TECHNOLOGY FOR THE WELDER'S WORLD.

ABIROB W®
Water-Cooled Robotic Torch

The universal MIG/MAG-torch system for robot welding:

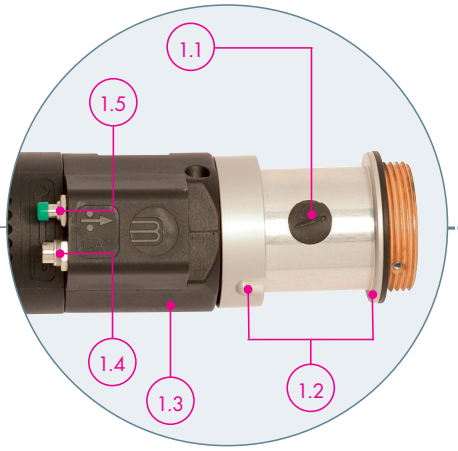
A new interface and cable assembly technology for liquid cooled applications in the robot welding process. Optimally adapted to the latest market demands, ABIROB® W provides everything needed for universal, heavy-duty use in automated and robot-supported MIG/MAG welding. Cost-effective, durable and reproducible.

ABICOR BINZEL® ROBOTIC SYSTEMS

www.binzel-abicor.com

“ABIROB® W” liquid-cooled
System overview and technical data

Figure 1:
Cable assembly interface



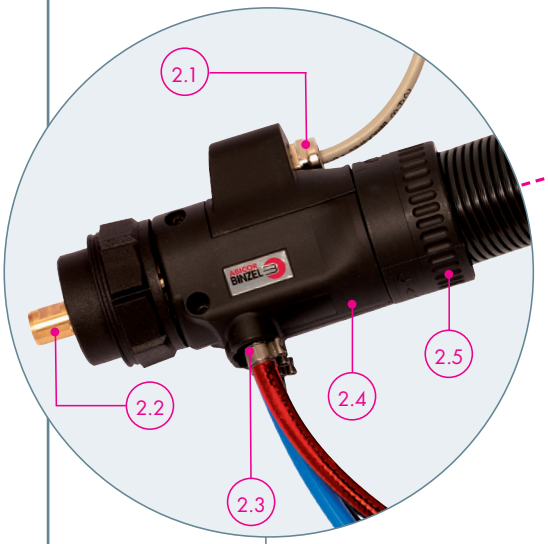


Figure 2:
Machine connection

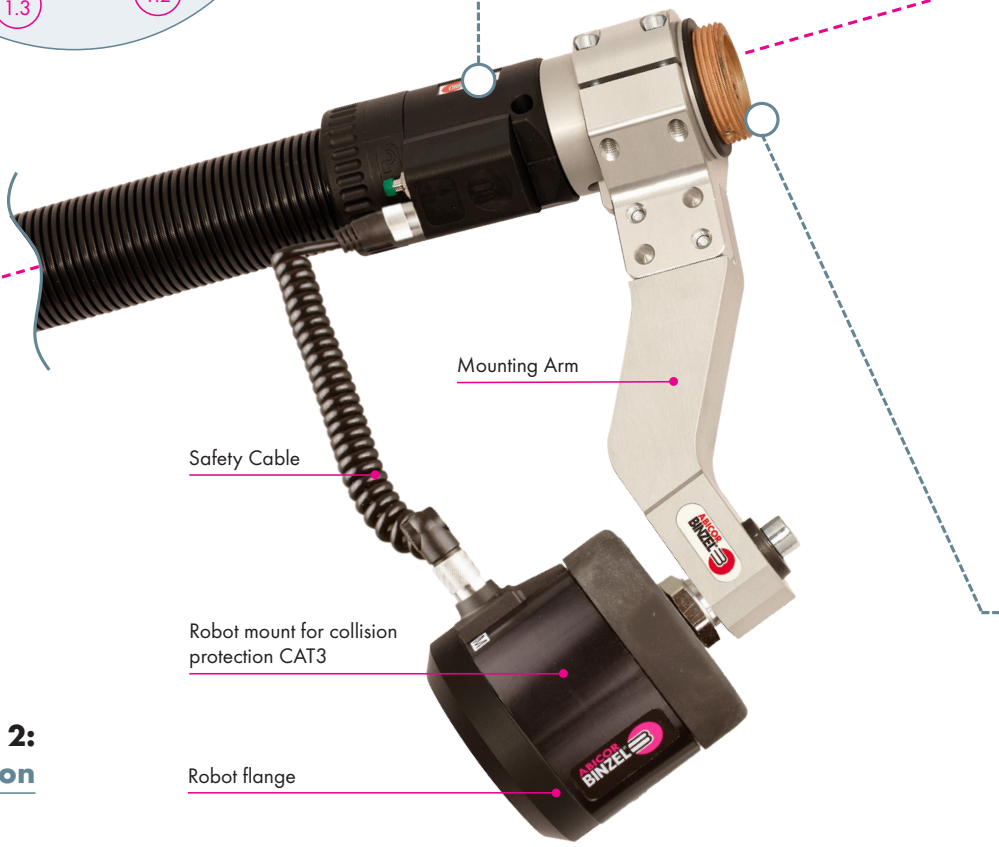


Fig. 1:
Cable assembly interface

- 1.1 Option: Connection for wire brake [2)]
- 1.2 INTERLOCK connection – reproducible cable assembly position in three dimensions
- 1.3 Short housing for optimal accessibility
- 1.4 Connection CAT3
- 1.5 Wire inching switch

Fig. 2:
Machine connection

- 2.1 Control cable with strain relief
- 2.2 Machine connection available for Euro and direct mount to most common wire feeders
- 2.3 Straight discharge for cooling liquid and airblast hoses – no bending or twisting
- 2.4 Short connection housing – high flexibility of the cable assembly
- 2.5 Rotatable outer hose connection – minimized torsional stress

Technical data

Technical data (EN 60 974-7):

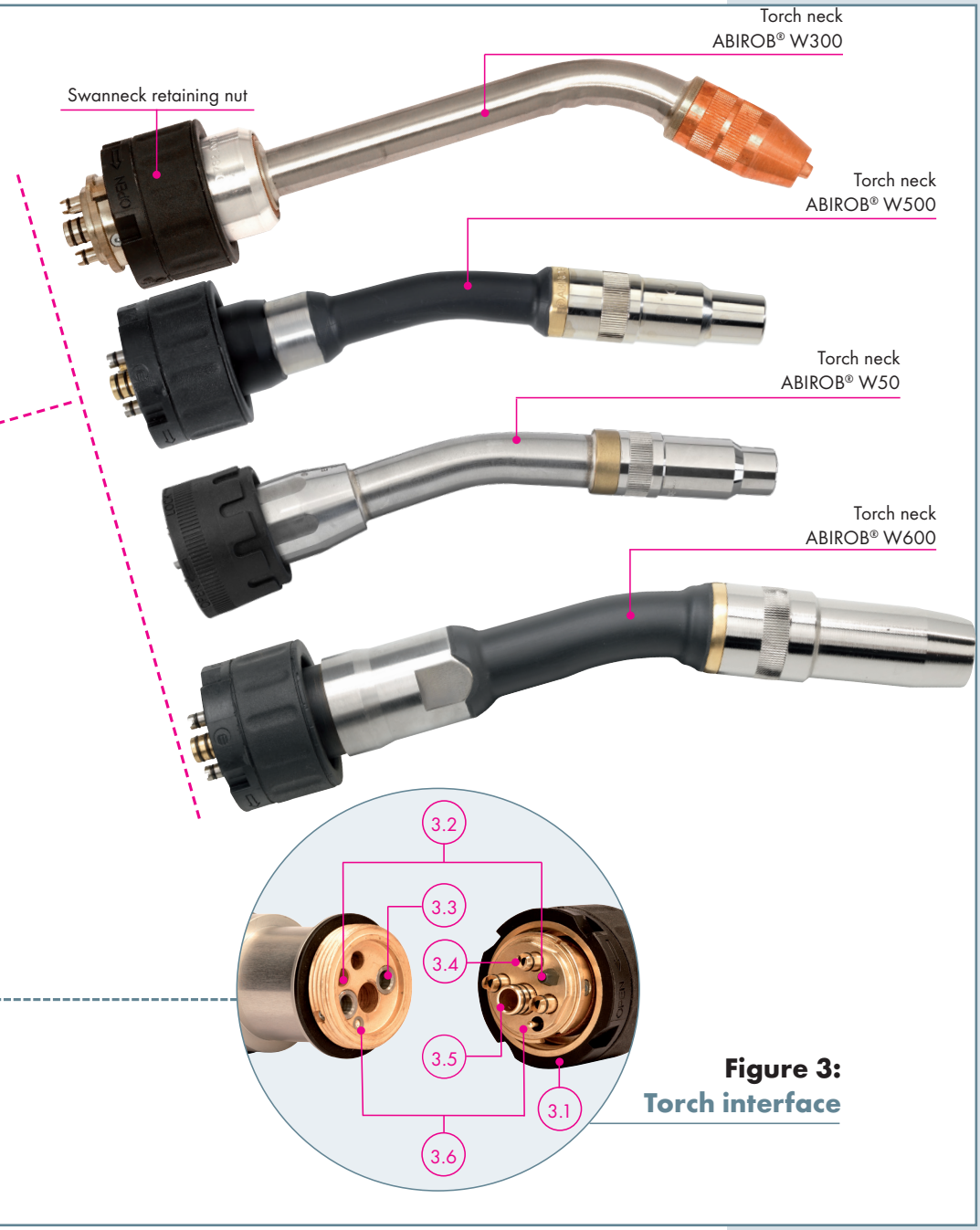


Figure 3:
Torch interface

Torch neck ABIROB® W300

Type of cooling:	liquid cooled
Rating:	300 A Mixed gases M21 (DIN EN 439)
Duty cycle:	100 %
Wire size:	0.8–1.2 mm
Torch geometry:	22°/45°

Torch neck ABIROB® W500

Type of cooling:	liquid cooled
Rating:	500 A Mixed gases M21 (DIN EN 439)
Duty cycle:	100 %
Wire size:	0.8–1.6 mm
Torch geometry:	180°/22°/45°

Torch neck ABIROB® W50

Type of cooling:	liquid cooled
Rating:	500 A mixed gases M21 (DIN EN 439)
Duty cycle	100%
Wire size:	0.8 -1.6 mm
Torch geometry:	180°/ 22°/ 45°

Torch neck ABIROB® W600

Type of cooling:	liquid cooled
Rating:	550 A Mixed gases M21 (DIN EN 439)
Duty cycle:	100 %
Wire size:	0.8–1.6 mm
Torch geometry:	180°/22°/45°

* See footnote regarding technical data.

Fig. 3:
Torch interface

- 3.1 High-grip swanneck retaining nut – for a fast and tight connection
- 3.2 Precision steel locating pin – for a reproducible torch neck change
- 3.3 Flow check valves – no leaking of the cooling liquid during torch neck change process
- 3.4 Gas and airblast – multi-purpose
- 3.5 One piece liner or seperate neckliner depending on torch options
- 3.6 Gas nozzle sensor[1)]

* **Note concerning technical data:**
Ratings determined under standard conditions at medium level of heat reflection, free air circulation and 28 °C ambient temperature. In applications with more demanding conditions the rating must be reduced by 10–20 %.

For pulsed arc welding the rating may be reduced by up to 35%.

* Hybrid cable assemblies support up to 400A mixed gases. Applications exceeding 400A require water-cooled power cables.

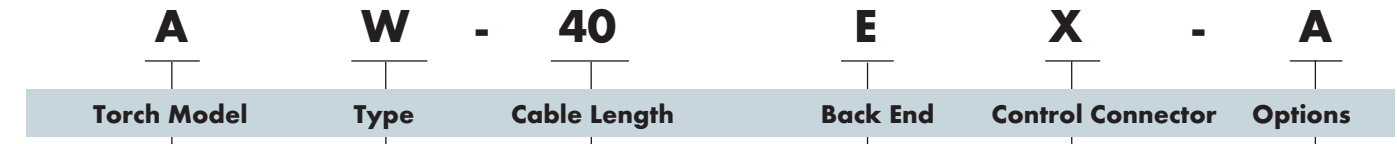
[1)] Torch necks supplied with gas nozzle sensor; gas nozzle sensor connection is used for tactile seam location via gas nozzle. Please ask your robot manufacturer.

[2)] Wire brake is used for tactile seam location via welding wire. Please ask your robot manufacturer.

ABIROB® Water-cooled Body/Cable Assembly

Ordering instructions for body/cable assembly

Example: AW-40EX-A



Torch Model

A - ABIROB®

Type

W - Water-cooled
* H - Hybrid

Cable Length

30 - 3 Feet
40 - 4 Feet
45 - 4.5 Feet
50 - 5 Feet
60 - 6 Feet
70 - 7 Feet
80 - 8 Feet
90 - 9 Feet
10 - 10 Feet

Back End

C - OTC/Daihen CMRE 741 AF4001
D - OTC/Daihen CM 147,231
E - Euro
F - Fronius CBRA-M
G - F++
K - Lincoln PF10, 4R90
L - Lincoln
M - Miller
P - Panasonic
T - Tweco #5
3/4"

Control Connector

X - None
A- Abicor
B - Brad Harrison 5 pin
C- Burndy 12 PIN ABB from 1996
D- Amp 4 pin Motoman
E - DDK 5 pin Fanuc
F - AMP 5 pin ABB before 1996
G - AMP 7 pin Motoman optional
H - Denki 2 pin
J - Panasonic
L - OTC 2-Pin
M - Fronius 14-Pin

Options

A - Nozzle Sense
B - Voltage Sense
E - ABB Water Fittings
*G - Wire Brake 35/45 ext
*H - Wire Brake 52/62 ext

*The wire break options are available on water-cooled (Type "W") models only

Please note: All the trademarks named in this brochure are the property of the respective companies.

“ABIROB® W” liquid-cooled
Torch necks & wear parts

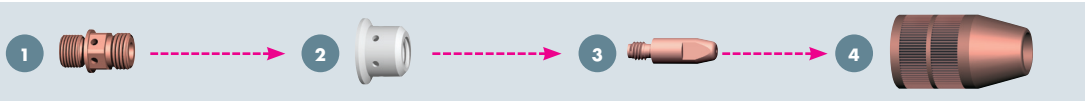
ABIROB® W300

Torch neck

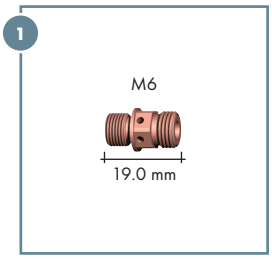
Features	180°	Part-No. 22°	Part-No. 45°
Standard	–	782.0014	782.0015

Consumables are not included in the delivery. Please order these separately and according to the application.

Consumables for ABIROB® W300

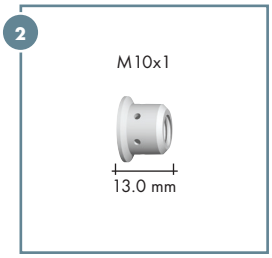


1 Contact tip holder
(Pkg QTY 10)



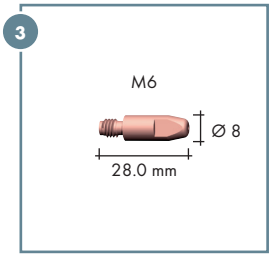
Type	Part-No.
M6 Copper	785.5052

2 Gas diffuser
(Pkg QTY 10)



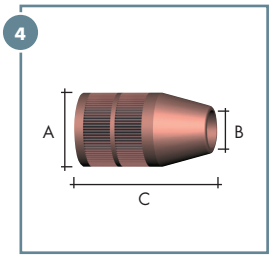
Type	Part-No.
Standard	962.0657
High temperature resistant (ceramic)	962.1341

3 Contact tip
(Pkg QTY 25)



Type	Wire-Ø		Part-No.
CuCrZr	.030"	0.8 mm	140.0054
	.035"	0.9 mm	140.0172
	.040"	1.0 mm	140.0245
	.045"	1.2 mm	140.0382
CuCrZr Silver Plated	.030"	0.8 mm	147.0054
	.035"	0.9 mm	147.0172
	.040"	1.0 mm	147.0245
	.045"	1.2 mm	147.0382

4 Gas nozzle
(Pkg QTY 5)



Type conical	Ø A	Ø B	Length C	Part-No.
Recess (–1.0 mm)[1]	25.0	13.0	48.5 mm	145.0564
Stick-out (+3.0 mm)[2]	25.0	13.0	44.5 mm	145.0495
Stick-out (+3.0 mm)[2]	25.0	15.5	44.5 mm	145.0494

[1] Recess: Contact tip recessed
[2] Stick-out: Contact tip protruding

Torch necks & wear parts

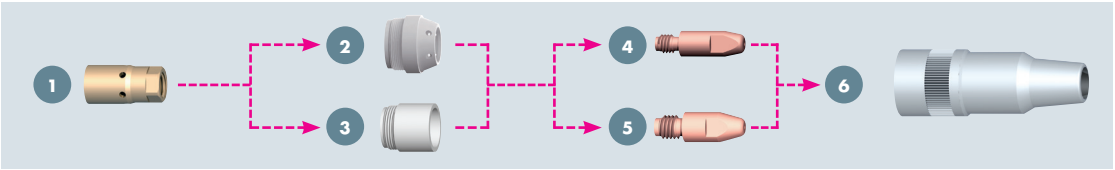
ABIROB® W500

Torch neck

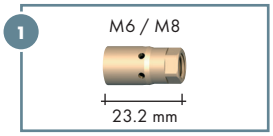
Features	Part-No. 180°	22°	45°
Standard	782.0079	782.0003	782.0005
Standard (+100 mm)	782.0088	782.0089	782.0091

Consumables are not included in the delivery. Please order these separately and according to the application.

Consumables for ABIROB® W500



1 Contact tip holder
(Pkg QTY 10)

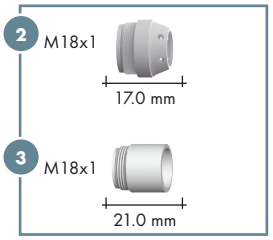


Type	Part-No.
M6 Copper	142.0133
M8 Copper[1]	142.0151
M8 Brass	142.0117

[1] Recommended for high amperages and pulse welding.

2 Gas diffuser
(Pkg QTY 10)

3 Nozzle insulator
(Pkg QTY 10)

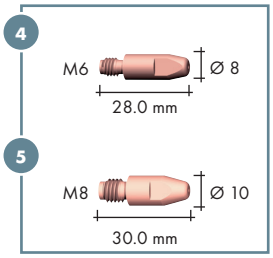


Type	Part-No.
Gas diffuser, standard	943.0284
Nozzle insulator, standard (white)	146.0054
Nozzle insulator, standard short (L=11.4mm)[2]	146.0064
Nozzle insulator, resistant to high temperatures (black)	146.0059

[2] Recommended for applications with galvanized materials in conjunction with gas nozzles 145.0553 or 145.0568.

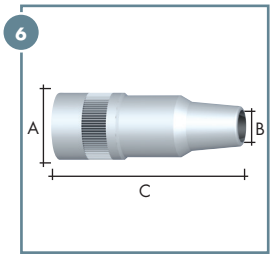
4 Contact tip M6
(Pkg QTY 25)

5 Contact tip M8
(Pkg QTY 25)



Type	Wire-Ø		Part-No. M6	M8
CuCrZr	.030"	0.8 mm	140.0054	140.0117
	.035"	0.9 mm	140.0172	140.0217
	.040"	1.0 mm	140.0245	140.0316
	.045"	1.2 mm	140.0382	140.0445
	.052"	1.4 mm	–	140.0536
	.062"	1.6 mm	–	140.0590
CuCrZr	.030"	0.8 mm	147.0054	147.0117
Silver Plated	.035"	0.9 mm	147.0172	147.0217
	.040"	1.0 mm	147.0245	147.0316
	.045"	1.2 mm	147.0382	147.0445
	.052"	1.4 mm	–	147.0536
	.062"	1.6 mm	–	147.0590

6 Gas nozzle
(Pkg QTY 5)

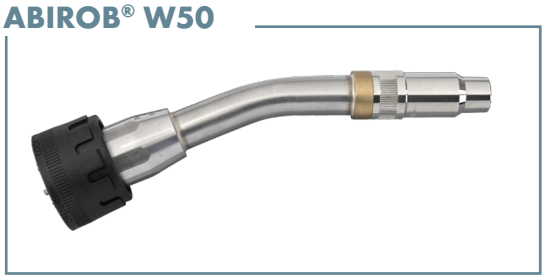


Type bottle form	Ø A	Ø B	Length C	Part-No.
Recess (–2.6 mm)[3]	Ø 27.0	Ø 13.0	77.0 mm	145.0556
Recess (–1.1 mm)[3]	Ø 27.0	Ø 13.0	75.5 mm	145.0479
Recess (–2.6 mm)[3]	Ø 27.0	Ø 15.5	77.0 mm	145.0480
Recess (–1.1 mm)[3]	Ø 27.0	Ø 15.5	75.5 mm	145.0544
Stick-out (+2.4 mm)[4]	Ø 27.0	Ø 15.5	72.0 mm	145.0466
Type conical	**Ø A**	**Ø B**	**Length C**	**Part-No.**
Recess (–1.1 mm)[3]	Ø 27.0	Ø 15.5	75.5 mm	145.0553
Stick-out (+2.4 mm)[4]	Ø 27.0	Ø 15.5	72.5 mm	145.0568

[3] Recess: Contact tip recessed
[4] Stick-out: Contact tip protruding

Torch necks & wear parts

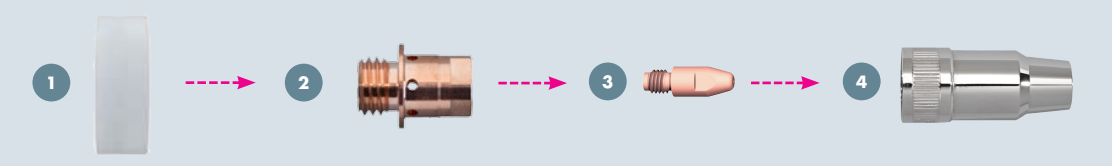
ABIROB® W50



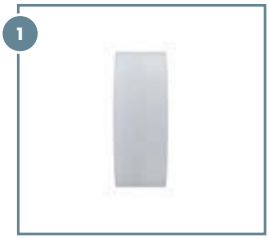
Torch neck

Features	Part-No. 180°	22°	45°
Standard	782.5001	782.5002	782.5004
Standard (+100)	782.5027	782.5028	782.5030

Wear parts for ABIROB® W50

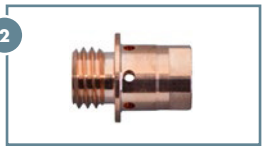


1 Nozzle insulator
(Pkg QTY 10)



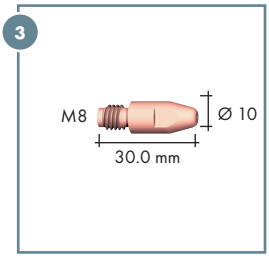
Type	Part-No.
Nozzle Insulator	146.0098

2 Contact tip holder
(Pkg QTY 10)



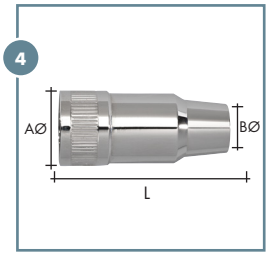
Type	Length	Part-No.
M8/M8x1	0.70"/18 mm	142.0327

3 Contact tip M8
(Pkg QTY 25)



Type	Ø	Wire-Ø	Length	Part-No.
CuCrZr, M8	10mm	0.035"/0.9mm	30mm	140.0217
CuCrZr, M8	10mm	0.040"/1.0mm	30mm	140.0316
CuCrZr, M8	10mm	0.045"/1.2mm	30mm	140.0445
CuCrZr, M8	10mm	0.052"/1.4mm	30mm	140.0536
CuCrZr, M8	10mm	0.062"/1.6mm	30mm	140.0559

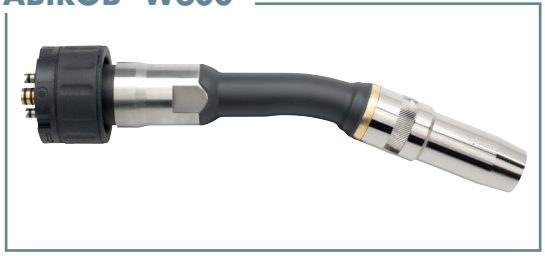
4 Gaz nozzle
(Pkg QTY 5)



Gas Nozzle Type	AØ	BØ	Length	Tip Spacing	Part-No.
Bottle form, ID, 5/8"(16mm)	1.06" / 27mm	0.79" / 20 mm	2.39"/ 60.7mm	Stick out: +2.5mm	145.0912
Bottle form, ID, 5/8"(16mm)	1.06" / 27mm	0.79" / 20 mm	2.49"/ 63.2mm	Flush: 0mm	145.0913
Bottle form, ID, 5/8"(16mm)	1.06" / 27mm	0.79" / 20 mm	2.59"/ 65.7mm	Recess: -2.5mm	145.0914

Torch necks & wear parts

ABIROB® W600

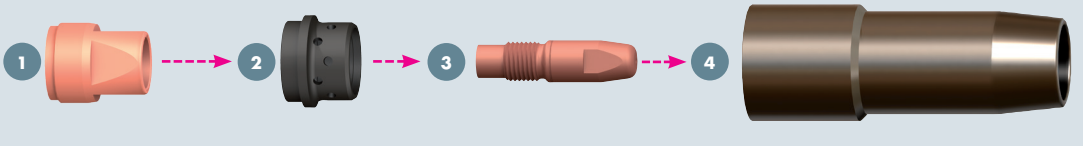


Torch neck

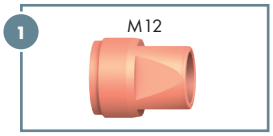
Features	Part-No. 180°	22°	45°
Standard	782.0213	782.0214	782.0216
Standard (+100 mm)	782.0233	782.0234	782.0236

Consumables are not included in the delivery. Please order these separately and according to the application.

Consumables for ABIROB® W600

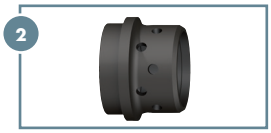


1 Contact tip holder
(Pkg QTY 10)



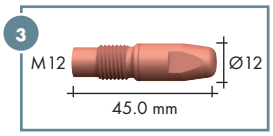
Type	Part-No.
M12	142.0214

2 Gas diffuser
(Pkg QTY 10)



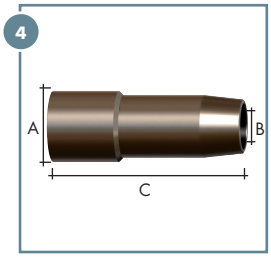
Type	Part-No.
Gas diffuser	146.0079

3 Contact tip M12
(Pkg QTY 25)



Type	Wire-Ø	Part-No.
CuCrZr	.040″/1.0mm	140.1605
CuCrZr	.045″/1.2mm	140.1563
CuCrZr	.052″/1.4mm	140.1564
CuCrZr	.062″/1.6mm	140.1565
Silver Plated	.045″/1.2mm	147.1563
Silver Plated	.052″/1.4mm	147.1564
Silver Plated	.062″/1.6mm	147.1565
HDS Silver Plated	.045″/1.2mm	147.6563
HDS Silver Plated	.052″/1.4mm	147.6564
HDS Silver Plated	.062″/1.6mm	147.6565

4 Gas nozzle
(Pkg QTY 5)



Type conical	Ø A	Ø B	Length C	Part-No.
Flush	34mm	18mm	92mm	145.0689
Recess (-3mm)[1]	34mm	21.5mm	95mm	145.0688
Flush	34mm	21.5mm	92mm	145.0686
Stick-out (+6mm)[2]	34mm	21.5mm	86mm	145.0687

[1] Recess: Contact tip recessed
[2] Stick-out: Contact tip protruding

Cable assemblies & liners

Liners for Euro central connection

Type	Wire-Ø		Up to 5'	Up to 10'	Up to 15'
Liner steel red	Ø 0.8 – 1.2	.035" - .045"	124.0145	124.0146	–
Liner steel white	Ø 1.4 – 1.6	.052" - .062"	124.0147	124.0148	–
Liner Combi PA[1]	Ø 0.8 – 1.2	.035" - .045"	128.M008	128.M009	–
	Ø 1.4 – 1.6	.052" - .062"	128.M012	128.M013	–

Liners for direct mount connection

Type	Wire-Ø		Up to 5'	Up to 10'	Up to 15'
Liner steel red	Ø 0.8 – 1.2	.035" - .045"	SI4-3545-8PT	SI4-3545-17PT	SI4-3545-17PT
Liner steel white	Ø 1.4 – 1.6	.052" - .062"	SI4-5262-8PT	SI4-5262-17PT	SI4-5262-17PT

[1] Liner Combi PA – for aluminium or bronze wires – is a combination of PA-liner and a bronze liner pressed on in the front section to avoid thermal overload of the PA.

Neckliners - For wire-brake only

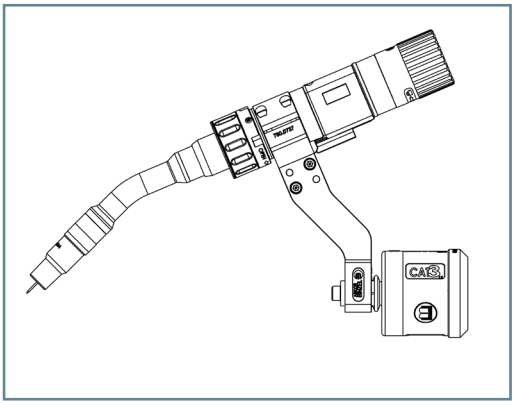
Neck	Part No.	Neckliner Length	Wire size .035-.045" (Red)	Wire size .052-.062" (Blue)
W300	782.0161	255mm	149.0344	149.0349
	782.0162	255mm	149.0344	149.0349
W500	782.0320	222mm	149.0287	149.0289
	782.0003	222mm	149.0287	149.0289
	782.0005	222mm	149.0287	149.0289
	782.0088	322mm	149.0348	149.0347
	782.0089	322mm	149.0348	149.0347
	782.0091	322mm	149.0348	149.0347
W50	782.5001	215mm	149.0543	149.0545
	782.5002	215mm	149.0543	149.0545
	782.5004	215mm	149.0543	149.0545
	782.5027	315mm	149.0544	149.0546
	782.5028	315mm	149.0544	149.0546
	782.5030	315mm	149.0544	149.0546
W600	782.0213	248mm	149.0350	149.0333
	782.0214	248mm	149.0350	149.0333
	782.0216	248mm	149.0350	149.0333
	782.0233	348mm	Call	149.0334
	782.0234	348mm	Call	149.0334
	782.0236	348mm	Call	149.0334

Holder and TCP geometries

Mounting Arm for CAT3

Torch type	Torch geometry	X	Y (mm)	h	α	Part-No.
ABIROB® W300	22°	400	0	149	45°	780.0444
	45°	400	0	90	50°	780.0742
ABIROB® W500	22°	400	0	153	45°	780.0414
	45°	400	0	126	50°	780.0422
	180°	400	0	182	40°	780.0797
ABIROB® W500/W50 (+100mm)	22°	500	0	192	45°	780.0438
	45°	500	0	134	50°	780.0442
	180°	500	0	182	30°	780.0440
ABIROB® W600	22°	400	0	170	45°	780.0781
	45°	400	0	135	50°	780.0784
	180°	400	0	186	35°	780.0767
ABIROB® W600 (+100 mm)	22°	500	0	209	45°	780.0785
	45°	500	0	144	50°	780.0788
	180°	500	0	212	30°	780.0769

TCP dimensions are based on 15mm flange thickness.

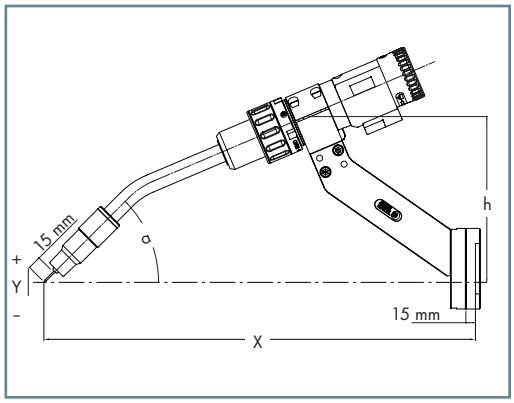


CAT-R Solid Torch Mount

for robots with collision software

Torch type	Torch geometry	X	Y (mm)	h	α	Part-No.
ABIROB® W300	22°	400	0	149	45°	780.0459
	45°	400	0	90	50°	780.0461
ABIROB® W500	22°	400	0	153	45°	780.0449
	45°	400	0	105	50°	780.0453
	180°	400	0	150	30°	780.0801
ABIROB® W500/W50 (+100 mm)	22°	500	0	192	45°	780.0455
	45°	500	0	105	45°	780.0453
	180°	500	0	169	25°	780.0803
ABIROB® W600	22°	400	0	170	45°	780.0789
	45°	400	0	150	50°	780.0792
	180°	400	0	162	30°	780.0759
ABIROB® W600 (+100 mm)	22°	500	0	209	45°	780.0793
	45°	500	0	144	50°	780.0796
	180°	500	0	179	25°	780.0761

Additional mounts are available on request.
TCP dimensions are based on 15mm flange thickness.



Welding Torch System ABIROB® W
Robot mount CAT3 Over-arm

The robot mount CAT3 is used with externally guided welding torch cable assemblies. During the deflection of the welding torch in a collision, the welding robot is reliably stopped by the CAT3 integrated safety switch function, which prevents damage to the welding robot and welding torch equipment.

In addition, the precise resetting accuracy allows for a fast resumption of the production process. This means that production downtime is reduced to a minimum. The CAT3 is the improved evolution of the tried and trusted CAT2 and CAT2-HL robot mounts.

Features:

- Technically sophisticated and robust design
- Simple installation
- Reliable switching function
- Excellent protection against contamination

Robot mount CAT3

Description	Part-No.
Robot mount CAT3 XL	780.2050
Robot mount CAT3 L	780.2051
Robot mount CAT3 M	780.2052

Intermediate flange

(Plastic, insulated)

Description	Part-No.
ISO 9409-1-A63	780.0614
ISO 9409-1-A50-d31,5	780.0608
ISO 9409-1-A125	780.0630
ISO 9409-1-A100	780.0649
ISO 9409-1-A160	780.0647
ISO 9409-1-A40-D50	780.0691

Adapter flanges can be delivered for all common welding robots. Please indicate type and model of robot.

TIPS & TRICKS

CAT3 with spring tension L is recommended for applications with wire feeders mounted on the robot arm. For long cable assemblies (high dynamic load) or in case of extreme robot movements and positions, CAT3 with spring tension XL should be used.

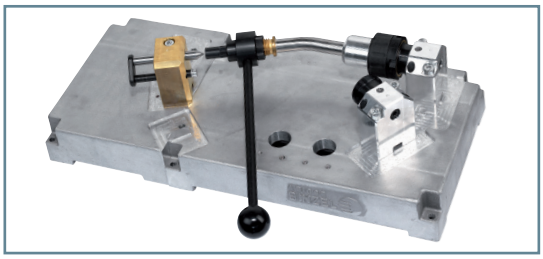
Accessories

1

2

3

Description	Part-No.
1 Thread cutter M10x1 f/W500 (for the inner tube)	191.0085
2 Concentricity tool f/M6 and M8 (to align inner tube with outer tube)	191.0090
3 Pin wrench for ABIROB W (to unscrew the connection)	191.0115



Alignment jig

for torch type	Torch geometry	Part-No.
ABIROB® W300	22°/45°	837.0484
ABIROB® W500	180°/22°/35°/45°	837.0950
ABIROB® W500 (+100 mm)	180°/22°/35°/45°	837.0950
ABIROB® W50	180°/ 22°/45°	837.1125
ABIROB® W600	180°/22°/45°	837.0860
ABIROB® W600 (+100mm)	180°/22°/45°	837.0868

TECHNOLOGY FOR THE WELDER´S WORLD.

ABICOR BINZEL® ROBOTIC SYSTEMS

Binzel S.A. DE C.V.
Municipio Pabellon de Arteaga 102
Valle De Aguascalientes, 20358
San Francisco de los Romo, Ags.
Phone: +52 (499) 973.0133
Fax: +52 (499) 973.1388
Email: info@binzel.com.mx

ABICOR BINZEL USA, Inc.
650 Medimmune Court, Suite 110
Frederick, MD 21703
Phone: 1.800.542.4867
Fax: 1.301.846.4497
Email: customerservice@abicorusa.com

www.binzel-abicor.co

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