WELDING SYSTEMS

Made for Robots.

Simple integration

Weld Package Stand-Alone Torch

For stationary applications

Solutions for: ABB • FANUC • KUKA • YASKAWA/MOTOMAN

The Stand-Alone Torch Weld Package: DCT power source • Weld process controller • Robot interface • Wire feeder• Wire guidance • Cable bundle • Control cable • Torch system • Torch necks • Consumables

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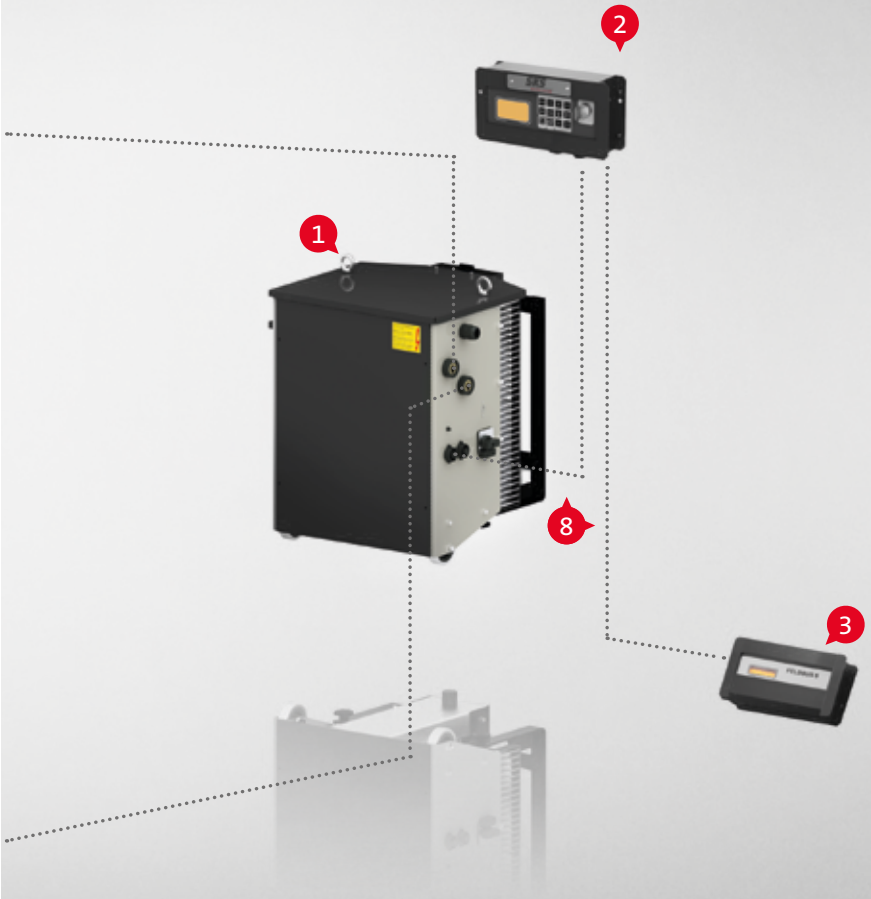
SKS Weld Package: System design

1. DCT power source
2. Weld process controller + Software
3. Robot interface
4. Wire feeder
5. Wire guidance
6. Cable bundle
7. Ground cable
8. Control cable
9. Torch system Stand-Alone Torch
10. Torch necks/ Consumables
11. Gas nozzles
12. TCP dimensions

For stationary installations.

This brochure contains information about the SKS Weld Package, the torch system **Stand-Alone Torch**, as well as consumables and spare parts. There are various features of the welding machine components and torch systems available depending on the robot system and the welding task.

The **Stand-Alone Torch Weld Package** can be used with common industrial robots, such as **ABB, FANUC, KUKA** and **YASKAWA/MOTOMAN**.



The complete SKS Stand-Alone Torch Weld Package is designed for the following welding processes, materials and power range:

Processes:	MIG/MAG (GMAW), Pulse, MIG Brazing
Wire materials:	High-alloy steels, low-alloy steels, aluminum and copper alloys, nickel-based materials
Wire diameter:	0.8-1.6 mm
Max. power:	420 A - 60 % duty cycle/40 °C, air-cooled

1 Power source

Power source LSQ5

LSQ5 power source with Direct Control Technology DCT

The LSQ5 ensures the optimum arc energy. It uniquely adjusts to different weld processes. Unlike conventional power sources with inverter technology, the LSQ5 with Direct Control Technology controls its switching transistors without any fixed clock frequency according to the needs of the weld process. Without any delay, the energy needed for the process is provided instantly. The flexible fine tuning is done by a central processor. The CPU continuously analyzes the weld process and current/voltage values on the basis of data obtained and optimally drives the switching transistors of the power section. This results in an extremely high efficiency and a low temperature development.
The power source can be configured with only two buttons and four LED indicators. For world-wide usage, voltages can be configured without opening the power source.

Overview of power sources

DESCRIPTION	PART-NO.
LSQ5	77-1185-00
LSQ5-CCC	77-1185-60

The main benefits are:

- DCT provides a speed regulation up to ten times higher compared to conventional inverter technology. This leads to excellent control behavior and shorter response times.
- The weld properties are substantially improved. Software replaces hardware: Fewer components also increase the reliability in continuous operation.

2 Weld process controller

Weld process controller Q6pw

Weld process controller Q4

Weld process controller Q4 as integrated solution into the power source

Weld process controller Q6pw and Q4

The perfect solution for local administration – the weld process controllers Q6pw and Q4 provide all basic functions of the Q80. The controllers can be administrated over the USB port with the Q8TOOL4 software. As a small and compact solution for the cost-optimized application, the Q4 is integrated into the power sources LSQ3 or LSQ5.

- Processes/features: MIG/MAG (GMAW), I-Pulse, U-Pulse, KF-Pulse
- Programs: 186
- General functions: Display and saving of readings, alarms
- Monitoring functions: Weld current monitoring, auto compensation, arc and ignition monitoring,motor current, gas and water monitoring
- Ports: RS232 (Q6pw only), SPW-Bus (Q6pw only), USB

Overview weld process controller

DESCRIPTION	PART-NO.
Q6pw	77-7230-00
Q4/LSQ5	77-1185-20
Q4/LSQ5-CCC	77-1185-21

Please note:

The Q4 weld process ontroller is integrated into the front of the power source and is delivered with the power source.

Perfect integration.

Interfacing all industrial robot types.

A

B

With the universal interface solution, weld process controllers can be connected with all industrial robot types. Users basically have two options for connecting robots with weld process controllers: The connection can be realized with the interface UNI 5 or by integrating into a given field bus environment with a field bus solution.

Standard application

Robot controllers or overall system controllers (e.g. PLC) use digital or analog signals to communicate with the weld process controller. The interface UNI 5 translates these signals for the welding machine. With just one interface, a variety of digital encodings and analog levels can be processed. The interface UNI 5 comes with a preconfigured connection kit for easy installation.

Field bus application

Field bus systems exchange signals via serial communication. The field bus master, usually the robot controller or overall system controller, bundles and processes the signals of the connected field bus, including the welding machine. Standard field bus systems are e.g., Interbus-S, Profibus DP or DeviceNet. The field bus interface FB5 translates the field bus signals for the welding machine using a standardized protocol. It makes no difference which type of field bus system is used. The signals are always at the same place on the field bus. This makes the preparation of the robot or system controller much easier.

3 Robot interface

A

Robot interface UNI 5

The interface connects the welding equipment with all industrial robot types. With its high degree of standardization, the UNI 5 is the perfect choice for connecting the weld process controller (e.g. Q80) with an industrial robot. The UNI 5 comes preprogrammed and configured for different robot types. Configuration to a particular robot type is handled easily by programming the interface with two buttons for the given robot type.

Overview of robot interfaces

DESCRIPTION	PART-NO.
UNI 5A	77-8011-08

ALTERNATIVE

B

Field bus application

Various field bus types are supported (e.g. Profibus DP, DeviceNet). The field bus interface has drilled bore holes for flexible mounting within the weld cell. Two additional mounting kits provide easy installation at the power source or into the cabinet. Additionally, external power can be connected to the interface. More details on solutions for the specific field bus types are available on request.

Overview FB5 interfaces

DESCRIPTION	PART-NO.
Interbus-S (copper line)	77-3-1
Profibus DP	77-3-2
DeviceNet	77-3-3
EtherCAT	77-3-4
Profinet IRT (copper line)	77-3-5
Profinet IRT (LWL 2 ports)	77-3-6
Interbus-S (LWL FSMA)	77-3-7
Ethernet/IP	77-3-8

Cabinet mounting

DESCRIPTION	PART-NO.
Mounting kit for cabinet	77-1182-02
Control cable with bracket	77-3102-02

Power source mounting

DESCRIPTION	PART-NO.
Mounting kit for power source	77-1182-03

Optional power supply (24V)

DESCRIPTION	PART-NO.
Connection cable 2.0 m (with open end)	77-1182-04

Strong, lightweight and precise.

The PF5 wire feeder.

Smaller and with less weight accompanied by improved efficiency over conventional wire feeders the PF5 goes along with the steady development of arc welding robots.

ALTERNATIVE

PF5 with integrated gas flow sensor

Power Feeder PF5

Modern motor, gear and control technology provide a strong performance and highest possible precision. The robust plastic housing is electrically insulated. As a "lightweight" the PF5 is the perfect choice for the new generation of robots with inner cable dress. The industrial proven Power Feeder PF5 is available with an additional monitoring functionality: an integrated gas-flow sensor. The weld process controller displays the gas flow values, and can also be triggered to an alarm, in case of a non-defined gas flow rate.

Overview PF5

DESCRIPTION	PART-NO.
PF5 L	10-2-8
PF5 L with integrated gas flow sensor	10-2-108

Technical data

Weight	3.8 kg
Motor	70W
Wire feeding speed	2.5 - 25 m/min
Roll diameter	0.8 - 1.6 mm

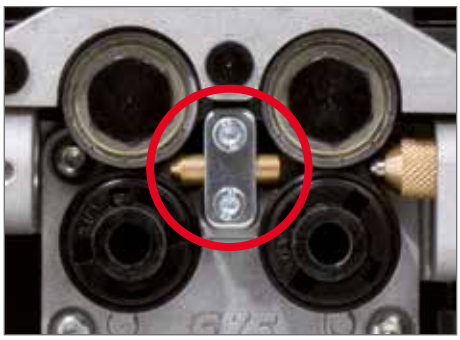
Shielding Gas Saver

The benefit of the shielding gas saver is its pre-regulated working pressure of 1.2 bar / 17 psi (common 4.5 bar / 65 psi). Therefore the ram pressure is reduced, i.e. there are key benefits of the shielding gas saver at ignition of the welding torch and an improved gas saving. The shielding gas saver ensures a constant gas flow during the welding task.

Shielding Gas Saver

DESCRIPTION	PART-NO.
Shielding Gas Saver	93-62-5

4 Wire feeder



Center guides

Available in two versions: For steel or aluminum wires

Overview of center guides

DESCRIPTION	PART-NO.
Wire-ø 0.8 - 1.6 mm for steel wire	12-2-1-15
Wire-ø 1.0 - 1.6 mm for aluminum	12-2-1-19

Drive roll for wire feeder

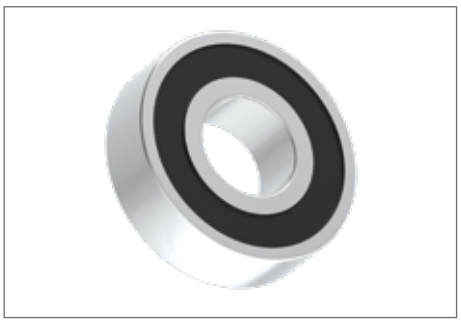
For wire diameters 0.8 - 1.6 mm and groove-types
(V-groove for steel and U-groove for aluminum wires)

Overview of four roller drive rolls

DESCRIPTION	PART-NO.
Wire-ø 0.8 mm, V-groove	12-2-3-08
Wire-ø 0.9 mm, V-groove	12-2-3-09
Wire-ø 1.0 mm, V-groove	12-2-3-10
Wire-ø 1.2 mm, V-groove	12-2-3-12
Wire-ø 1.4 mm, V-groove	12-2-3-14
Wire-ø 1.6 mm, V-groove	12-2-3-16
Wire-ø 1.2 mm, U-groove	12-2-3-112
Wire-ø 1.6 mm, U-groove	12-2-3-116

Please note:

Two drive rolls are needed per system.



Pressure roll

Pressure roll for wire feeder.

Pressure roll

DESCRIPTION	PART-NO.
Pressure roll	12-2-3-0
Locating bolt for pressure roll	12-13-5
Pressure roll for aluminum wire, U-groove 1.2 mm	12-2-5-112
Pressure roll for aluminum wire, U-groove 1.6 mm	12-2-5-116
Locating bolt for pressure roll U-groove	12-2-1-23
Knurled screw for pressure roll U-groove	12-2-1-24

Please note:

Two pressure rolls and two locating bolts are needed per system.

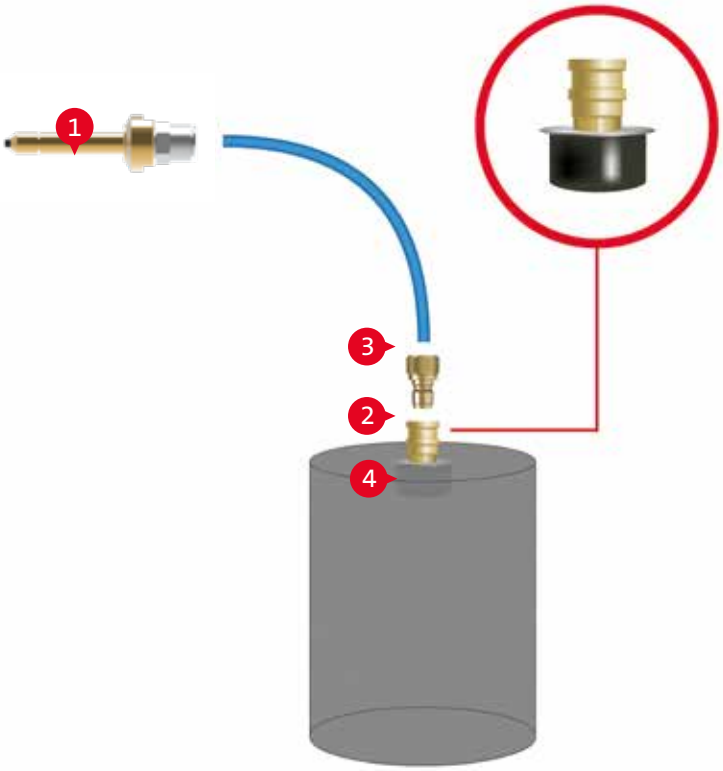
Wire feeder brackets

Wire feeder bracket for PF5 with holes and screws for installation

Overview of wire feeder brackets

DESCRIPTION	PART-NO.
Bracket for stationary applications	14-1-16

5 Wire guidance polymer for aluminum wires



1. Wire inlet body with quick coupling
2. Connection nipple for polymer conduit
3. Polymer conduit
4. Drum connector with ceramic inlay

Please note:

Furhter information can be found in our brochure "Wire guidance" (DOC-0193EN).

With the new SKS polymer guidance, the high efficiency of the whole system extends up to the drum.

Advantages of polymer wire guidance

- Extraordinary good glide properties reduces motor load
- Minimized abrasive wear and reduced dirt in wire feeder and torch system
- Lightweight design and a high inherent stability for easy installation
- Length can be freely chosen by the customer
- Cost optimized exchange: only the polymer conduit must be changed, connectors are reuseable.
- Optimized materials for longer life and reduced downtimes

Wire inlet body, Connection nipple, Polymer conduit and Connection for wire drum

Wire inlet body with quick coupling

DESCRIPTION	PART-NO.
Wire Inlet body with quick lock and polymeric inlet	10-2-0-63
Polymeric inlet (spare part)	10-2-0-63-2
Inset for aluminum wire	10-2-0-57-3

Connection nipple for polymer conduit

DESCRIPTION	PART-NO.
Connection nipple	44-40-3

Polymer wire conduit

DESCRIPTION	PART-NO.
Polymer wire conduit, blue, per meter	44-9-1

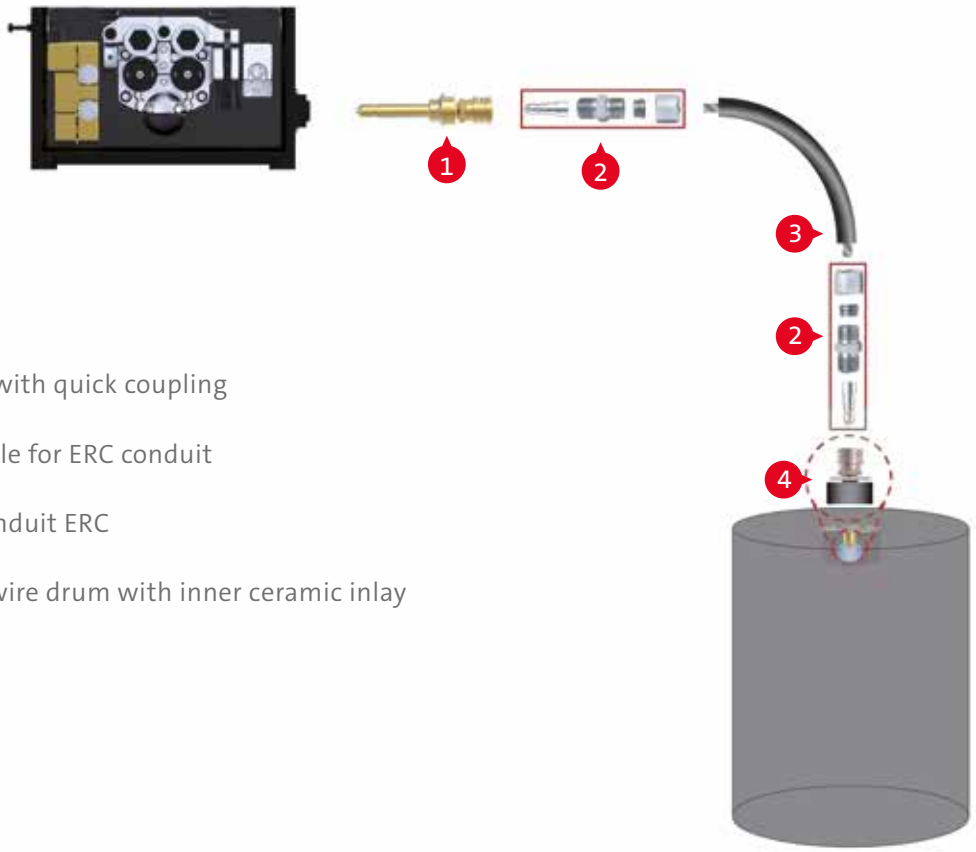
Connection for wire drum

DESCRIPTION	PART-NO.
Drum connector with ceramic inlay	44-40-1

OPTION

DESCRIPTION	PART-NO.
Strain-Relief for wire guidance	14-10-6

5 Wire guidance ERC for steel and stainless steel wire materials



1. Wire inlet body with quick coupling
2. Connection nipple for ERC conduit
3. Polymer wire conduit ERC
4. Connection for wire drum with inner ceramic inlay

With the ERC wire guidance for steel/stainless steel, the high efficiency of the whole system extends up to the drum.

Advantages

- Very good inherent stability due to thick polyethylene insulating jacket
- Good sliding properties
- Reduced wear by using flat wire for monocoil core
- Suitable for steel and stainless steel wires

Wire guidance ERC

DESCRIPTION	PART-NO.
Wire inlet body with quick coupling	10-2-0-61
Connection nipple for ERC conduit	44-70-2
Polymer wire conduit ERC / per meter	44-70-1
Drum connector with ceramic inlay	44-40-1

OPTION

DESCRIPTION	PART-NO.
Strain Relief for wire guidance	14-10-6
Strain Relief spring for wire guidance	44-70-3

Please note:

Two connection nipples are necessary.

ALTERNATIVE

Wire inlet bodies for additional systems

Beside the wire inlet body for the SKS wire guidance, inlet bodies for additional systems are available.

Overview of wire inlet bodies for additional systems

DESCRIPTION	PART-NO.
M10 with internal thread for ESAB	10-2-0-50
with 9.6 mm bore hole	10-2-0-52
with 13 mm bore hole	10-2-0-53
with PG9 thread	10-2-0-56
with 1/4" internal thread	10-2-0-60

Aluminum inlets for wire inlet bodies

DESCRIPTION	PART-NO.
for types 50/52/53/54/59/60/61	10-2-0-57-3
for types 51/55/56	10-2-0-58-3

6 Cable bundles

Please note:

Further lengths available on request

Cable bundles: Power source to wire feeder PF5

Coaxial power cable 72 mm² with internal gas flow, control cable L700, disconnect cable, corrugated tube and cable holder. Air-cooled version.

Overview of cable bundles

Length	PART-NO.
5 m	20-40-5
7 m	20-40-7
10 m	20-40-10

7 Ground cable

Please note:

Further lengths available on request

Ground cable with 70 mm² connector and cable plug

Cables with larger diameters are available on request

Overview of ground cables

LENGTH	PART-NO.
6 m	228078106
10 m	228078100

8 Control cable

Please note:

For the Stand-Alone Torch system three control cables are needed. One control cable is already included in the cable bundle.

Please note:

Further lengths available on request

Control cable: L700/SPW-bus

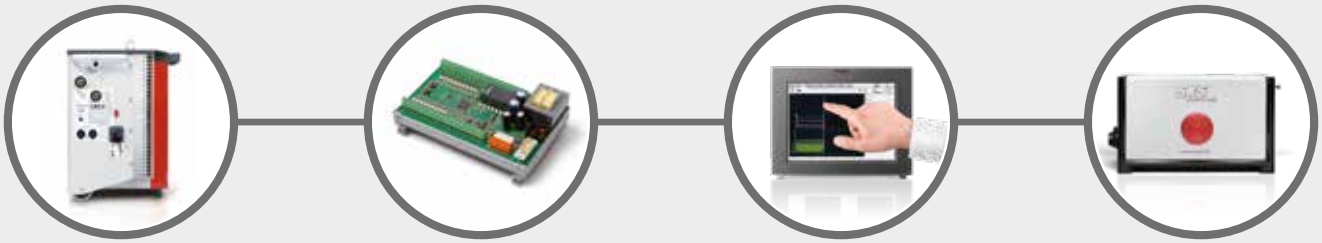
Standard control cable to connect the components:
Weld process controller, power source, robot interface, wire feeder.

Overview of control cables

LENGTH	PART-NO.
0.5 m	541031050
1 m	541031001
2 m	541031002
3 m	541031003
5 m	541031005
7 m	541031007
10 m	541031000
12 m	541031012
15 m	541031015

PLUG & PLAY: CONTROL CABLE L700

The advantages of a system concept are revealed by its details: One standard control cable (L700) connects all system components (power source, robot interface, weld process controller and wire feeder) within the welding system.
The system is expandable: Other components can be integrated at any time into an existing system. New devices are automatically detected.



POWER SOURCE | ROBOT INTERFACE | WELD PROCESS CONTROLLER | WIRE FEEDER

9a Torch system: Torch holder

Single wire torch holder for fixtures

Precision single wire torch holder with the industrial proven quick change system for torch cables and torch necks

Single wire torch holder

DESCRIPTION	PART-NO.
Torch holder for fixtures, clampable	62-5-11
Power Clutch mounting ring for stationary torch system	62-5-14

9a Torch system: Torch holder

Alternative torch holder 95-10 (left) and 95-13-1 (right)

Alternative single wire torch holder for fixtures

Alternative single wire torch holder

DESCRIPTION	PART-NO.
Torch holder for fixtures, table mounting	95-10
Torch holder for fixtures, adjustable	95-13-1

9b Torch system: Torch cable/Accessories

Torch cable

High flexible coaxial cable 72 mm² with Power Pin connector including switch-off cable for the robot.

Overview of torch cables

LENGTH	PART-NO.
0.75 m	61-5-075
0.9 m	61-5-09
1.0 m	61-5-10
1.2 m	61-5-12
1.5 m	61-5-15
1.8 m	61-5-18
2.0 m	61-5-20
2.4 m	61-5-24

Liner for torch cable

For the following diameters and filler materials:

Steel, bronze (wire-ø 0.8 - 1.0 mm)

LENGTH	PART-NO.
2.0 m	44-20-0810-20
3.5 m	44-20-0810-35

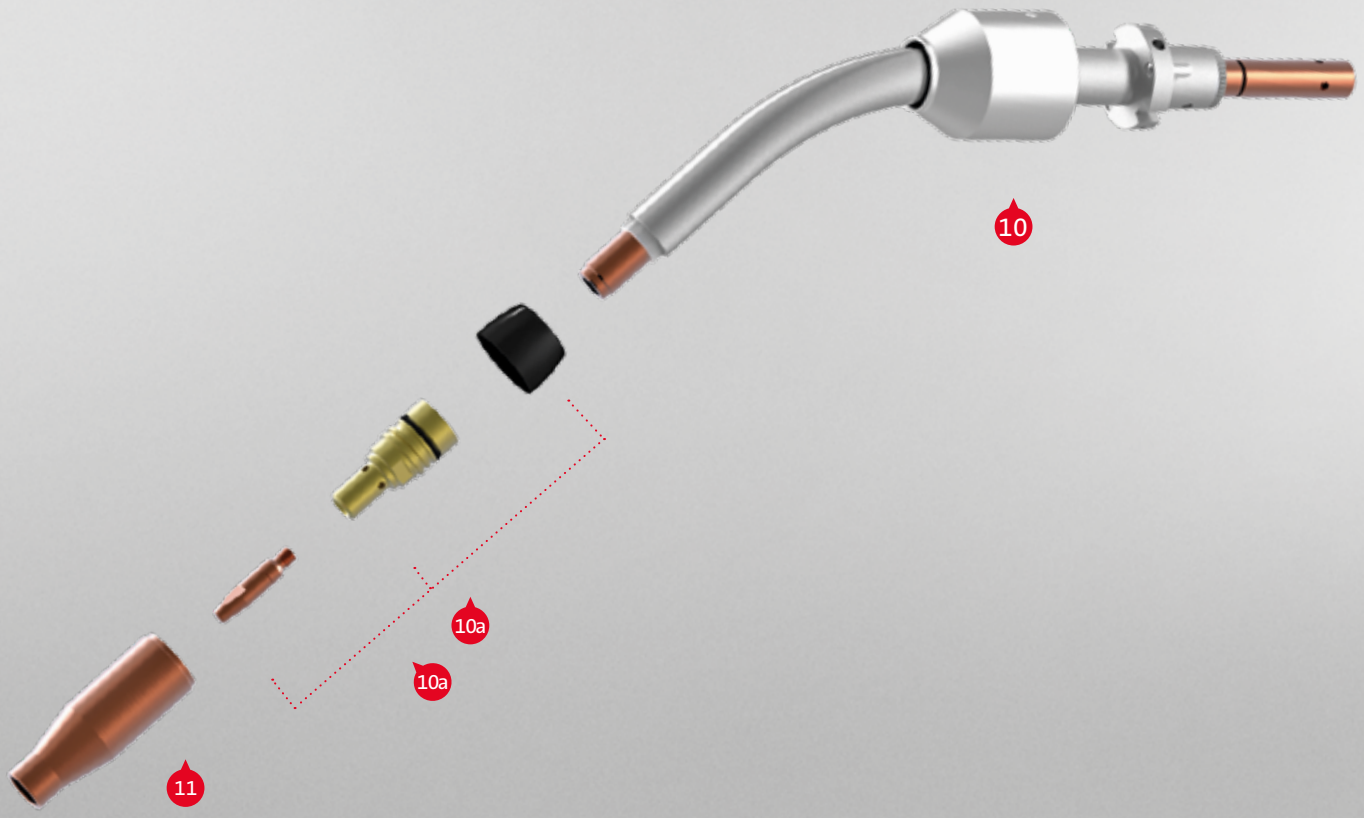
Steel, bronze (wire-ø 1.2 - 1.6 mm)

LENGTH	PART-NO.
2.0 m	44-20-1216-20
3.5 m	44-20-1216-35

Aluminum (wire-ø 1.2 - 1.6 mm)

DESCRIPTION	PART-NO.
per meter	91-68-47025-25E
sleeve	44-30-7
Power Pin cap	61-2-0-2-7

Stand-Alone
Torch system parts overview

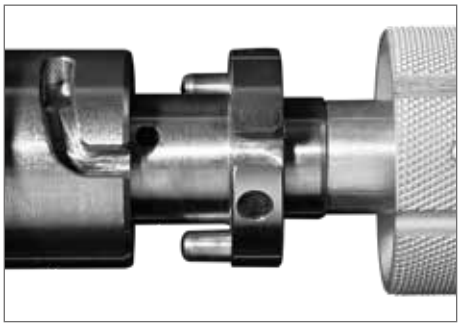


The Stand-Alone Torch system can be configurated with different gas nozzles for standard applications or heavy duty applications.

9 Torch system: Parts overview

9a Brennerhalter 9b Brennerkabel 10 Brennerhals

10a Verschleißteile 11 Gasdüse



Torch necks for Stand Alone Torch

With the innovative bayonet lock system, the SKS torch neck can be replaced quickly. This unique tool-free quick change system is also highly precise with TCP accuracy of ± 0.2 mm.

Overview torch necks — **Application recommendations**

Type	PART-NO.	TCP length [mm]	angle [°]	Steel/CrNi	Al*
standard dressing air-cooled	58-1-00-400-1	295.5	0	√	√
	58-1-22-350-1	245.5	22	√	√
	58-1-22-400-1	295.5	22	√	√
	58-4-330-500-1	334.5	30	O	O
	58-1-130-450-1	345.5	30	O	O
	58-1-35-400-1	295.5	35	√	X
	58-1-45-350-1	245.5	45	√	X
	58-1-45-400-1	295.5	45	√ √	X
	58-1-45-450-1	245.5	45	√	X
	58-4-345-450-1	284.5	45	√	√
	58-4-345-567-1	401.0	45	√	√

Type	PART-NO.	TCP length [mm]	angle [°]	Steel/CrNi	Al
ZK	58-1-245-400-1	295.5	45	√	X

√ √ Recommended standard torch neck
√ Recommended
O Special design: application specific
X Not recommended

*** Please note:**

For aluminum applications SKS recommends a Frontpull torch system

INFO: TORCH NECK

SKS offers a special torch neck (up to 250 A, ZK-HeavyDuty up to max. 300 A) for welding components with tight accessibility.
The special torch neck needs a smaller insulator (ZK) and a more compact gas nozzle (ZK). Standard Power Lock contact tips can be used.

TCP drawings can be found on the next to last page (torch necks).

Clamping cap for SKS single wire torch necks

Tool-free assembly with bayonet quick-change system

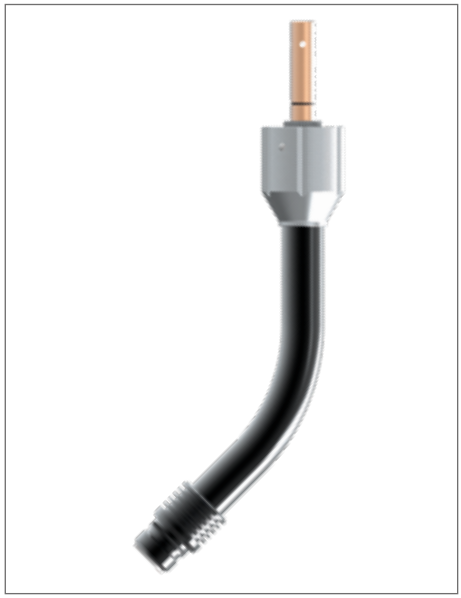
Clamping cap

DESCRIPTION	PART-NO.
Clamping cap	71-3-25

Insulator for SKS torch necks

Overview insulator

DESCRIPTION	PART-NO.
Standard	58-1-5
ZK type	43-6-4-2
ZK heavy duty type	43-6-4-3



HQX Brennerhälse für Stand Alone Torch

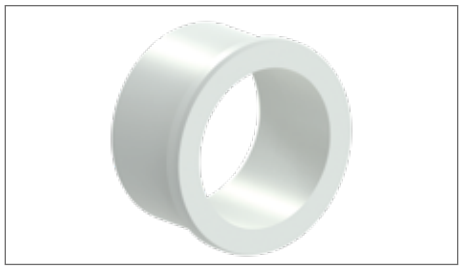
Overview torch necks — **Application recommendations**

Type	PART-NO.	TCP length [mm]	angle [°]	Steel/CrNi	Al*
HQX-dressing air-cooled	58-1-622-350-1	245.5	22	√	√
	58-1-622-400-1	295.5	22	√	√
	58-1-635-400-1	295.5	35	√	X
	58-1-645-350-1	245.5	45	√	X
	58-1-645-400-1	295.5	45	√	X
	58-4-6345-450-1	284.5	45	√ √	√ √
	58-4-6345-567-1	401.5	45	√	√

√ √ Recommended standard torch neck
√ Recommended
o Special design: application specific
X Not recommended

*** Please note:**

For aluminum applications SKS recommends a Frontpull torch system



Insulator for HQX torch necks

Insulator

DESCRIPTION	PART-NO.
HQX Insulator for single wire torch necks	58-1-14

Power Lock: Düsenstock

Retaining heads for heavy duty applications with thread for threaded gas nozzles for simple and safe installation

Overview of retaining heads

DESCRIPTION	PART-NO.
High performance retaining head Power Lock standard	43-9-2
High performance retaining head Power Lock with 6 holes (AL-application)	43-9-4
High performance retaining head HQX Power Lock Plus with 6 holes (Fe-/AL-application)	43-20-3
High performance retaining head Power Lock (ZK-Version)	43-8-6
High performance retaining head Power Lock Plus	43-16-2
High performance retaining head Power Lock Plus (ZK-Version)	43-24-1

Power Lock: Contact tips

- Tapered design for high TCP reproducibility
- Improved heat transfer extends lifetime
- Improved power transition: constant arc quality

Overview of contact tips (also for ZK type)

Wire-ø	Steel applications		Stainless steel applications		Aluminum applications	
	Power Lock	Power Lock Plus	Power Lock	Power Lock Plus	Power Lock	Power Lock Plus
0.8 mm	40-4-5-0.8E	40-6-5-0.8E	40-4-7-0.8S	40-6-7-0.8S	————	————
0.9 mm	40-4-5-0.9E	40-6-5-0.9E	40-4-7-0.9S	40-6-7-0.9S	————	————
1.0 mm	40-4-5-1.0E	40-6-5-1.0E	40-4-7-1.0S	40-6-7-1.0S	————	————
1.2 mm	40-4-5-1.2E	40-6-5-1.2E	40-4-7-1.2S	40-6-7-1.2S	40-4-7-1.2AL	40-6-7-1.2AL
1.4 mm	————	————	40-4-7-1.4S	40-6-7-1.4S	————	————
1.6 mm	————	————	40-4-7-1.6S	40-6-7-1.6S	40-4-7-1.6AL	40-6-7-1.6AL

Please note:

An overview of gas nozzles with dimensions can be found on the next page.

Please note:

Further iInformation can be found in our brochure "Consumables" (DOC-0135EN).

Gas nozzles with thread

Standard gas nozzles

13 mm bottle shaped	PART-NO.
short	41-19-13-BS
flush	41-19-13-BF
long	41-19-13-BR
13 mm tapered	**PART-NO.**
short	41-19-13-TS
flush	41-19-13-TF
long	41-19-13-TR
15 mm bottle shaped	**PART-NO.**
short	41-19-15-BS
flush	41-19-15-BF
long	41-19-15-BR
16 mm tapered	**PART-NO.**
short	41-19-16-TS
flush	41-19-16-TF
long	41-19-16-TR

Heavy Duty gas nozzles

13 mm	PART-NO.
flush, bottle shaped	41-20-13-BF
long, tapered	41-20-13-TR
16 mm tapered	**PART-NO.**
short	41-20-16-TS
flush	41-20-16-TF
long	41-20-16-TR

ZK type

13 mm bottle shaped	PART-NO.
short	41-21-13-BS
flush	41-21-13-BF
15 mm bottle shaped	**PART-NO.**
short	41-21-15-BS
flush	41-21-15-BF
13+15 mm Heavy Duty/tapered	**PART-NO.**
13 mm, flush	41-22-13-TF
15 mm, flush	41-22-15-TF

Gas nozzles with thread (HQX)

HQX gas nozzles	
16 mm bottle shaped	**PART-NO.**
kurz	**41-16-16-BS**
16 mm tapered	**PART-NO.**
kurz	**41-16-16-TS**
bündig	**41-16-16-TF**
lang	**41-16-16-TR**

Tool for contact tips

For replacement of contact tips: Fast exchange of contact tip without removing the gas nozzle

contact tips	
DESCRIPTION	**PART-NO.**
Mounting tool SW6 for contact tip (Power Lock)	**51-9001-00**
Mounting tool SW7 for contact tip (Power Lock Plus)	**51-9002-00**

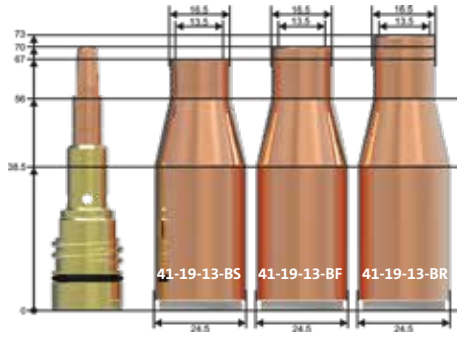
Programming tips

Power Lock programming tips for precise seam programming

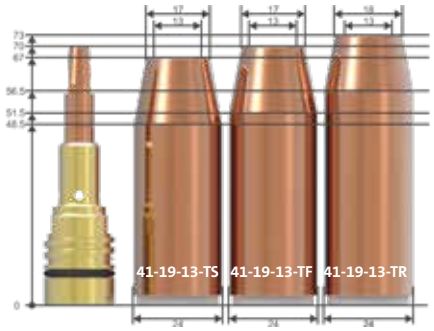
Overview of programming tips	
Stickout	**PART-NO.**
12 mm (Power Lock)	**65-6**
15 mm (Power Lock)	**65-7**
20 mm (Power Lock)	**65-8**
12 mm (Power Lock Plus)	**65-11**
15 mm (Power Lock Plus)	**65-12**

11 Gas nozzles: Overview dimensions

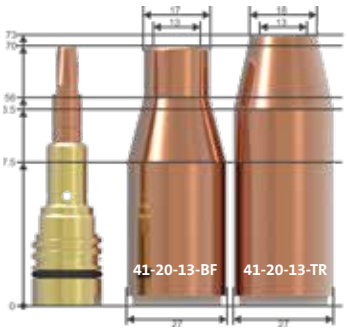
13 mm bottle-shaped



13 mm tapered

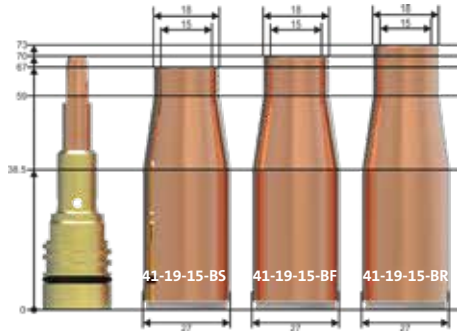


13 mm Heavy Duty

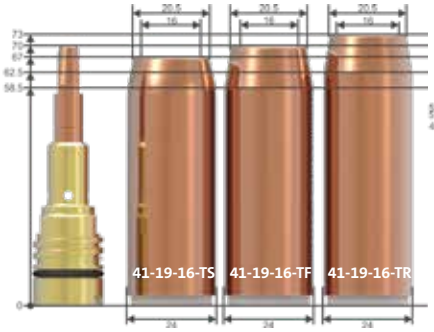


Gas nozzle PART-NO.	41-19-13-BS	41-19-13-BF	41-19-13-BR	41-19-13-TS	41-19-13-TF	41-19-13-TR	41-20-13-BF	41-20-13-TR
Reamer Blade:								
Power Lock								
(UNF 3/8" x 24) PART-NO.	66-13-S	66-13-F	66-13-R	66-13-S	66-13-F	66-13-R	66-13-F	66-13-R
(M10 x 1) eReam PART-NO.	67-13-S	67-13-F	67-13-R	67-13-S	67-13-F	67-13-R	67-13-F	67-13-R
Power Lock Plus								
(UNF 3/8" x 24) PART-NO.	68-13-S	68-13-F	68-13-R	68-13-S	68-13-F	68-13-R	68-13-F	68-13-R
(M10 x 1) eReam PART-NO.	69-13-S	69-13-F	69-13-R	69-13-S	69-13-F	69-13-R	69-13-F	69-13-R

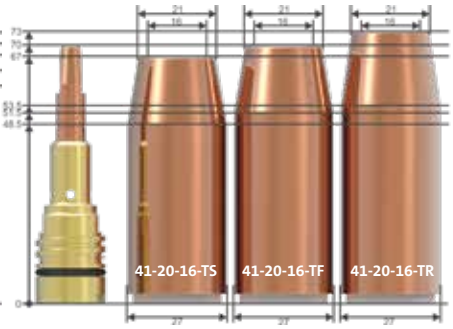
15 mm bottle-shaped



16 mm tapered



16 mm Heavy Duty

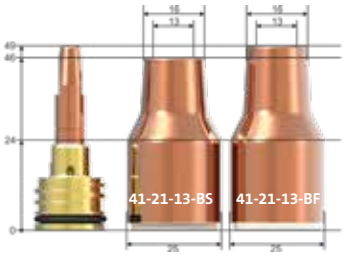
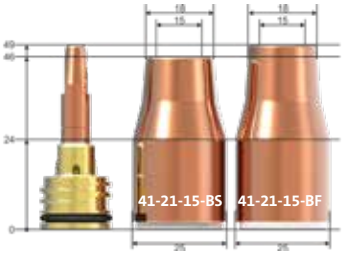
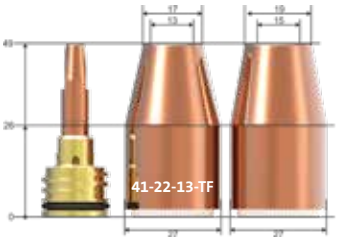


Gas nozzle PART-NO.	41-19-15-BS	41-19-15-BF	41-19-15-BR	41-19-16-TS	41-19-16-TF	41-19-16-TR	41-20-16-TS	41-20-16-TF	41-20-16-TR
Reamer Blade:									
Power Lock									
(UNF 3/8" x 24) PART-NO.	66-15-S	66-15-F	66-15-R	66-16-S	66-16-F	66-16-R	66-16-S	66-16-F	66-16-R
(M10 x 1) eReam PART-NO..	67-15-S	67-15-F	67-15-R	67-16-S	67-16-F	67-16-R	67-16-S	67-16-F	67-16-R
Power Lock Plus									
(UNF 3/8" x 24) PART-NO.	68-15-S	68-15-F	68-15-R	68-16-S	68-16-F	68-16-R	68-16-S	68-16-F	68-16-R
(M10 x 1) eReam PART-NO.	69-15-S	69-15-F	69-15-R	69-16-S	69-16-F	69-16-R	69-16-S	69-16-F	69-16-R

Dimensions in mm.

Further gas nozzles, reamer blades and torch necks can be found in our consumables brochure.

11 Gas nozzles: Overview dimensions

ZK type:							
	13 mm bottle-shaped		15 mm bottle-shaped		13+15 mm Heavy Duty/tapered		
							
Gas nozzle PART-NO.	41-21-13-BS	41-21-13-BF	41-21-15-BS	41-21-15-BF	41-22-13-TF	41-22-15-TF	
Reamer Blade:							
Power Lock							
(UNF 3/8" x 24) PART-NO.	66-13-ZK-S	66-13-ZK-F	66-15-ZK-S	66-15-ZK-F	66-13-ZK-F	66-15-ZK-F	
(M10 x 1) eReam PART-NO.	67-13-S	67-13-F	67-15-ZK-S	67-15-ZK-F	67-13-F	67-15-ZK-F	
Power Lock Plus							
(UNF 3/8" x 24) PART-NO.	68-13-ZK-S	68-13-ZK-F	68-15-ZK-S	68-15-ZK-F	68-15-ZK-F	68-15-ZK-F	
(M10 x 1) eReam PART-NO.	69-13-S	69-13-F	69-15-ZK-S	69-15-ZK-F	69-15-F	69-15-ZK-F	

Dimensions in mm.

Further gas nozzles, reamer blades and torch necks can be found in our consumables brochure.

11 Gas nozzles: Overview dimensions

HQX Version

16 mm bottle-shaped

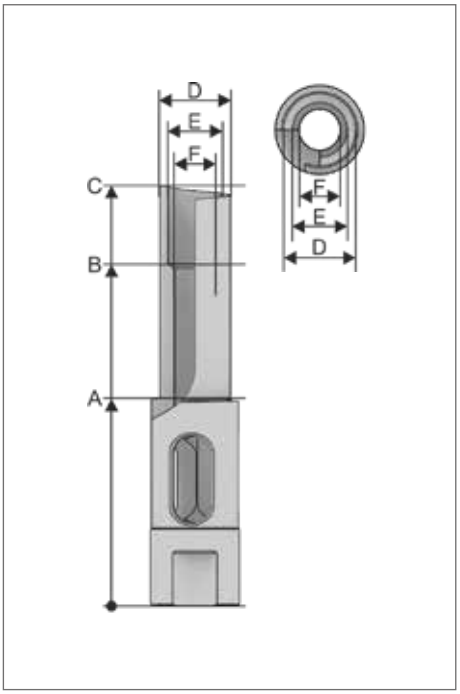
16 mm tapered

Gas nozzle PART-NO.	41-16-16-BS	41-16-16-TS	41-16-15-TF	41-16-16-TR
Reamer Blade: Power Lock Plus				
(UNF 3/8" x 24) PART-NO.	68-16-HD-S	68-16-HD-S	41-16-HD-F	41-16-HD-R
(M10 x 1) eReam PART-NO.	69-16-HD-S	69-16-HD-S	41-16-HD-F	41-16-HD-R

Dimensions in mm.

Further gas nozzles, reamer blades and torch necks can be found in our consumables brochure.

11a Gas nozzles: Reamer blades



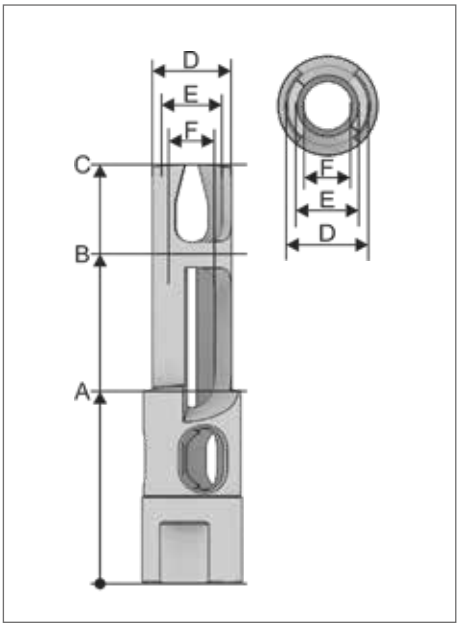
Standard torch neck – Power Lock

Reamer blade (internal thread UNF 3/8“ x 24)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	66-13-S	66-13-F	66-13-R
15 mm	66-15-S	66-15-F	66-15-R
16 mm	66-16-S	66-16-F	66-16-R

Dimensions

A	B	C	D	E	F	PART-NO.
44	-	67	12.5	9	-	66-13-S
44	-	70	12.5	9	-	66-13-F
44	-	73	12.5	9	-	66-13-R
45	68	85	14.5	11.8	9	66-15-S
45	71	88	14.5	11.8	9	66-15-F
45	74	91	14.5	11.8	9	66-15-R
45	68	85	15.5	11.8	9	66-16-S
45	71	88	15.5	11.8	9	66-16-F
45	74	91	15.5	11.8	9	66-16-R

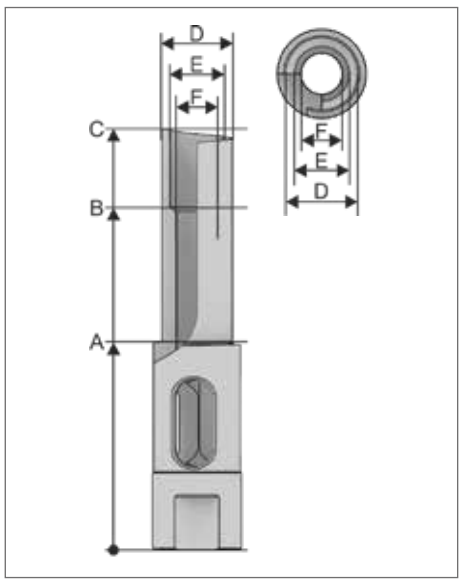


Reamer blade (internal thread M10 x 1 – eReam)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	67-13-S	67-13-F	67-13-R
15 mm	67-15-S	67-15-F	67-15-R
16 mm	67-16-S	67-16-F	67-16-R

Dimensions

A	B	C	D	E	F	PART-NO.
55	-	78	12.5	9	-	67-13-S
55	-	81	12.5	9	-	67-13-F
55	-	84	12.5	9	-	67-13-R
38	61	78	14.5	11.8	9	67-15-S
38	64	81	14.5	11.8	9	67-15-F
38	67	84	14.5	11.8	9	67-15-R
38	61	78	15.5	11.8	9	67-16-S
38	64	81	15.5	11.8	9	67-16-F
38	67	84	15.5	11.8	9	67-16-R



Please note:
Dimensions in mm.

Standard torch neck – Power Lock Plus

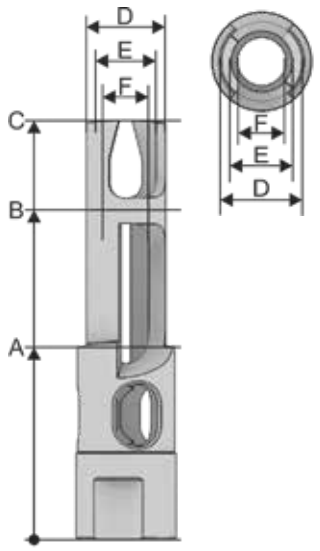
Reamer blade (internal thread UNF 3/8“ x 24)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	68-13-S	68-13-F	68-13-R
15 mm	68-15-S	68-15-F	68-15-R
16 mm	68-16-S	68-16-F	68-16-R

Dimensions

A	B	C	D	E	F	PART-NO.
55.5	-	67	12.5	9	-	68-13-S
52.5	-	67	12.5	9	-	68-13-F
49.5	-	67	12.5	9	-	68-13-R
51	63	91	14.5	11.8	9	68-15-S
48	63	91	14.5	11.8	9	68-15-F
45	63	91	14.5	11.8	9	68-15-R
51	63	91	15.5	11.8	9	68-16-S
48	63	91	15.5	11.8	9	68-16-F
45	63	91	15.5	11.8	9	68-16-R

11a Gas nozzles: Reamer blades



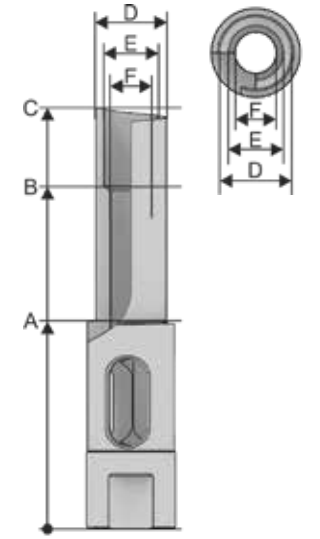
Standard torch neck – Power Lock Plus

Reamer blade (internal thread M10 x 1 – eReam)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	69-13-S	69-13-F	69-13-R
15 mm	69-15-S	69-15-F	69-15-R
16 mm	69-16-S	68-16-F	68-16-R

Dimensions

A	B	C	D	E	F	PART-NO.
66.5	-	78	12.5	9	-	69-13-S
66.5	-	81	12.5	9	-	69-13-F
66.5	-	84	12.5	9	-	69-13-R
38	50	78	14.5	11.8	9	69-15-S
38	53	81	14.5	11.8	9	69-15-F
38	56	84	14.5	11.8	9	69-15-R
38	50	78	15.5	11.8	9	69-16-S
38	53	81	15.5	11.8	9	69-16-F
38	56	84	15.5	11.8	9	69-16-R



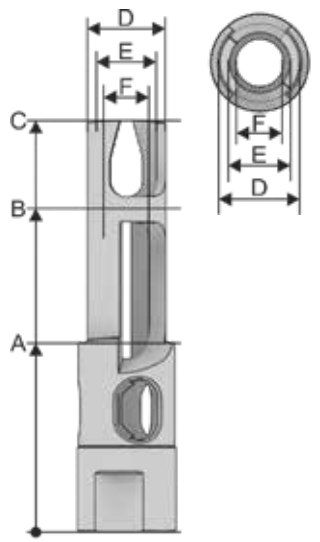
ZK-Series – Power Lock

Reamer blade (internal thread UNF 3/8“ x 24)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	66-13-ZK-S	66-13-ZK-F	-
15 mm	66-15-ZK-S	66-15-ZK-F	-

Dimensions

A	B	C	D	E	F	PART-NO.
54	-	77	12.5	9	-	66-13-ZK-S
51	-	77	12.5	9	-	66-13-ZK-F
45	68	77	14.5	11.8	9	66-15-ZK-S
42	68	77	14.5	11.8	9	66-15-ZK-F



Reamer blade (internal thread M10 x 1 – eReam)

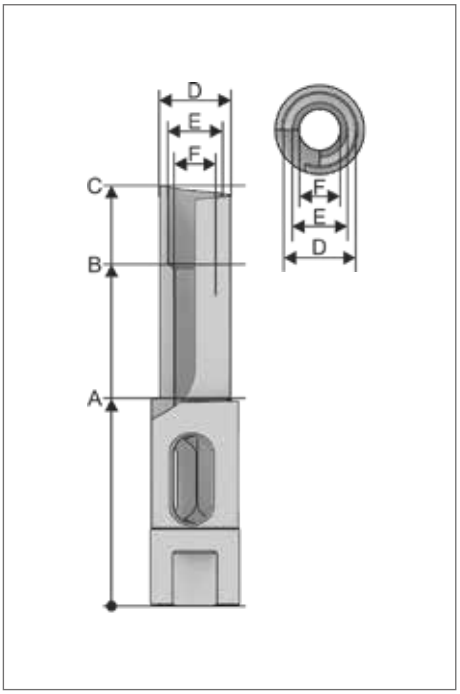
Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	67-13- S	67-13-F	-
15 mm	67-15-ZK-S	67-15-ZK-F	-

Dimensions

A	B	C	D	E	F	PART-NO.
55	-	78	12.5	9	-	67-13-S
55	-	81	12.5	9	-	67-13-F
46	69	78	14.5	11.8	9	67-15-ZK-S
46	72	81	14.5	11.8	9	67-15-ZK-F

Please note:
Dimensions in mm.

11a Gas nozzles: Reamer blades



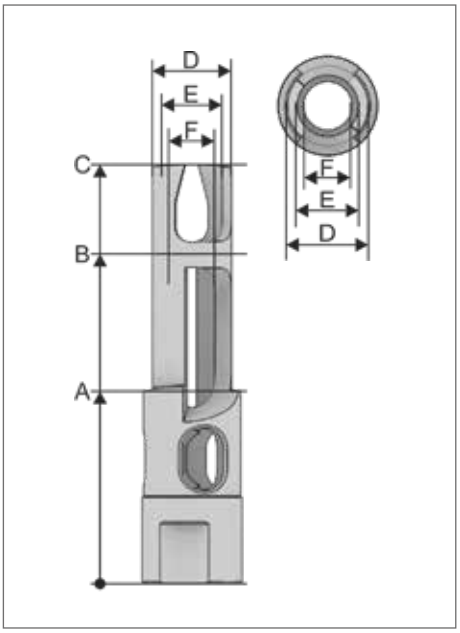
ZK-Series – Power Lock Plus

Reamer blade (internal thread UNF 3/8“ x 24)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	68-13-ZK-S	68-13-ZK-F	-
15 mm	68-15-ZK-S	68-15-ZK-F	-

Dimensions

A	B	C	D	E	F	PART-NO.
65.5	-	77	12.5	9	-	68-13-ZK-S
62.5	-	77	12.5	9	-	68-13-ZK-F
45	58	77	14.5	11.8	9	68-15-ZK-S
42	58	77	14.5	11.8	9	68-15-ZK-F

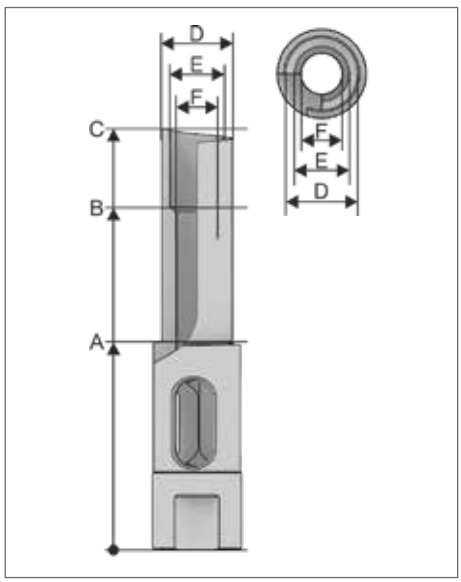


Reamer blade (internal thread M10 x 1 – eReam)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
13 mm	69-13- S	69-13-F	-
15 mm	69-15-ZK-S	69-15-ZK-F	-

Dimensions

A	B	C	D	E	F	PART-NO.
66.5	-	78	12.5	9	-	69-13-S
66.5	-	81	12.5	9	-	69-13-F
59	68	78	14.5	11.8	9	69-15-ZK-S
62	72	81	14.5	11.8	9	69-15-ZK-F



HQX-Series – Power Lock Plus

Reamer blade (internal thread UNF 3/8“ x 24)

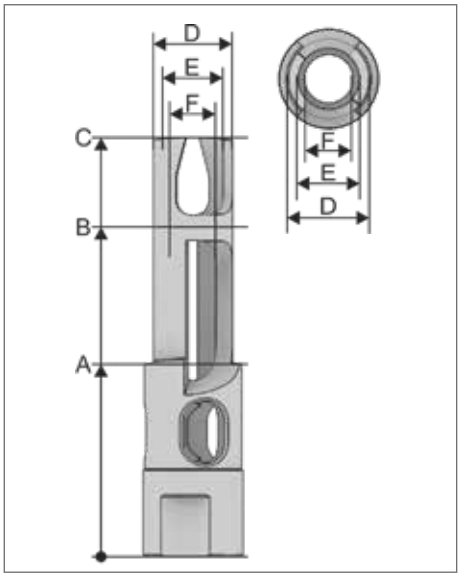
Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
16 mm	68-16-HD-S	68-16-HD-F	68-16-HD-R

Dimensions

A	B	C	D	E	F	PART-NO.
49.5	62	85	15.5	12.8	9	68-16-HD-S
46.5	62	85	15.5	12.8	9	68-16-HD-F
43.5	62	85	15.5	12.8	9	68-16-HD-R

Please note:
Dimensions in mm.

11a Gas nozzles: Reamer blades



Please note:
Dimensions in mm.

HQX-Series – Power Lock Plus

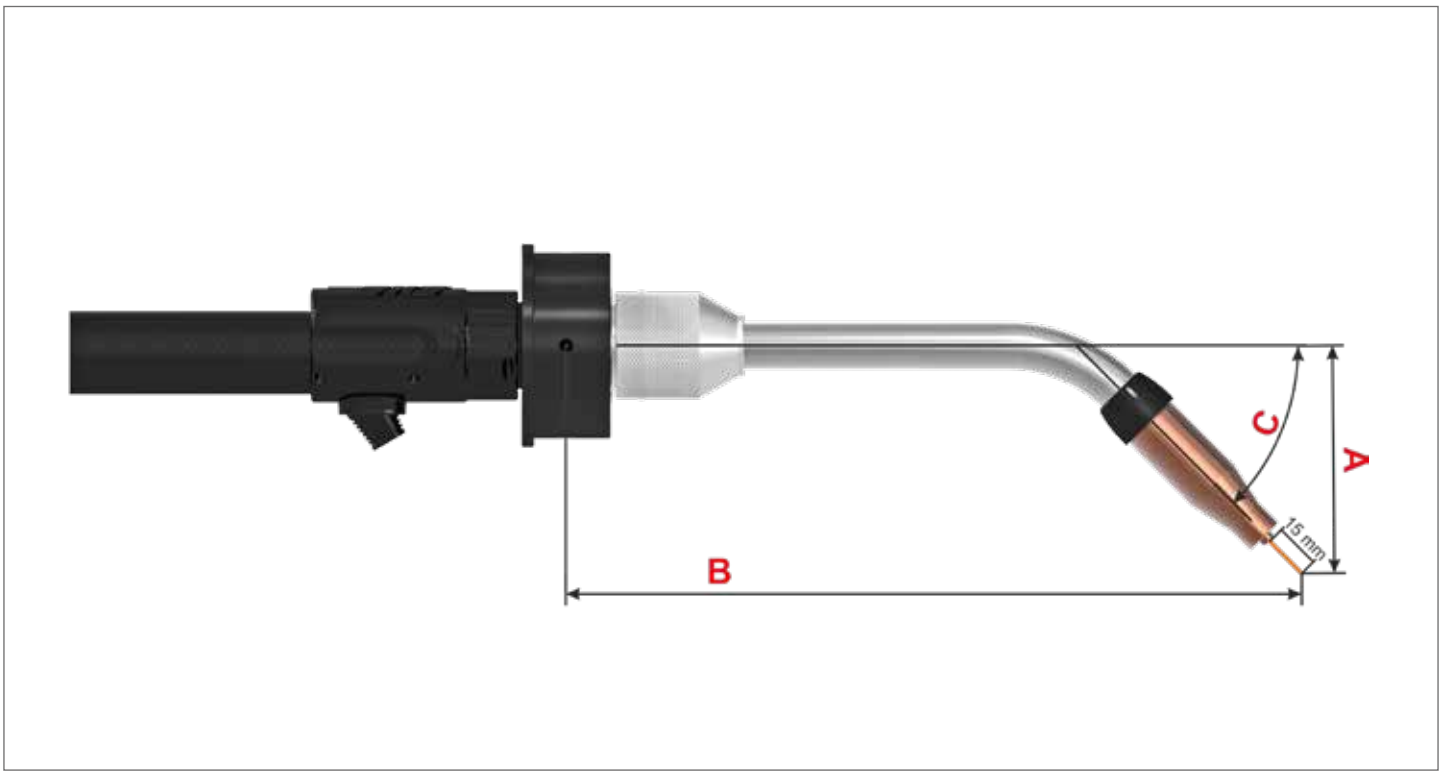
Reamer blade (internal thread M10 x 1 – eReam)

Reamer blade	short	flush	long
Inner diameter of the gas nozzle	PART-NO.	PART-NO.	PART-NO.
16 mm	69-16-HD-S	69-16-HD-F	69-16-HD-R

Dimensions

A	B	C	D	E	F	PART-NO.
38	50.5	73.5	15.5	12.8	9	69-16-HD-S
38	53.5	76.5	15.5	12.8	9	69-16-HD-F
38	56.5	79.5	15.5	12.8	9	69-16-HD-R

12 Torches: TCP dimensions



Overview torch necks standard dressing air-cooled

standard dressing	HQX	A	B	C
PART-NO.	PART-NO.	(distance in mm)	(TCP length in mm)	(angle in °)
58-1-00-400-1	on request	0	295,5	0
58-1-22-350-1	58-1-622-350-1	45	245,5	22
58-1-22-400-1	58-1-622-400-1	45	295,5	22
58-4-330-500-1	on request	120	334,5	30
58-1-130-450-1	on request	0	345,5	30
58-1-35-400-1	58-1-635-400-1	70	295,5	35
58-1-45-350-1	58-1-645-350-1	90	245,5	45
58-1-45-400-1	58-1-645-400-1	90	295,5	45
58-1-45-450-1	on request	90	245,5	45
58-4-345-450-1	58-4-6345-450-1	120	284,5	45
58-4-345-567-1	58-4-6345-567-1	120	401,0	45

Overview torch necks ZK type

standard dressing	HQX	A	B	C
PART-NO.	PART-NO.	(distance in mm)	(TCP length in mm)	(angle in °)
58-1-245-400-1	on request	62	295,5	45

Please note:
Dimensions in mm.

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