

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

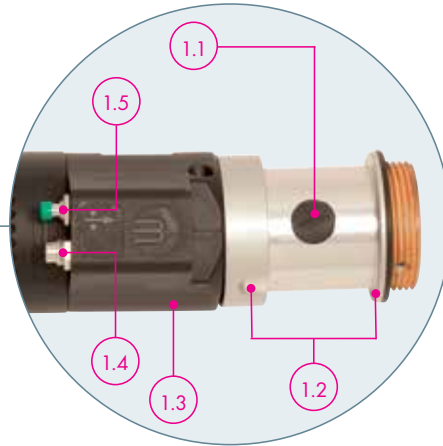


Figure 2:
Machine connection

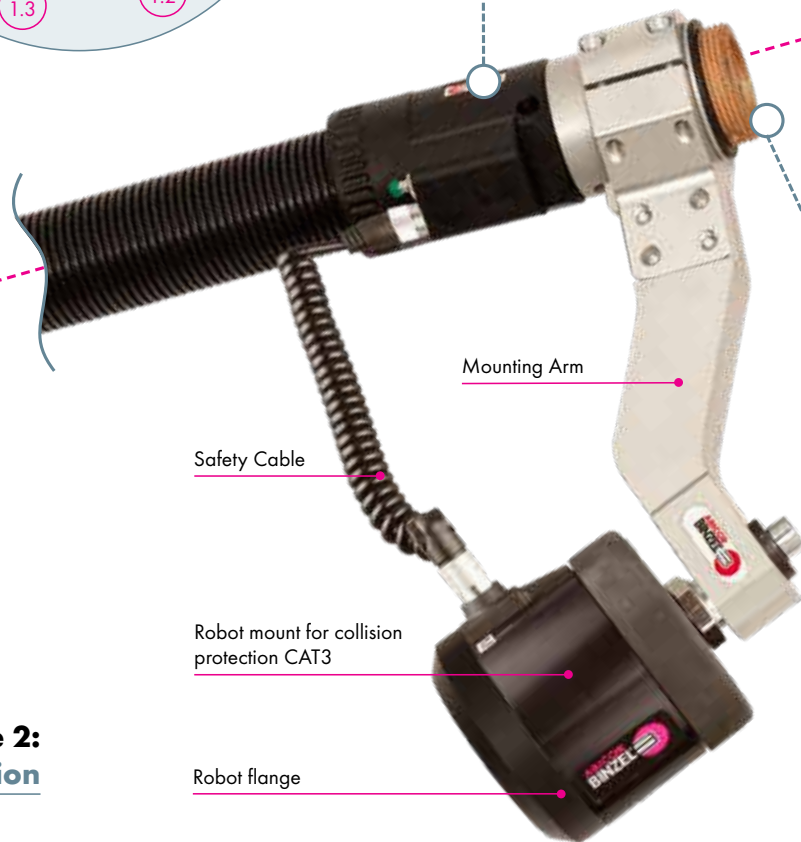
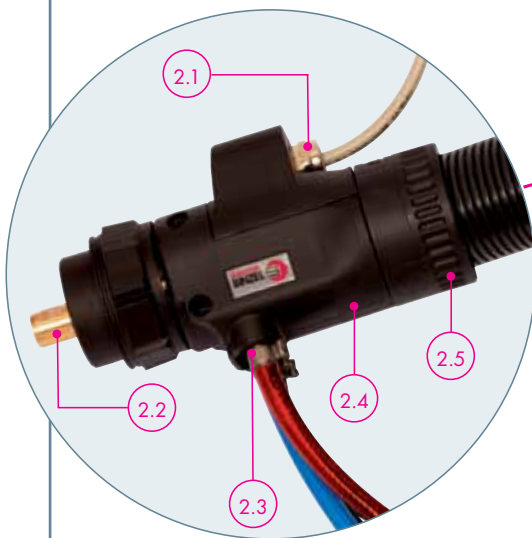


Fig. 1:
Cable assembly interface

- 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):

Torch neck ABIROB® W 300

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® W 500

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® W 600

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.	

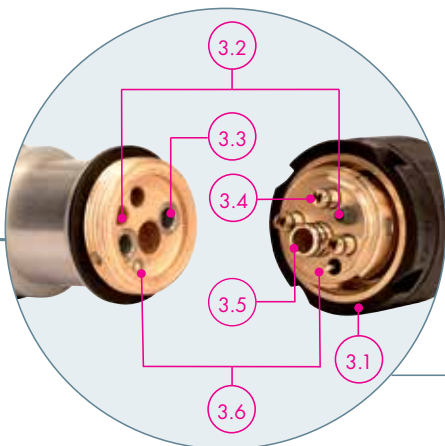
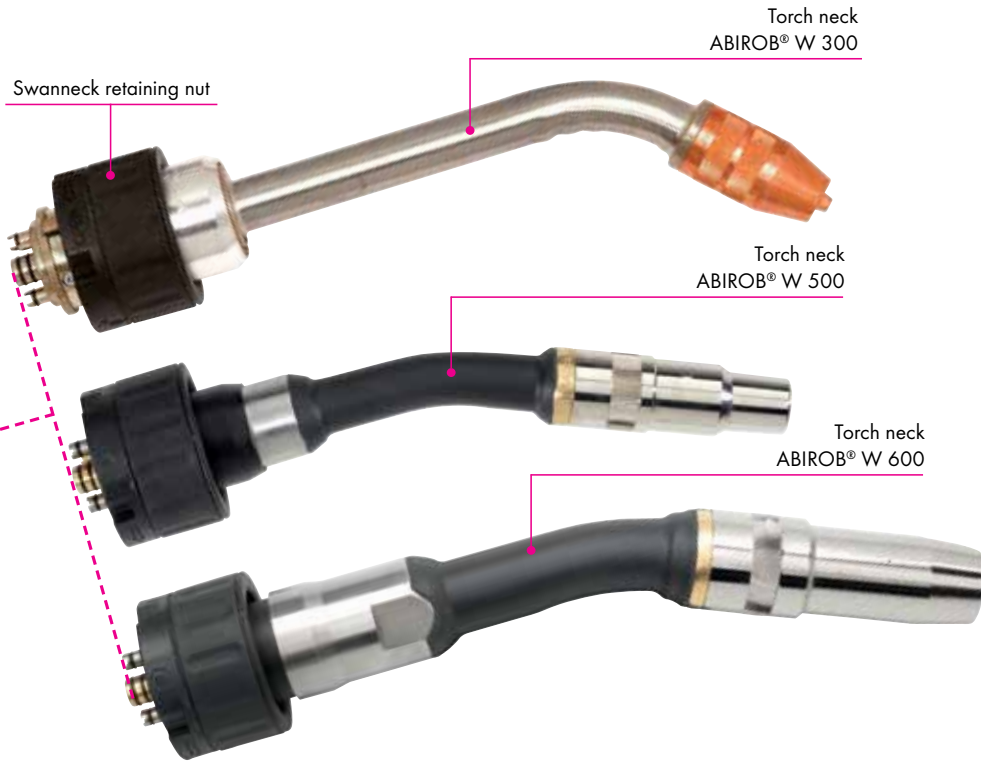


Figure 3:
Torch interface

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 separate neckliner depending on torch options
- 3.6 Gas nozzle sensor¹⁾

*** 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

A	W	-	40	E	X	-	A
Torch Model	Type	Cable Length		Back End	Control Connector	Options	
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

"ABIROB® W" liquid-cooled Torch necks & wear parts

ABIROB® W 300



Torch neck

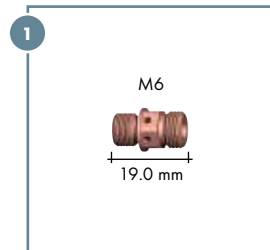
	Part-No.		
Features	180°	22°	45°
Standard	-	782.0014	782.0015

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

Consumables for ABIROB® W300

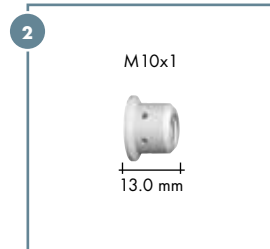


1 Contact tip holder (10 pcs.)



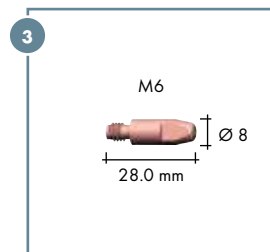
Type	Part-No.
M6 Copper	785.5052

2 Gas diffuser (10 pcs.)



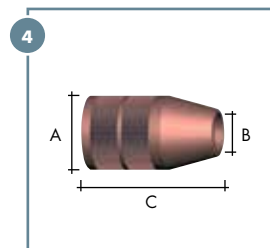
Type	Part-No.
Standard	962.0657
High temperature resistant (ceramic)	962.1341

3 Contact tip (25 pcs.)



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 (5 pcs.)



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® W 500

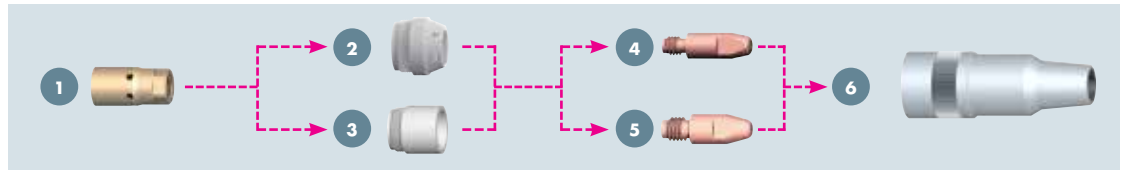


Torch neck

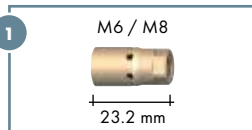
Features	Part-No.		
	180°	22°	45°
Standard	782.0079	782.0003	782.0005
Standard (+100 mm)	782.0088	782.0089	782.0091

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

Consumables for ABIROB® W500



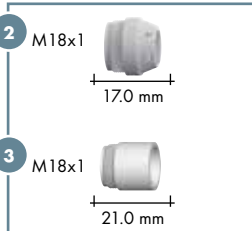
1 Contact tip holder (10 pcs.)



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

¹ Recommended for high amperages and pulse welding.

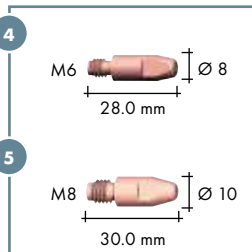
2 Gas diffuser 3 Nozzle insulator (10 pcs.)



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

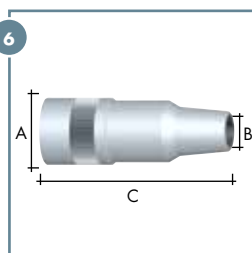
² Recommended for applications with galvanized materials in conjunction with gas nozzles 145.0553 or 145.0568.

4 Contact tip M6 5 Contact tip M8 (25 pcs.)



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 Silver Plated	.030"	0.8 mm	147.0054	147.0117
	.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 (5 pcs.)



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® W 600

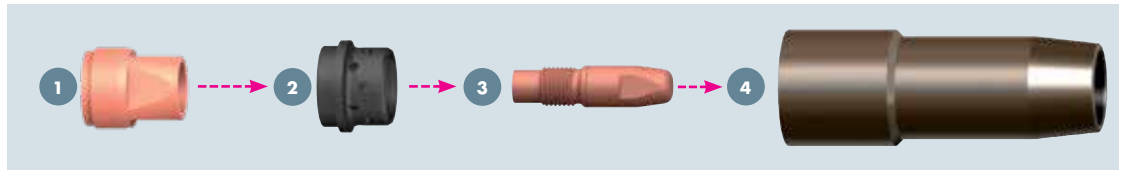


Torch neck

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**
(10 pcs.)



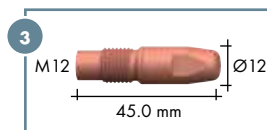
Type	Part-No.
M12	142.0214

- 2 Gas diffuser**
(10 pcs.)



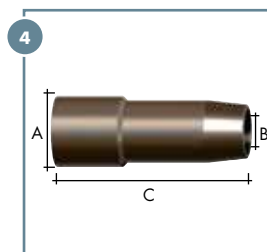
Type	Part-No.
Gas diffuser	146.0079

- 3 Contact tip M12**
(25 pcs.)



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**
(5 pcs.)



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

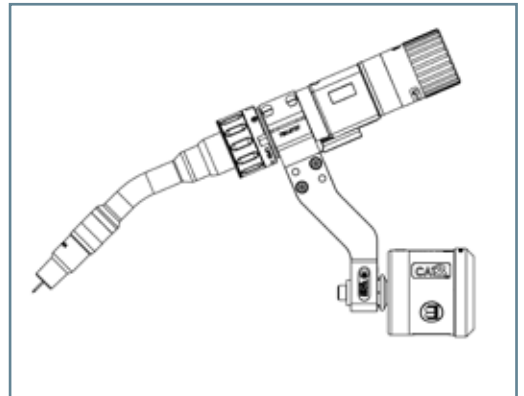
Neck	Part No.	Neckliner Length	Wire size .035-.045"	Wire size .052-.062"
W300	782.0161	255mm	149.0344	149.0349
	782.0162	255mm	149.0344	149.0349
W500	782.0320	222mm	149.0287	149.0289
	782.0003	222mm	149.0287	149.0289
	782.0005	222mm	149.0287	149.0289
	782.0088	322mm	149.0348	149.0347
	782.0089	322mm	149.0348	149.0347
	782.0091	322mm	149.0348	149.0347
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	h	Part-No.
		(mm)			
ABIROB® W 300	22° 45°	400	0	149 45° 90 50°	780.0444 780.0742
ABIROB® W 500	22° 45° 180°	400	0	153 45° 126 50° 182 40°	780.0414 780.0422 780.0797
ABIROB® W 500 (+100 mm)	22° 45° 180°	500	0	192 45° 134 50° 182 30°	780.0438 780.0442 780.0440
ABIROB® W 600	22° 45° 180°	400	0	170 45° 135 50° 186 35°	780.0781 780.0784 780.0767
ABIROB® W 600 (+100 mm)	22° 45° 180°	500	0	209 45° 144 50° 212 30°	780.0785 780.0788 780.0769

TCP dimensions are based on 15mm flange thickness.



CAT-R Solid Torch Mount

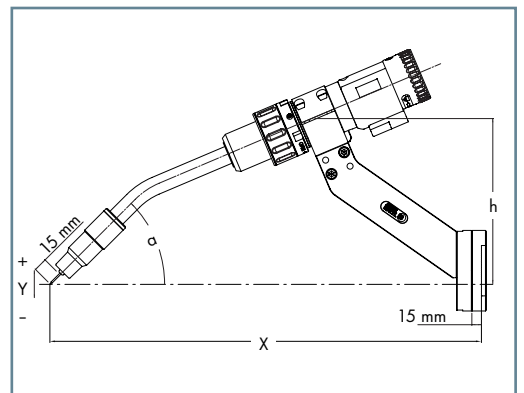
for robots with collision software

Torch type	Torch geometry	X	Y	h	Part-No.
		(mm)			
ABIROB® W 300	22° 45°	400	0	149 45° 90 50°	780.0459 780.0461
ABIROB® W 500	22° 45° 180°	400	0	153 45° 105 50° 150 30°	780.0449 780.0453 780.0801
ABIROB® W 500 (+100 mm)	22° 45° 180°	500	0	192 45° 105 45° 169 25°	780.0455 780.0453 780.0803
ABIROB® W 600	22° 45° 180°	400	0	170 45° 150 50° 162 30°	780.0789 780.0792 780.0759
ABIROB® W 600 (+100 mm)	22° 45° 180°	500	0	209 45° 144 50° 179 25°	780.0793 780.0796 780.0761

Additional holders are available on request.

TCP dimensions are based on 15mm flange thickness.

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



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



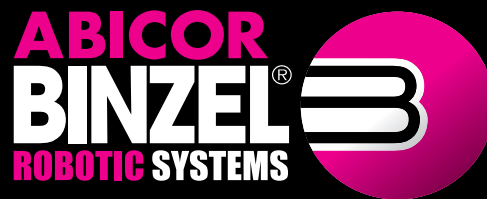
Description	Part-No.
1 Thread cutter M10x1 f/W500 (for the inner tube)	191.0085
2 Concentricity tool f/M6 and M8 (to align inner tube with outer tube)	191.0090
3 Pin wrench (to unscrew the swanneck nut)	191.0115



Alignment jig for torch type	Torch geometry	Part-No.
ABIROB® W 300	22° / 45°	837.0484
ABIROB® W 500	180° / 22° / 35° / 45°	837.0950
ABIROB® W 500 (+100 mm)	180° / 22° / 35° / 45°	837.0950
ABIROB® W 600	180° / 22° / 45°	837.0860
ABIROB® W 600 (+100mm)	180° / 22° / 45°	837.0868



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