

MIG/MAG Welding Torch System

"ABIROB® W" liquid cooled



Robust & flexible ...

Pure ROBO power! Liquid-cooled ABIROB® W welding torches have power ratings up to 600 A and are equipped with state-of-the-art cable assembly and interface technology. The modular design of these rugged yet flexible torches allows a fast change of torch neck and cable assembly components without the TCP (Tool Centre Point) changing – thus avoiding additional programming effort.

High repetitive accuracy and a continuously precise welding process are ensured through the innovative but "simple" torch construction.

Advantages that speak for themselves:

- Robust torch necks with screw-on gas nozzle and replaceable contact tip holder guarantee high durability and a long service life cycle
- The innovative interface design ensures the fast change of torch neck and reproducible positioning of cable assembly and torch neck
- Hybrid cable assembly technology for optimized wire feeding, prevention of electrolytic corrosion and improved coolant flow
- Special torch neck geometries are available for joining components even with limited accessibility

Degree of automation:

| Low | Medium | High |
|-----|--------|------|
|-----|--------|------|

Application areas:



- Commercial vehicle construction
- Earth-moving equipment
- Rail vehicle construction
- Shipbuilding
- Machine and steel construction

Material:

- Construction steels (coated / non-coated)
- Chrome-nickel steels
- Duplex steels
- Nickel basic materials
- Mixed compounds
- Aluminium materials
- Magnesium materials
- Copper materials
- Special materials

Robot interface:

- Conventional robot
(Cable assembly external):
 - Robot mount CAT3
 - Fixed bracket RTM
- Hollow wrist robot
(Cable assembly internal):
 - Robot mount iCAT
 - Bracket iSTM (for robots with integrated collision software)
- Hollow wrist robot
(Cable assembly external):
 - Robot mount CAT3
 - Fixed bracket RTM

* Definition of the degree of automation:

- Low = Torch neck change not possible
- Medium = Torch neck change possible (manually)
- High = Torch neck change possible (manually & automatically)

up to
600 A



"ABIROB® W" liquid cooled System Overview & Technical Data

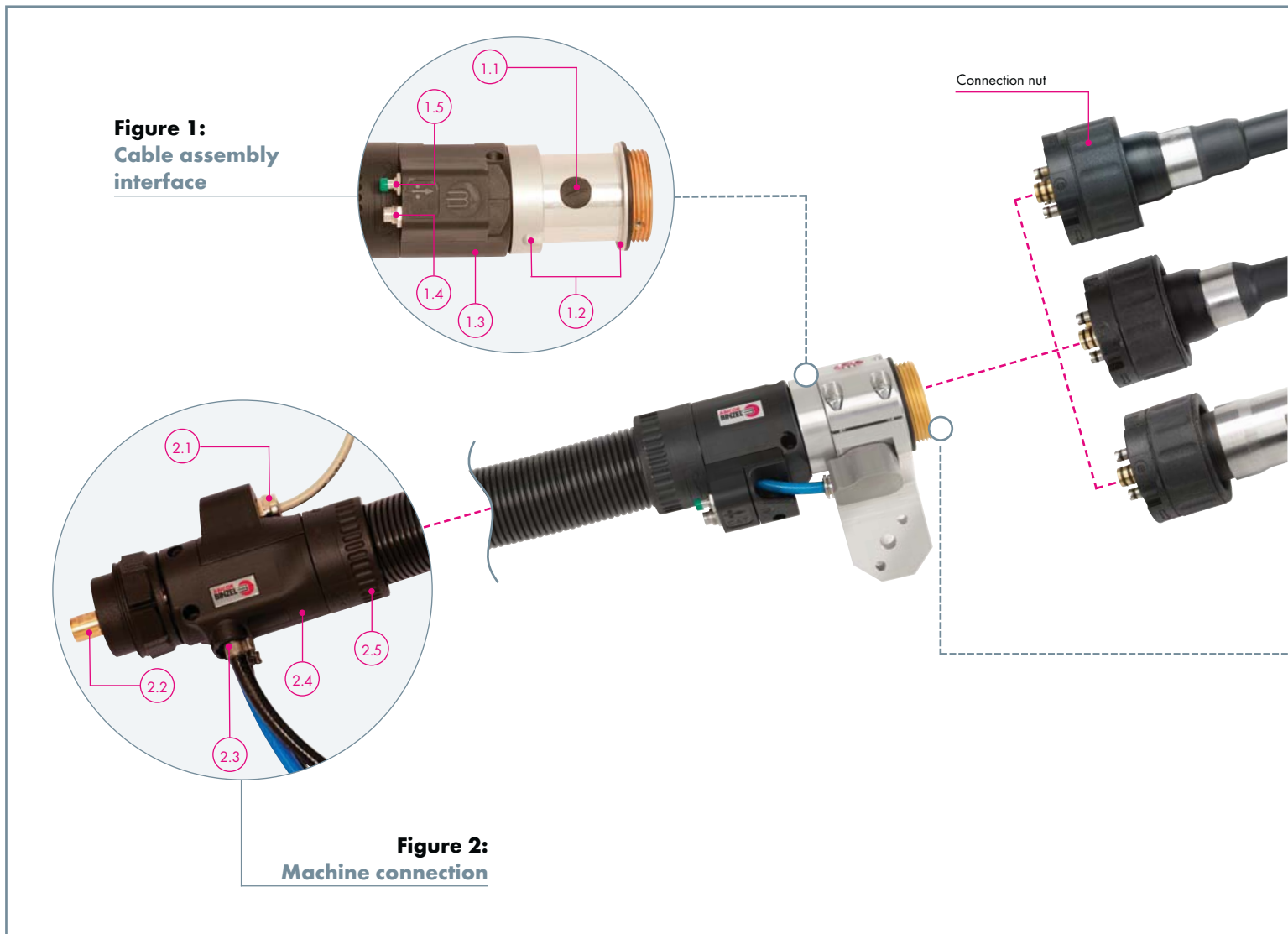


Figure 1:
Cable assembly interface

- 1.1 Connection for the optional wire clamp function (wire brake)¹
- 1.2 INTERLOCK connection - reproducible positioning of the cable assembly in three dimensions
- 1.3 Short housing for best accessibility
- 1.4 Connection CAT3
- 1.5 Wire feed button

Figure 2:
Machine connection

- 2.1 High-quality control cable with strain relief (control cable connector on request)
- 2.2 Machine connection available for all standard wire feeds
- 2.3 Straight discharge for coolant and airblast hose - no bending or twisting of the hoses
- 2.4 Short connection housing - high flexibility of the cable assembly
- 2.5 Rotatable outer hose connection - minimized torsion stress

¹ Wire brake and gas nozzle sensor connection are required for tactile seam location. Ask your robot manufacturer for more details.

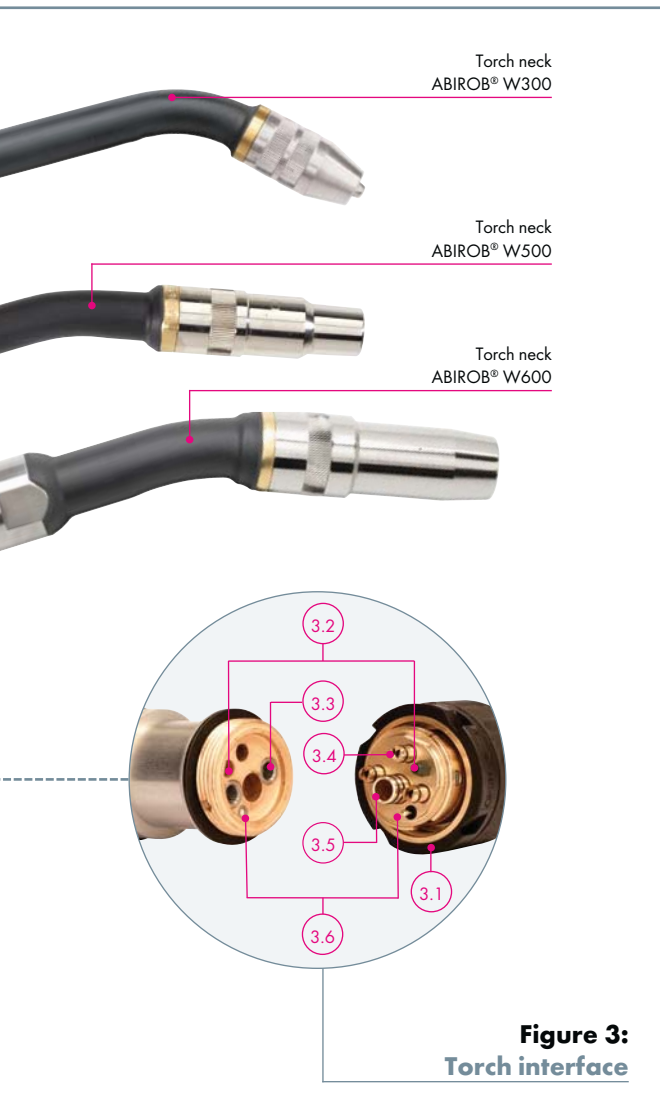
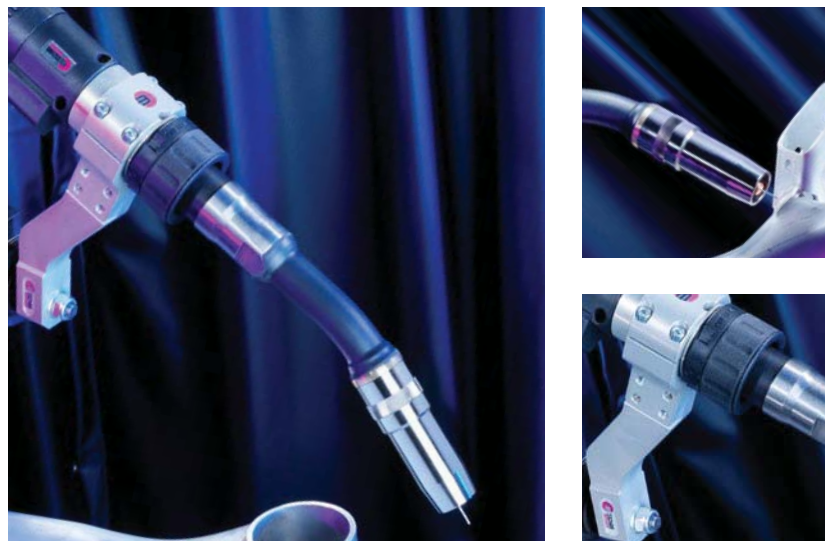


Figure 3:
Torch interface

Figure 3:
Torch interface

- 3.1 High-grip connection nut – for a fast and tight connection
- 3.2 Diamond head pin connection – for reproducible torch neck change
- 3.3 Flow check valves – no leaking of the coolant during the torch neck change
- 3.4 Gas and airblast – best gas shielding
- 3.5 For one piece liner or neck liner
- 3.6 Gas nozzle sensor¹



Technical data (EN 60 974-7):

ABIROB® W300

Type of cooling: liquid cooled
 Rating: 330 A CO₂
 300 A Mixed gases M21 (EN ISO 14175)
 Duty cycle: 100 %
 Wire-Ø: 0.8 - 1.2 mm
 Torch geometries: 22°/45°

ABIROB® W500

Type of cooling: liquid cooled
 Rating: 550 A CO₂
 500 A Mixed gases M21 (EN ISO 14175)
 Duty cycle: 100 %
 Wire-Ø: 0.8 - 1.6 mm
 Torch geometries: 0°/22°/35°/45°

ABIROB® W600

Type of cooling: liquid cooled
 Rating: 600 A CO₂
 550 A Mixed gases M21 (EN ISO 14175)
 Duty cycle: 100 %
 Wire-Ø: 0.8 - 1.6 mm
 Torch geometries: 0°/22°/35°/45°

Note on the technical data:

Rating data was determined under normal conditions at low to medium reflected heat, free air circulation and at 28°C ambient temperature. When used under more difficult conditions, the rating data must be reduced by 10 - 20 %. The rating data are reduced by up to 35 % for pulse arc welding.

"ABIROB® W" liquid cooled Torch Necks & Wear Parts

ABIROB® W300



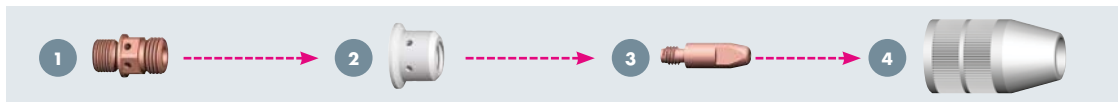
Torch neck

| | Part-No. | |
|-------------------------|------------|------------|
| Features | 22° | 45° |
| Standard | 782.0110.1 | 782.0111.1 |
| with gas nozzle sensor* | 782.0014.1 | 782.0015.1 |

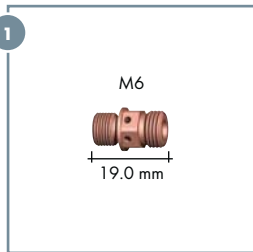
Wear parts and fittings are not included in the scope of delivery! Please order these separately and according to the application!

* Gas nozzle sensor connection for tactile seam location via gas nozzle

Wear parts for ABIROB® W300

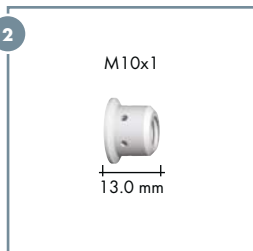


1 Contact tip holder (10 pcs.)



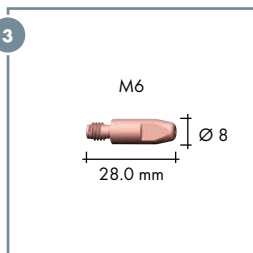
| Type | Part-No. |
|-----------|----------|
| M6 Copper | 785.5052 |

2 Gas diffuser (10 pcs.)



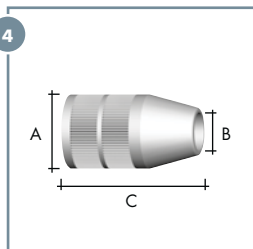
| Type | Part-No. |
|--------------------------------------|----------|
| Standard | 962.0657 |
| High temperature resistant (ceramic) | 962.1341 |

3 Contact tip (10 pcs.)



| Type | Wire-Ø | Part-No. |
|--------|--------|----------|
| CuCrZr | Ø 0.8 | 140.0054 |
| | Ø 0.9 | 140.0172 |
| | Ø 1.0 | 140.0245 |
| | Ø 1.2 | 140.0382 |

4 Gas nozzle (10 pcs.)



| Type conical | Ø A | Ø B | Length C | Part-No. |
|----------------------------------|--------|--------|----------|-------------|
| Recess (-1.0 mm) ² | Ø 25.0 | Ø 13.0 | 48.5 mm | 145.0564 |
| Stick-out (+3.0 mm) ³ | Ø 25.0 | Ø 13.0 | 44.5 mm | 145.0495.10 |
| Stick-out (+3.0 mm) ³ | Ø 25.0 | Ø 15.5 | 44.5 mm | 145.0494.10 |

² Recess: Contact tip recessed

³ Stick-out: Contact tip protruding

"ABIROB® W" liquid cooled Torch Necks & Wear Parts

ABIROB® W500



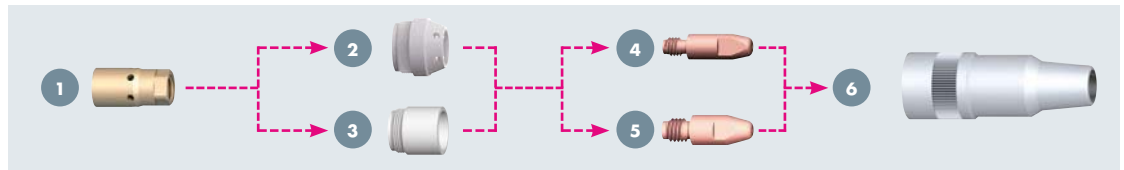
Torch neck

| Features | Part-No. | | | |
|--------------------------------|------------|------------|------------|------------|
| | 0° | 22° | 35° | 45° |
| Standard | 782.0080.1 | 782.0076.1 | 782.0077.1 | 782.0078.1 |
| Standard (+100) | 782.0106.1 | 782.0107.1 | 782.0108.1 | 782.0109.1 |
| with gas nozzle sensor* | 782.0079.1 | 782.0003.1 | 782.0004.1 | 782.0005.1 |
| with gas nozzle sensor* (+100) | 782.0088.1 | 782.0089.1 | 782.0090.1 | 782.0091.1 |

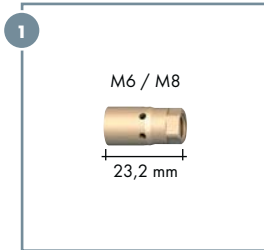
Wear parts and fittings are not included in the scope of delivery! Please order these separately and according to the application!

* Gas nozzle sensor connection for tactile seam location via gas nozzle

Wear parts for ABIROB® W500



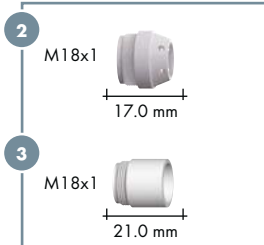
1 Contact tip holder (10 pcs.)



| Type | Part-No. |
|------------------------|-------------|
| M6 Copper ¹ | 142.0133.10 |
| M6 Brass | 142.0216.10 |
| M8 Copper ¹ | 142.0151.10 |
| M8 Brass | 142.0117.10 |

¹ Recommended for high amperages.

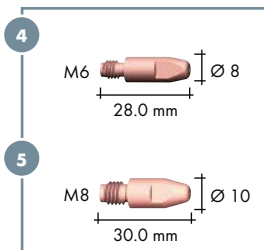
2 Gas diffuser 3 Nozzle insulator (10 pcs.)



| Type | Part-No. |
|---|-------------|
| Gas diffuser standard | 943.0284 |
| Nozzle insulator standard | 146.0054.10 |
| Nozzle insulator standard short (L=11.4mm) ² | 146.0064 |
| Nozzle insulator, resistant to high temperatures | 146.0059.10 |

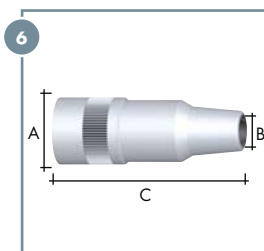
² Recommended for applications with galvanized materials in conjunction with gas nozzles 145.0553 and 145.0568.

4 Contact tip M6 5 Contact tip M8 (10 pcs.)



| Type | Wire-Ø | Part-No. | |
|--------|--------|----------|----------|
| | | M6 | M8 |
| CuCrZr | Ø 0.8 | 140.0054 | 140.0117 |
| | Ø 0.9 | 140.0172 | 140.0217 |
| | Ø 1.0 | 140.0245 | 140.0316 |
| | Ø 1.2 | 140.0382 | 140.0445 |
| | Ø 1.4 | - | 140.0536 |
| | Ø 1.6 | - | 140.0590 |

6 Gas nozzle (10 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 | 145.0556.10 |
| Recess (-1.1 mm) ³ | Ø 27.0 | Ø 13.0 | 75.5 mm | 145.0479.10 |
| Recess (-2.6 mm) ³ | Ø 27.0 | Ø 15.5 | 77.0 mm | 145.0480.10 |
| Recess (-1.1 mm) ³ | Ø 27.0 | Ø 15.5 | 75.5 mm | 145.0544.10 |
| Stick-out (+2.4 mm) ⁴ | Ø 27.0 | Ø 15.5 | 72.0 mm | 145.0466.10 |

| Type conical | Ø A | Ø B | Length C | Part-No. |
|----------------------------------|--------|--------|----------|-------------|
| Recess (-1.1 mm) ³ | Ø 27.0 | Ø 15.5 | 75.5 mm | 145.0553.10 |
| Stick-out (+2.4 mm) ⁴ | Ø 27.0 | Ø 15.5 | 72.5 mm | 145.0568.10 |

³ Recess: Contact tip recessed

⁴ Stick-out: Contact tip protruding

"ABIROB® W" liquid cooled Torch Necks & Wear Parts

ABIROB® W600



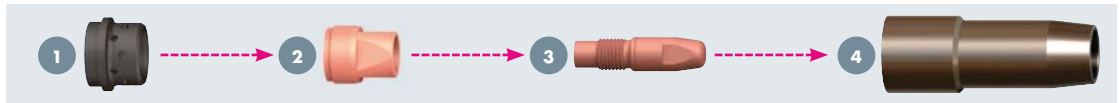
Torch neck

| Features | Part-No. | | | |
|--------------------------------|------------|------------|------------|------------|
| | 0° | 22° | 35° | 45° |
| Standard | 782.0190.1 | 782.0191.1 | 782.0192.1 | 782.0193.1 |
| Standard (+100) | 782.0219.1 | 782.0220.1 | 782.0221.1 | 782.0222.1 |
| with gas nozzle sensor* | 782.0213.1 | 782.0214.1 | 782.0215.1 | 782.0216.1 |
| with gas nozzle sensor* (+100) | 782.0233.1 | 782.0234.1 | 782.0235.1 | 782.0236.1 |

Wear parts and fittings are not included in the scope of delivery! Please order these separately and according to the application!

*Gas nozzle sensor connection for tactile seam location via gas nozzle

Wear parts for ABIROB® W600

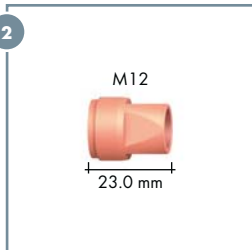


1 Gas diffuser (10 pcs.)



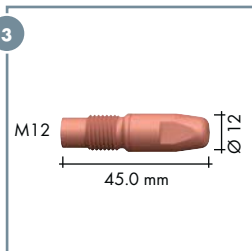
| Type | Part-No. |
|----------|-------------|
| Standard | 146.0079.10 |

2 Contact tip holder (10 pcs.)



| Type | Part-No. |
|------|-------------|
| M12 | 142.0214.10 |

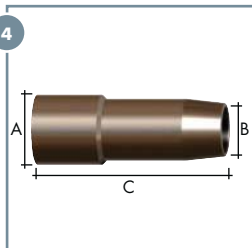
3 Contact tip (10 pcs.)



| Type | Wire-Ø | Part-No. |
|---------------------|--------|-------------|
| CuCrZr | Ø 1.2 | 140.1563.10 |
| | Ø 1.4 | 140.1564.10 |
| | Ø 1.6 | 140.1565.10 |
| HDS silver plated** | Ø 1.2 | 147.6563.10 |
| | Ø 1.4 | 147.6564.10 |
| | Ø 1.6 | 147.6565.10 |

**HDS = Heavy Duty Silver Contact Tips

4 Gas nozzle (5 pcs.)



| Type conical | Ø A | Ø B | Length C | Part-No. |
|-----------------------------------|------|------|----------|------------|
| Flush ¹ | 34.0 | 21.5 | 92.0 mm | 145.0686.5 |
| Stick-Out (+ 6.0 mm) ² | 34.0 | 21.5 | 86.0 mm | 145.0687.5 |
| Recess (- 3.0 mm) ³ | 34.0 | 21.5 | 95.0 mm | 145.0688.5 |
| Flush ¹ | 34.0 | 18.0 | 92.0 mm | 145.0689.5 |

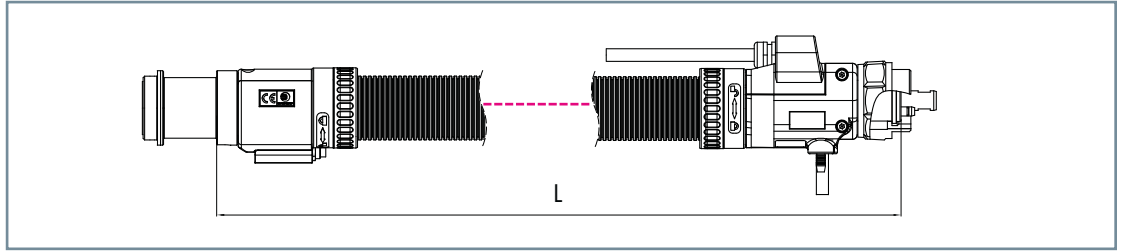
¹ Flush: Contact tip flush

² Stick-out: Contact tip protruding

³ Recess: Contact tip recessed

"ABIROB® W" liquid cooled Cable Assemblies & Accessoires

Cable assemblies and connection types



Cable assemblies ABIROB® W5H

(Recommended for amperages up to 400 A and cable assembly lengths up to 2.50 m.)

| with connection type | Length | Part-No. |
|-------------------------|--------|------------|
| ABICOR BINZEL® | 1.10 m | 782.1014.1 |
| Euro central connection | 1.35 m | 782.1018.1 |
| | 1.50 m | 782.1020.1 |

Other lengths are available on request.

The control cable is not pre-wired at the machine end. Power source specific types on request.

The steel liner 0.8–1.2 mm is included in the scope of delivery. Please order other versions separately.

Cable assemblies ABIROB® W7F

(Recommended for amperages over 400 A.)

| with connection type | Length | Part-No. |
|-------------------------|--------|------------|
| ABICOR BINZEL® | 1.10 m | 782.1103.1 |
| Euro central connection | 1.35 m | 782.1049.1 |
| | 1.50 m | 782.1099.1 |

Liners for Euro central connection¹

| Type | Wire-Ø | up to L=1.5 m ⁴ | up to L=3.15 m ⁴ | 10.0 m ⁵ | Collet |
|---------------------------------|-----------|----------------------------|-----------------------------|---------------------|----------|
| Liner steel ² | Ø 0.8–1.2 | 124.0145.1 | 124.0146.1 | 124.0159.1 | 131.0012 |
| Liner steel ² | Ø 1.4–1.6 | 124.0147 | 124.0148 | 124.0160 | 131.0011 |
| Combined wire feed ³ | Ø 0.8–1.2 | 128.M008 | 128.M009 | - | 131.0019 |
| | Ø 1.4–1.6 | 128.M012 | 128.M013 | - | 131.0020 |

¹ Liners for other connection types are available on request.

² Steel liners (insulated) for the use of non-alloyed and low-alloyed steels. The completely insulated wire feed prevents damage caused by "micro-arcing" on the wire. This allows optimal current transfer inside the contact tube, improving the welding process. The insulated steel liner must always be used for power sources with optimal welding wire sensors.

³ Combined wire feed – 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.

⁴ Including 1x collet

⁵ For individual production including 2x collets

Accessories



| Description | Part-No. |
|--|------------|
| 1 Thread cutter M10x1 (for inner tube) | 191.0085 |
| 2 Alignment tool (to align inner tube with outer tube) | 191.0090.1 |
| 3 Pin wrench (to unscrew the connection) | 191.0115 |

Alignment jig

| for torch neck | torch geometry | Part-No. |
|-------------------------------|----------------|------------|
| ABIROB® W300 | 22°/45° | 837.0484.1 |
| ABIROB® W500 / W500 (+100 mm) | 0°/22°/35°/45° | 837.0950.1 |
| ABIROB® W600 / W600 (+100 mm) | 0°/22°/35°/45° | 837.0860.1 |

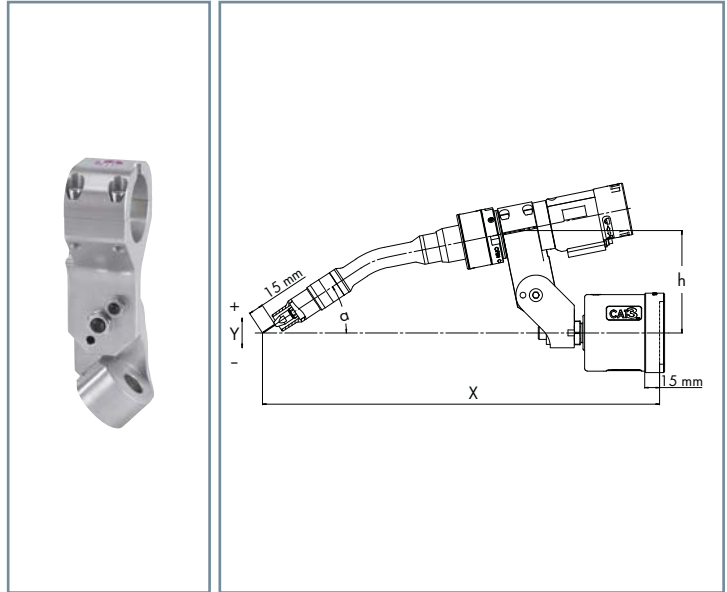


"ABIROB® W" liquid cooled Holder & TCP Geometries

CAT3 holder for ABIROB® W

in connection with CAT3 cpl.

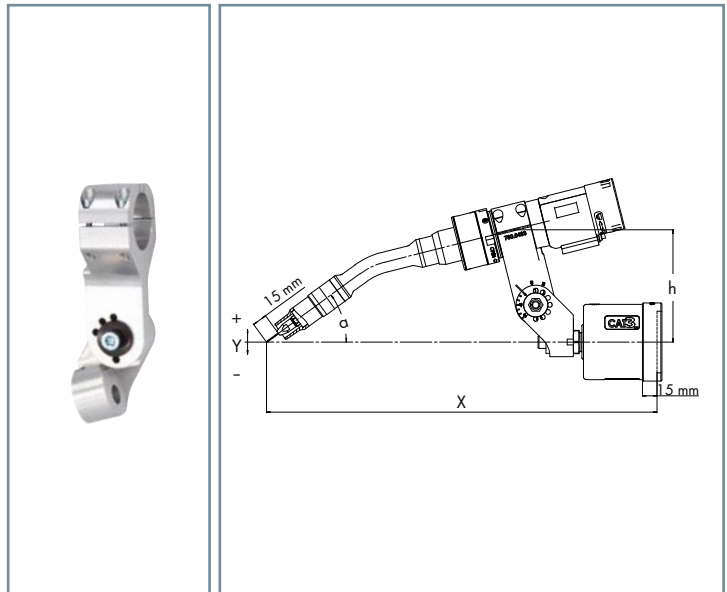
| Torch type | Torch geometry | X | Y | h | a | Part-No. |
|------------|----------------|------|---|-----|-----|------------|
| | | (mm) | | | | |
| ABIROB® | 22° | 437 | 0 | 102 | 36° | 780.0430.1 |
| W300 | 45° | 416 | 0 | 104 | 53° | 780.0430.1 |
| ABIROB® | 22° | 399 | 0 | 103 | 33° | 780.0430.1 |
| W500 | 35° | 383 | 0 | 104 | 40° | 780.0430.1 |
| | 45° | 370 | 0 | 105 | 45° | 780.0430.1 |
| ABIROB® | 22° | 499 | 0 | 104 | 30° | 780.0430.1 |
| W500 | 35° | 484 | 0 | 105 | 39° | 780.0430.1 |
| (+100 mm) | 45° | 470 | 0 | 105 | 45° | 780.0430.1 |
| ABIROB® | 22° | 440 | 0 | 104 | 32° | 780.0430.1 |
| W600 | 35° | 424 | 0 | 105 | 39° | 780.0430.1 |
| | 45° | 410 | 0 | 105 | 44° | 780.0430.1 |
| ABIROB® | 22° | 540 | 0 | 104 | 29° | 780.0430.1 |
| W600 | 35° | 525 | 0 | 105 | 38° | 780.0430.1 |
| (+100 mm) | 45° | 510 | 0 | 105 | 44° | 780.0430.1 |



Segment holder für ABIROB® W¹

in connection with CAT3

| Torch type | Torch geometry | X | Y | h | a | Part-No. |
|------------|----------------|------|-----|-----|-----|------------|
| | | (mm) | | | | |
| ABIROB® | 22° | 440 | +10 | 115 | 36° | 780.0433.1 |
| W300 | 45° | 413 | -19 | 115 | 59° | 780.0433.1 |
| ABIROB® | 22° | 400 | 0 | 115 | 36° | 780.0433.1 |
| W500 | 35° | 383 | 0 | 117 | 43° | 780.0433.1 |
| | 45° | 368 | 0 | 118 | 48° | 780.0433.1 |
| ABIROB® | 22° | 497 | -24 | 115 | 36° | 780.0433.1 |
| W500 | 35° | 475 | -51 | 115 | 49° | 780.0433.1 |
| (+100 mm) | 45° | 453 | -70 | 115 | 59° | 780.0433.1 |
| ABIROB® | 22° | 439 | -11 | 115 | 36° | 780.0433.1 |
| W600 | 35° | 416 | -40 | 115 | 49° | 780.0433.1 |
| | 45° | 393 | -61 | 115 | 59° | 780.0433.1 |
| ABIROB® | 22° | 536 | -36 | 115 | 36° | 780.0433.1 |
| W600 | 35° | 513 | -64 | 115 | 49° | 780.0433.1 |
| (+100 mm) | 45° | 490 | -86 | 115 | 49° | 780.0433.1 |



Further holders are available on request.

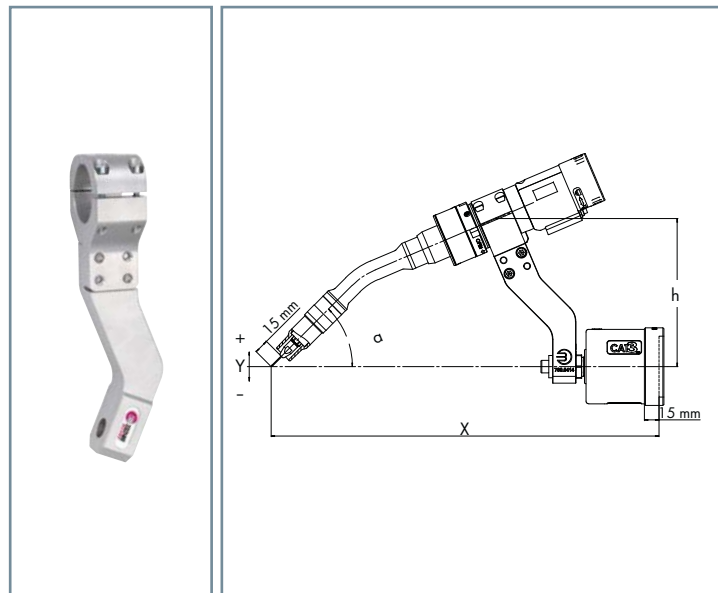
¹ Holder adjustable in 15° steps

"ABIROB® W" liquid cooled Holder & TCP Geometries

Fixed bracket for ABIROB® W

in connection with CAT3

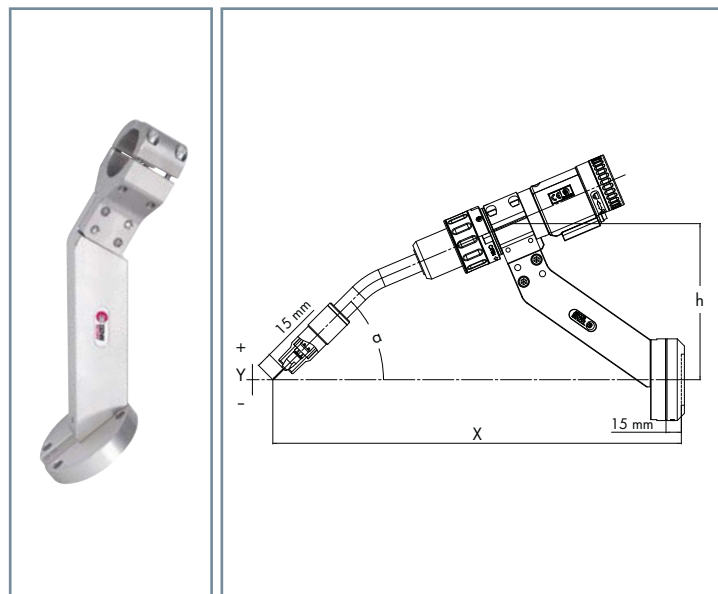
| Torch type | Torch geometry | X | Y | h | α | Part-No. |
|------------------------|----------------|------|---|-----|----------|------------|
| | | (mm) | | | | |
| ABIROB® W300 | 22° | 400 | 0 | 149 | 45° | 780.0444.1 |
| | 45° | 400 | 0 | 90 | 50° | 780.0446.1 |
| ABIROB® W500 | 22° | 400 | 0 | 153 | 45° | 780.0414.1 |
| | 35° | 400 | 0 | 125 | 45° | 780.0420.1 |
| | 45° | 400 | 0 | 126 | 50° | 780.0422.1 |
| ABIROB® W500 (+100 mm) | 22° | 500 | 0 | 192 | 45° | 780.0438.1 |
| | 35° | 500 | 0 | 142 | 45° | 780.0440.1 |
| | 45° | 500 | 0 | 134 | 50° | 780.0442.1 |
| ABIROB® W600 | 22° | 400 | 0 | 170 | 45° | 780.0781.1 |
| | 35° | 400 | 0 | 136 | 45° | 780.0782.1 |
| | 45° | 400 | 0 | 135 | 50° | 780.0784.1 |
| ABIROB® W600 (+100 mm) | 22° | 500 | 0 | 209 | 45° | 780.0785.1 |
| | 35° | 500 | 0 | 153 | 45° | 780.0786.1 |
| | 45° | 500 | 0 | 144 | 50° | 780.0788.1 |



RTM holder for ABIROB® W

for robots with collision software

| Torch type | Torch geometry | X | Y | h | α | Part-No. |
|------------------------|----------------|------|---|-----|----------|------------|
| | | (mm) | | | | |
| ABIROB® W300 | 22° | 400 | 0 | 149 | 45° | 780.0459.1 |
| | 45° | 400 | 0 | 90 | 50° | 780.0461.1 |
| ABIROB® W500 | 22° | 400 | 0 | 153 | 45° | 780.0449.1 |
| | 35° | 400 | 0 | 125 | 45° | 780.0451.1 |
| | 45° | 400 | 0 | 105 | 50° | 780.0453.1 |
| ABIROB® W500 (+100 mm) | 22° | 500 | 0 | 192 | 45° | 780.0455.1 |
| | 35° | 500 | 0 | 142 | 45° | 780.0457.1 |
| | 45° | 500 | 0 | 105 | 45° | 780.0453.1 |
| ABIROB® W600 | 22° | 400 | 0 | 170 | 45° | 780.0789.1 |
| | 35° | 400 | 0 | 136 | 45° | 780.0790.1 |
| | 45° | 400 | 0 | 135 | 50° | 780.0792.1 |
| ABIROB® W600 (+100 mm) | 22° | 500 | 0 | 198 | 45° | 780.0793.1 |
| | 35° | 500 | 0 | 153 | 45° | 780.0794.1 |
| | 45° | 500 | 0 | 144 | 50° | 780.0796.1 |



Further holders are available on request.

"ABIROB® W" liquid cooled Wire Brake Function



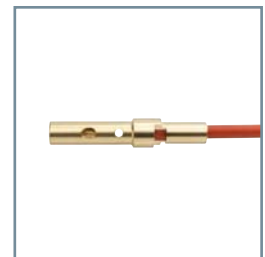
For tactile component search using the established ABIROB® W cable assembly, cable assemblies can now come with an optional wire clamp function to fix the wire. This function enables locking the wire in the cable assembly via a pneumatically operated piston that pushes the wire against an abutment. This ensures that the wire remains in position during sensing.

Arguments that speak for themselves:

- No displacement of wire through torch movement or contact with materials
- Guaranteed "Stick-Out" during tactile sensing
- Nearly every variation of the ABIROB® W cable assembly can be factory fitted with a wire brake function

Neck-Liners for wire brake

| for torch neck | for | Wire-Ø | Length | Part-No. |
|----------------|-------|----------|--------|------------|
| ABIROB® W300 | steel | 1.0- 1.2 | 255 mm | 149.0344.5 |
| ABIROB® W500 | steel | 1.0- 1.2 | 222 mm | 149.0287.5 |
| | | 1.4- 1.6 | 222 mm | 149.0289.5 |
| ABIROB® W600 | steel | 1.0- 1.2 | 248 mm | 149.0350.5 |
| | | 1.0- 1.2 | 348 mm | on request |
| | | 1.4- 1.6 | 248 mm | 149.0333.5 |
| | | 1.4- 1.6 | 348 mm | 149.0334.5 |



Cable assemblies with wire brake function

Cable assemblies ABIROB® W5H

(Recommended for amperages up to 400 A and cable assembly lengths up to 2.50 m.)

| with connection type | Length | Part-No. |
|-------------------------|--------|------------|
| ABICOR BINZEL® | 1.10 m | 782.1096.1 |
| Euro central connection | 1.35 m | 782.1097.1 |
| | 1.50 m | 782.1098.1 |

Cable assemblies ABIROB® W7F

(Recommended for amperages over 400 A.)

| with connection type | Length | Part-No. |
|-------------------------|--------|------------|
| ABICOR BINZEL® | 1.10 m | 782.1100.1 |
| Euro central connection | 1.35 m | 782.1101.1 |
| | 1.50 m | 782.1102.1 |

Other lengths are available on request.

The control cable is not pre-wired at the machine end. Power source specific types on request.

The steel liner 0.8- 1.2 mm is included in the scope of delivery. Please order other versions separately.