handle type STAR: Propane / Oxygen		
Z-PMY 4/3	71607665	71616714
Flame straightening kit in system case:		
Acetylene	71607662	-
Propane	71607663	-
		Index

Max. flame power [KW] – overall view Forked torches:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
MINITHERM: Propane, Methane / Oxygen – multi-hole nozzles						
MINITHERM	FKZ-PMY 1	4,86	4,27	-	71650828	66
MINITHERM	FKZ-PMY 2	5,82	4,64	-	71650829	66
MINITHERM: Acetylene / Oxygen – multi-hole nozzles						
MINITHERM	FKZ-AH 1	-	-	10,06	71650820	66
MINITHERM	FKZ-AH 2	-	-	11,61	71650821	66
MINITHERM: Propane, Methane / Oxygen – single-hole nozzles						
MINITHERM	Z-PMYE 000	0,26	0,21	-	71650467	67
MINITHERM	Z-PMYE 00	0,44	0,36	-	71650468	67
MINITHERM	Z-PMYE 0	0,96	0,78	-	71650469	67
MINITHERM	Z-PMYE 1	2,08	1,66	-	71650470	67
MINITHERM	Z-PMYE 2	3,95	3,15	-	71650471	67
MINITHERM	Z-PMYE 3	6,11	4,86	-	71650472	67
MINITHERM: Acetylene / Oxygen – single-hole nozzles						
MINITHERM	Z-AH 00	-	-	1,03	71650463	67
MINITHERM	Z-AH 0	-	-	2,01	71650464	67
MINITHERM	Z-AH 1	-	-	4,32	71650465	67
MINITHERM	Z-AH 2	-	-	8,19	71602560	67
MINITHERM	Z-AH 3	-	-	12,65	71650466	67
STARLET: Propane, Methane / Oxygen – single-hole nozzles						
STARLET	Z-PM 1	3,64	2,92	-	71650756	68
STARLET	Z-PM 2	7,80	5,83	-	71650757	68
STARLET	Z-PM 3	9,62	7,69	-	71650758	68
STARLET: Propane, Methane / Oxygen - multi-hole nozzles						
STARLET	F-PM 1	7,80	6,10	-	71650759	68
STARLET	F-PM 2	14,55	11,58	-	71650760	68
STARLET	F-PM 3	17,15	13,79	-	71650761	68
STARLET: Acetylene / Oxygen – single-hole nozzles						
STARLET	Z-A 2	-	-	3,95	71650762	68
STARLET	Z-A 3	-	-	10,44	71650763	68
STARLET	Z-A 4	-	-	18,03	71650764	68
STARLET	Z-A 5	-	-	35,74	71650765	68
STARLET: Acetylene / Oxygen - multi-hole nozzles						
STARLET	F-A 1	-	-	6,17	71650766	68
STARLET	F-A 2	-	-	10,44	71650767	68
STARLET	F-A 3	-	-	18,03	71650768	68
STARLET	F-A 4	-	-	24,83	71650769	68
STARLET	F-A 5	-	-	35,74	71650770	68
					Index	

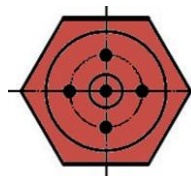
Forked torch MINITHERM FKZ



Version:

- Two brass torch pipes with brazed nozzle connection nipples.
- Exchangeable Copper multi-jet heating nozzles.
- Stainless steel distributor piece.

Nozzle size 1



Nozzle size 2



Application:

- Building pipelines and heat exchangers.
- Assembly and installation work.
- Final installation household equipment.
- Production of water and gas manifolds.
- Production lines and assembly belts.
- Glass processing.

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

Type	Pressure [bar]		Consumption [l/h]			
	Oxygen	Fuel gas (P M Y)	Oxygen	Fuel gas		
				(P)	(M)	(Y)
To fit handle type MINITHERM:						
FKZ-PMY 1	2,0 - 4,0	> 0,5	420 - 700	112 - 187	263 - 483	150 - 250
FKZ-PMY 2	3,0 - 5,0	> 0,5	550 - 840	147 - 224	344 - 525	196 - 300

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

Type	Oxygen	(A H)	Oxygen	Acetylene (A)	Hydrogen (H)
To fit handle type MINITHERM:					
FKZ-AH 1	2,0 - 4,0	> 0,5	420 - 700	382 - 636	1170 - 1795
FKZ-AH 2	3,0 - 5,0	> 0,5	550 - 840	500 - 734	1528 - 2039

Technical data:

Weight [g]	Length [mm]	Nozzle stand-off [mm]	Nozzles Connection thread	Nozzle Outer Ø [mm]	Ø[mm] Flame circle
144	210	30 – 35	M9x1	9	5,5

Part numbers:

Type	Forked torch MINITHERM complete	Spare nozzle	Nozzle type
FKZ-PMY 1	71650828	71650800	FKZ-PMY 1
FKZ-PMY 2	71650829	71650801	FKZ-PMY 2
FKZ-AH 1	71650820	71650798	FKZ-AH 1
FKZ-AH 2	71650821	71650799	FKZ-AH 2
			Index

Forked torch MINITHERM Z-PMYE und Z-AH



Version:

- Two flexible Copper torch nozzles with hammered mouthpieces.
- Brazed, non-exchangeable Copper heating nozzles. Stainless steel distribution piece.

Application:

- Building pipelines and heat exchangers.
- Assembly and installation work.
- Final installation household equipment.
- Production of water and gas manifolds.
- Production lines and assembly belts.
- Glass processing.

Operating data for gas type PMYE: Propane (P), Methane (M), MAPP (Y), Ethylene (E) / Oxygen

Type	Pressure [bar]		Consumption [l/h]				
	Oxygen	Fuel gas (P M Y E)	Oxygen	Fuel gas			
				(P)	(M)	(Y)	(E)
To fit handle type MINITHERM:							
Z-PMYE 000	0,5 - 2,0	> 0,5	15 - 38	4 - 10	9 - 24	5 - 13	8 - 20
Z-PMYE 00	0,5 - 2,0	> 0,5	26 - 65	7 - 17	16 - 41	9 - 22	14 - 34
Z-PMYE 0	0,5 - 2,0	> 0,5	56 - 140	15 - 37	35 - 88	19 - 47	29 - 74
Z-PMYE 1	0,5 - 2,0	> 0,5	120 - 300	32 - 80	75 - 188	40 - 100	63 - 158
Z-PMYE 2	1,0 - 3,0	> 0,5	310 - 570	83 - 152	194 - 356	103 - 190	103 - 300
Z-PMYE 3	1,0 - 5,5	> 0,5	430 - 880	115 - 235	269 - 550	143 - 293	226 - 463

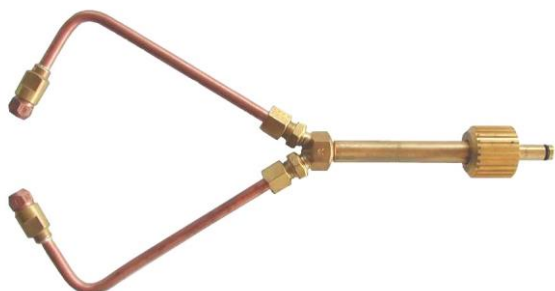
Operating data for gas type: Acetylene (A), Hydrogen (H) / Oxygen

Type	Oxygen	(A H)	Oxygen	Acetylene (A)	Hydrogen (H)
To fit handle type MINITHERM:					
Z-AH 00	0,5 - 2,0	> 0,5	26 - 65	26 - 65	72 - 181
Z-AH 0	0,5 - 2,0	> 0,5	56 - 140	51 - 127	156 - 389
Z-AH 1	0,5 - 2,5	> 0,5	120 - 300	109 - 273	333 - 833
Z-AH 2	1,0 - 3,0	> 0,5	310 - 570	282 - 518	861 - 1583
Z-AH 3	2,0 - 5,5	> 0,5	430 - 880	391 - 800	1194 - 2444

Technical data:

Weight [g]	Length [mm]	Nozzle stand-off [mm]	Nozzle pipe length [mm]
90	210	30 - 35	100
Part numbers:			
	Z-PMYE	Z-AH	
size 000	71650467	-	
size 00	71650468	71650463	
size 0	71650469	71650464	
size 1	71650470	71650465	
size 2	71650471	71602560	
size 3	71650472	71650466	
			Index

Forked torch STARLET F-PM, F-A, Z-PM



Forked torch STARLET Z-A



Version:

- Two flexible Copper torch nozzles with exchangeable heating nozzles, type Z-A Brazed, non-exchangeable heating nozzles (mouth pieces).
- Threaded, exchangeable torch pipe.

Application:

- Building pipelines and heat exchangers.
- Assembly and installation work.
- Final installation household equipment.
- Production lines and assembly belts.
- Glass processing.

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

Type	Pressure [bar]		Consumption [m³/h]		
	Oxygen	(P M)	Oxygen	Propane (P)	Methane (M)
To fit handle type STARLET; with exchangeable single jet nozzles:					
Z-PM 1	1,0 - 4,0	0,5 - 1,0	0,52	0,14	0,33
Z-PM 2	1,0 - 4,0	0,5 - 1,0	1,11	0,30	0,66
Z-PM 3	1,0 - 4,0	0,5 - 1,0	1,40	0,37	0,87
To fit handle type STARLET; with exchangeable multi-jet nozzles:					
F-PM 1	1,0 - 4,0	0,5 - 1,0	1,11	0,30	0,69
F-PM 2	1,0 - 4,0	0,5 - 1,0	2,09	0,56	1,31
F-PM 3	1,0 - 4,0	0,5 - 1,0	2,49	0,66	1,56

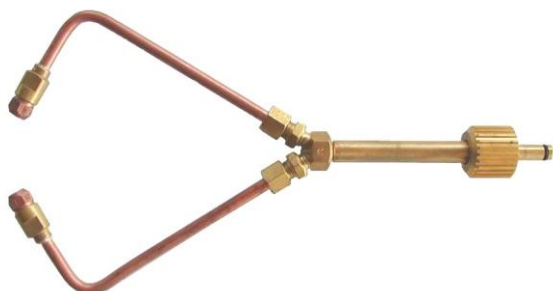
Operating data for gas type: Acetylene (A) / Oxygen

Type	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
To fit handle type STARLET; with brazed, non-exchangeable single jet nozzles:				
Z-A 2	2,5	0,5	0,28	0,25
Z-A 3	2,5	0,5	0,73	0,66
Z-A 4	2,5	0,5	1,25	1,14
Z-A 5	2,5	0,5	2,49	2,26
To fit handle type STARLET; with exchangeable multi-jet nozzles:				
F-A 1	2,5	0,5	0,43	0,39
F-A 2	2,5	0,5	0,73	0,66
F-A 3	2,5	0,5	1,25	1,14
F-A 4	2,5	0,5	1,73	1,57
F-A 5	2,5	0,5	2,49	2,26

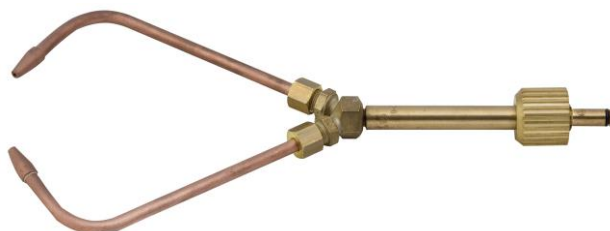
Technical data und Part numbers on the next page.

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Forked torch STARLET F-PM, F-A, Z-PM



Forked torch STARLET Z-A

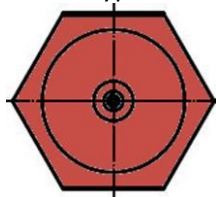


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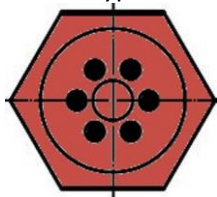
Weight [g]	Length [mm]	Nozzle stand-off [mm]	Connection thread	Nozzles - Outer Ø [mm]	Ø Flame circle [mm]
100	250	30 - 60	M9x1	9	5,5

Different jet diameters according to gas type and nozzle sizes. Jet pattern as below:

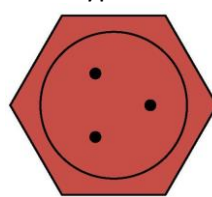
Nozzles type ZK-PM



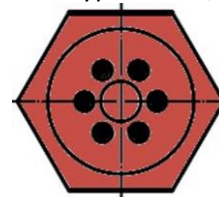
Nozzles type FK-PM



Nozzles type FK-A 1 + 2



Nozzles type FK-A 3, 4, 5



Part numbers:

Type	Forked torch	Spare nozzle	Type nozzle	No. of jets
To fit handle type STARLET; with exchangeable single jet nozzles: Propane (P), Methane (M)				
Z-PM 1	71650756	71603011	ZK-PM 1	1
Z-PM 2	71650757	71603012	ZK-PM 2	1
Z-PM 3	71650758	71603013	ZK-PM 3	1
To fit handle type STARLET; with exchangeable multi-jet nozzles: Propane (P), Methane (M)				
F-PM 1	71650759	71603016	FK-PM 1	6
F-PM 2	71650760	71603017	FK-PM 2	6
F-PM 3	71650761	71603018	FK-PM 3	6
To fit handle type STARLET; with brazed, non-exchangeable single jet nozzles: Acetylene (A)				
Z-A 2	71650762	on request	-	1
Z-A 3	71650763	on request	-	1
Z-A 4	71650764	on request	-	1
Z-A 5	71650765	on request	-	1
To fit handle type STARLET; with exchangeable multi-jet nozzles: Acetylene (A)				
F-A 1	71650766	71603006	FK-A 1	3
F-A 2	71650767	71603007	FK-A 2	3
F-A 3	71650768	71603008	FK-A 3	6
F-A 4	71650769	71652217	FK-A 4	6
F-A 5	71650770	71652883	FK-A 5	6
				Index

Max. flame power [KW] – overall view Flame washing inserts, Line heating torches:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
Flame washing inserts STAR T-PM: Propane, Methane / oxygen – 3-rows drilled						
STAR	<u>T-PM 50</u>	25,99	23,86	-	71600523	72
STAR	<u>T-PM 100</u>	51,98	47,72	-	71600524	72
STAR	<u>T-PM 150</u>	77,96	72,46	-	71600525	72
Flame washing inserts SUPERTHERM T-PM: Propane, Methane / Oxygen – 3-rows drilled						
SUPERTHERM	<u>T-PM 200</u>	114,35	82,19	-	71602107	72
SUPERTHERM	<u>T-PM 250</u>	142,93	101,63	-	71602108	72
Flame washing inserts STAR T-A: Acetylene / Oxygen – 1-row drilled						
STAR	<u>T-A 50</u>	-	-	15,81	71600520	72
STAR	<u>T-A 100</u>	-	-	31,63	71600521	72
STAR	<u>T-A 150</u>	-	-	47,44	71600522	72
Flame washing inserts SUPERTHERM T-A: Acetylene / Oxygen – 1-row drilled						
SUPERTHERM	<u>T-A 200</u>	-	-	63,26	71602105	72
SUPERTHERM	<u>T-A 250</u>	-	-	79,07	71602106	72
Line heating torch RBF-PM: Propane, Methane / Oxygen						
STAR	<u>RBF-PM 200</u>	52,27	41,66	-	54140961	74
STAR	<u>RBF-PM 400</u>	99,80	79,54	-	54140962	74
STAR	<u>RBF-PM 500</u>	123,56	98,47	-	71653789	74
STAR	<u>RBF-PM 600</u>	147,32	117,41	-	54140963	74
SUPERTHERM	<u>RBF-PM 800</u>	243,55	194,11	-	54140964	74
SUPERTHERM	<u>RBF-PM 1000</u>	302,95	241,45	-	54140965	74
SUPERTHERM	<u>RBF-PM 1200</u>	362,35	288,79	-	71653746	74
SUPERTHERM	<u>RBF-PM 1500</u>	451,46	359,81	-	71653956	74
SUPERTHERM	<u>RBF-PM 2000</u>	599,96	478,17	-	54140966	74
Line heating torch RBF-A: Acetylene / Oxygen						
STAR	<u>RBF-A 200</u>	-	-	64,75	44140961	74
STAR	<u>RBF-A 400</u>	-	-	123,62	44140962	74
STAR	<u>RBF-A 600</u>	-	-	182,49	44140963	74
SUPERTHERM	<u>RBF-A 800</u>	-	-	301,70	44140964	74
SUPERTHERM	<u>RBF-A 1000</u>	-	-	375,28	44140965	74
Line heating torch with 5 gas-mixing heating nozzles type FD:						
Anschlussplatte	<u>FG-20/21-PMY-5</u>	1429,34	972,09	-	On request	76
Anschlussplatte	<u>FG-20/12-A-5</u>	-	-	506,04	On request	76
Anschlussplatte	<u>FG-20/15-A-5</u>	-	-	1059,53	On request	76
Line heating torch STAR TF-PM/D: Propane, Methane / Compressed air						
STAR	<u>TF-PM/D 50</u>	14,03	11,40	-	71651644	78
STAR	<u>TF-PM/D 100</u>	22,09	17,94	-	71651645	78
STAR	<u>TF-PM/D 150</u>	28,07	22,80	-	71651646	78
STAR	<u>TF-PM/D 200</u>	43,40	35,00	-	71651647	78
Line heating torch SUPERTHERM TF-PM/D: Propane, Methane / Compressed air						
SUPERTHERM	<u>TF-PM/D 250</u>	51,20	41,36	-	71651648	78
SUPERTHERM	<u>TF-PM/D 300</u>	65,75	53,02	-	71651649	78
					Index	

Max. flame power [KW] – overall view Line heating torches:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
Line heating torch STAR RB-PM/D: Propane, Methane / Compressed air - ^{*1} with nozzles Z-PM/D 24/3						
STAR	<u>RB-PM/D 200^{*1}</u>	4,42	3,62	-	44140966	79
STAR	<u>RB-PM/D 400^{*1}</u>	8,32	6,80	-	44140967	79
STAR	<u>RB-PM/D 500^{*1}</u>	10,40	8,40	-	71652372	79
STAR	<u>RB-PM/D 600^{*1}</u>	12,47	9,99	-	44140968	79
Line heating torch SUPERTHERM RB-PM/D: Propane, Methane / Compr. air - ^{*1} with nozzles Z-PM/D 24/3						
SUPERTHERM	<u>RB-PM/D 800^{*1}</u>	20,53	16,53	-	44140969	79
SUPERTHERM	<u>RB-PM/D 1000^{*1}</u>	23,13	20,50	-	44140970	79
Line heating torch GVEN RB-PM/D: Propane, Methane / Compressed air - ^{*1} with nozzles Z-PM/D 24/3						
GVEN	<u>RB-PM/D 2000^{*1}</u>	60,29	48,69	-	71653506	79
GVEN	<u>RB-PM/D 3000^{*1}</u>	89,92	72,73	-	71652388	79
Line heating torch STAR RT-PM/D: Propane, Methane / Compressed air - ^{*1} with nozzles Z-PM/D 24/3						
STAR	<u>RT-PM/D 400^{*1}</u>	8,32	6,80	-	71653811	79
STAR	<u>RT-PM/D 500^{*1}</u>	10,40	8,40	-	71653570	79
STAR	<u>RT-PM/D 600^{*1}</u>	12,47	9,99	-	71654161	79
Line heating torch GVEN RT-PM/D: Propane, Methane / Compressed air – ^{*1} with nozzles Z-PM/D 24/3; ^{*2} ZF-PM/D 20/2						
GVEN	<u>RT-PM/D 600^{*2}</u>	4,68	3,71	-	71652852	79
GVEN	<u>RT-PM/D 800^{*1}</u>	20,53	16,53	-	71654162	79
GVEN	<u>RT-PM/D 1000^{*1}</u>	23,13	20,50	-	71652898	79
GVEN	<u>RT-PM/D 1500^{*1}</u>	37,94	30,58	-	71652887	79
GVEN	<u>RT-PM/D 2000^{*2}</u>	22,09	17,94	-	71653208	79
GVEN	<u>RT-PM/D 3000^{*1}</u>	89,92	72,73	-	71653207	79
GVEN	<u>RT-PM/D 4000^{*2}</u>	44,44	35,79	-	71653276	79
Line heating torch STAR T-A/D: Acetylene / Compressed air						
STAR	<u>T-A/D 50</u>	-	-	1,90	71654741	82
STAR	<u>T-A/D 100</u>	-	-	3,80	71652710	82
STAR	<u>T-A/D 150</u>	-	-	5,69	71654742	82
STAR	<u>T-A/D 200</u>	-	-	7,59	71654743	82
Line heating torch RB-PM/S: Propane, Methane (20-50 mbar) / Siphoned air						
SL	<u>RB-PM/S-6-500</u>	7,02	6,36	-	44171478	83
SL	<u>RB-PM/S-6-1000</u>	13,77	12,63	-	44171479	83
SL	<u>RB-PM/S-6-1500</u>	20,79	19,44	-	44171480	83
SL	<u>RB-PM/S-6-2000</u>	27,81	25,36	-	44171481	83
SL	<u>RB-PM/S-6-4000</u>	55,61	50,73	-	71653092	83
					<u>Index</u>	

Flame washing insert T-A 50 or T-PM 50



Version:

- **Type T-PM:** Three row drilled Copper strip torch head with screwed on stainless steel plate wear protection. Staggered jets, outermost row of jets inclined inwards by 12.5° for centred flame outlet.
From T-PM 150 upwards with double gas mix pre-distribution at the torch head.
- **Type T-A:** Single row drilled Copper strip torch head with screwed on stainless steel plate wear protection.
- **Type T-PM-w and T-A-w** with water cooled torch heads, Connection threads G1/4" RH for cooling water inlet and outlet on the underside of the torch head. All torch heads with threaded holes on the side for subsequent assembly of running wheels to be ordered separately.

Application:

- Flame washing: Thermal treatment of steel or concrete surfaces to loosen, transform and convert corroded surfaces.
- Removing rust or mill scale, burning off paint, brazing, annealing, tempering, hardening.

Operating data for gas type: Propane (P), Methane (M) / Oxygen						
Type	Pressure [bar]			Consumption [m³/h]		
	Oxygen	Propane (P)	Methane (M)	Oxygen	Propane (P)	Methane (M)
To fit handle type STAR:						
T-PM 50	4,0 - 5,0	0,2 - 0,3	0,2 - 0,3	2,9 - 3,7	0,8 - 1,0	2,1 - 2,7
T-PM 100	4,0 - 5,0	0,2 - 0,3	0,2 - 0,3	5,3 - 7,3	1,4 - 2,0	3,9 - 5,4
T-PM 150	4,0 - 5,0	0,2 - 0,3	0,2 - 0,3	9,4 - 11,0	2,5 - 3,0	7,0 - 8,2
To fit handle type SUPERTHERM:						
T-PM 200	4,0 - 5,0	0,5	0,5	14,5 - 16,0	4,4	9,3
T-PM 250	4,0 - 5,0	0,5	0,5	20,0	5,5	11,5
Operating data for gas type: Acetylene (A) / Oxygen						
Type	Oxygen	Acetylene (A)		Oxygen	Acetylene (A)	
To fit handle type STAR:						
T-A 50	3,0	0,5		1,25	1,0	
T-A 100	4,0	0,6		2,50	2,0	
T-A 150	5,0	0,7		3,75	3,0	
To fit handle type SUPERTHERM:						
T-A 200	3,5 - 4,5	0,7		5,0	4,0	
T-A 250	3,5 - 4,5	0,7		6,25	5,0	
Technical data und Part numbers on the next page.					Index	

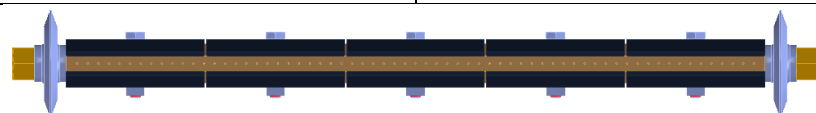
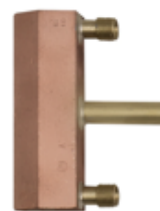
Flame washing insert T-PM 150



Flame washing insert T-A 50



Water cooled



Torch head with mounted rollers

Technical data:

Type	Flame width [mm]	Height torch head [mm]	Length torch [mm]	Weight [g]
T-PM 50	50	35	402	547
T-PM 100	100	35	432	846
T-PM 150	150	35	547	1321
T-PM 200	200	35	643	2300
T-PM 250	250	35	663	6400
T-A 50	50	40	503	568
T-A 100	100	40	523	951
T-A 150	150	40	533	1400
T-A 200	200	40	1300	2390
T-A 250	250	40	1300	5500

Part numbers:

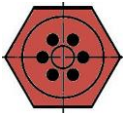
Flame washing insert				
Type	Without water cooling	Type	With water cooling	Consumption Water [l/min]
To fit handle type STAR: Propane (P), Methane (M) / Oxygen				
T-PM 50	71600523	T-PM 50-w	71610156	12
T-PM 100	71600524	T-PM 100-w	71610157	16
T-PM 150	71600525	T-PM 150-w	71610158	16
To fit handle type SUPERTHERM: Propane (P), Methane (M) / Oxygen				
T-PM 200	71602107	T-PM 200-w	71610159	16
T-PM 250	71602108	T-PM 250-w	71610160	16
To fit handle type STAR: Acetylene (A) / Oxygen				
T-A 50	71600520	T-A 50-w	71610089	12
T-A 100	71600521	T-A 100-w	71610090	16
T-A 150	71600522	T-A 150-w	71610091	16
To fit handle type SUPERTHERM: Acetylene (A) / Oxygen				
T-A 200	71602105	T-A 200-w	71610092	16
T-A 250	71602106	T-A 250-w	71610093	16
Spare parts:		Part-No.	Spare parts:	Part-No.
Plate protection 50 mm Type T-PM		05335050	Plate protection 50 mm Type T-PM-w	71607694
Plate protection 50 mm Type T-A		71600700	Plate protection 50 mm Type T-A-w	71607695
Equipment:		Part.-No.	Equipment:	Part-No.
Running wheels for torch head		67701202	Axle M6 for roller	67701216

Line heating torches RBF-PM; RBF-A



Version:

- Line heating torches with exchangeable multi-jet Copper heating nozzles.
- Torch pipe is seamless, drawn steel tube, chemically Ni plated.
- Type RBF-PM, RBF-A with central torch connections and 90° to nozzle pipe on request.

Heating nozzles for Line heating torches Type RBF-PM.		Heating nozzles for Line heating torches Type RBF-A.	
---	---	--	---

Application:

- Pre and post heating when welding and flame cutting.
- Annealing of weld seams.
- Bending and forming.
- Annealing and straightening.

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

Type	Pressure [bar]			Consumption [m³/h]		
	Oxygen	Propane (P)	Methane (M)	Oxygen	Propane (P)	Methane (M)
To fit handle type STAR:						
RBF-PM 200	2,5 - 4,0	0,5 - 1,0	0,3 - 1,0	4,71 - 7,54	1,26 - 2,01	2,95 - 4,71
RBF-PM 400	2,5 - 4,0	0,5 - 1,0	0,3 - 1,0	9,00 - 14,4	2,40 - 3,84	5,63 - 9,00
RBF-PM 500	2,5 - 4,0	0,5 - 1,0	0,3 - 1,0	11,14 - 17,83	2,97 - 4,75	6,96 - 11,14
RBF-PM 600	2,5 - 4,0	0,5 - 1,0	0,3 - 1,0	13,29 - 21,26	3,54 - 5,67	8,30 - 13,29
To fit handle type SUPERTHERM:						
RBF-PM 800	2,5 - 5,0	0,5 - 1,0	0,5 - 1,0	17,57 - 35,14	4,69 - 9,37	10,98 - 21,97
RBF-PM 1000	2,5 - 5,0	0,5 - 1,0	0,5 - 1,0	21,86 - 43,72	5,83 - 11,66	13,66 - 27,32
RBF-PM 1200	2,5 - 5,0	0,5 - 1,0	0,5 - 1,0	26,14 - 52,29	6,97 - 13,94	16,34 - 32,68
RBF-PM 1500	2,5 - 5,0	0,5 - 1,0	0,5 - 1,0	32,57 - 65,14	8,69 - 17,37	20,36 - 40,72
RBF-PM 2000	2,5 - 5,0	0,5 - 1,0	0,5 - 1,0	43,29 - 86,57	11,54 - 23,07	27,05 - 54,11

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

Type	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
To fit handle type STAR:				
RBF-A-200	2,5 - 4,0	0,5 - 0,7	2,82 - 4,50	2,56 - 4,06
RBF-A 400	2,5 - 4,0	0,5 - 0,7	5,37 - 8,60	4,89 - 7,82
RBF-A 600	2,5 - 4,0	0,5 - 0,7	7,93 - 12,69	7,21 - 11,54
To fit handle type SUPERTHERM:				
RBF-A 800	2,5 - 5,0	0,5 - 1,0	10,49 - 20,99	9,54 - 19,08
RBF-A 1000	2,5 - 5,0	0,5 - 1,0	13,05 - 26,10	11,87 - 23,73

Technical data und Part numbers on the next page.

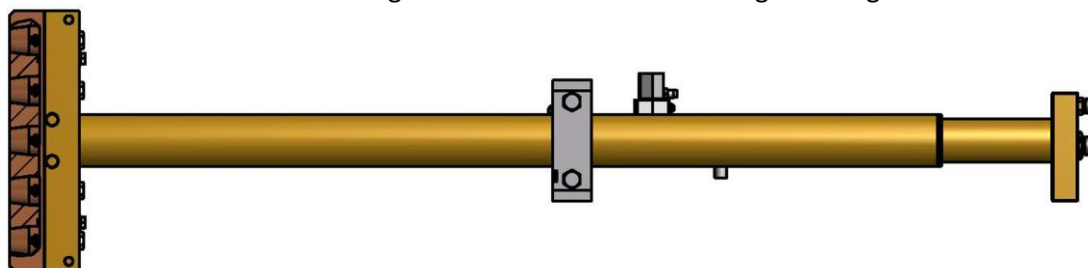
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Line heating torches RBF-PM; RBF-A



Technical data for Gas type PM: Propane (P), Methane (M) / Oxygen						
Type	Nozzles-Type	Number of heating nozzles	Nozzle stand-off [mm]	Torch height [mm]	Flame width [mm]	Torch length [mm]
To fit handle type STAR:						
RBF-PM 200	FK-PMY 1	11	20	40	200	400
RBF-PM 400	FK-PMY 1	21	20	40	400	600
RBF-PM 500	FK-PMY 1	26	20	40	500	700
RBF-PM 600	FK-PMY 1	31	20	40	600	800
To fit handle type SUPERTHERM:						
RBF-PM 800	FK-PMY 1	41	20	40	800	1200
RBF-PM 1000	FK-PMY 1	51	20	40	1000	1400
RBF-PM 1200	FK-PMY 1	61	20	40	1200	1600
RBF-PM 1500	FK-PMY 0	76	20	40	1500	1900
RBF-PM 2000	FK-PMY 0	101	20	40	2000	2400
Technical data for Gas type A: Acetylene (A) / Oxygen						
To fit handle type STAR:						
RBF-A-200	FK-A 2	11	20	40	200	400
RBF-A 400	FK-A 2	21	20	40	400	600
RBF-A 600	FK-A 2	31	20	40	600	800
To fit handle type SUPERTHERM:						
RBF-A 800	FK-A 2	41	20	40	800	1200
RBF-A 1000	FK-A 2	51	20	40	1000	1400
Part numbers:						
Type	Line heating torches			Spare nozzle		
	STAR		SUPERTHERM			
RBF-PM 200	54140961		-		71603016	
RBF-PM 400	54140962		-		71603016	
RBF-PM 500	71654976		-		71603016	
RBF-PM 600	54140963		-		71603016	
RBF-PM 800	-		54140964		71603016	
RBF-PM 1000	-		54140965		71603016	
RBF-PM 1200	-		71653746		71603015	
RBF-PM 1500	-		71653956		71603015	
RBF-PM 2000	-		71653566		71603015	
RBF-A 200	44140961		-		71603006	
RBF-A 400	44140962		-		71603006	
RBF-A 600	44140963		-		71603006	
RBF-A 800	-		44140964		71603006	
RBF-A 1000	-		44140965		71603006	
Line heating torches with different flame lengths or with central torch pipe for nozzles rows on request.						
						Index

Water cooled line heating torches FG-PMY-FG-A with 5 gas mixing nozzles FD



Version:

The high-powered line heating torches type FG-PMY-FG-A are produced only for customer specific requirements and are adapted to suit the corresponding requirements with respect to torch power and torch geometry.

The line heating torches are particularly suitable for use with heating temperatures up to 1200° C on large parts and can be used even over long periods of time under extremely high thermal loading remaining back-fire resistant. The following versions are available:

- Up to 5 high power nozzles, mounted in a water-cooled Copper block.
- Optional operation with heating nozzles for Acetylene/Oxygen (Type FD-A) or Propane, Methane, MAPP/Oxygen (Type FD-PMY).
- Water-cooled torch pipe in straight, angled or multiply bent versions available. Length made to suit application.
- With integrated ignition nozzle or external ignition torch.

Application:

- Automated heating with high back-fire resistance at extremely high heating temperatures.
e.g. in the production of corrugated pipes for the manufacture of heat exchangers / pressure vessels.



Heating nozzles: 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)
FD 20/21 PMY	2,0 - 5,0	0,3 - 1,0	20,0-42,7	5,1 - 11,0	1,0 - 4,0	0,2 - 1,0	12,9-35,3	8,0 - 22,0

Heating nozzles: Operating data for gas type: MAPP (Y) / Oxygen und Acetylene / Oxygen

Type	Oxygen	MAPP (Y)	Oxygen	MAPP (Y)	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
FD 20/21 PMY	2,0 - 5,0	0,3 - 1,0	20,0-42,7	6,7 - 14,2	-	-	-	-
FD 20/12 A	-	-	-	-	2,0 - 4,0	0,3 - 1,0	4,2 - 7,0	3,8 - 6,4
FD 20/15 A	-	-	-	-	2,0 - 4,5	0,5 - 1,0	7,9 - 14,7	7,2 - 13,4

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Line heating torches T-PM-w; T-A-w

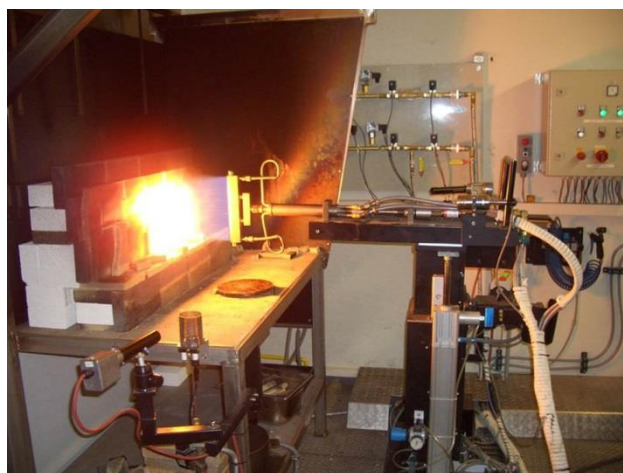
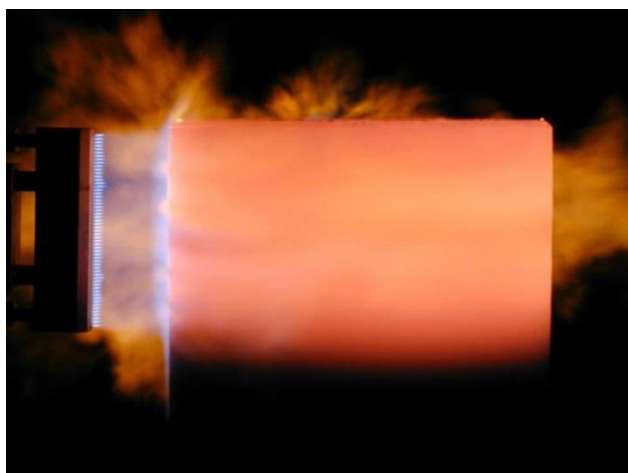


Version:

- Line heating torches type T-PM and T-A are configured according to the application and customer specific requirements for the required torch output. The following versions can be supplied:
 - Line heating torch head of Copper or stainless steel with flame widths up to 300 mm.
 - Number of parallel drilled jet rows over the flame width: 1-7 in rows.
 - Line heating torch head and / or mixing tube with or without water cooling.
 - Length and possible inclination of the torch mixing tube as required.
 - For heating temperatures up to about 1000° C. If the torch should be heated up to over 500° C by reflected radiation then water cooling is necessary.
 - To fit the handles or shafts STAR and SUPERTHERM or the shaft SUPERTHERM 30.
- With flame widths of over 200 mm and temperatures around 1000° C at the workpiece, we recommend the use of line heating torches type FD-PMY; FD-A with gas mixing heating nozzles! (see previous page).

Application:

- Fast heating to high temperatures.
- Forming, melting, hardening, etc.



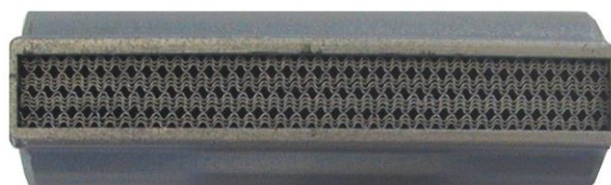
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Line heating torches STAR TF-PM/D



Version:

- Line heating torches wide area flame pattern from corrugated stainless steel sheet packet pressed into the torch head.
- Exchangeable threaded torch head.



Application:

- Heating and brazing.
- Drying.

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

Type / Flame width	Pressure [bar]			Consumption [m³/h]		
	Compr. air	Propane (P)	Methane (M)	Compr. air	Propane (P)	Methane (M)
To fit handle type STAR:						
TF-PM/D 50	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	4,2 - 10,3	0,22 - 0,54	0,53 - 1,29
TF-PM/D 100	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	6,5 - 16,2	0,34 - 0,85	0,81 - 2,03
TF-PM/D 150	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	8,4 - 20,6	0,44 - 1,08	1,05 - 2,58
TF-PM/D 200	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	12,8 - 31,7	0,67 - 1,67	1,60 - 3,96
To fit handle type SUPERTHERM:						
TF-PM/D 250	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	15,1 - 37,4	0,79 - 1,97	1,89 - 4,68
TF-PM/D 300	1,0 - 4,0	0,5 - 1,0	0,5 - 1,0	19,5 - 48,0	1,03 - 2,53	2,44 - 6,00

Technical data:

Length [mm]:

370

Available on request with flame width 700 mm. Other lengths available on request.

Part numbers:

Type	Torch complete	Replacement torch head
To fit handle type STAR:		
TF-PM/D 50	71651644	71653457
TF-PM/D 100	71651645	71653458
TF-PM/D 150	71651646	71653459
TF-PM/D 200	71651647	71653460
To fit handle type SUPERTHERM:		
TF-PM/D 250	71651648	71653461
TF-PM/D 300	71651649	71653462

For applications in automated operation the torch can also be equipped with electrodes mounted on the sides for ignition and flame monitoring.

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Line heating torches RB-PM/D



Version:

- Line heating torches exchangeable single jet steel heating nozzles.
- Torch pipe of seamless drawn steel tube, lacquered black.
- With connection for handle or including injector GVEN.

Application:

- Pre and post heating when welding and flame cutting.
- Annealing of weld seams, straightening
- Bending and forming.

Injector type GVEN (For use without handle)



*1 nozzle Z-PM/D 24/3,0



*2 nozzle ZF-PM/D 20/2



Operating data for gas type PM: Propane (P), Methane (M) / Compressed air

Type	Pressure [bar]			Consumption [m³/h]		
	Compr. air	Propane (P)	Methane (M)	Compr. air	Propane (P)	Methane (M)
To fit handle type STAR - Mixing tube arranged in line with nozzle rows:						
RB-PM/D 200*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	1,63 - 3,26	0,09 - 0,17	0,20 - 0,41
RB-PM/D 400*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	3,08 - 6,17	0,16 - 0,32	0,39 - 0,77
RB-PM/D 500*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	3,81 - 7,62	0,20 - 0,40	0,48 - 0,95
RB-PM/D 600*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	4,53 - 9,07	0,24 - 0,48	0,57 - 1,13
To fit handle type SUPERTHERM – Mixing tube arranged in line with nozzle rows						
RB-PM/D 800*1	2,0 - 5,0	0,5 - 1,0	0,3 - 0,8	5,98 - 14,96	0,32 - 0,79	0,75 - 1,87
RB-PM/D 1000*1	2,0 - 5,0	0,5 - 1,0	0,3 - 0,8	7,43 - 18,58	0,39 - 0,89	0,93 - 2,32
With injector GVEN (For use without handle) - Mixing tube arranged in line with nozzle rows:						
RB-PM/D 2000*1	2,0 - 6,0	0,5 - 1,0	0,3 - 0,8	14,69 - 44,06	0,77 - 2,32	1,84 - 5,51
RB-PM/D 3000*1	2,0 - 6,0	0,5 - 1,0	0,3 - 0,8	21,94 - 65,82	1,16 - 3,46	2,74 - 8,23
To fit handle type STAR - Mixing tube arranged at 90° to nozzle rows:						
RT-PM/D 400*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	3,08 - 6,17	0,16 - 0,32	0,39 - 0,77
RT-PM/D 500*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	3,81 - 7,62	0,20 - 0,40	0,48 - 0,95
RT-PM/D 600*1	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	4,53 - 9,07	0,24 - 0,48	1,38 - 3,46
With injector GVEN (For use without handle) - Mixing tube arranged centrally and at 90° to nozzle rows:						
RT-PM/D 600*2	2,0 - 4,0	0,5 - 1,0	0,3 - 0,8	1,69 - 3,38	0,09 - 1,18	0,21 - 0,42
RT-PM/D 800*1	2,0 - 5,0	0,5 - 1,0	0,3 - 0,8	5,98 - 14,96	0,32 - 0,79	0,75 - 1,87
RT-PM/D 1000*1	2,0 - 5,0	0,5 - 1,0	0,3 - 0,8	7,43 - 18,58	0,39 - 0,89	0,93 - 2,32
RT-PM/D 1500*1	2,0 - 5,0	0,5 - 1,0	0,3 - 0,8	11,06 - 27,65	0,58 - 1,46	1,38 - 3,46
RT-PM/D 2000*2	2,0 - 6,0	0,5 - 1,0	0,3 - 0,8	5,40 - 16,20	0,28 - 0,85	0,68 - 2,03
RT-PM/D 3000*1	2,0 - 6,0	0,5 - 1,0	0,3 - 0,8	21,94 - 65,82	1,16 - 3,46	2,74 - 8,23
RT-PM/D 4000*2	2,0 - 6,0	0,5 - 1,0	0,3 - 0,8	10,80 - 32,39	0,57 - 1,71	1,35 - 4,05

Technical data und Part numbers on the next page.

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Line heating torches RB-PM/D



*1 Nozzle
Z-PM/D 24/3



*2 Nozzle
ZF-PM/D 20/2



Technical data for Gas type PM: Propane (P), Methane (M) / Compressed air						
Type	No. of heating nozzles	Connections		Flame width [mm]	Torch length [mm]	Part number Line heating torches
		Compressed air	(P M)			
To fit handle type STAR - Mixing tube arranged in line with nozzle rows:						
RB-PM/D 200	9*1	G1/4" RH	G3/8" LH	200	500	44140966
RB-PM/D 400	17*1	G1/4" RH	G3/8" LH	400	700	44140967
RB-PM/D 500	21*1	G1/4" RH	G3/8" LH	500	800	71652372
RB-PM/D 600	25*1	G1/4" RH	G3/8" LH	600	900	44140968
To fit handle type SUPERTHERM - Mixing tube arranged in line with nozzle rows:						
RB-PM/D 800	33*1	G3/8" RH	G1/2" LH	800	1300	44140969
RB-PM/D 1000	41*1	G3/8" RH	G1/2" LH	1000	1500	44140970
With injector GVEN (For use without handle) - Mixing tube arranged centrally and at 90° to nozzle rows:						
RB-PM/D 2000	81*1	G3/8" RH	G1/2" LH	2000	on request	71653506
RB-PM/D 3000	121*1	G3/8" RH	G1/2" LH	3000	on request	71652388
To fit handle type STAR - Mixing tube arranged centrally and in line with nozzle rows:						
RT-PM/D 400	17*1	G1/4" RH	G3/8" LH	400	on request	71653811
RT-PM/D 500	21*1	G1/4" RH	G3/8" LH	500	on request	71653570
RT-PM/D 600	25*1	G1/4" RH	G3/8" LH	600	on request	71654161
With injector GVEN (For use without handle) - Mixing tube arranged centrally and at 90° to nozzle rows:						
RT-PM/D 600	21*2	G3/8" RH	G1/2" LH	600	on request	71652852
RT-PM/D 800	33*1	G3/8" RH	G1/2" LH	800	on request	71654162
RT-PM/D 1000	41*1	G3/8" RH	G1/2" LH	1000	on request	71652898
RT-PM/D 1500	61*1	G3/8" RH	G1/2" LH	1400	on request	71653073
RT-PM/D 2000	67*2	G3/4" RH	G1" LH	2000	on request	71653208
RT-PM/D 3000	100*1	G3/4" RH	G1" LH	3000	on request	71653207
RT-PM/D 4000	134*2	G3/4" RH	G1" LH	4000	on request	71653276
Part numbers spare parts:						
Injector GVEN						
For Type RB-PM/D	GVEN Type	Part number	For type RT-PM/D	GVEN Type	Part number	
RB-PM/D 2000	GVEN 15	44130234	RT-PM/D 600	GVEN 15	44130234	
RB-PM/D 3000	GVEN 15	44130234	RT-PM/D 800	GVEN 15	44130234	
spare heating nozzle	*1	*2	RT-PM/D 1000	GVEN 15	44130234	
	Z-PM/D 24/3	ZF-PM/D 20/2	RT-PM/D 1500	GVEN 15	44130234	
Connection thread:	M10x1	G1/4" RH (AG)	RT-PM/D 2000	GVEN 15	44130234	
Outer dia.: [mm]	24	20	RT-PM/D 3000	GVEN 25	44130230	
Part number:	40142012	40141125	RT-PM/D 4000	GVEN 25	44130230	
Line heating torches in different lengths or with multiple nozzle rows available on request.						Index

Prism line heating torches PRB-PM/D



Version:

- Three nozzle rows in prism form.
- With compressed air high power injector type GVEN.
- The prism line heating torches will only be made for customer specific requirements, i.e.
 - Length of the nozzle rows,
 - Nozzle type and nozzle power,
 - Angle between the two outer and the central nozzle rows,
 - Distance of the two outer to the middle nozzle row,
 - Total length of the torchwill be configured according to the application.

Application:

- Surface area heating of pipes.

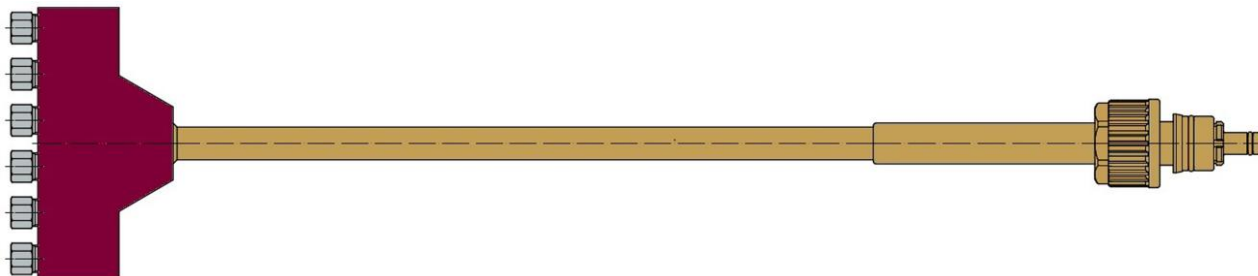
Injector type GVEN



Heating nozzle ZF-PM/D 20/3,0



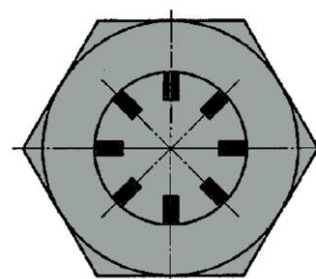
Line heating torches type T-A/D 100



Version:

- Copper line heating torch heads with chromed Copper exchangeable heating nozzles.
- Heating nozzles flame outlet slits arranged in a ring.
- Brass mixing tube and injector.
- With internal gas mixture double pre-distribution in the torch head.

Nozzle FSB-A/D



Application:

- Sooting (with excess Acetylene flame) of glass or moulds.
- Preheating of plates and other components.

Operating data for gas type: Acetylene (A) / Compressed air

Type	Pressure [bar]		Consumption [m³/h]	
	Compressed air	Acetylene (A)	Compressed air	Acetylene (A)
To fit handle type STAR:				
T-A/D 50	1,5	0,5	0,66	0,12
T-A/D 100	1,5	0,5	1,32	0,24
T-A/D 150	1,5	0,5	1,98	0,36
T-A/D 200	1,5	0,5	2,64	0,48

Technical data:

Part numbers

Type	Number of nozzles	Flame width [mm]	Length [mm]	Line heating torches Complete	Spare nozzle type FSB-A/D
To fit handle type STAR:					
T-A/D 50	3	50	462,5	71654741	71651637
T-A/D 100	6	100	462,5	71652710	71651637
T-A/D 150	9	150	462,5	71654742	71651637
T-A/D 200	12	200	462,5	71654743	71651637

Line heating torches with different flame widths or lengths available on request.

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Line heating torches RB-PM/S



Version:

- Line heating torches including siphoned air injector type SL and ballcock with connection thread for fuel gas hose.
- Flame outlet through six row drilled ceramic strips which are glued into the torch head. Torch pipe of seamless drawn steel tube, lacquered black.

Application:

- Pre and post heating when welding and flame cutting.
- Bending and forming.

Operating data and technical data for gas type: Propane (P), Methane (M) / Siphoned air					
Type / Flame length	Fuel gas consumption [m³/h]		Length [mm]	Fuel gas connection [inch]	Injector SL size
	Propane (P)	Methane (M)			
RB-PM/S-6 500	0,27	0,72	700	G3/8“ LH	SL 1 1/4”
RB-PM/S-6 1000	0,53	1,43	1200	G3/8“ LH	SL 1 1/4”
RB-PM/S-6 1500	0,80	2,20	1700	G3/8“ LH	SL 1 1/2”
RB-PM/S-6 2000	1,07	2,87	2200	G1/2“ LH	SL 1 1/2”
RB-PM/S-6 4000	2,14	5,74	4300	G1/2“ LH	SL 1 1/2”
Part numbers	Line heating torches for fuel gas pressure [mbar]		Spare parts		
			Injector SL	Ballcock	
	20 - 50	200 - 500			
RB-PM/S-6 500	44171478	44171482	71340198	30032015	
RB-PM/S-6 1000	44171479	44171483	71340198	30032015	
RB-PM/S-6 1500	44171480	44171484	71340199	30032018	
RB-PM/S-6 2000	44171481	44171485	71340199	30032018	
RB-PM/S-6 4000	71653092	on request	71340199	-	
Part numbers Spare parts	Spare ceramic strip 98x14 mm		Adhesive for ceramic strips 0,5 kg		
	30040002		03830107		
Line heating torches with different flame lengths available on request.					Index

Max. flame power [KW] – overall view Ring torches:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
MINITHERM C: Propane, Methane / Oxygen						
MINITHERM	C2-PMY-36-5	2,11	1,69	-	71650917	86
MINITHERM	C3-PMY-55-7	3,35	2,68	-	71650919	86
MINITHERM	C3-PMY-75-7	3,35	2,68	-	71650921	86
MINITHERM	C3-PMY-90-8	3,35	2,68	-	71650923	86
MINITHERM C: Acetylene / Oxygen						
MINITHERM	C2-A-36-3	-	-	4,38	71650915	86
MINITHERM	C2-A-36-5	-	-	4,38	71650916	86
MINITHERM	C3-A-55-7	-	-	6,97	71650918	86
MINITHERM	C3-A-75-7	-	-	6,97	71650920	86
MINITHERM	C3-A-90-8	-	-	6,97	71650922	86
STAR RK-1G-PMY: Propane, Methane / Oxygen – hinged torch ring, drilled						
STAR	RK-1-G-PMY 25	14,29	11,40	-	44110025	88
STAR	RK-1-G-PMY 50	23,65	18,91	-	71610494	88
STAR	RK-1-G-PMY 75	31,19	25,27	-	71652673	88
STAR	RK-1-G-PMY 100	34,82	27,75	-	71610495	88
STAR	RK-1-G-PMY 150	47,56	37,91	-	71650775	88
STAR	RK-1-G-PMY 200	55,35	44,19	-	71610496	88
STAR	RK-1-G-PMY 250	63,41	50,46	-	71652864	88
STAR	RK-1-G-PMY 300	71,21	56,82	-	71610497	88
SUPERTHERM RK-1G-PMY: Propane, Methane / Oxygen – hinged torch ring, drilled						
SUPERTHERM	RK-1-G-PMY 400	93,56	74,50	-	71610498	88
SUPERTHERM	RK-1-G-PMY 500	128,64	102,51	-	71610499	88
STAR RKZ-A: Acetylene / Oxygen – hinged torch ring with single-hole nozzles						
STAR	RKZ-A 50	-	-	36,85	71610501	90
STAR	RKZ-A 100	-	-	55,19	71610502	90
STAR	RKZ-A 200	-	-	82,86	71610503	90
STAR	RKZ-A 300	-	-	142,80	71610504	90
SUPERTHERM RKZ-A: Acetylene / Oxygen – hinged torch ring with single-hole nozzles						
SUPERTHERM	RKZ-A 400	-	-	196,25	71610505	90
SUPERTHERM	RKZ-A 500	-	-	275,95	71610506	90
SUPERTHERM	RKZ-A 600	-	-	344,90	71610507	90
STAR RKF-A : Acetylene / Oxygen – hinged torch ring with multi-hole nozzles						
STAR	RKF-A 50	-	-	49,02	71610508	90
STAR	RKF-A 100	-	-	73,53	71610509	90
STAR	RKF-A 200	-	-	110,38	71610510	90
STAR	RKF-A 300	-	-	196,25	71610511	90
SUPERTHERM RKF-A: Acetylene / Oxygen – hinged torch ring with multi-hole nozzles						
SUPERTHERM	RKF-A 400	-	-	261,72	71610512	90
SUPERTHERM	RKF-A 400	-	-	367,99	71610513	90
SUPERTHERM	RKZ-A 600	-	-	459,87	71610514	90
Flame power of hinged ring torch = flame power of closed ring torch!					Index	

Max. flame power [KW] – overall view Ring torches:						
Connection	Type	Propane	Methane	Acetylene	Part No.	Page
STAR RKZ-PMY/D: Propane, Methane / Compressed air						
STAR	RKZ-PMY/D 25	4,42	3,62	-	44010025	92
STAR	RKZ-PMY/D 50	8,06	6,45	-	44010050	92
STAR	RKZ-PMY/D 75	8,84	7,25	-	44010075	92
STAR	RKZ-PMY/D 100	12,73	9,63	-	44010100	92
STAR	RKZ-PMY/D 125	12,99	10,43	-	44010125	92
STAR	RKZ-PMY/D 150	13,77	11,22	-	44010150	92
STAR	RKZ-PMY/D 200	16,89	13,61	-	44010200	92
SUPERTHERM RKZ-PMY/D: Propane, Methane / Compressed air						
SUPERTHERM	RKZ-PMY/D 250	24,69	20,06	-	44010250	92
SUPERTHERM	RKZ-PMY/D 300	27,29	22,00	-	44010300	92
SUPERTHERM	RKZ-PMY/D 350	30,93	25,00	-	44010350	92
SUPERTHERM	RKZ-PMY/D 400	35,86	28,54	-	44010400	92
SUPERTHERM	RKZ-PMY/D 450	38,46	31,02	-	44010450	92
SUPERTHERM	RKZ-PMY/D 500	42,10	34,02	-	44010500	92
SUPERTHERM	RKZ-PMY/D 600	48,34	39,06	-	44010600	92
Flame power of hinged ring torch = flame power of closed ring torch!					<u>Index</u>	

Ring torch MINITHERM type C



Version:

- Small ring torch with threading opening for heating of pipes.
- Torch ring and mixing tube made of Copper piping, chemically Ni plated.
- To fit handle type MINITHERM.

Application:

- Building pipelines and heat exchangers.
- Assembly and installation work.
- Manufacture of gas and water manifolds.
- Production lines and assembly belts.
- Processing glass.

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

Type	Pressure [bar]		Consumption [l/h]			
	Oxygen	(P M Y)	Oxygen	Propane (P)	Methane (M)	MAPP (Y)
C2-PMY-36-5	2,5	0,5	305	81	191	102
C3-PMY-55-7	2,5	0,5	485	129	303	162
C3-PMY-75-7	2,5	0,5	485	129	303	162
C3-PMY-90-8	2,5	0,5	485	129	303	162

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

Type	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
C2-A-36-3	2,5	0,5	305	277
C2-A-36-5	2,5	0,5	305	277
C3-A-55-7	2,5	0,5	485	441
C3-A-75-7	2,5	0,5	485	441
C3-A-90-8	2,5	0,5	485	441

Technical data und Part numbers on the next page.

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Ring torch MINITHERM type C



Version:

- Small ring torch with threading opening for heating of pipes.
- Torch ring and mixing tube made of Copper piping, chemically Ni plated.
- To fit handle type MINITHERM.

Application:

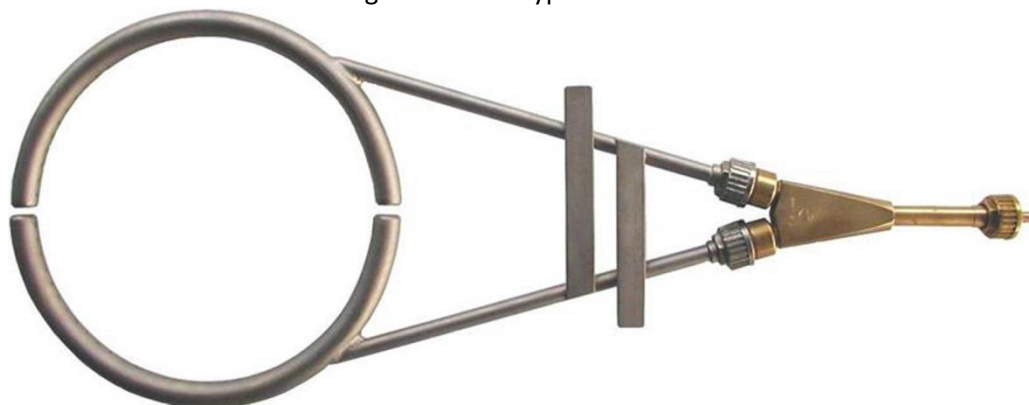
- Building pipelines and heat exchangers.
- Assembly and installation work.
- Manufacture of gas and water manifolds.
- Production lines and assembly belts.
- Processing glass.

Technical data:	Weight	Length	Threading	Inner Ø	Number of jets
Type	[g]	[mm]	opening [mm]	Ring [mm]	
C2-PMY-36-5	77	171	30	36	5
C3-PMY-55-7	86	191	30	55	7
C3-PMY-75-7	111	215	45	75	7
C3-PMY-90-8	111	227	55	90	8
C2-A-36-3	77	171	30	36	3
C2-A-36-5	77	171	30	36	5
C3-A-55-7	86	191	30	55	7
C3-A-75-7	86	215	45	75	7
C3-A-90-8	111	227	55	90	8

Part numbers:

Type PMY	Part number	Type A	Part number
C2-PMY-36-5	71650917	C2-A-36-3	71650915
C3-PMY-55-7	71650919	C2-A-36-5	71650916
C3-PMY-75-7	71650921	C3-A-55-7	71650918
C3-PMY-90-8	71650923	C3-A-75-7	71650920
-	-	C3-A-90-8	71650922
			Index

Ring torch STAR type RK-1G- PMY



Version:

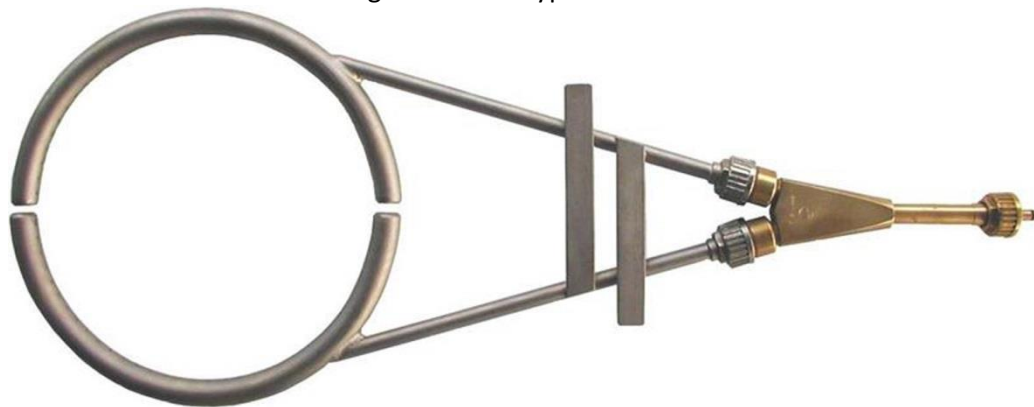
- Single row drilled torch ring.
- Torch ring closed (RG) or hinged (RK) to thread the torch ring at any desired point on the pipe.
- Torch ring and mixing tube from steel pipe, chemically Ni plated.

Application:

- Pre and post heating when welding.
- Annealing of weld seams.
- Shrinking and drawing.
- Preheating for swaging.
- Processing glass.

Operating data for gas type: Propane (P), Methane (M), MAPP (Y) / Oxygen						
Type	Pressure [bar]		Consumption [m³/h]			
	Oxygen	Fuel gas (P M Y)	Oxygen	Propane (P)	Methane (M)	MAPP (Y)
To fit handle type STAR; Closed torch ring:						
RG-1G-PMY 50	2,0 - 4,0	0,2 - 0,5	1,71 - 3,43	0,46 - 0,91	1,07 - 2,14	0,57 - 1,14
RG-1G-PMY 100	2,0 - 4,0	0,2 - 0,5	2,51 - 5,03	0,67 - 1,34	1,57 - 3,14	0,84 - 1,68
RG-1G-PMY 150	2,0 - 4,0	0,2 - 0,5	3,43 - 6,86	0,91 - 1,83	2,14 - 4,29	1,14 - 2,29
RG-1G-PMY 200	2,0 - 4,0	0,2 - 0,5	4,00 - 8,00	1,07 - 2,13	2,50 - 5,00	1,33 - 2,67
RG-1G-PMY 300	3,0 - 4,0	0,2 - 0,5	7,71 - 10,3	2,06 - 2,74	4,82 - 6,43	2,57 - 3,43
To fit handle type SUPERTHERM; Closed torch ring:						
RG-1G-PMY 400	3,0 - 4,0	0,2 - 0,5	10,1 - 13,5	2,70 - 3,60	6,32 - 8,43	3,37 - 4,50
To fit handle type STAR; Hinged torch ring:						
RK-1G-PMY 25	2,0 - 4,0	0,2 - 0,5	1,03 - 2,06	0,27 - 0,55	0,64 - 1,29	0,43 - 0,69
RK-1G-PMY 50	2,0 - 4,0	0,2 - 0,5	1,71 - 3,43	0,46 - 0,91	1,07 - 2,14	0,57 - 1,14
RK-1G-PMY 75	2,0 - 4,0	0,2 - 0,5	2,29 - 4,57	0,61 - 1,20	1,43 - 2,86	0,76 - 1,52
RK-1G-PMY 100	2,0 - 4,0	0,2 - 0,5	2,51 - 5,03	0,67 - 1,34	1,57 - 3,14	0,84 - 1,68
RK-1G-PMY 150	2,0 - 4,0	0,2 - 0,5	3,43 - 6,86	0,91 - 1,83	2,14 - 4,29	1,14 - 2,29
RK-1G-PMY 200	2,0 - 4,0	0,2 - 0,5	4,00 - 8,00	1,07 - 2,13	2,50 - 5,00	1,33 - 2,67
RK-1G-PMY 250	2,0 - 4,0	0,2 - 0,5	4,57 - 9,14	1,20 - 2,44	2,86 - 5,71	1,52 - 3,05
RK-1G-PMY 300	3,0 - 4,0	0,2 - 0,5	7,71 - 10,3	2,06 - 2,74	4,82 - 6,43	2,57 - 3,43
To fit handle type SUPERTHERM; Hinged torch ring:						
RK-1G-PMY 400	3,0 - 4,0	0,2 - 0,5	10,1 - 13,5	2,70 - 3,60	6,32 - 8,43	3,37 - 4,50
RK-1G-PMY 500	3,0 - 4,0	0,2 - 0,5	11,1 - 18,6	2,97 - 4,95	6,96 - 11,60	3,71 - 6,19
Technical data and Part numbers on the next page.						Index

Ring torch STAR type RK-1G-PMY



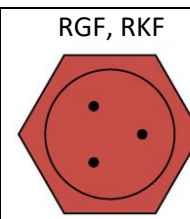
Technical data und Part numbers:					
Type	For heating of max. pipe Ø [mm]	Outer Ø Ring [mm]	Number of jets in the ring	Length [mm]	Part number
To fit handle type STAR; Closed torch ring:					
RG-1G-PMY 50	50	122	30	460	71610350
RG-1G-PMY 100	100	172	44	525	71610352
RG-1G-PMY 150	150	220	60	700	71650793
RG-1G-PMY 200	200	280	70	695	71610354
RG-1G-PMY 300	300	390	90	980	71610356
To fit handle type SUPERTHERM; Closed torch ring:					
RG-1G-PMY 400	400	560	118	1400	71610358
To fit handle type STAR; Hinged torch ring:					
RK-1G-PMY 25	25	97	18	436	44110025
RK-1G-PMY 50	50	122	30	460	71610494
RK-1G-PMY 75	75	147	40	490	71652673
RK-1G-PMY 100	100	172	44	525	71610495
RK-1G-PMY 150	150	220	60	700	71650775
RK-1G-PMY 200	200	280	70	695	71610496
RK-1G-PMY 250	250	330	80	900	71652864
RK-1G-PMY 300	300	390	90	980	71610497
To fit handle type SUPERTHERM; Hinged torch ring:					
RK-1G-PMY 400	400	560	118	1400	71610498
RK-1G-PMY 500	500	598	130	1585	71610499
Ring torch for different pipe diameters available on request.					Index

Ring torch STAR type RKF-A; RKZ-A



Version:

- Torch ring equipped with exchangeable Copper nozzles.
- Torch ring closed (RG) or hinged (RK) to thread the torch ring at any desired point on the pipe.
- Torch ring and mixing tube from steel pipe, chemically Ni plated.



Application:

- Pre and post heating when welding.
- Annealing of weld seams.
- Processing of glass.
- Shrinking and drawing.
- Preheating for swaging.

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

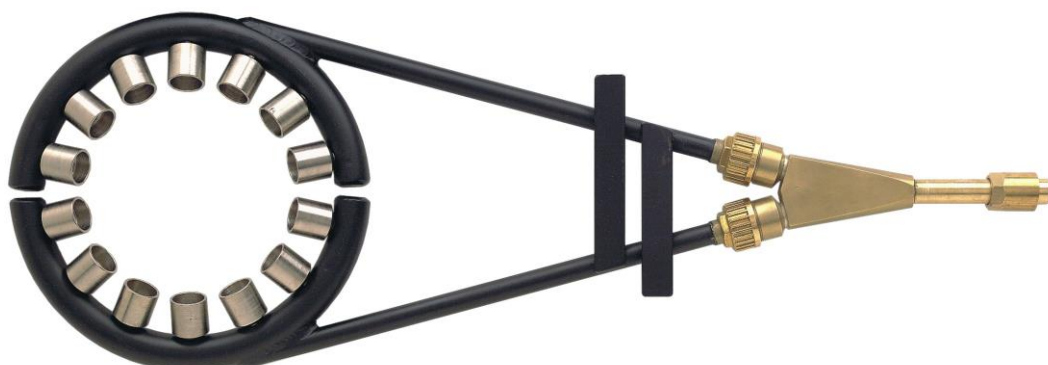
Type		Pressure [bar]		Consumption [m³/h]	
Closed torch ring RG	Hinged torch ring RK	Oxygen	Acetylene (A)	Oxygen	Acetylene (A)
To fit handle type STAR; Torch ring with single jet heating nozzles (Z):					
RGZ-A 50	RKZ-A 50	2,0 - 3,0	0,1 - 0,3	1,71 - 2,56	1,55 - 2,33
RGZ-A 100	RKZ-A 100	2,0 - 3,0	0,1 - 0,3	2,56 - 3,84	2,33 - 3,49
RGZ-A 200	RKZ-A 200	2,0 - 3,0	0,2 - 0,5	3,84 - 5,76	3,49 - 5,24
RGZ-A 300	RKZ-A 300	3,0 - 4,0	0,2 - 0,5	7,68 - 10,28	7,00 - 9,03
To fit handle type SUPERTHERM; Torch ring with single jet heating nozzles (Z):					
RGZ-A 400	RKZ-A 400	3,0 - 4,0	0,2 - 0,5	10,24 - 13,65	9,31 - 12,41
RGZ-A 500	RKZ-A 500	3,0 - 5,0	0,2 - 0,5	11,52 - 19,19	10,47 - 17,45
RGZ-A 600	RKZ-A 600	3,0 - 5,0	0,2 - 0,5	14,40 - 23,99	13,09 - 21,81
To fit handle type STAR; Torch ring with multi-jet heating nozzles (F):					
RGF-A 50	RKF-A 50	2,0 - 3,0	0,1 - 0,3	2,28 - 3,41	2,07 - 3,10
RGF-A 100	RKF-A 100	2,0 - 3,0	0,1 - 0,3	3,41 - 5,12	3,10 - 4,65
RGF-A 200	RKF-A 200	2,0 - 3,0	0,2 - 0,5	5,12 - 7,68	4,65 - 6,98
RGF-A 300	RKF-A 300	3,0 - 4,0	0,2 - 0,5	10,24 - 13,65	9,31 - 12,41
To fit handle type SUPERTHERM; Torch ring with multi-jet heating nozzles (F):					
RGF-A 400	RKF-A 400	3,0 - 4,0	0,2 - 0,5	13,65 - 18,20	12,41 - 16,55
RGF-A 500	RKF-A 500	3,0 - 5,0	0,2 - 0,5	15,36 - 25,59	13,96 - 23,27
RGF-A 600	RKF-A 600	3,0 - 5,0	0,2 - 0,5	19,19 - 31,99	17,45 - 29,08
Technical data und Part numbers on the next page.					Index

Ring torch STAR type RKF-A; RKZ-A



Technical data:							
Type		For heating of max. pipe ø [mm]	Outer ø Ring [mm]	Number of nozzles in the ring	Length [mm]	Nozzles type	
Closed torch ring RG	Hinged torch ring RK						
To fit handle type STAR; Torch ring with single jet heating nozzles (Z):							
RGZ-A 50	RKZ-A 50	50	220	16	560	ZK-A 1	
RGZ-A 100	RKZ-A 100	100	270	24	680	ZK-A 1	
RGZ-A 200	RKZ-A 200	200	370	36	920	ZK-A 1	
RGZ-A 300	RKZ-A 300	300	470	48	1200	ZK-A 1	
To fit handle type SUPERTHERM; Torch ring with single jet heating nozzles (Z):							
RGZ-A 400	RKZ-A 400	400	670	64	1600	ZK-A 1	
RGZ-A 500	RKZ-A 500	500	770	72	1850	ZK-A 1	
RGZ-A 600	RKZ-A 600	600	870	90	2000	ZK-A 1	
To fit handle type STAR; Torch ring with multi-jet heating nozzles (F):							
RGF-A 50	RKF-A 50	50	220	16	560	FK-A 1	
RGF-A 100	RKF-A 100	100	270	24	680	FK-A 1	
RGF-A 200	RKF-A 200	200	370	36	920	FK-A 1	
RGF-A 300	RKF-A 300	300	470	48	1200	FK-A 1	
To fit handle type SUPERTHERM; Torch ring with multi-jet heating nozzles (F):							
RGF-A 400	RKF-A 400	400	670	64	1600	FK-A 1	
RGF-A 500	RKF-A 500	500	770	72	1850	FK-A 1	
RGF-A 600	RKF-A 600	600	870	90	2000	FK-A 1	
Part numbers:							
Type	Part No.	Type	Part No.	Type	Part No.	Type	Part No.
With single jet nozzles for RGZ and RKZ				With multi-jet nozzles for RGF und RKF			
Closed Ring		Hinged Ring		Closed Ring		Hinged Ring	
To fit handle type STAR:							
RGZ-A 50	71610363	RKZ-A 50	71610501	RGF-A 50	71610389	RKF-A 50	71610508
RGZ-A 100	71610365	RKZ-A 100	71610502	RGF-A 100	71610391	RKF-A 100	71610509
RGZ-A 200	71610367	RKZ-A 200	71610503	RGF-A 200	71610393	RKF-A 200	71610510
RGZ-A 300	71610369	RKZ-A 300	71610504	RGF-A 300	71610395	RKF-A 300	71610511
To fit handle type SUPERTHERM:							
RGZ-A 400	71610371	RKZ-A 400	71610505	RGF-A 400	71610397	RKF-A 400	71610512
RGZ-A 500	71610373	RKZ-A 500	71610506	RGF-A 500	71610399	RKF-A 500	71610513
RGZ-A 600	71610374	RKZ-A 600	71610507	RGF-A 600	71610400	RKF-A 600	71610514
Ring torch for different pipe diameters available on request.							Index

Ring torch STAR type RGZ-PMY/D



Version:

- Torch ring equipped with exchangeable steel nozzles, chemically Ni plated.
- Torch ring closed (RG) or hinged (RK) to thread the torch ring at any desired point on the pipe.
- Torch ring and mixing tube from steel pipe, black lacquered.
- Heating nozzles with central flame outlet and centrally arranged stabilisation slit.

Heating nozzle Z-PM/D 24/3,0



Application:

- Straightening, forming, annealing, bending.
- Pre and post heating when welding and flame cutting.
- Annealing of weld seams.
- Shrinking and drawing.

Operating data for gas type: Propane (P), Methane (M), MAPP (Y) / Compressed air

Type		Pressure [bar]		Consumption [m³/h]			
Closed torch ring RG	Hinged torch ring RK	Compr. air	Fuel gas (P M Y)	Compr. air	Propane (P)	Methane (M)	MAPP (Y)
To fit handle type STAR:							
RGZ-PMY/D 25	RKZ-PMY/D 25	2,0 - 3,0	0,2 - 0,5	2,18-3,26	0,12-0,17	0,27-0,41	0,15-0,22
RGZ-PMY/D 50	RKZ-PMY/D 50	2,0 - 4,0	0,2 - 0,5	2,90-5,80	0,15-0,31	0,36-0,73	0,19-0,39
RGZ-PMY/D 75	RKZ-PMY/D 75	2,0 - 4,0	0,2 - 0,5	3,26-6,53	0,17-0,34	0,41-0,82	0,22-0,44
RGZ-PMY/D 100	RKZ-PMY/D 100	2,0 - 4,0	0,2 - 0,5	4,35-8,70	0,23-0,49	0,54-1,09	0,29-0,58
RGZ-PMY/D 125	RKZ-PMY/D 125	2,0 - 4,0	0,2 - 0,5	4,71-9,43	0,25-0,50	0,59-1,18	0,31-0,63
RGZ-PMY/D 150	RKZ-PMY/D 150	2,0 - 4,0	0,2 - 0,5	5,08-10,2	0,27-0,53	0,64-1,27	0,34-0,68
RGZ-PMY/D 200	RKZ-PMY/D 200	2,0 - 4,0	0,2 - 0,5	6,17-12,3	0,32-0,65	0,77-1,54	0,41-0,82
To fit handle type SUPERTHERM:							
RGZ-PMY/D 250	RKZ-PMY/D 250	2,0 - 5,0	0,5 - 0,8	7,25-18,1	0,38-0,95	0,91-2,27	0,48-1,21
RGZ-PMY/D 300	RKZ-PMY/D 300	2,0 - 5,0	0,5 - 0,8	7,98-19,9	0,42-1,05	1,00-2,49	0,53-1,33
RGZ-PMY/D 350	RKZ-PMY/D 350	2,0 - 5,0	0,5 - 0,8	9,07-22,7	0,48-1,19	1,13-2,83	0,60-1,51
RGZ-PMY/D 400	RKZ-PMY/D 400	2,0 - 5,0	0,5 - 0,8	10,5-26,3	0,55-1,38	1,31-3,23	0,70-1,75
RGZ-PMY/D 450	RKZ-PMY/D 450	2,0 - 5,0	0,5 - 0,8	11,2-28,1	0,59-1,48	1,41-3,51	0,75-1,87
RGZ-PMY/D 500	RKZ-PMY/D 500	2,0 - 5,0	0,5 - 0,8	12,3-30,8	0,65-1,62	1,54-3,85	0,82-2,06
RGZ-PMY/D 600	RKZ-PMY/D 600	2,0 - 5,0	0,5 - 0,8	14,1-35,4	0,74-1,86	1,77-4,42	0,94-2,36
Technical data und Part numbers on the next page.							Index

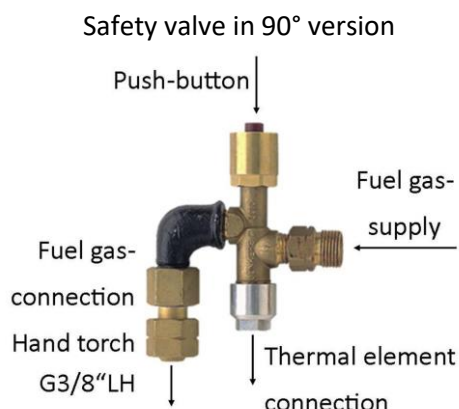
Ring torch STAR type RGZ-PMY/D



Heating nozzle Z-PM/D 24/3,0



Technical data:						
Type		For heating of max. pipe Ø [mm]	Outer Ø Ring [mm]	No. of nozzles in ring	Length [mm]	Nozzle type
Closed torch ring RGZ	Hinged torch ring RKZ					
To fit handle type STAR:						
RGZ-PMY/D 25	RKZ-PMY/D 25	25	225	12	575	Z-PM/D 24/3,0
RGZ-PMY/D 50	RKZ-PMY/D 50	50	250	16	600	Z-PM/D 24/3,0
RGZ-PMY/D 75	RKZ-PMY/D 75	75	275	18	660	Z-PM/D 24/3,0
RGZ-PMY/D 100	RKZ-PMY/D 100	100	300	24	720	Z-PM/D 24/3,0
RGZ-PMY/D 125	RKZ-PMY/D 125	125	325	26	780	Z-PM/D 24/3,0
RGZ-PMY/D 150	RKZ-PMY/D 150	150	350	28	840	Z-PM/D 24/3,0
RGZ-PMY/D 200	RKZ-PMY-D 200	200	400	34	960	Z-PM/D 24/3,0
To fit handle type SUPERTHERM:						
RGZ-PMY/D 250	RKZ-PMY/D 250	250	450	40	1100	Z-PM/D 24/3,0
RGZ-PMY/D 300	RKZ-PMY/D 300	300	500	44	1240	Z-PM/D 24/3,0
RGZ-PMY/D 350	RKZ-PMY/D 350	350	550	50	1290	Z-PM/D 24/3,0
RGZ-PMY/D 400	RKZ-PMY/D 400	400	620	58	1640	Z-PM/D 24/3,0
RGZ-PMY/D 450	RKZ-PMY/D 450	450	670	62	1690	Z-PM/D 24/3,0
RGZ-PMY/D 500	RKZ-PMY/D 500	500	720	68	1890	Z-PM/D 24/3,0
RGZ-PMY/D 600	RKZ-PMY/D 600	600	820	78	2040	Z-PM/D 24/3,0
Part numbers:						
Type	Part No.		Type	Part No.		
Closed ring RGZ			Hinged ring RKZ			
To fit handle type STAR:						
RGZ-PMY/D 25	42010025		RKZ-PMY/D 25	44010025		
RGZ-PMY/D 50	42010050		RKZ-PMY/D 50	44010050		
RGZ-PMY/D 75	42010075		RKZ-PMY/D 75	44010075		
RGZ-PMY/D 100	42010100		RKZ-PMY/D 100	44010100		
RGZ-PMY/D 125	42010125		RKZ-PMY/D 125	44010125		
RGZ-PMY/D 150	42010150		RKZ-PMY/D 150	44010150		
RGZ-PMY/D 200	42010200		RKZ-PMY/D 200	44010200		
To fit handle type SUPERTHERM:						
RGZ-PMY/D 250	42010250		RKZ-PMY/D 250	44010250		
RGZ-PMY/D 300	42010300		RKZ-PMY/D 300	44010300		
RGZ-PMY/D 350	42010350		RKZ-PMY/D 350	44010350		
RGZ-PMY/D 400	42010400		RKZ-PMY/D 400	44010400		
RGZ-PMY/D 450	42010450		RKZ-PMY/D 450	44010450		
RGZ-PMY/D 500	42010500		RKZ-PMY/D 500	44010500		
RGZ-PMY/D 600	42010600		RKZ-PMY/D 600	44010600		
Spare nozzle	40142012		Spare nozzle	40142012		
Ring torch for different pipe diameters available on request.					Index	



Safety valve (90°) with thermal element



Version:

- Thermal-electric ignition safety comprising: safety valve, thermal element and fixing material. With push-button to open the fuel gas supply in the safety valve when starting (igniting) the torch. The thermo-element is mounted on the safety valve and at the other end on the torch head. Flame contact to the point of the thermal element causes a thermoelectric voltage to keep the safety valve open; the push-button can be released after the flame has been burning for a short time. The safety valve remains open as long as the point of the thermal element in the flame stays hot. If there is a problem with the flame and the point of the thermal element cools then the safety valve shuts off the fuel gas.

Application:

- Suitable for small hand torches with up to 4 kW power for use with fuel gas / compressed air or fuel gas / siphoned air.

Operating data for: Propane (P), Methane (M), MAPP (Y), Acetylene (A) /compressed air or siphoned air			
Max. permissible fuel gas consumption [m³/h]			
Propane (P)	Methane (M)	MAPP (Y)	Acetylene (A)
To fit handle type MINITHERM, STARLET und STAR:			
0,15	0,45	0,16	0,25
Part numbers:			
Safety valve:			Part number
Safety valve, straight version up to p = 50 mbar:			44240052
Safety valve, straight version up to p = 5 bar:			44240053
Safety valve, 90° version up to p = 50 mbar:			44240050
Safety valve, 90° version up to p = 5 bar:			44240051
Thermal element with connections M8x1 on both ends:			
Length [mm]	Part number	Length [mm]	Part number
320 mm	76530363	850 mm	76530025
450 mm	76530436	1000 mm	76530023
600 mm	76530024	1200 mm	76530292
750 mm	76530009	1500 mm	76530614
Fixing material:			
Support plate (Thermal element point at torch end):			46530196
Counter nut (2 pieces required)			46530014
			Index

Mechanical gas economiser



Mechanical gas economiser
with safety valve to monitor the pilot flame

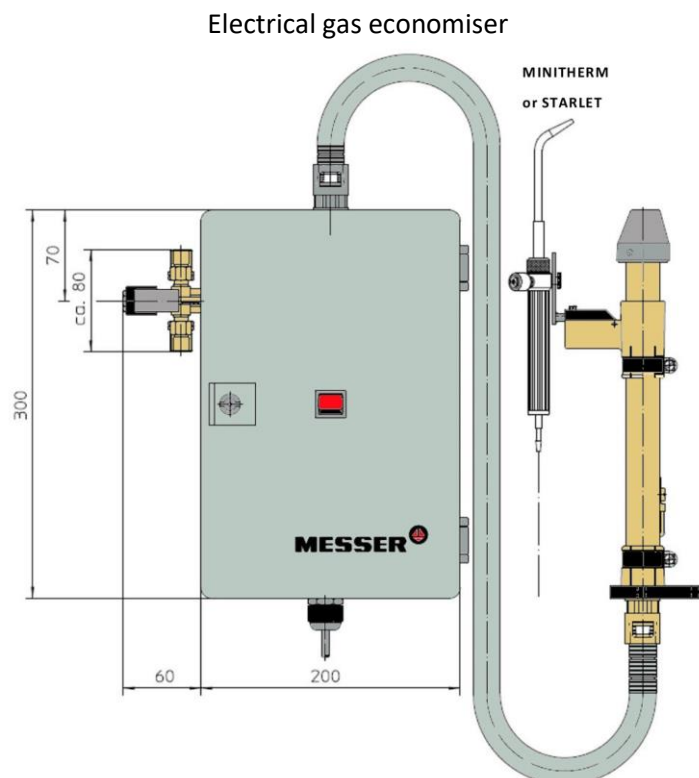
**Version:**

- The gas economiser consists of a small casing in which the easily exchanged membrane shut-off valves for Oxygen und fuel gas are housed – protected from dust and damage –, the hanging bracket for the torch (gas stop when torch sits in bracket), the permanent pilot flame and the installation plate. Inlets and outlets for Oxygen and fuel gas hoses.
- There is also a gas economiser equipped with a safety valve and thermal element to monitor the permanent pilot flame.

Application:

- The gas economiser is conceived for work-places equipped with lightweight brazing, heating and welding torches with frequent or regular pauses in the work with the flame, e.g. in mass production of soldered parts.

Operating data for gas type: Propane (P) / Oxygen; Acetylene (A) / Oxygen				
Max. operating pressures [bar]				
Oxygen			Fuel gas	
4,0			0,5	
Technical data:				
Height [mm]	Width [mm]	Depth [mm]	Connections	
			Oxygen	Fuel gas
337	240	88	G1/4" RH - Hose 6,3 mm	G3/8" LH – Hose 9 mm
Part numbers:				
Propane (P) / Oxygen			Acetylene (A) / Oxygen	
Laid out for torch type MINITHERM:				
71607015			71607014	
Laid out for torch type MINITHERM, also with safety valve to monitor the pilot flame:				
71607588			71607587	
A Laid out for torch types MINITHERM, Gas economiser chemically Ni plated: (Hydrogen/Oxygen)				
-			71607027	
Laid out for torch type STARLET und STAR:				
71600139			71600140	
Laid out for torch types STARLET und STAR, also with safety valve to monitor the pilot flame:				
71607026			71607025	
				Index



Version:

- The electrical gas economiser consists of a small electrical cabinet with integrated ignition transformer and solenoid valves mounted on the outside with inlet and outlet connections for Oxygen and fuel gas hoses. An electrical lead from the cabinet with shielding cover runs through and to a table stand with integrated ignition head and torch holder. When the torch is hung up, the solenoid valves shut off the gas supply. When the torch is picked up the solenoid valves open and the torch can be lit directly at the ignition head. The time for ignition after picking up the torch can be set on a time relay.

Application:

- The gas economiser is conceived for work-places equipped with small brazing, heating and welding torches type MINITHERM or STARLET and offers safe operation of the torch at work stations with frequent pauses in the work. Very safe as no open pilot flame exists.

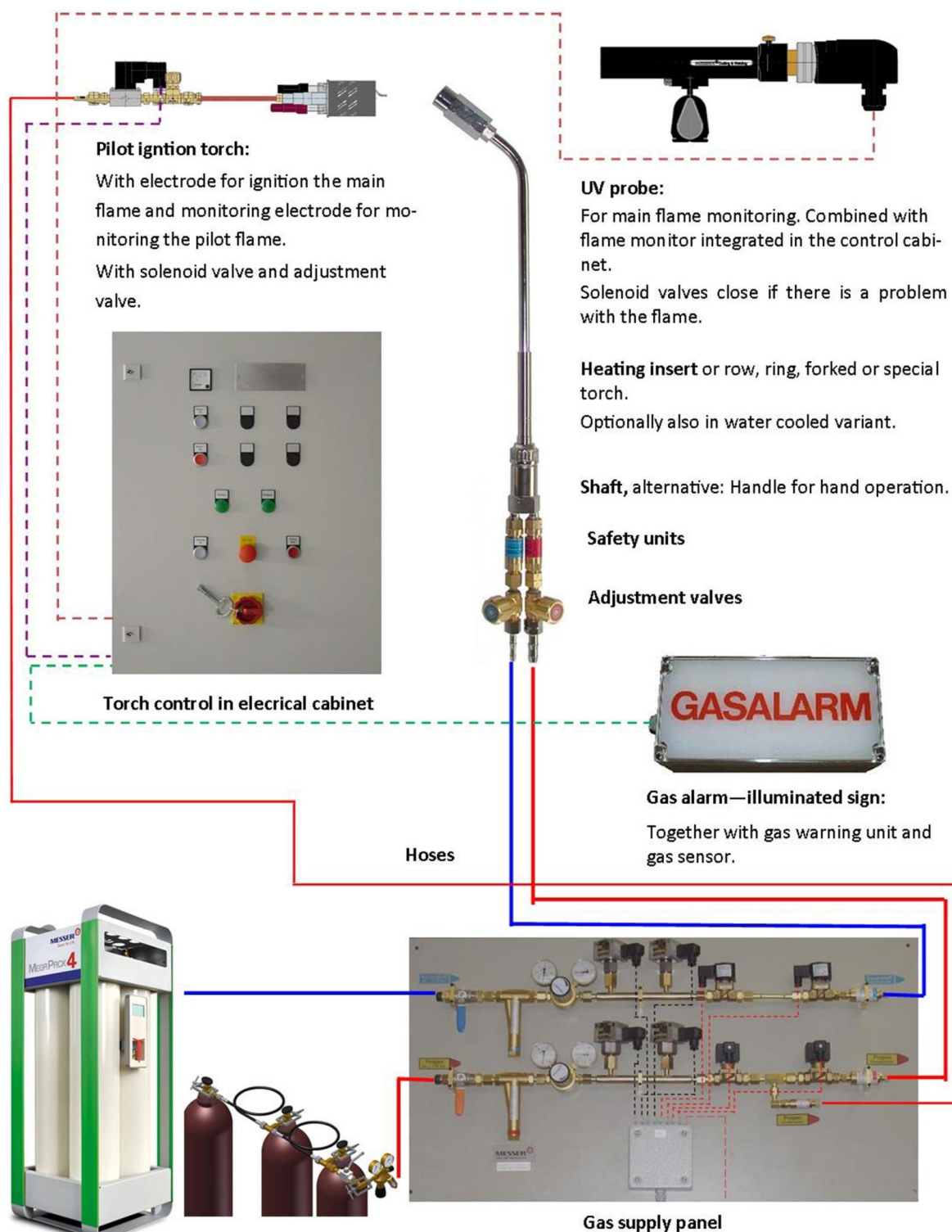
Technical data:				
Height [mm]	Width [mm]	Depth [mm]	Connections	
			Oxygen	Fuel gas
300	200 + 60	120	G1/4" RH - hose 6,3 mm	G3/8" LH - hose 9 mm
Part numbers:				
24 V - 50/60 Hz			230 V – 50/60 Hz	
71605756			71605755	
				<u>Index</u>

Version:

- Single parts for automated heating system on the following pages.
Automated heating units will be offered complete from Messer GRIFLAM.

Application:

- Automated operation of heating torches with ignition and monitoring functions.



Gas supply panel



Version:

- Aluminum panel, powder coated or anodised, mounted with the following gas supply elements, each with an Oxygen (Compressed Air) line and a Fuel Gas line:
- Ballcock with threaded inlet for hose connection.
- Filter.
- Pressure regulator.
- Two units pressure monitor (1x p-min.; 1x p-max.).
- Main gas magnetic valve (24 V DC).
- Outlet for ignition gas with safety unit (only fuel gas).
- Control solenoid valve (24 V DC).
- Flashback arrestors, flame arrestor.

Further equipment possibilities:

- Proportional valve for continuous adjustment of the flame power.
- Adjustment valve.
- Connection box for connecting the valves and pressure monitor to the torch control.
- Supply for two or more torches. Torches to be switched on and off individually or in groups.

Part numbers

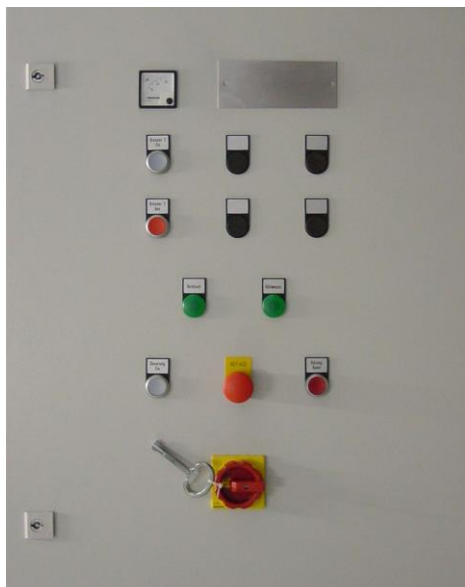
for standard gas supply panels to supply one torch type STARLET or STAR:

Propane (P), Methane (M) / Oxygen	Acetylene (A) / Oxygen
71651661	71651662

As a rule, gas supply panels will be configured by Messer according to the application and the torch to be supplied. For optimum configuration we need details of the available inlet fuel gas pressure as well as about the hose lengths between the outlet of the gas supply panel and the torch inlet.

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Torch control in electrical cabinet



Touch panel



Version:

- With operating push-buttons in the cabinet or operator control panel.
- For the control of:
 - Ignition with an electrical ignition torch or direct electrode ignition.
 - Ignition flame monitoring through the ionisation stream.
 - Main flame monitoring with UV probe or ionisation stream.
 - Main and control solenoids.
 - Pressure monitoring via pressure sensor.
 - External signal exchange through potential free signals or Profibus, etc.
 - Selection switch: Manual / Automatic operation; Emergency off through safety relay.
 - Control: Siemens.
- Further control possibilities:
 - Proportional valve for continuous adjustment of the flame power.
 - Pyrometer for contactless temperature measurement and display.
 - Control of two or more torches. Torches to be controlled individually or in groups.
- Versions:
 - Switch cabinet for wall mounting, as desk, on stand feet etc.

Part numbers for control of standard torches in combination with standard gas supply panel.

71650639

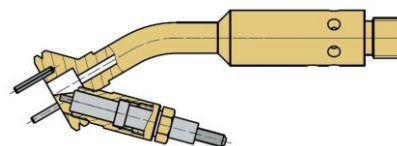
As a rule, torch controls are configured and offered by Messer according to the application and necessary equipment specifically for each customer.

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Ignition torch type ZAI



Ignition torch type BSM



Version type ZAI:

- With one ignition electrode and one monitoring electrode (to monitor the ignition flame).
- With siphoned air injector in the torch nozzle.
- With stainless steel torch pipe, adjustment valve for fuel gas G3/8"LH.
- Heat resistant protection tube over torch head and electrode.
- Optionally with 24 V DC solenoid valve mounted incl. 5 meter connecting cable.

Version type BSM:

- Single electrode operation only for ignition.
- Compact construction.

Application:

- For the reliable ignition of welding, cutting, brazing and heating torches which are used in automated operation.

Part numbers:

Type	Gas type	Solenoid valve	Part numbers
ZAI-A	Acetylene / Siphoned air	without	71651596
ZAI-A	Acetylene / Siphoned air	with	71655082
ZAI-P	Propane / Siphoned air	without	71651597
ZAI-P	Propane / Siphoned air	with	71655083
ZAI-M	Methane / Siphoned air	without	71651598
ZAI-M	Methane / Siphoned air	with	71655084
BSM-A	Acetylene / Siphoned air	without	71654122
BSM-PM	Propane, Methane / Siphoned air	without	71654120

Accessories:

Ignition cable and monitoring cable (Metre ware); ZAI: 1 item each.; BSM: 1 item.	0570199
Ignition transformer type TZI for cabinet mounting: 230V, 50/60 Hz; output 5 kV	0525077
Ignition transformer type TGI for wall mounting: 230 V, 50/60 Hz; output 5 kV	71605083
Ignition transformer type WS to build into cabinet: 24 V, 50/60 Hz; output 12 kV	0471008
Flame monitor type F130i to evaluate ionisation stream (s. p. 102)	71653289
Connection box*, pre-wired with ignition transformer and flame monitor F130i, 1 each	71653288

Spare parts:

Ignition electrode for type ZAI	74472941
Ignition electrode plug for type ZAI	04115306
Monitoring electrode for type ZAI (Ionisation electrode)	74472920
Monitoring electrode plug for type ZAI	04115302
Connecting cable solenoid valve for type ZAI incl. 5 pole M12 plug 5 meter	77071163
Ignition and monitoring electrode ZE 8-42-4 for type BSM	71651505
Ceramic ignition electrode plug for type BSM	0462419
Plastic ignition electrode plug, anti-interference, for type BSM	77020111
*Connection box: see also flame monitoring with UV-probe.	Index

Solenoid valve for Oxygen



Solenoid valve for Propane, Methane



Version:

- Solenoid valve closed with no current.

Application:

- To protect and control the supply of fuel gas and Oxygen to heating torches.

Gas type	Voltage	i. d. [mm]	Operating press. [bar]	Connection	Ambient temperature	Part No.
Oxygen; Air	24 V DC	10	0 - 8	G1/2" RH	-10 to 50° C	0647469
Oxygen; Air	24 V DC	10	0 - 16	G1/2" RH	-10 to 50° C	71653855
Oxygen; Air	24 V 50 Hz	10	0 - 8	G1/2" RH	-10 to 50° C	0346588
Oxygen; Air	230 V 50 Hz	10	0 - 8	G1/2" RH	-10 to 50° C	659509
Propane; Methane	24 V DC	8	0 - 1,8	G1/4" RH	-20 to 60° C	71651619
Propane; Methane	230 V 50 Hz	8	0 - 1,8	G1/4" RH	-20 to 60° C	71651620
Propane; Methane	24 V DC	12	0 - 8	G1/2" RH	0 to 60° C	71653456
Acetylene; MAPP	24 V DC	12	0 - 10	G1/2" RH	-20 to 50° C	71603240
Acetylene; MAPP	24 V DC	12	0 - 25	G1/2" RH	-20 to 50° C	71653854
Acetylene; MAPP	24 V 50 Hz	12	0 - 10	G1/2" RH	-20 to 50° C	71603241
Acetylene; MAPP	230 V 50 Hz	12	0 - 10	G1/2" RH	-20 to 50° C	71603242
All	24 V AC	3	0 - 3,5	G1/8" RH	-20 to 80° C	0351267 ²⁾
All	24 V DC	1	0 - 12	G1/8" RH	-10 bis 120° C	77020386 ¹⁾

¹⁾Suitable for ignition torch ZAI-A, ZAI-P, ZAI-M; ²⁾ Solenoid valve for electrical gas economiser

Threaded connection type R-G (G) for solenoid valves



Threaded connection type R-G (M) for solenoid valves



Cone thread	Cyl. thread	Part No.	Cone thread	Cap nut	Part No.
R1/8" RH	G1/4" RH	72216587	-	-	-
R1/8" RH	G3/8" LH	72321280	R1/8" RH	G3/8" LH	71655081
R1/4" RH	G1/4" RH	445312	R1/4" RH	G1/4" RH	71651603
R1/4" RH	G1/4" LH	71602501	R1/4" RH	G1/4" LH	71651604
R1/4" RH	G3/8" RH	71651606	R1/4" RH	G3/8" RH	71651605
R1/4" RH	G3/8" LH	71650684	R1/4" RH	G3/8" LH	71650683
R3/8" RH	G1/4" RH	72325387	-	-	-
R3/8" RH	G1/4" LH	72325389	-	-	-
R3/8" RH	G3/8" LH	72325388	-	-	-
R3/8" RH	G1/2" RH	72328933	-	-	-
R1/2" RH	G1/4" RH	71602502	R1/2" RH	G1/4" RH	71604592
R1/2" RH	G1/4" LH	71602503	R1/2" RH	G1/4" LH	71604593
R1/2" RH	G3/8" RH	71602504	R1/2" RH	G3/8" RH	71604594
R1/2" RH	G3/8" LH	71602505	R1/2" RH	G3/8" LH	71604595
R1/2" RH	G1/2" RH	72102013	R1/2" RH	G1/2" RH	71604596
R1/2" RH	G1/2" LH	72102012	R1/2" RH	G1/2" LH	71604597

Solenoid valves in different versions available on request.

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Flame sensor type FFS07



Flame sensor type FFS08



Version:

- Flame sensor in the housing, with 3m cable and plug:
FFS07: Housing made of corrosion-resistant aluminum, nickel-plated.
FFS08: Housing made of nickel-plated brass, partly black powder-coated.
- Alignment of the flame sensor in the housing:
FFS07: 180°; FFS08: 90°
- Accessories: Various brackets, cooling air housings, extension cables, etc. on request.

Application:

- For monitoring the burner flame in single-burner combustion systems.
- In connection with flame monitoring device F152 (for installation in control cabinet or terminal box).

Technical data und Part numbers

Type	Spectral-range UV [nm]	Angle of view	Ambient temperature	Weight Incl. 3m cabel [g]	Sensitivity min.	Pro-tection class	Part-No.
FFS07	260 - 400	Ca. 8°	-20 bis +65° C	400	10 mVAC	IP 67	71660263
FFS08	260 - 400	Ca. 8°	-20 bis +65° C	400	25 mVAC	IP 67	71660264

Type	Supply Voltage	Power consumption	Length [mm]	Diameter [mm]
FFS07	24...42 VDC	< 20 mA	160	40
FFS08	24...42 VDC	< 20 mA	111	25

Accessories: Flame monitor

Type F152	Application area:	Part-No.
	The flame monitoring device is used to monitor burners with UV flame sensors. For installation in the control cabinet.	71660262

Accessories: Terminal box prewired for UV sensor and ignition torch ZAI

Part-No.
With 1 pc. Flame monitor type F152 for flame sensor FFS07 or FFS08.
With 1 pc. Flame monitor type F130i for monitoring electrode on ignition torch ZAI.
With 1 pc. Ignition transformer for ignition the ignition torch ZAI.
71654756

Spare parts for existing old systems with UV-probe type UV-S10

Part-No.
UV-probe type UV-S10 with guiding tube and ball tild tripod
71653393
Flame monitor type IFW 50 (until year of construction: 12/2018)
0520163

Pressure monitor DWR on T piece



Gauge on T piece



Version:

- Pressure die cast Aluminum housing.
- Switch cabinet can be adjusted from outside with a screwdriver.

Application:

- If a fixed pre-set pressure limit is exceeded or not reached the gas supply will be switched off by a solenoid valve.
- Monitoring of p-min. and p-max.

Version:

- Steel sheet gauge housing.
- Plastic viewing window.

Application:

- Checking the pressure of fuel gas and / or Oxygen, e.g. directly at torch inlet to recognise pressure losses in hoses and upstream safety units.

Operating data and Part numbers – Pressure monitor DWR:

Type	Setting range [bar]	Switch difference [bar]	Max. operating pressure [bar]	Part numbers
DWR 1	0,2 - 1,6	0,06	6	71651607
DWR 6*	0,5 - 6,0	0,2	10	71651608

*Free from oil and grease for Oxygen

Technical Data and part No: T pieces for pressure monitor DWR:

	T piece	Seal
Connection thread: G1/4" RH (M) - G1/4" RH (cap nut) - outlet G1/2" (cap nut)	71650669	Fuel gas: 16223760
Connection thread: G3/8" RH (M) - G3/8" RH (cap nut) - outlet G1/2" (cap nut)	71650671	
Connection thread: G3/8" LH (M) - G3/8" LH (cap nut) - outlet G1/2" (cap nut)	71650672	
Connection thread: G1/2" RH (M) - G1/2" RH (cap nut) - outlet G1/2" (cap nut)	71650673	Oxygen: 16220120
Connection thread: G1/2" LH (M) - G1/2" LH (cap nut) - outlet G1/2" (cap nut)	71650674	
Connection thread: G3/4" LH (M) - G3/4" LH (cap nut) - outlet G1/2" (cap nut)	71650676	

Operating data und Part numbers: Test gauge:

Pressure range [bar]	Oxygen Part number	Neutral- & Fuel gasses (PMY) Part number	Acetylene Part number
0 - 2,5	0640114	0640070	0640479
0 - 4	0640113	0640069	-
0 - 6	0640112	0640068	-
0 - 16	0640477	0640066	-
0 - 25	0640109	0640065	-

Technical Data und Part numbers – T pieces for test gauge:

Technical Data and Part Numbers - T piece for test gauge		T piece	Seal
Connection thread: G1/4" RH (M) - G1/4" RH (cap nut) - outlet G1/4" (cap nut)		71825530	45208020
Connection thread: G3/8" RH (M) - G3/8" RH (cap nut) - outlet G1/4" (cap nut)		71825532	
Connection thread: G3/8" LH (M) - G3/8" LH (cap nut) - outlet G1/4" (cap nut)		71825534	
Connection thread: G1/2" RH (M) - G1/2" RH (cap nut) - outlet G1/4" (cap nut)		71825536	
Connection thread: G1/2" LH (M) - G1/2" LH (cap nut) - outlet G1/4" (cap nut)		71825538	
			Index

Flow monitor PSR (cooling water)



Version:

- Baffle disc flow monitor with reed contact.

Application:

- For monitoring the cooling water flow when using water cooled torches. The flow monitor PSR can be used with a torch control to prevent the starting of the torch if the cooling water supply is closed off. It is recommended to insert it in the cooling water return flow so that a leak in the inlet supply will cause the torch to be switched off.

Technical Data und Part numbers:

Connection thread	Protection class	Max. water temperature	Max. operating pressure [bar]	Max. switching current	Max. switching voltage	Part No.
G1/2" (IG)	IP 65	100° C	100	1,5 A	250 V	71651640

Gas warning unit – on request

Gas warning unit



Version:

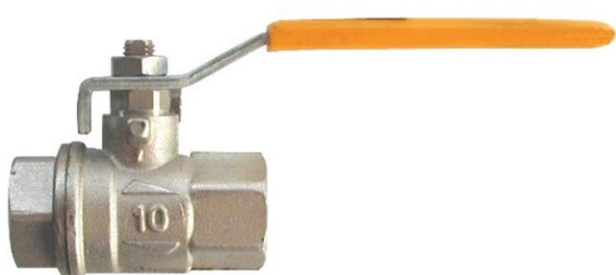
- Central gas control in BUS technology.
- Up to 10 measuring points for inflammable gasses.
- Menu guided button operation.
- Two variably adjustable alarm thresholds per sensor.
- Password protected configuration level.
- Large LCD clear letter display.
- Six potential free alarm relays.
- Bus interface.
- LED status display of the system.

Application:

- The unit is used for the measurement and evaluation of gas concentrations in the ambient air.
- Warning if limit values exceeded by acoustic signal (horn) and / or gas warning light.
- The type and number of gas sensors as well as the optimum installation location is selected according to the gas type and the room size to be monitored.

➤ Gas warning units are configured and offered on request.

Ballcock



Adjustment valve – fuel gas



Version:

- Housing, Brass, Nickel plated.
- Sphere, Brass, hard chromed.
- With internal pipe connection threads.

Application:

- For manual shut-off of fuel gas, Oxygen or compressed air supplies to heating torches.

Version:

- With hand-wheel.
- Brass valve body.

Application:

- On and shut-off valve to be installed on torch shafts, pipe lines or gas supply panels.

Ballcocks:

Gas type	Nominal bore DN [mm]	Nominal pressure PN [bar]	Connection thread	Handle colour	Part No
Oxygen	15	40	G1/2" RH	Blue	71651623
Propane, Methane	15	10	G1/2" RH	Red	71651625
Acetylene	15	1,5	G1/2" RH	Yellow	71651624

Threads for ballcocks: see under Solenoid valves

Adjustment valves: Inlet external thread – Outlet cap nut: (Installed on torch inlet)

Gas type	Connection	max. operating pressure [bar]	Nominal bore DN [mm]	Part No.
Oxygen	G1/4" RH	25	6	71800500
Oxygen	G3/8" RH	25	9	71800501
Oxygen	G1/2" RH	25	10	71804290
Fuel gas	G1/4" LH	25	2	71655040
Fuel gas	G3/8" LH	25	9	71800502
Fuel gas	G1/2" LH	25	8	71800855

Adjustment valves: Inlet cap nut – Outlet external thread:

Oxygen	G1/4" RH	40	6	71803907
Oxygen	G3/8" RH	40	9	71803908
Oxygen	G1/2" RH	40	10	71803691
Fuel gas	G3/8" LH	40	9	71803909

Distribution piece:



Version:

- 1x inlet (nut), 2x outlets (m thread)
- One adjustment knob per outlet

Application:

- Splitting the gas supply between two torches.

Gas type	Connection	Part No
Oxygen	G1/4" RH	51211653
Acetylene	G3/8" LH	51211602
Fuel gas	G3/8" LH	71655018

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Filter F 11



Filter F 77



Filter GFK



Version:

- F11 und F77 with filter insert.
- GFK with filter matt (woven fibre felt).

Application:

- For separation of foreign particles carried along in pipelines.
- To prevent downstream equipment from contamination.

Type	For gas type	Max. operating pressure [bar]	Connection	Part No.
F 11	• Oxygen • Compressed air • Propane • Methane • MAPP • Ethylene	300	G1/2" RH Internal thread	71709405
F 77	• Acetylene • Propane • Methane • MAPP • Ethylene • Oxygen • Compressed air	1,5 50 50 50 50 30 50	G3/4" RH Internal thread	71653162
GFK 15	• Propane • Methane • Compressed air	4 4 4	G1/2" RH Internal thread	71651626
GFK 20	• Propane • Methane • Compressed air	4 4 4	G3/4" RH Internal thread	71651627
GFK 25	• Propane • Methane • Compressed air	4 4 4	G1" RH Internal thread	71651628
				<u>Index</u>

Rubber hose



Hose with metallic cover



Version:

- Rubber hose with fibre inserts. Max. operating pressure: 20 bar
- Alternative: with steel wire cover (heat resistant up to max. 60° C).
- To comply with current technical regulations, ISO 3821.

Application:

- Flexible supply of welding, cutting and heating torches with fuel gas and Oxygen or compressed air.

Steel covered hoses; Metre ware cut to length with crimped connections:

Gas type	Nominal bore DN [mm]	Cap nut connection	Part numbers	
			Metre ware [m] without connections	-X = Length [m] With crimped connections
Oxygen	6 x 5	G1/4" RH	71651616	71651615-X
Oxygen	9 x 5,5	G1/4" RH	71651618	71655371-X
Oxygen	9 x 5,5	G3/8" RH	71651618	71651617-X
Oxygen	11 x 5,0	G1/2" RH	71654495	71654496-X
All fuel gas	6 x 3,5	G3/8" LH	71651610	71651609-X
All fuel gas	9 x 3,5	G3/8" LH	71651612	71651611-X
All fuel gas	11 x 3,5	G1/2" LH	71651614	71651613-X

Rubber hoses, Metre ware				Twin hoses with connections			
Gas type	Nominal bore DN [mm]	Max. operating pressure [bar]	Part. No.	Length [m]	Oxygen G1/4" RH DN -	Acetylene G3/8" LH DN -	Part No.
Oxygen	3,2 x 1,8	10	0140079	5	6 x 5	8 x 3,5	0469013
Oxygen	4 x 3,5	10	05100550	10	6 x 5	8 x 3,5	0469014
Oxygen	6 x 5,0	20	0469030	20	6 x 5	8 x 3,5	0469015
Oxygen	6,3 x 5,0	20	05101010	40	6 x 5	8 x 3,5	0469016
Oxygen	8 x 3,5	20	0469033				
Oxygen	9 x 5,5	20	05101060	5	6 x 3,5	6 x 3,5	0469017
Oxygen	11 x 5,5	20	05101200	10	6 x 3,5	6 x 3,5	0469018
Oxygen	12,5 x 6,0	20	05102940	20	6 x 3,5	6 x 3,5	0469019
Oxygen	16 x 6,0	20	05102030	40	6 x 3,5	6 x 3,5	0469020
All fuel gas	3,2 x 1,8	10	0140078	Length [m]	Oxygen G1/4" RH DN -	Propane G3/8" LH DN -	Part No.
All fuel gas	6,3 x 3,5	20	0462863				
All fuel gas	9 x 3,5	20	0462859				
All fuel gas	11 x 3,8	20	0462860	10	6 x 5	8 x 3,5	0469021
All fuel gas	12,5 x 4,0	20	0462861	20	6 x 5	8 x 3,5	0469022
All fuel gas	16 x 4,5	20	0462862	40	6 x 5	8 x 3,5	0469023

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Hose tail



Cap nut



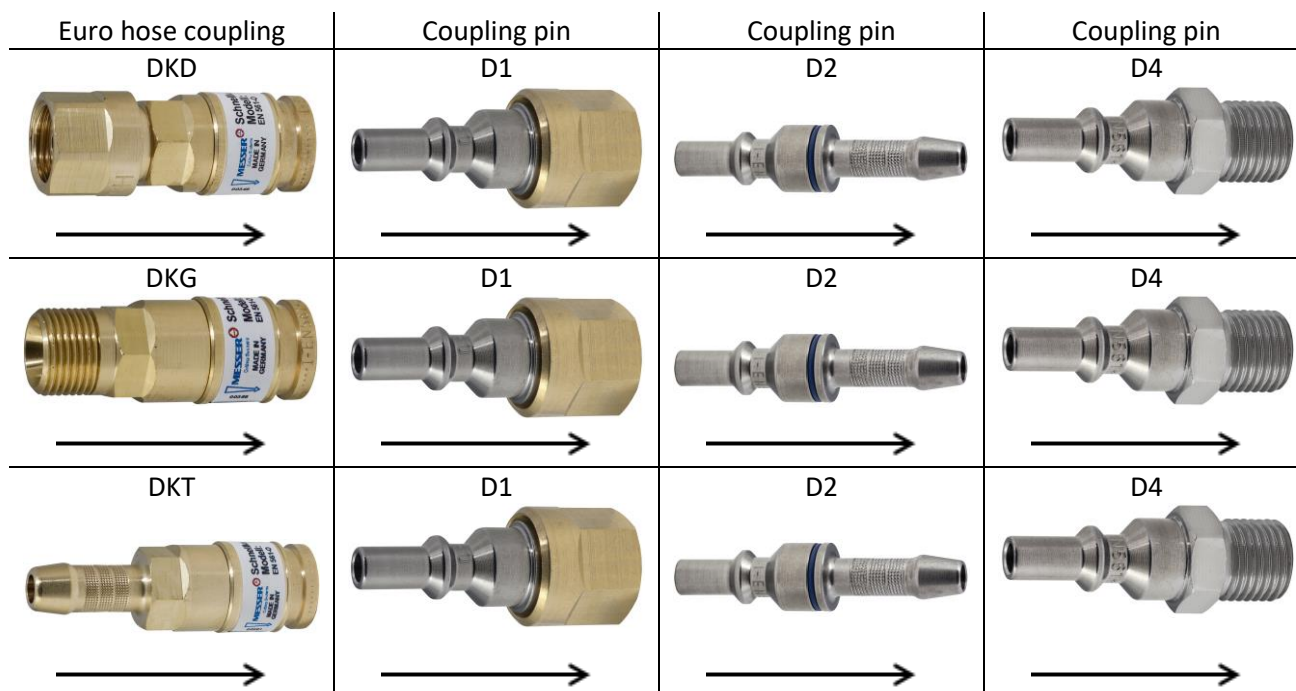
Version:

- Brass etched and passivated.
- Cap nut with cylindrical threads.
- Steel clamping ferrules.

Application:

- To connect and join hoses for inflammable gasses, Oxygen, compressed air and cooling water.

Hose tails				Cap nuts	
Hose inner Ø [mm]	To fit Cap nut [Inch]		Part. No.	Size [Inch]	Part. No.
3,2	G1/4" RH	G1/4" LH	71601160	G1/4" RH	70050030
3,2	G3/8" RH	G3/8" LH	71601161	G1/4" LH	47130250
4	G1/4" RH	G1/4" LH	47140820	G3/8" RH	70050130
4	G3/8" RH	G3/8" LH	47140830	G3/8" LH	70050040
6	G1/4" RH	G1/4" LH	70050050	G1/2" RH	286256
6	G3/8" RH	G3/8" LH	70050060	G1/2" LH	286327
6	G1/2" RH	G1/2" LH	749114	G3/4" RH	286415
8	G3/8" RH	G3/8" LH	47140770	G3/4" LH	286416
9	G3/8" RH	G3/8" LH	47140090	G1" RH	028116
9	G1/2" RH	G1/2" LH	749111	Sealing nipple for cap nut	
11	G1/2" RH	G1/2" LH	47140230		
13	G3/4" RH	G3/4" LH	70203581	G1/4" RH and LH	47121140
16	G3/4" RH	G3/4" LH	47124990	G3/8" RH and LH	47121150
Clamping ferrules:					
Hose inner Ø [mm]	Ferrule inner Ø [mm]	Ferrule height [mm]	Ferrule hole Ø [mm]	Part. No.	
4	14	22	7,2	77020315	
6	15	20	11	77020316	
8	16,5	20	12	77020317	
9	21	31	16,5	77020318	
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Version:

- DKD – Inlet cap nut – outlet connection for pin.
- DKG – Inlet external thread – outlet connection for pin.
- DKT – Inlet hose tail – outlet connection for pin.

Version:

- D1 – Coupling – cap nut.
- D2 – Coupling – hose tail.
- D4 – Coupling – external thread.

Application:

- Quick joining and separating of hose lengths with couplings in between.
- With automatic gas shut-off for safe connection and release under pressure.

Oxygen			Fuel gas			Non-flammable gasses		
Inlet	Outlet	Part. No.	Inlet	Outlet	Part. No.	Inlet	Outlet	Part. No.
DKD – Euro coupling: Inlet cap nut:								
G1/4" RH	Coupling	0463312	-	-	-	G1/4" RH	Coupling	0463313
G3/8" RH	Coupling	0463368	G3/8" LH	Coupling	0463311	G3/8" RH	Coupling	0463369
DKG – Euro coupling: Inlet external thread:								
G1/4" RH	Coupling	0463306	-	-	-	G1/4" RH	Coupling	0463307
G1/4" RH	Coupling	0463358	G3/8" LH	Coupling	0463305	G3/8" RH	Coupling	0463359
DKT – Euro coupling: Inlet hose tail:								
6,3 mm	Coupling	0463309	6,3 mm	Coupling	0463360	6,3 mm	Coupling	0463310
9,0 mm	Coupling	0463361	9,0 mm	Coupling	0463308	9,0 mm	Coupling	0463362
Coupling pin D1 – Outlet cap nut:								
Coupling	G1/4" RH	0463300	-	-	-	Coupling	G1/4" RH	0463301
Coupling	G3/8" RH	0463363	Coupling	G3/8" LH	0463299	Coupling	G3/8" RH	0463364
Coupling pin D2 – Outlet hose tail:								
Coupling	6,3 mm	0463303	Coupling	6,3 mm	0463365	Coupling	6,3 mm	0463304
Coupling	9,0 mm	0463366	Coupling	9,0 mm	0463302	Coupling	9,0 mm	0463367
Coupling pin D4 – Outlet external thread:								
Coupling	G1/4" RH	0463430	-	-	-	Coupling	G1/4" RH	0463433
Coupling	G3/8" RH	0463431	Coupling	G3/8" LH	0463432	Coupling	G3/8" RH	0463434
								Index



Version:

- With filter, gas non-reverse flow valve and flame arrestor.
- Flow direction (picture): from right to left.

Application:

- To protect hand torches and for inserting into hoses.

Oxygen			Fuel gas		
Inlet	Outlet	Part. No.	Inlet	Outlet	Part. No.
Type GG 91					
G1/4" RH (AG)	G1/4" RH (Nut)	0463389	-	-	-
G3/8" RH (AG)	G3/8" RH (cap nut)	0463390	G3/8"LH (AG)	G3/8"LH (cap nut)	0463388
Type GT 91					
6,3 mm	G1/4" RH (cap nut)	0463393	-	-	-
9,0 mm	G1/4" RH (cap nut)	0463856	-	-	-
6,3 mm	G3/8" RH (cap nut)	0463394	6,3 mm	G3/8"LH (cap nut)	0463628
9,0 mm	G3/8" RH (cap nut)	0463392	9,0 mm	G3/8"LH (cap nut)	0463391
Type TT 91					
3,2 mm	3,2 mm	0463853	3,2 mm	3,2 mm	0463850
6,3 mm	6,3 mm	0463854	6,3 mm	6,3 mm	0463851
9,0 mm	8,0 mm	0463855	9,0 mm	9,0 mm	0463852
Type DKSG 91					
G1/4" RH (AG)	Coupling	0463866	-	-	-
G3/8" RH (AG)	Coupling	0463867	G3/8" LH (AG)	Coupling	0463865
Type DKST 91					
6,3 mm	Coupling	0463863	-	-	-
9,0 mm	Coupling	0463864	9,0 mm	Coupling	0463862
Working pressure: [bar]	Oxygen	Acetylene A	Fuel gas PMYE	Hydrogen H	
	20	1,5	5,0	3,5	
Flow rate table			Conversion table (Air U = 1)		
Inlet pressure [bar]	Air volume [m³/h]	Gas type		Conversion factor U	
0,3	1,81	Oxygen		0,95	
0,8	3,66	Propane		0,9 (1,0 at p=0,7)	
0,9	4,45	Methane		1,40	
1,5	7,23	MAPP		0,80	
2,5	13,30	Ethylene		1,012	
3,0	23,00	Acetylene		1,20	
Max. Gas flow rate: Volume gas = Volume Air x Conversion factor U [m³/h]				Index	

Safety device DG 91 N for Oxygen



Safety device DG 91 N for Fuel gas



Version:

- **DG 91 UA:**
 - Reverse flow direction (Inlet: male thread – Outlet: Cap nut).
 - Asymmetric connection for **mounting on handle or on the shaft**.
 - With filter, gas non-reverse flow valve and flame arrestor.
- **DGN**
 - Flow direction for **mounting on gas take-off points**.
Inlet: cap nut – Outlet: male thread.
 - Filter, gas non-reverse flow valve, flame arrestor, post flow stop valve.
- **DG 91 N**
 - Flow direction for **mounting on gas take-off points**.
Inlet: cap nut – Outlet: male thread.
 - Filter, gas non-reverse flow valve, flame arrestor, post flow stop valve.
 - High flow rate.

Application:

- To protect against creeping and sudden gas back-flow and against back-fires.

Type	Gas type	Connections	Flow rate air volume [m³/h] with inlet pressure [bar]	Part No.
DG 91 UA	Oxygen	G1/4" RH	6,50 – 54,70 [0,5 – 5,0]	0463859
DG 91 UA	Oxygen	G3/8" RH	6,50 – 54,70 [0,5 – 5,0]	0463860
DG 91 UA	Oxygen	G1/2" RH	6,50 – 54,70 [0,5 – 5,0]	0463861
DG 91 UA	Fuel gas	G3/8" LH	6,50 – 54,70 [0,5 – 5,0]	0463857
DG 91 UA	Fuel gas	G1/2" LH	6,50 – 54,70 [0,5 – 5,0]	0463858
DGN	Oxygen	G1/4" RH	2,35 – 33,0 [0,3 – 5,0]	0463386
DGN	Oxygen	G3/8" RH	2,35 – 33,0 [0,3 – 5,0]	0463387
DGN	Fuel gas	G3/8" LH	2,35 – 33,0 [0,3 – 5,0]	0463385
DG 91 N	Oxygen	G1/4" RH	3,50 – 45,0 [0,3 – 5,0]	0463831
DG 91 N	Oxygen	G3/8" RH	3,50 – 45,0 [0,3 – 5,0]	0463832
DG 91 N	Oxygen	G1/2" RH	3,50 – 45,0 [0,3 – 5,0]	0463833
DG 91 N	Fuel gas	G3/8" LH	3,50 – 45,0 [0,3 – 5,0]	0463829
DG 91 N	Fuel gas	G1/2" LH	3,50 – 45,0 [0,3 – 5,0]	0463830

Test unit for safety devices

Test unit PVGD for annual testing of safety devices.

0463825

Conversion factor U to calculate the gas flow rate for gas type:

Air	Oxygen	Propane (P)	Methane (M)	MAPP (Y)	Ethylene (E)	Acetylene (A)
1	0,95	0,9; (1,0 at p=0,7)	1,40	0,80	1,012	1,20

Max. Gas flow rate: Volume Gas = Volume Air x Conversion factor U [m³/h]

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Safety device DEMAX 5



Safety device SIMAX 3



Version:

- **DEMAX 5**
 - With G 1" internal thread and flexibly adaptable thread connections.
 - 5 units DGN safety devices mounted in parallel.
 - With filter, gas non-reverse flow valve, flame arrestor, post flow stop valve.
- **SIMAX 3**
 - With G 1" internal thread and flexibly adaptable thread connections.
- **SIMAX 5**
 - 3 or 5 or 8 units DGN 91 N safety devices mounted in parallel.
- **SIMAX 8**
 - With filter, gas non-reverse flow valve, flame arrestor, post flow stop valve.

Application:

- To protect against creeping and sudden gas back-flow and against back-fires.
- When welding up to 30 mm material thickness.
- When heating > 100 mm material thickness.
- When cutting > 700 mm material thickness.

Type	Gas type	Weight [kg]	Ø [mm]	Opening pressure [mbar]	*Air volume flow rate [m³/h] with inlet pressure [bar]	Part No.
DEMAX 5	Oxygen	1,269	64	50 - 70	16 - 110 [0,5 - 5,0]	0463841
DEMAX 5	Fuel gas	1,269	64	50 - 70	16 - 110 [0,5 - 5,0]	0463840
SIMAX 3	Oxygen	3,351	88	10	25 - 175 [0,5 - 5,0]	0463843
SIMAX 3	Fuel gas	3,351	88	10	25 - 175 [0,5 - 5,0]	0463842
SIMAX 5	Oxygen	3,916	90	10	40 - 290 [0,5 - 5,0]	0463845
SIMAX 5	Fuel gas	3,916	90	10	40 - 290 [0,5 - 5,0]	0463844
SIMAX 8	Oxygen	8,376	122	10	50 - 460 [0,5 - 5,0]	0463847
SIMAX 8	Fuel gas	8,376	122	10	50 - 460 [0,5 - 5,0]	0463846

*Flow rate conversion factors for gasses see previous page.

Operating pressure [bar]:

Type	Oxygen	Compressed air	Propane (P)	Methane (M)	MAPP (Y)	Ethylene (E)	Acetylene (A)
DEMAX	25	25	5	5	5	5	1,5
SIMAX	25	25	5	5	5	5	15

Inlet and outlet threads for SIMAX and DEMAX safety units: G1" (AG) -

Cap nut (female)				External thread (male)			
Oxygen	Part. No.	Fuel gas	Part. No.	Oxygen	Part. No.	Fuel gas	Part. No.
G3/8" RH	0463410	G3/8" LH	0463411	G3/8" RH	0463414	G3/8" LH	0463415
G1/2" RH	0463408	G1/2" LH	0463409	G1/2" RH	0463412	G1/2" LH	0463413
G3/4" RH	0463380	G3/4" LH	71652536	G3/4" RH	0463341	G3/4" LH	0463342
G1" RH	0463339	G1" LH	0463340	G1" RH	0463343	G1" LH	0463344

Max. Gas flow rate: Volume Gas = Volume Air x Conversion factor U [m³/h]

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Cylinder pressure regulator
CONSTANT Oxygen



Cylinder pressure regulator
CONSTANT Propane



Cylinder pressure regulator
CONSTANT Acetylene



Version:

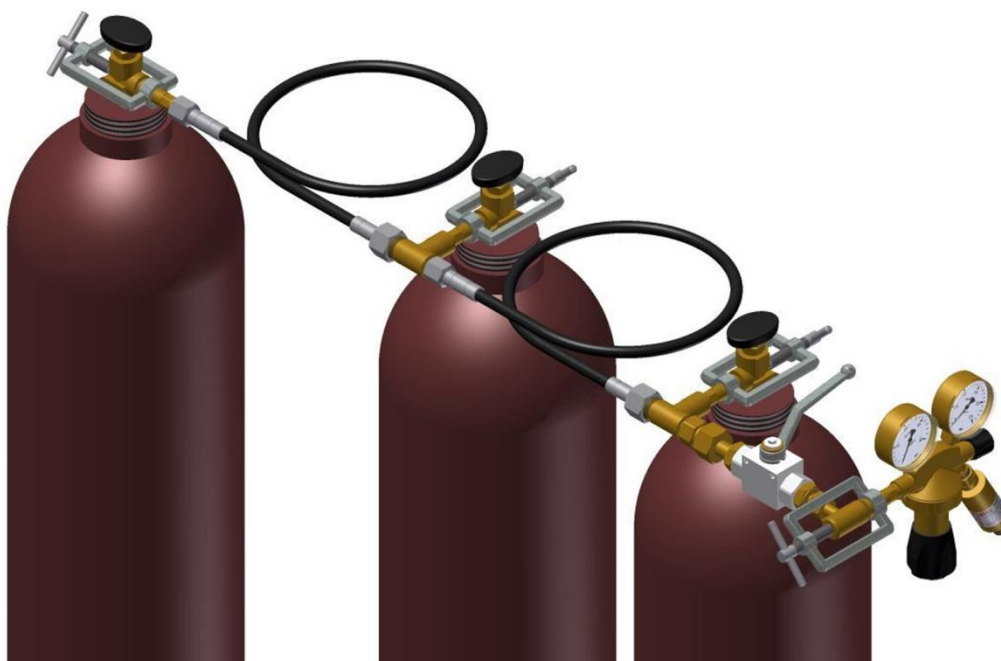
- Tested to BAM (Federal German Institute for material research and testing).
- With integrated central filter.
- High regulation accuracy even with low operating pressures and take-off quantities.
- Double protected outlet pressure limitation with blow-off valve and toothed arrestor.
- Single stage regulator (also available as two stage regulator).

Application:

- For mounting on gas cylinders to reduce the cylinder pressure to the working pressure.

Gas type Type CONSTANT	max. outlet pressure [bar]	Cylinder connection	Hose connection	Part No.
Cylinder pressure: 200 bar				
Oxygen	10	G3/4" RH	G1/4" RH - DN 6	71620100
Oxygen	20	G3/4" RH	G1/4" RH - DN 6	71620101
Compressed air	10	G5/8" RH (male)	G1/4" RH - DN 6	71620141
Compressed air	20	G5/8" RH (male)	G1/4" RH - DN 6	71620142
Propane	2,5	W 21,80 x 1/14" LH	G3/8" LH - DN 9	71620108
Fuel gas	10	W 21,80 x 1/14" LH	G3/8" LH - DN 9	71620110
Fuel gas	20	W 21,80 x 1/14" LH	G3/8" LH - DN 9	71620111
MAPP	2,5	W 21,80 x 1/14" LH	G3/8" LH - DN 9	71620109
Acetylene	1,5	Clamp	G3/8" LH - DN 9	71620107
Cylinder pressure: 300 bar				
Oxygen	10	W 30x2 - Ø 17.3/18.3	G1/4" RH - DN 6	71630100
Oxygen	20	W 30x2 - Ø 17.3/18.3	G1/4" RH - DN 6	71630101
Compressed air	20	W30x2 - Ø 16.6/19.4	G1/4" RH - DN 6	71630106
Fuel gas	10	W 30x2LH - Ø 15.2/20.2	G3/8" LH - DN 9	71630115
Fuel gas	20	W 30x2LH - Ø 15.2/20.2	G3/8" LH - DN 9	71630116
Type U 13				
Cylinder pressure: 200 bar				
Oxygen	10	G3/4" RH	G1/2" RH - DN 9	50999850
Oxygen	20	G3/4" RH	G1/2" RH - DN 9	50999900
Cylinder pressure: 300 bar				
Oxygen	10	W 30x2 - Ø 17.3/18.3	G1/2" - DN 9	71706901
Oxygen	20	W 30x2 - Ø 17.3/18.3	G1/2" - DN 9	71706902
For cylinder pressure regulators for different gasses and pressure ranges see main catalogue oxyfuel equipment. Other connections on request.				Index

Cylinder couplings for Acetylene cylinders



Version:

- Cylinder couplings to connect multiple gas cylinders (Acetylene or Propane).

Application:

- Transportable gas supply systems for simultaneous gas take-off from 2 or 3 Acetylene cylinders (up to 6 cylinders on request) or up to 6 Propane cylinders to supply an end user through a cylinder pressure regulator.
- For the operation of medium powered heating torches if the gas quantity to supply the torch exceeds the maximum take-off quantity of a single cylinder.
See below.

Gas type	Type	Number of gas cylinders	Consisting of:	Part No.
Acetylene	FK-A2 RSV	2	Cylinder coupling complete	71654846
Acetylene	FK-A3 RSV	3	Cylinder coupling complete	71654847
Propane: X = Number of gas cylinders to be linked:				
Propane	FK-P2 to FK-P6	2 to 6	(X-1 unit) HD Propane hose	71654764
			(X-1 unit T-piece Propane cylinders)	71654765
Maximum take-off quantity from single cylinders:				
Gas type	For short operating times: < 15 min.	For middle operation times: 15 - 30 min.	For longer operating times: > 30 min.	
Acetylene	ca. 1,0 m3/h (10 kg Cylinder)	ca. 0,7 m3/h (10 kg Cylinder)	ca. 0,5 m3/h (10 kg Cylinder)	
Propane	ca. 1,0 to 1,4 m3/h (33 kg Cylinder)	ca. 0,79 to 1,12 m3/h (33 kg Cylinder)	ca. 0,6 to 0,7 m3/h (33 kg Cylinder)	
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Double thread connectors



Angle connections



Reducing piece



Double thread connectors:

- Brass with double-ended external thread and internal sealing cone.
- For the connection of Oxygen, Fuel gas, Compressed air and Cooling water hoses with metallic sealing connection threads.

Angle connections:

- With cylindrical inner or external threads and 90° bend.
- For the connection of Oxygen, Fuel gas, Compressed air and Cooling water hoses with metallic sealing connection threads.

Reducing pieces:

- Internal thread with flat sealing, conical sealing nipple 45 ° made of aluminum as insert in the internal thread.
- External thread with 45° internal cone.

Double thread connectors:

Thread G1 and G2 [Inch]	Total length [mm]	Thread length G1 / G2 [mm]	Spanner size [mm]	Part No.
G1/4" RH	34	12	14	71826006
G1/4" LH	34	12	14	71650376
G3/8" RH	37	13,5	17	70101361
G3/8" LH	37	13,5	17	71826008
G1/2" RH	44	15,5	22	72102088
G1/2" LH	44	15,5	22	72323165
G3/4" RH	47	17	27	73203829
G3/4" LH	47	17	27	72308249
G1" RH	52	19	36	73203830
G1" LH	52	19	36	71650381

90° - Angle connections:

Thread G1 (female) and G2 (male) [Inch]	Part numbers
G1/4" RH	71826666
G1/4" LH	71826669
G3/8" RH	71826667
G3/8" LH	71826670
G1/2" RH	71826668
G1/2" LH	71826671
G3/4" RH	77004956
G3/4" LH	77070121

Reducing pieces:

Internal thread	External thread	Spanner size	Length	Part No.
G1/2" RH	G3/8" RH	24	32 mm	77021906
G1/2" LH	G3/8" LH	24	30 mm	77021907
G1/2" RH	G1/4" RH	24	26 mm	77005820



CREATING SOLUTIONS BEYOND MACHINES

What we stand for

PRODUCT

Messer Cutting Systems is a global supplier of cutting edge technology for the metalworking industry.

AUTOMATION

With over 900 employees worldwide in over 50 countries, we maintain a constant dialogue with our customers to achieve sustainable user-oriented innovation.

DIGITAL

SERVICES

Our portfolio embraces the themes PRODUCT, DIGITAL, SERVICES, AUTOMATION and KNOW-HOW. We will live up to our claim “creating solutions beyond machines” not just with the most modern cutting systems and solutions for oxyfuel technology.

KNOW-HOW

Appropriate services and training, our own software applications as well as the integration of solutions from our technology partners, e. g. in the field of automation, complete the machine to give forward-looking total solutions.

Our know-how combined with our customer-oriented attitude and actions have made us the worldwide partner of choice for innovative total solutions on all aspects of cutting systems for over 120 years.

Messer Cutting Systems India Private Limited

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