



New
KNL-360° Through-Arm
**TECHNICAL
GUIDE**

Robotic MIG Gun
CONSUMABLES, PARTS & ACCESSORIES

QUICK SPECS

DUTY CYCLE RATING

100%: 350 AMP w/ Mixed Gases

100%: 500 AMP w/ CO₂

60%: 500 AMP w/ Mixed Gases

PROCESSES

MIG (GMAW) Welding

COMPATIBLE ROBOTS

ABB®, OTC Daihen®, FANUC®,
 KUKA®, Motoman®, Panasonic®

KNL-360°

KNOW NO LIMITS



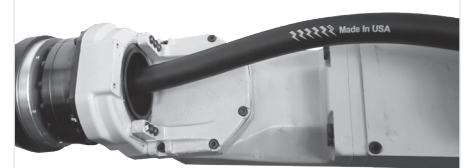
Repeatable TCP

Perform repeated, programmed movements with the highest degree of accuracy and spot-on precision, saving time and boosting productivity.



Infinite Rotation

Reduce programming time and wasted air time. For circular welds, KNL-360° reduces per-piece costs compared to old technologies.



Zero Cable Torsion

No matter how much the torch rotates, the cable never twists or tears. This extends the life of the cable and consumables dramatically.

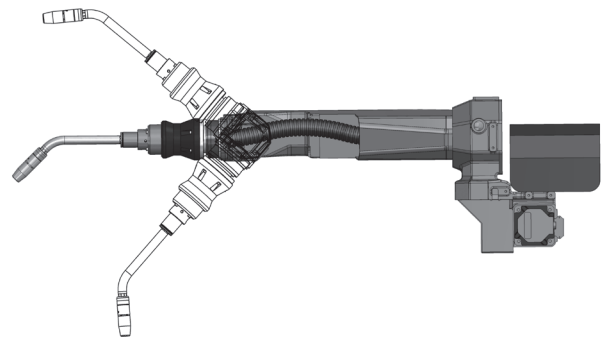
ROBOT ACTIVATION LIMITS

Feeder should be pressed all the way forward to allow for proper cable installation. When installed, cable should rise approximately 1-1/2 inches.

J5 activation limits are +/- 101 degrees.

The KNL-360° cable truly “knows no limits” on the sixth axis (J6). The only limits are those of the robot itself. Cable wear will not increase with infinite rotation.

The FANUC ARC Mate 100iC/12 has a limit of 630 degrees on the 6th axis, meaning you can rotate one way up to 630° with the KNL-360° but you would then have to revert from 630°, but you can do so at a time that best suits your program.



LIGHTNING® NOZZLE SELECTOR CHART (SLIP-ON)

SD Nozzle Part #	Bore/Material	O.D. / Length	Tip Location
63-2138	3/8" Copper	.938" / 2.75"	Flush
63-2150	1/2" Copper	.938" / 2.88"	1/8" Recess
63-2662	5/8" Copper	.938" / 2.63"	1/8" Stick out
63-2162	5/8" Copper	.938" / 2.88"	1/8" Recess
63-2175	3/4" Copper	.938" / 2.88"	1/8" Recess

HD Nozzle Part #	Bore/Material	O.D. / Length	Tip Location
65-2550	1/2" Copper	1.062" / 2.88"	1/8" Recess
65-2662	5/8" Copper	1.062" / 2.63"	1/8" Stick out
65-2362	5/8" Brass	1.062" / 2.63"	1/8" Stick out
63-2362	5/8" Brass	1.062" / 2.88"	1/8" Recess
65-2562	5/8" Copper	1.062" / 2.88"	1/8" Recess
65-2575	3/4" Copper	1.062" / 2.88"	1/8" Recess
64-2575	3/4" Copper	1.062" / 3.00"	1/4" Recess

*Threaded versions available for all nozzles.
Add the letter "T" to the end of the part number.*

LIGHTNING® LINERS

Part #	Wire Size	Length	O.D.
64-4306	.035" (.9mm)	6'	.175
64-4310	.035" (.9mm)	10'	.175
64-4506	.045" (1.6mm)	6'	.189
64-4510	.045" (1.6mm)	10'	.189
	3/64" (1.6mm)		
	.52" (1.6mm)		
	1/16" (1.6mm)		

LIGHTNING® RETAINING HEADS / DIFFUSERS

Part #	Description
65-3103-2	Retaining Head, Extra HD
63-3103-2	Retaining Head T/L
65-3116	Thread-on Retaining Head, Extra HD
63-3116	Thread-on Retaining Head HD

LIGHTNING® CONTACT TIP SELECTOR CHART

Part #	Contact Tip - Size
63-1130	Contact Tip HD .030 pk 10
63-1135	Contact Tip HD .035 pk 10
63-1135-40	Contact Tip HD .035 / .040 I.D. pk 10
63-1138	Contact Tip .030 Pk 10 Robotic
63-1140	Contact Tip HD .040 pk 10
63-1145-50	Contact Tip HD .045 pk 10
63-1147	Contact Tip HD 3/64" al pk 10
63-1152	Contact Tip HD .052 pk 10
63-1162	Contact Tip HD 1/16" pk 10
63-1168	Contact Tip HD .068 / .078 I.D. pk 10
63-1172	Contact Tip HD .072 pk 10 SPECIAL
63-1178	Contact Tip HD 5/64" pk 10
63-1193	Contact Tip HD 3/32" pk 10

Part #	Tapered Tip - Size
63-12XX	XX = use suffix from chart above

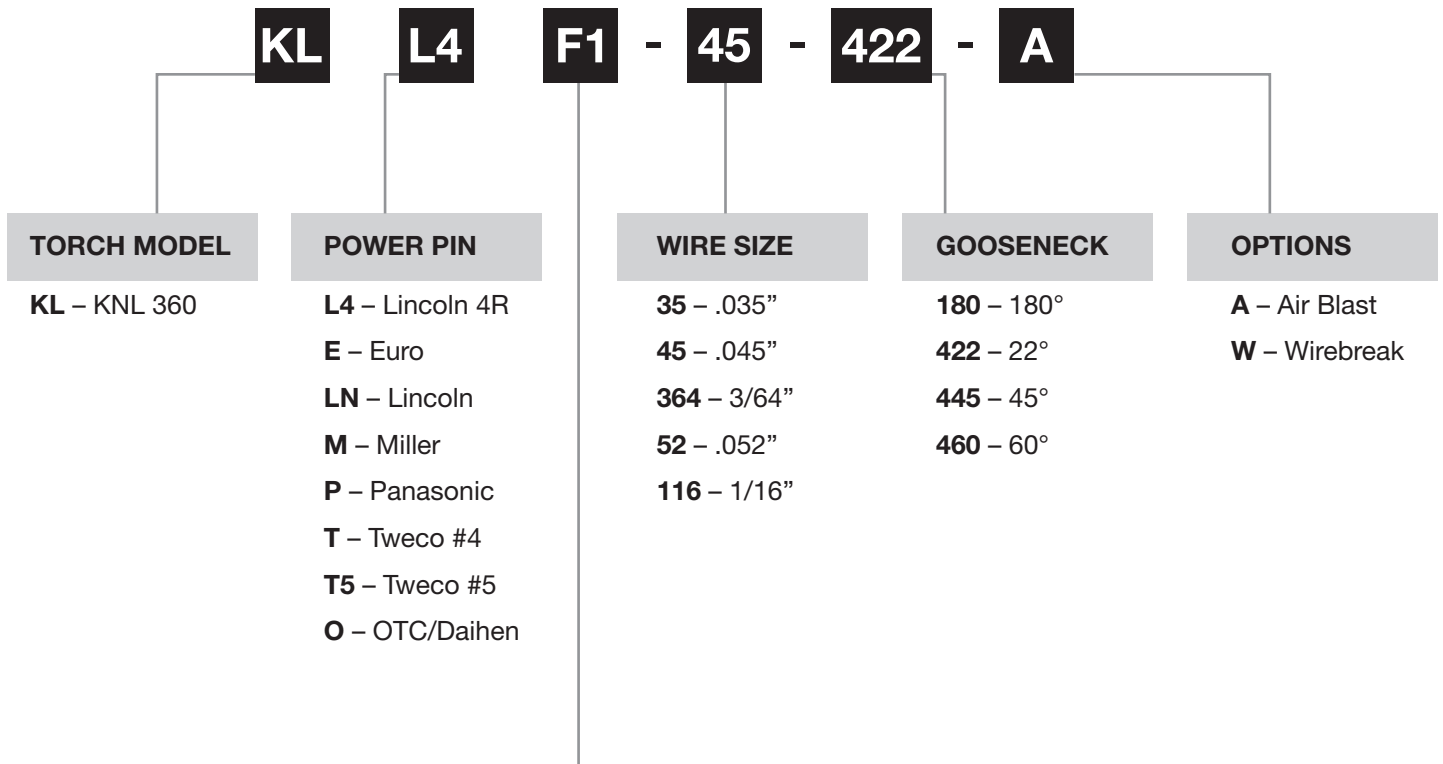
Part #	Heavy Duty Tip - Size
63-13XX	XX = use suffix from chart above

Part #	Extra Heavy Duty Tip - Size
65-11XX**	XX = use suffix from chart above

LIGHTNING® SHOCK WASHERS

Part #	Description
63-6202-HD	Shock Washer HD

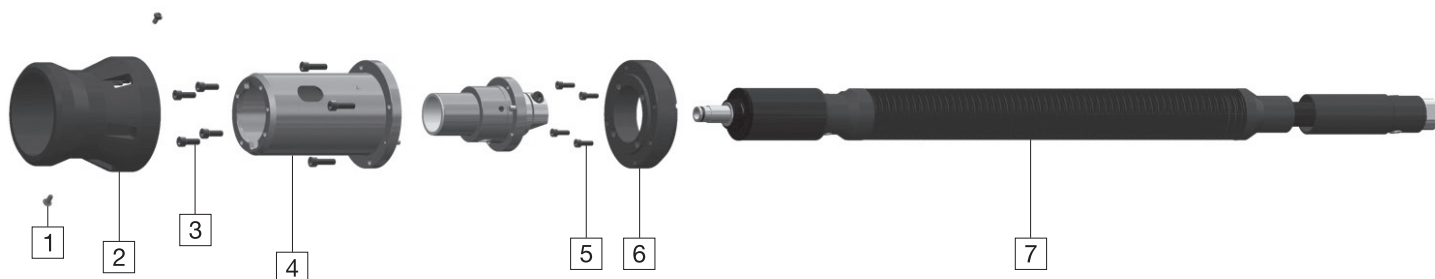
KNL-360° PARTS ORDERING SYSTEM



ROBOT MODEL

A1 – ABB 1520iD	F3 – FANUC 120iC	M4 – Motoman MA2010
A2 – ABB 1600iD	F4 – FANUC 100iC/6L, 100iC/12L	M5 – Motoman MA3100
A3 – ABB1660iD	F5 – FANUC 120iC/10L, 120iC/12L	M6 – Motoman MA3120
A4 – ABB2600iD	F6 – FANUC 100iC/8L	P1 – Panasonic TB1100/1400
D1 – OTC Daihen AX-V 4	K1 – KUKA KR5 HW	P2 – Panasonic TB1800
D2 – OTC Daihen AX-V 4L	K2 – KUKA KR16HW	P3 – Panasonic TM1400
D3 – OTC Daihen All-B4, FD-B4	K3 – KUKA KR16 L8 HW	P4 – Panasonic TM1800
D4 – OTC Daihen All-B4L, FD-B4L	M1 – Motoman EA & MA1400N, SSA2000	P5 – Panasonic TM1600
F1 – FANUC 710iC/12L	M2 – Motoman EA & MA 1900N	P6 – Panasonic TM2000
F2 – FANUC 100iC, 100iC/12L	M3 – Motoman MA1440	

KNL-360° TORCH COMPONENTS



Pos	Part #	Part Name	Notes
1		M4x0.7 Button Head Screws	2 pc.
2	KNL-TB-03	Outer Cover	
3		M5x0.8 Socket Head Cap Screws	4 pc.
4	KNL-TB-02	Torch Body	
5		Socket Head Cap Screws	Size and quantity dependent on robotic application
6	Dependent on robot	Breakaway Puck	
7	See table below	Rotating Cable	Cable shortened for demonstration purposes

Robot Brand	Robot Model	Part #	LSR Replacement
KUKA®	KR 5 arc HW	64-CK023	58CK023-KNL
	KR 16 arc HW	64-CK030	58CK030-KNL
	KR 16 L8 HW	64-SK027	58SK027-KNL
Motoman®	EA1400 XRC	64-CM016	58CM016-KNL
	EA1900 XRC	64-CM017	58CM017-KNL
	EA1400N, SSA2000, MA1400, VA1400	64-CM001	58CM001-KNL
	MA1440, AR1440, MH12	64-CM035	58CM035-KNL
	EA1900N	64-CM002	58CM002-KNL
	MA2010, AR2010	64-CM038	58CM038-KNL
	MA3100, MA3120	64-CM031	58CM031-KNL
ABB®	MH24, AR1730	64-CM039	58CM039-KNL
	IRB1600ID, IRB1520ID	64-SA024	58SA024-KNL
	IRB2600ID-15/1.85	64-SA028	58SA028-KNL
	IRB2600ID-8/2.00	64-SA029	58SA029-KNL
FANUC®	IRB1660ID	64-SA030	58SA030-KNL
	100iC, 100iC-12	64-SF005	58SF005-KNL
	100iC-6L, 100iC-7L	64-SF007	58SF007-KNL
	100iC-8L	64-SF010	58SF010-KNL
	120iC	64-SF006	58SF006-KNL
	120iC-10L, 120iC-12L	64-SF008	58SF008-KNL
M10iA-6L, M10iA-7L	64-SF007	58SF007-KNL	

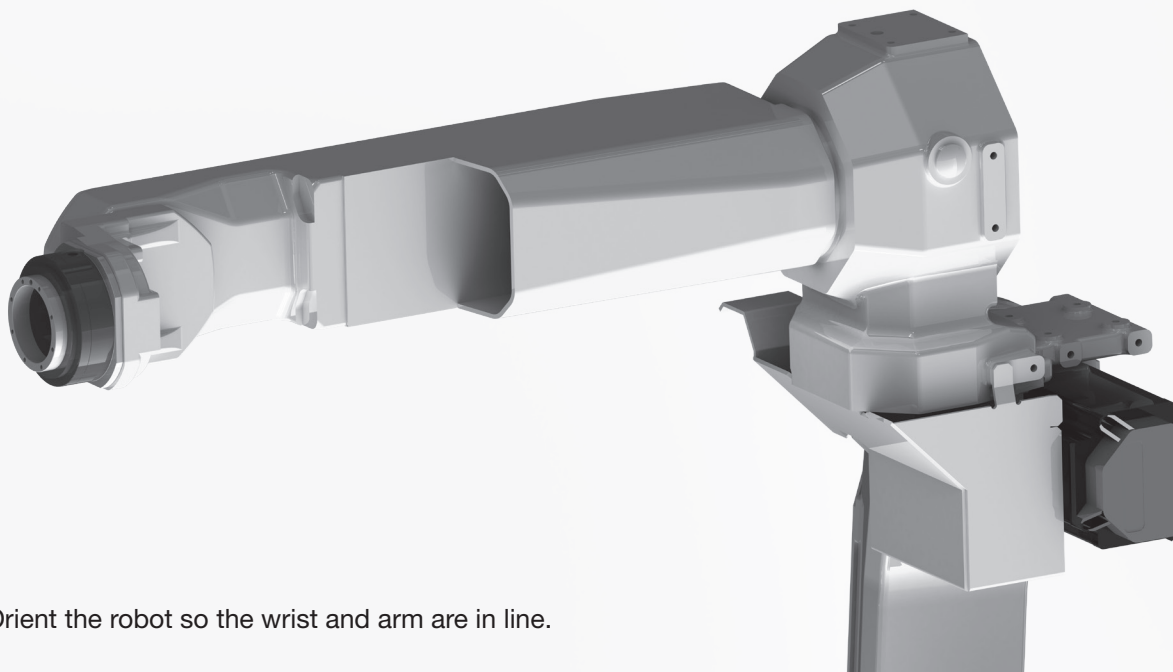
KNL-360°

KNOW NO LIMITS

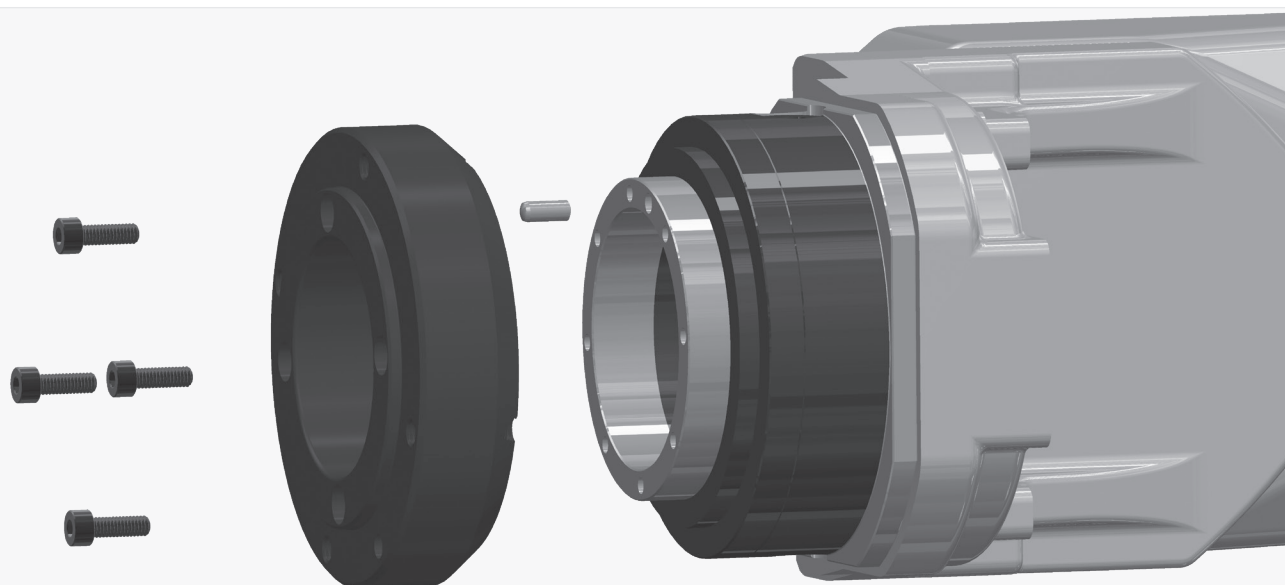
Installation

- Torch Body _____ 7 – 9
- Cable _____ 10 – 13
- Consumables _____ 14 – 15

INSTALLING THE TORCH BODY

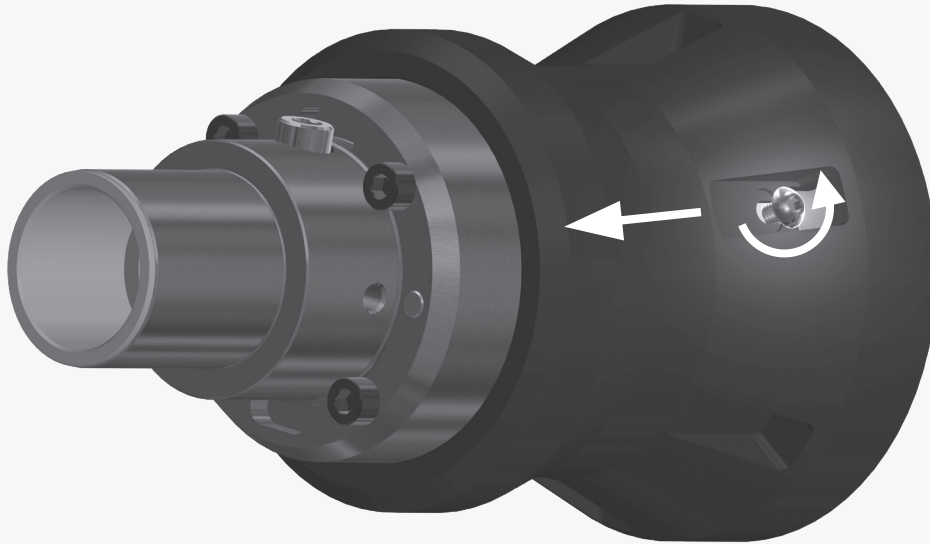
**1**

Orient the robot so the wrist and arm are in line.

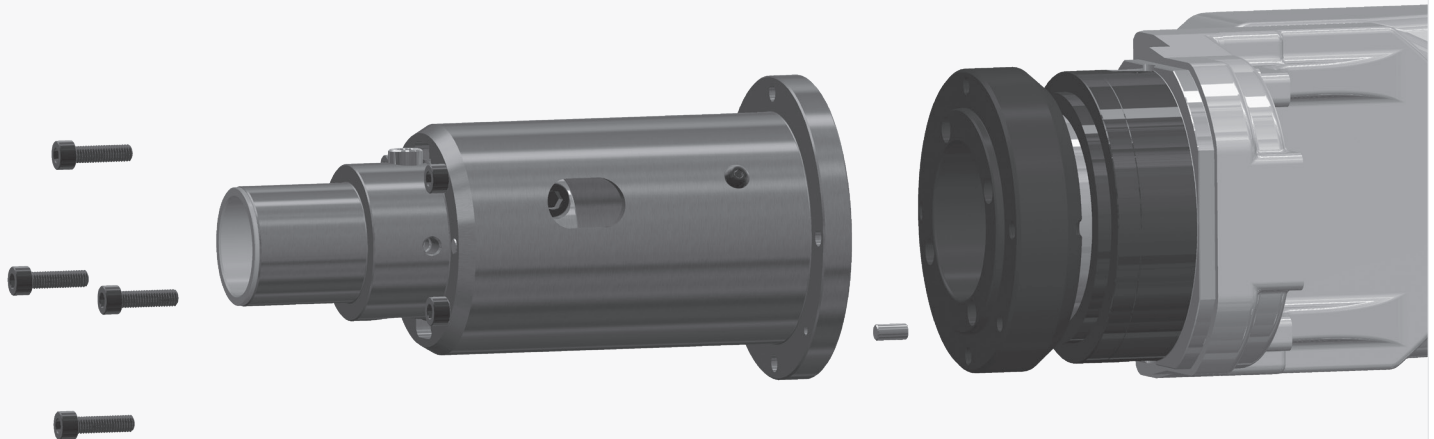
**2**

Align the flange adaptor to the robot via the dowel pin. Fasten using the provided socket head cap screws. **NOTE:** The pin will be pressed into the flange disc by the manufacturer.

INSTALLING THE TORCH BODY (CONT.)

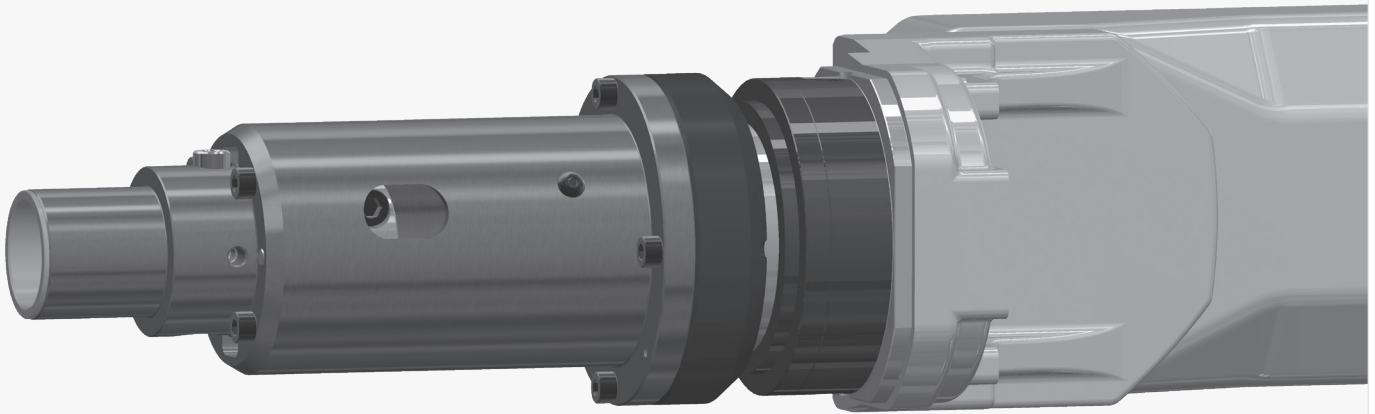
**3**

Remove the outer cover by loosening the 2 button head screws 1-1/4 turns. After loosening, the outer cover can be slid forward. **NOTE:** The button head screws do not need to be removed in order to free the outer cover.

**4**

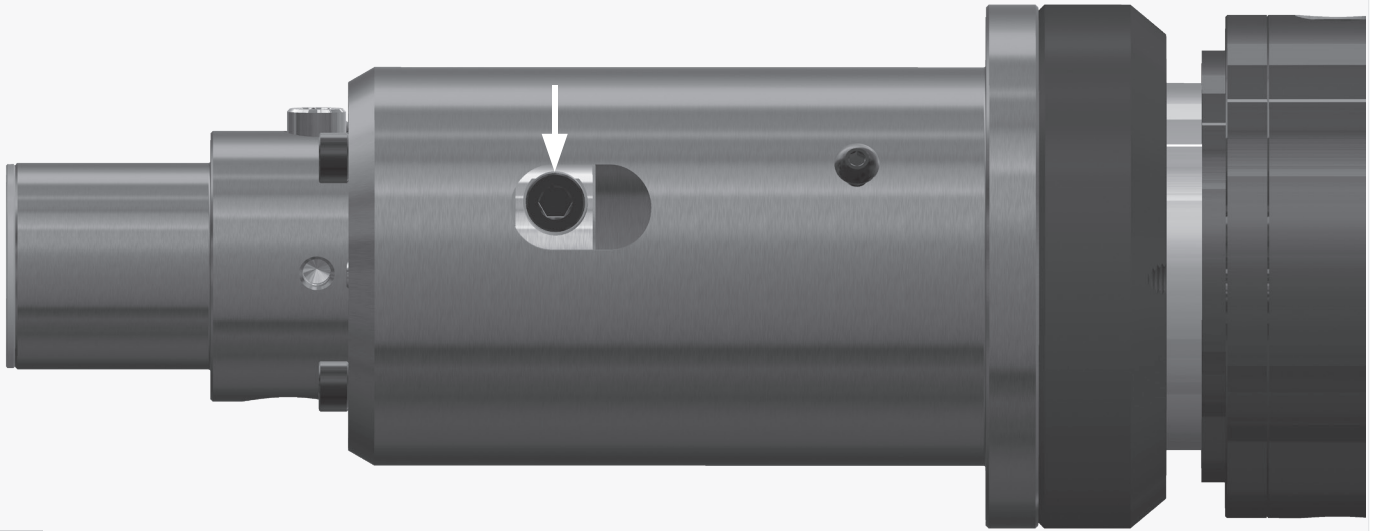
Align the torch body to the flange disc via the dowel pin. Fasten using the provided socket head cap screws. **NOTE:** The pin will be pressed into the torch body by the manufacturer.

INSTALLING THE TORCH BODY (CONT.)

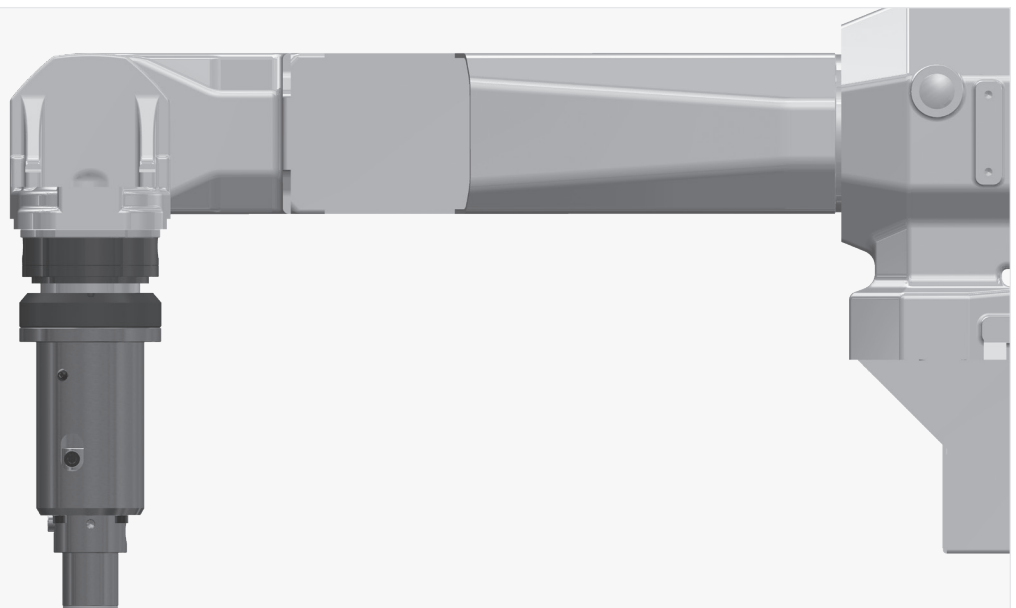
**5**

The torch body is now ready for the cable to be installed.

INSTALLING THE CABLE

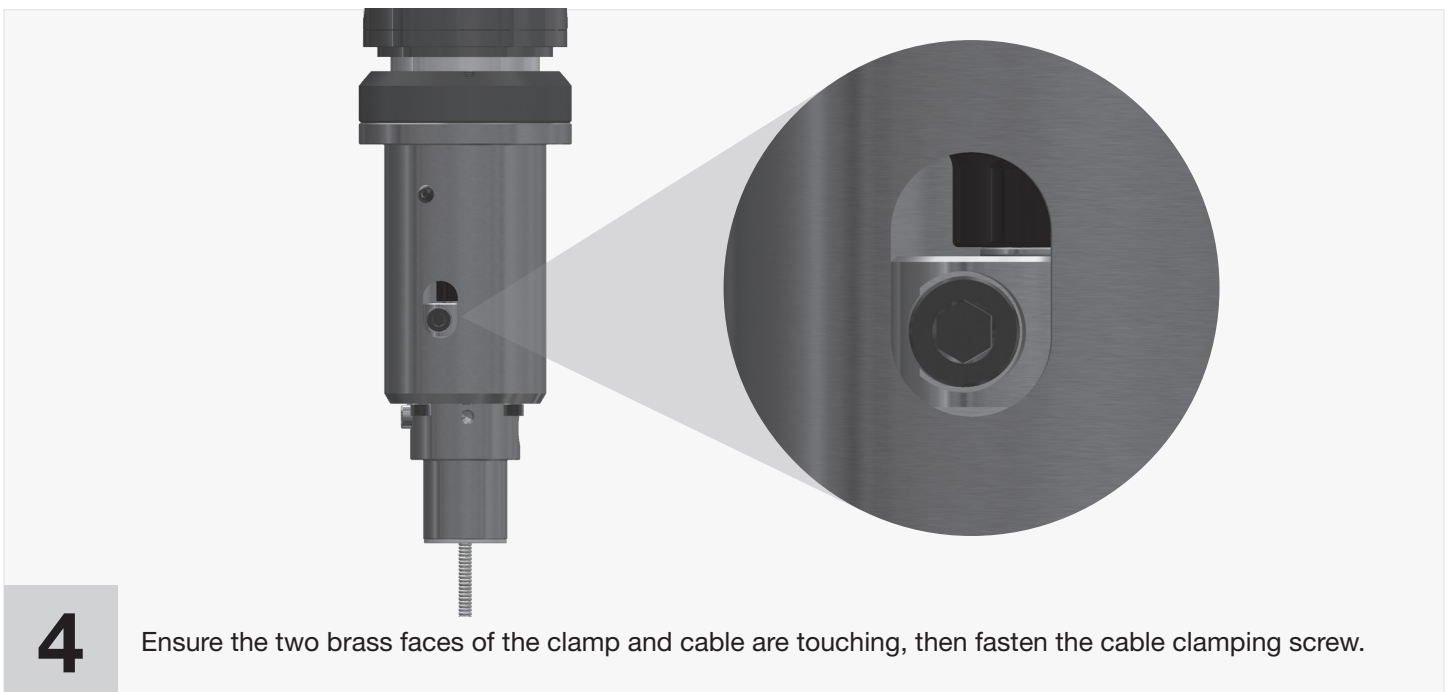
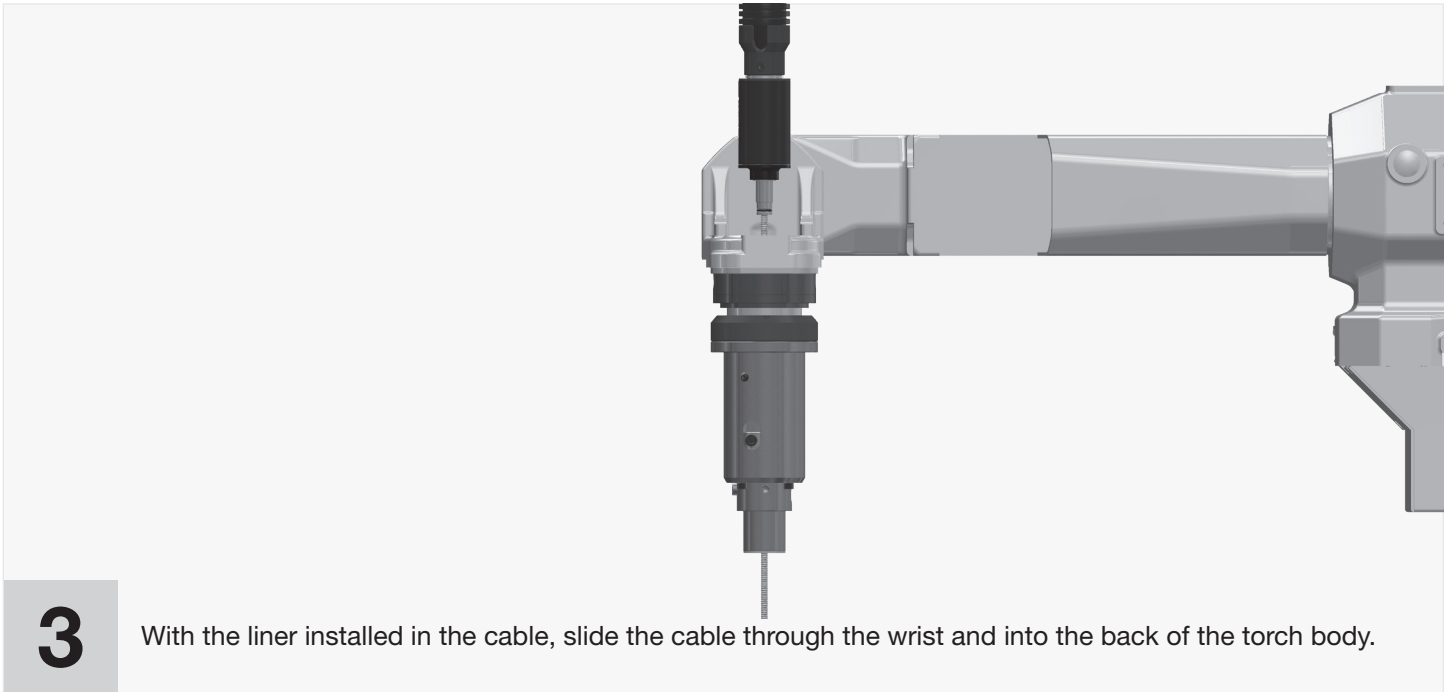
**1**

Loosen the cable clamping screw, but do not remove it.

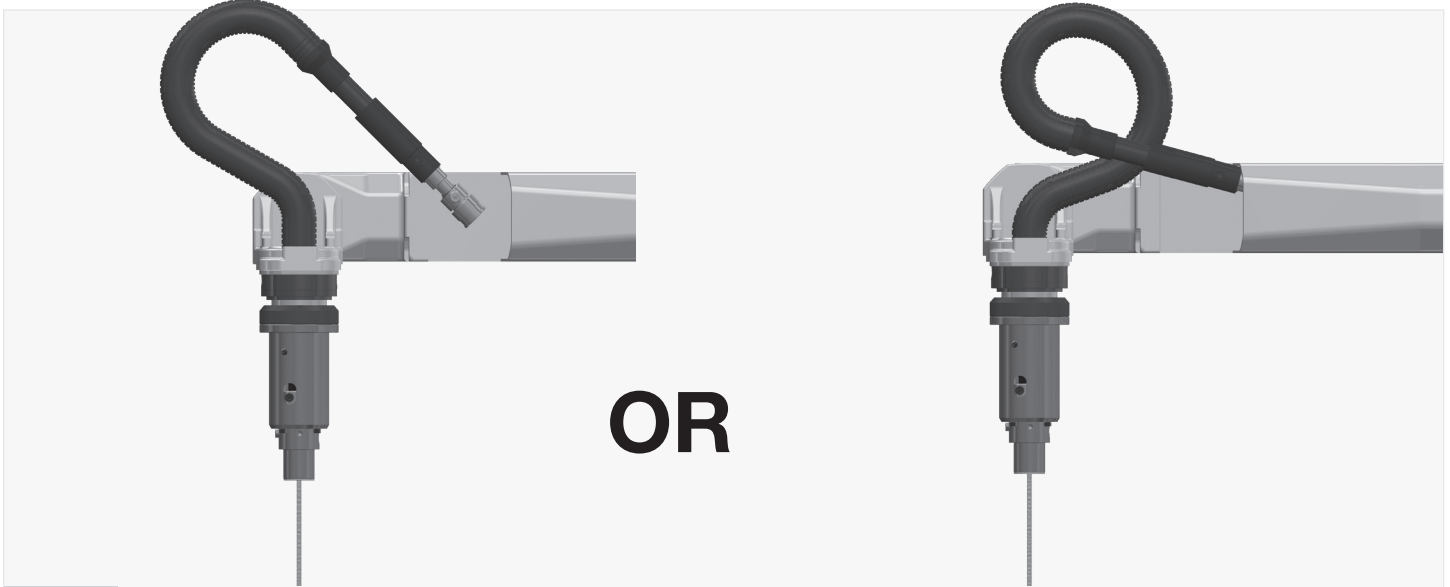
**2**

Orient the robot so the wrist is perpendicular to the arm.

INSTALLING THE CABLE (CONT.)

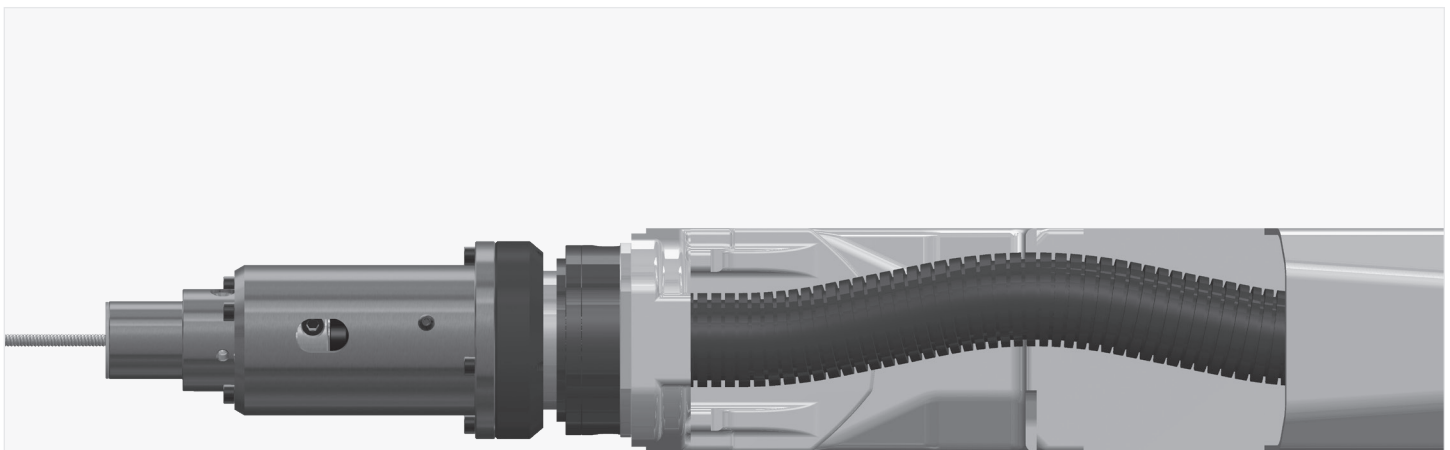


INSTALLING THE CABLE (CONT.)

**5**

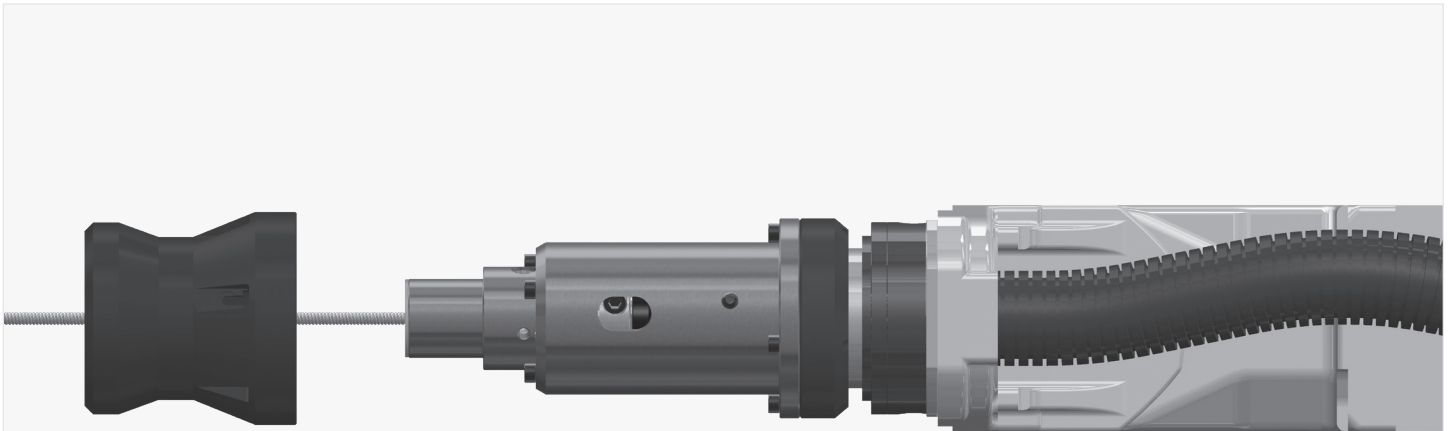
With the front end of the cable secured, install the power pin into the wire feed.

NOTE: The twisting motion shown on the right is not always necessary, but may be helpful in tight quarters. Power pin may vary from what is shown in the image above.

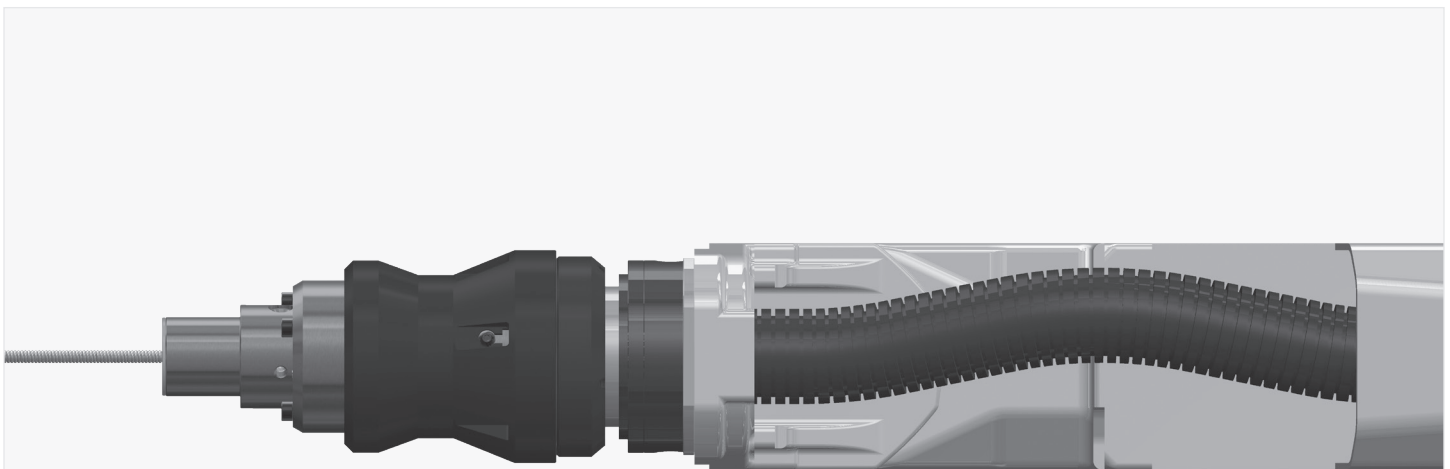
**6**

Orient the robot so the wrist and arm are in line. Verify the flex in the cable does not rise above the top edge of the robot arm. An ideal height of flex is shown in the image above. Adjust wire feeder if cable rise is too much or too little. Power pin extension is another option.

INSTALLING THE CABLE (CONT.)

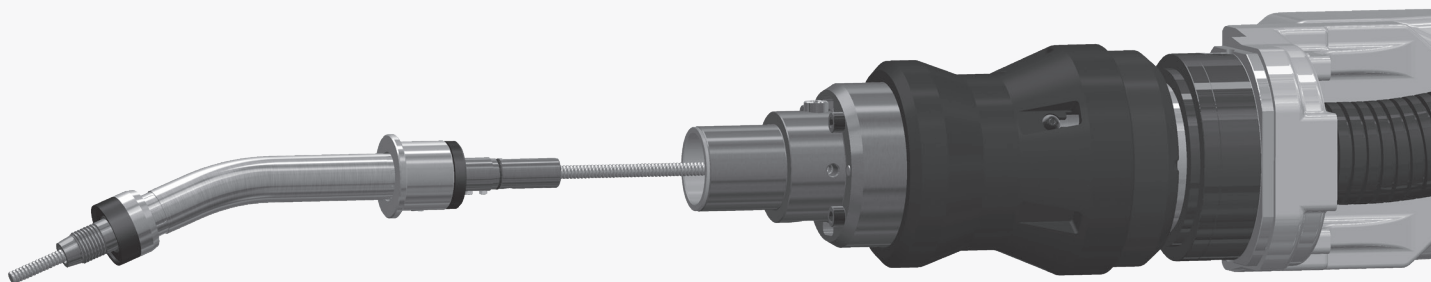
**7**

Align the receiving slots of the outer cover with the button head screws on the torch body. Slide the outer cover over the torch body and tighten the two screws until the cover is held in place. Do not overtighten.

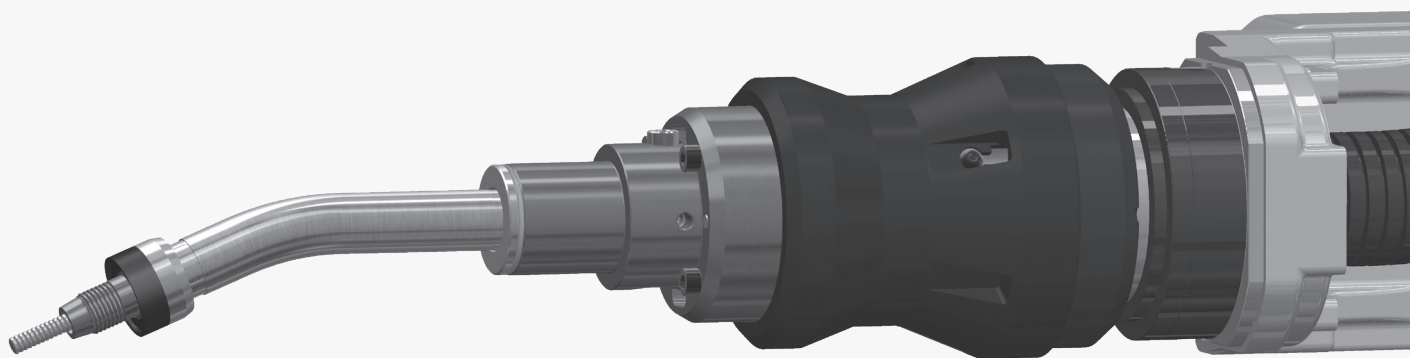
**8**

The cable is now installed on the torch body.

INSTALLING THE CONSUMABLES

**1**

Insert the gooseneck into the torch head until it is fully seated. Secure the gooseneck in place with a 5mm hex key. Do not overtighten or damage can occur.

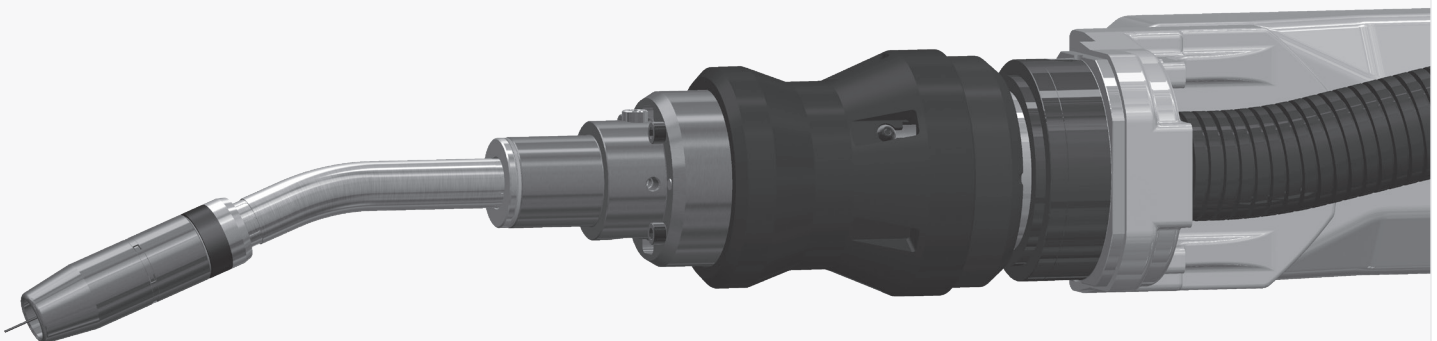
**2**

Trim the liner to $\frac{3}{4}$ " from the end of the gooseneck.

INSTALLING THE CONSUMABLES (CONT.)

**[A]****[B]****[C]****[D]****3**

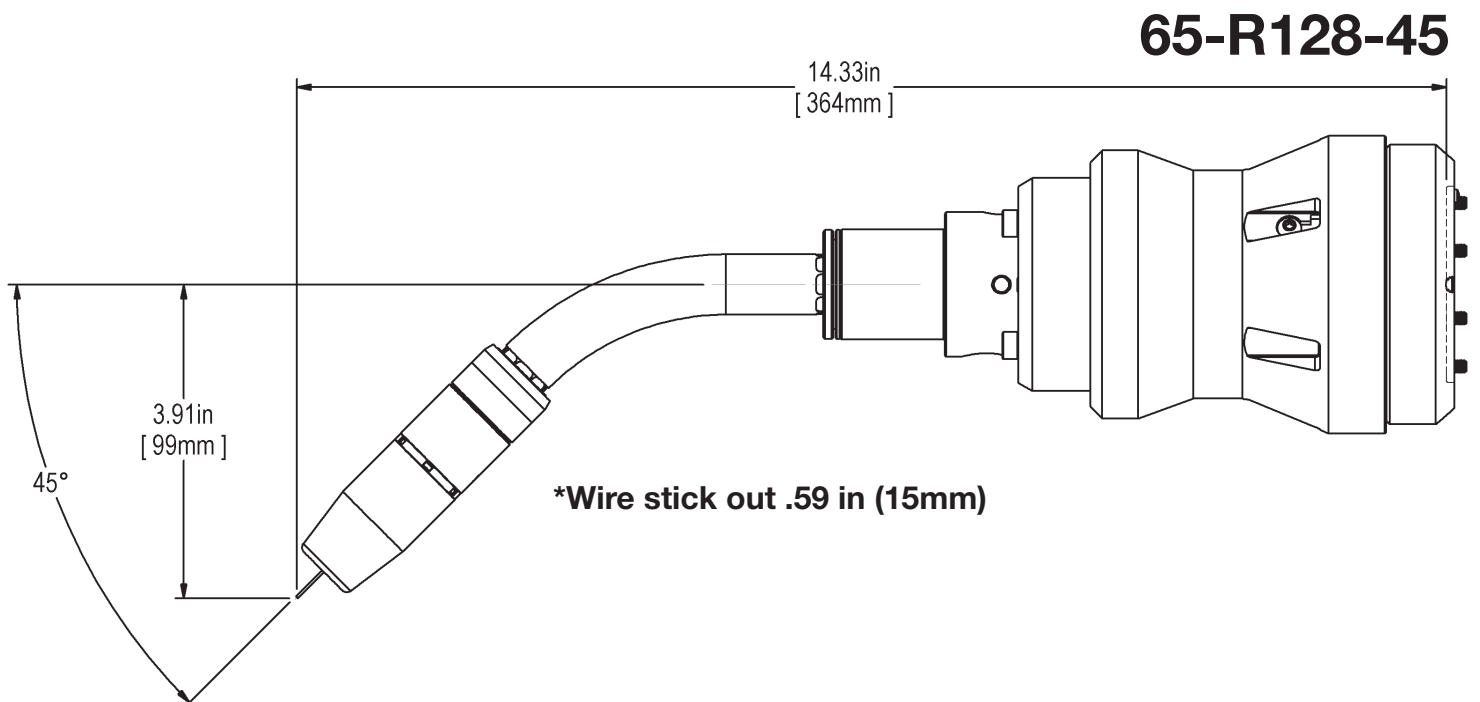
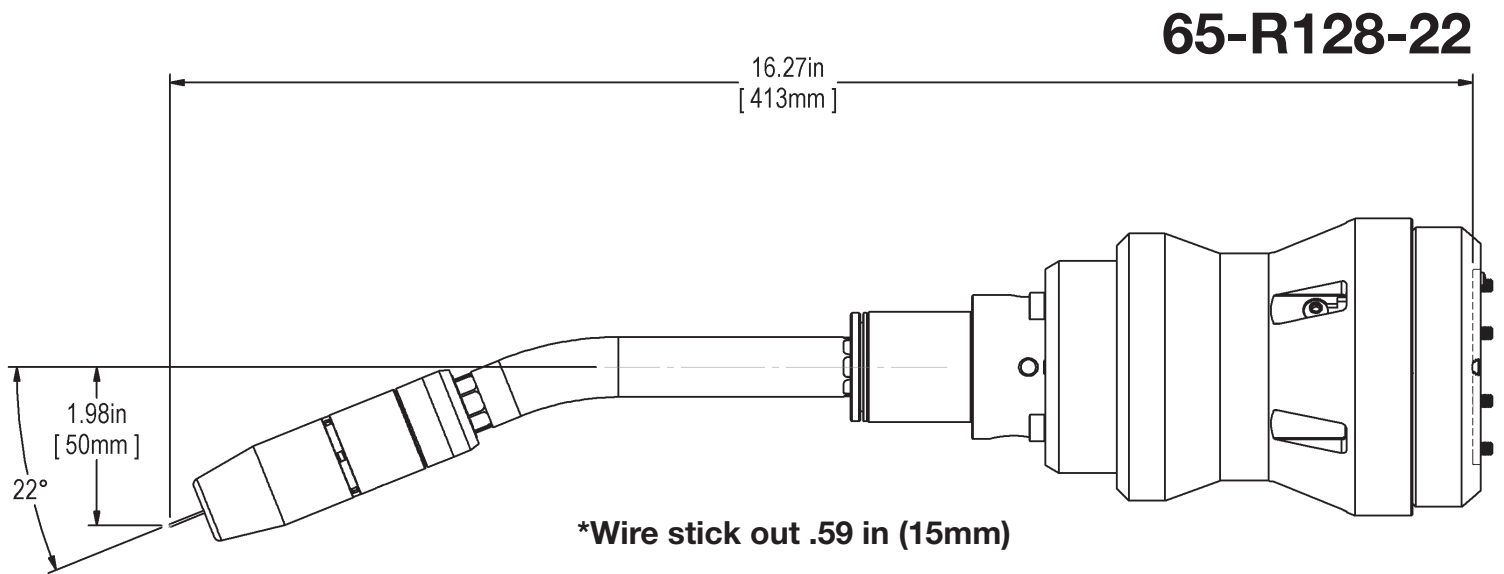
- **Step 1:** Thread the diffuser **[C]** onto the end of the gooseneck **[D]**. Make sure liner is fully seated and opening is clear. Tighten with 5/8" wrench.
- **Step 2:** Thread the contact tip **[B]** into the diffuser **[C]**. Be careful not to score the tip. Tighten to 30in.-lbs.
- **Step 3:** Slide the nozzle **[A]** over the diffuser **[C]** and contact tip **[B]**, pushing in onto the gooseneck **[D]** with a twisting motion.

**4**

The torch assembly is now complete.

TECHNICAL DATA

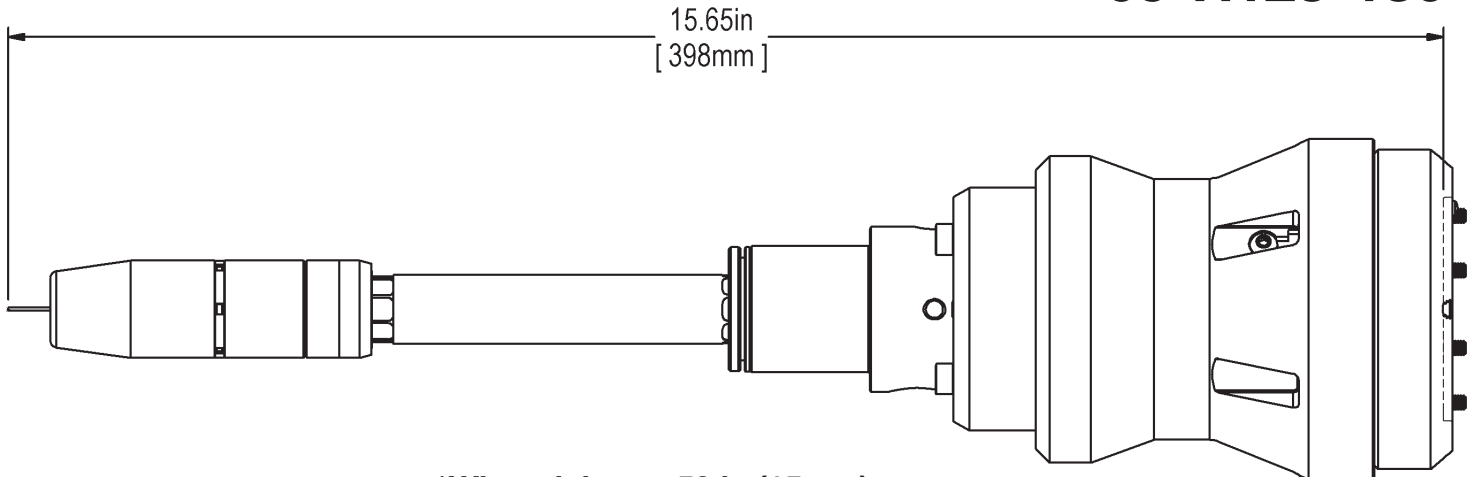
TCP DIMENSIONS



TECHNICAL DATA

TCP DIMENSIONS

65-R128-180



***Wire stick out .59 in (15mm)**

WARRANTY TERMS

American Torch Tip (ATTC) warrants its products to the original end user for the periods listed below:

		180 DAYS	ONE YEAR	THREE YEARS	LIFETIME
PLASMA	* PHD & PHDX Torch Bodies				●
	* Lightning® Handle & Trigger Switch				●
MIG	* Lightning® Semi-Automatic MIG Guns		●		
	* Lightning® Robotic MIG Guns		●		
	* Lightning® Fixed Automation MIG Guns		●		
	* All Other Gun Models	●			
GAS APPARATUS	* Complete Oxy-Fuel Kit Components			●	
	* Regulators/Flowmeters/Flowregulators			●	
	* Torches, Handles & Cutting Attachments			●	
TIG	* TIG Torches		●		
THERMAL SPRAY	* Thermal Spray Guns		●		

* *Limited Warranty on Manufacturing and Material Defects. Warranty Terms Do Not Apply to Consumable Products.*

WARRANTY TERMS

This warranty shall not apply to any product that has been modified or used in a manner inconsistent with ATTC's installation instructions and operating guidelines.

Within the warranty periods listed above and at ATTC's sole discretion, ATTC will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. ATTC must be notified within thirty (30) days of such defect or failure, at which time ATTC will determine if a Return Goods Authorization (RGA) is justified and issue an RGA number, authorization of a RGA number shall not be unreasonably withheld.

ATTC will supply a RGA form, which must be included with the returned products for inspection by ATTC. Shipping and packing costs shall be the responsibility of the party returning the goods. Once received, ATTC shall inspect and determine if a warranty claim is justified and at ATTC's sole discretion authorize a repair or replacement.

Once authorization has been granted ATTC shall provide instructions on the warranty claim procedures to be followed. Where authorized, repair or replacement constitutes the sole remedy for breach of warranty and expressly excludes claims for lost revenue, down time and other consequential damages. The warranty is limited to the conditions stated above and excludes, to the fullest extent permitted by law, all conditions, warranties and representations express or implied by statute, law or otherwise in relation to the supply or delay in supplying the goods/services.

There are no agreements, promises or understandings, either verbal or written that are not fully expressed in this warranty. This warranty may be amended or altered only if agreed to in writing and signed by ATTC.



CREATING A BETTER EXPERIENCE



Our mission at American Torch Tip is to create a better experience for our customers and the end users of our products. Creating a better experience is not just a tagline, it's at the heart of everything that we do.

— To that end, we commit to: —



Deliver The Greatest Possible Performance

We promise that all products manufactured by American Torch Tip will deliver the greatest possible performance for the operator. Offering six (6) welding and cutting platforms; we take our knowledge from each and use it to design the highest quality product.



Only Ship Products That Meet Our Standards

Our products are rigorously tested and inspected to meet high standards and ensure the highest quality.



100%

Always Do The Right Thing

We stand by our products with a 100% satisfaction guarantee. Should they not meet your expectations we will do what is in our power to make it right.



Ship In A Timely Manner

Any regular item we quote is available to ship within three (3) days unless otherwise stated. We have 6,000 items in stock and ready-to-order but also produce over 20,000 specialty and hard-to-find products every day.

THAT'S THE AMERICAN WAY

The American Way is symbolic of how we've done business as an American manufacturer since 1940. Treating our customers with the utmost respect and servicing their requests to the best of our abilities. Being a family owned company that creates domestic opportunities and employment for hard working Americans. Most of all, creating the best possible products that exceed the expectations of our customers.

LIGHTNING[®]

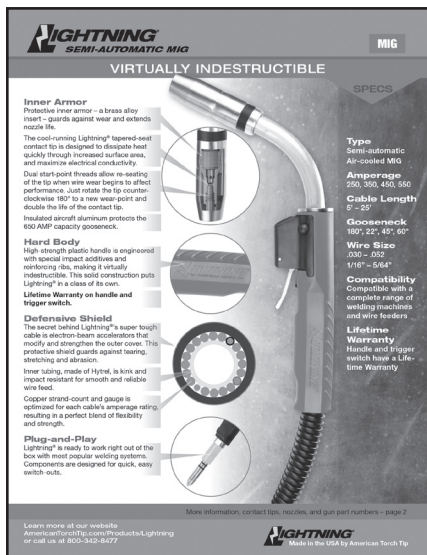
KNL-360° ROBOTIC

THANK YOU

For selecting the Lightning[®] KNL-360° Through-The-Arm Robotic MIG. The KNL-360° is for welding professionals who want durability and precision in harsh automated-welding environments. This technical guide with instructions and illustrations is designed to make it easy to maintain your KNL-360°. For technical support, please call our Customer Service department at 1-800-371-8477 or email us at sales@attcusa.com between 8:00 AM and 5:00 PM EST Monday through Friday. We are committed to providing the best-quality products and services. We are constantly working to improve our products. We would appreciate hearing your suggestions.

The LIGHTNING[®] Family of MIG Guns, Consumables and Accessories

Semi-Auto MIG Gun



LIGHTNING[®] SEMI-AUTOMATIC MIG

VIRTUALLY INDESTRUCTIBLE

Inner Armor
Protective inner armor – a brass alloy insert – guards against wear and extends nozzle life.
The cool-running Lightning[®] tapered-seat contact tip is designed to dissipate heat quickly through increased surface area, and maximize electrical conductivity.
Dual start-point threads allow re-seating of the tip when wire wear begins to affect performance. Just rotate the tip counter-clockwise 180° to a new wear-point and double the life of the contact tip.
Insulated aircraft aluminum protects the 650 AMP capacity gooseneck.

Hard Body
High-strength plastic handle is engineered with special impact additives and reinforcing ribs, making it virtually indestructible. The solid construction puts Lightning[®] in a class of its own.
Lifetime Warranty on handle and trigger switch.

Defensive Shield
The secret behind Lightning[®]'s super tough cable is electron-beam accelerators that modify and strengthen the outer cover. This protective shield guards against tearing, stretching and abrasion.
Inner tubing, made of Hytrel, is kink and impact resistant for smooth and reliable wire feed.
Copper strand-count and gauge is optimized for each cable's ampere rating, resulting in a perfect blend of flexibility and strength.

Plug-and-Play
Lightning[®] is ready to work right out of the box with most popular welding systems. Components are designed for quick, easy switch-outs.

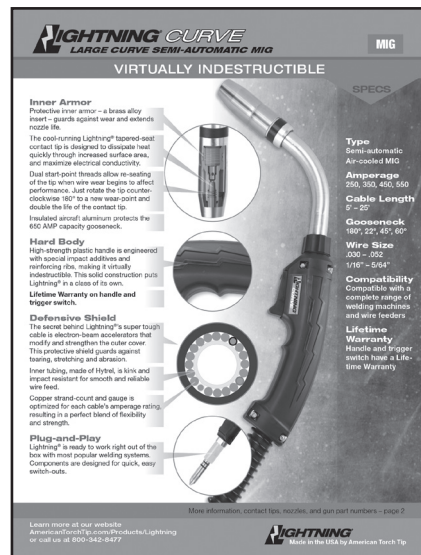
More information, contact tips, nozzles, and gun part numbers – page 2

Learn more at our website: AmericanTorchTip.com/Products/Lighting or call us at 800-342-8477

Lifetime Warranty
Handle and trigger switch have a Lifetime Warranty

Specs:
Type: Semi-automatic Air-cooled MIG
Amperage: 250, 300, 400, 500
Cable Length: 6' - 25'
Gooseneck: 180°, 22°, 45°, 60°
Wire Size: .030 - .052
1/16" - 5/64"

Large Curve MIG Gun



LIGHTNING[®] CURVE LARGE CURVE SEMI-AUTOMATIC MIG

VIRTUALLY INDESTRUCTIBLE

Inner Armor
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More information, contact tips, nozzles, and gun part numbers – page 2

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Specs:
Type: Semi-automatic Air-cooled MIG
Amperage: 250, 300, 400, 500
Cable Length: 6' - 25'
Gooseneck: 180°, 22°, 45°, 60°
Wire Size: .030 - .052
1/16" - 5/64"

Small Curve MIG Gun



LIGHTNING[®] CURVE SMALL CURVE SEMI-AUTOMATIC MIG

VIRTUALLY INDESTRUCTIBLE

Inner Armor
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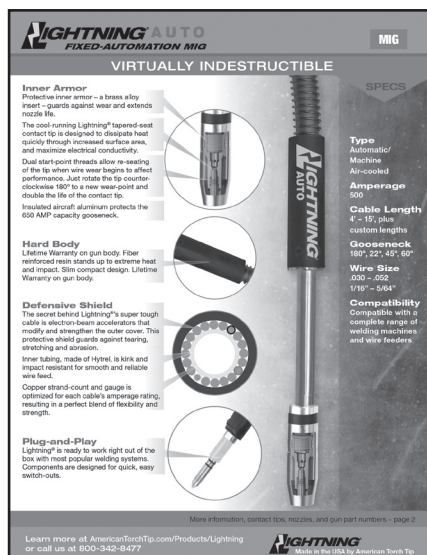
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Lifetime Warranty
Handle and trigger switch have a Lifetime Warranty

Specs:
Type: Semi-automatic Air-cooled MIG
Amperage: 250, 300, 400, 500
Cable Length: 6' - 25'
Gooseneck: 180°, 22°, 45°, 60°
Wire Size: .030 - .052
1/16" - 5/64"

Automatic MIG Gun



LIGHTNING[®] AUTO FIXED-AUTOMATION MIG

VIRTUALLY INDESTRUCTIBLE

Inner Armor
Protective inner armor – a brass alloy insert – guards against wear and extends nozzle life.
The cool-running Lightning[®] tapered-seat contact tip is designed to dissipate heat quickly through increased surface area, and maximize electrical conductivity.
Dual start-point threads allow re-seating of the tip when wire wear begins to affect performance. Just rotate the tip counter-clockwise 180° to a new wear-point and double the life of the contact tip.
Insulated aircraft aluminum protects the 650 AMP capacity gooseneck.

Hard Body
Lifetime Warranty on gun body. Fiber reinforced resin stands up to extreme heat and impact. Slim compact design. Lifetime Warranty on gun body.

Defensive Shield
The secret behind Lightning[®]'s super tough cable is electron-beam accelerators that modify and strengthen the outer cover. This protective shield guards against tearing, stretching and abrasion.
Inner tubing, made of Hytrel, is kink and impact resistant for smooth and reliable wire feed.
Copper strand-count and gauge is optimized for each cable's ampere rating, resulting in a perfect blend of flexibility and strength.

Plug-and-Play
Lightning[®] is ready to work right out of the box with most popular welding systems. Components are designed for quick, easy switch-outs.

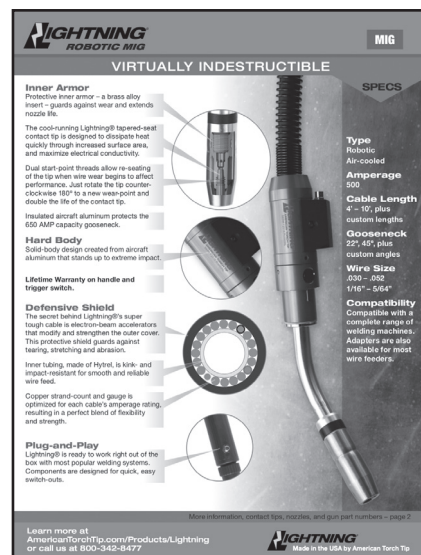
More information, contact tips, nozzles, and gun part numbers – page 2

Learn more at AmericanTorchTip.com/Products/Lighting or call us at 800-342-8477

Lifetime Warranty
on gun body

Specs:
Type: Automatic Machine Air-cooled
Amperage: 500
Cable Length: 4' - 15', plus custom lengths
Gooseneck: 180°, 22°, 45°, 60°
Wire Size: .030 - .052
1/16" - 5/64"

Robotic MIG Gun



LIGHTNING[®] ROBOTIC MIG

VIRTUALLY INDESTRUCTIBLE

Inner Armor
Protective inner armor – a brass alloy insert – guards against wear and extends nozzle life.
The cool-running Lightning[®] tapered-seat contact tip is designed to dissipate heat quickly through increased surface area, and maximize electrical conductivity.
Dual start-point threads allow re-seating of the tip when wire wear begins to affect performance. Just rotate the tip counter-clockwise 180° to a new wear-point and double the life of the contact tip.
Insulated aircraft aluminum protects the 650 AMP capacity gooseneck.

Hard Body
Solid body design created from aircraft aluminum that stands up to extreme impact.
Lifetime Warranty on handle and trigger switch.

Defensive Shield
The secret behind Lightning[®]'s super tough cable is electron-beam accelerators that modify and strengthen the outer cover. This protective shield guards against tearing, stretching and abrasion.
Inner tubing, made of Hytrel, is kink and impact-resistant for smooth and reliable wire feed.
Copper strand-count and gauge is optimized for each cable's ampere rating, resulting in a perfect blend of flexibility and strength.

Plug-and-Play
Lightning[®] is ready to work right out of the box with most popular welding systems. Components are designed for quick, easy switch-outs.

More information, contact tips, nozzles, and gun part numbers – page 2

Learn more at AmericanTorchTip.com/Products/Lighting or call us at 800-342-8477

Lifetime Warranty
on handle and trigger switch

Specs:
Type: Robotic Air-cooled
Amperage: 500
Cable Length: 4' - 10', plus custom lengths
Gooseneck: 22°, 45°, plus custom angles
Wire Size: .030 - .052
1/16" - 5/64"

