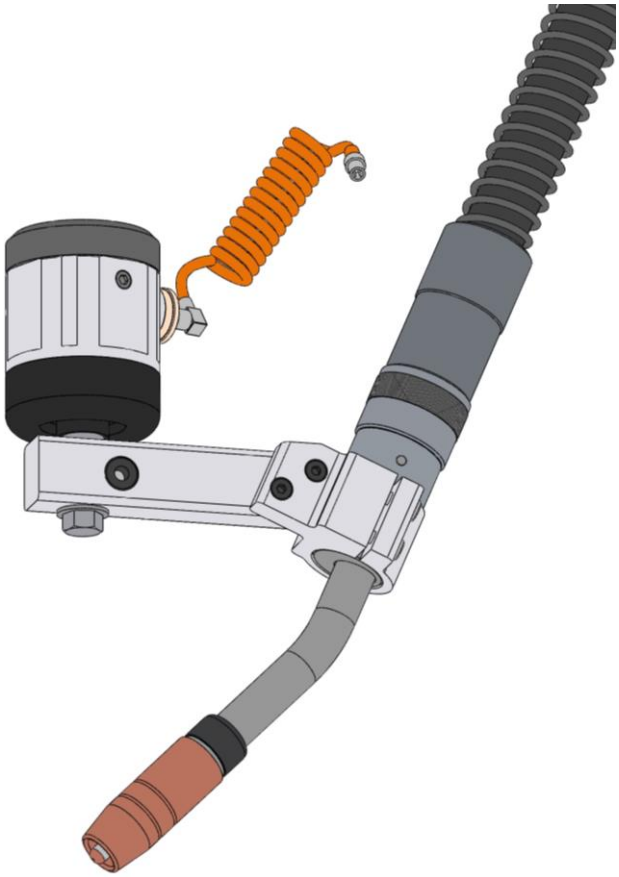


TECHNICAL GUIDE

For TOUGH GUN™ Robotic Water-Cooled MIG Guns 450 amp | 650 amp

- **SAFETY & WARRANTY INFORMATION**
- **INSTALLATION**
- **MAINTENANCE GUIDE**
- **TECHNICAL DATA**
- **OPTIONS**
- **EXPLODED VIEW & PARTS LIST**
- **TROUBLE SHOOTING**
- **ORDERING INFORMATION**

Certified ISO 9001:2008
Please read instructions prior to use.
Save this manual for future reference.

TABLE OF CONTENTS

WARRANTY

Product is warranted to be free from defects in material and workmanship for the period specified below after the sale by an authorized Buyer. Should there be a defect please refer to our Return Merchandise Policy.

PRODUCT	WARRANTY PERIOD
TOUGH GUN™ Robotic MIG Guns	180 days
TOUGH GUN Reamer	1 year
TOUGH GARD™ Spatter Cleaner	1 year
TOUGH GUN Robotic Peripherals (Clutch, Sprayer, Wire Cutter, Mounting Arms)	1 year
Low-Stress Robotic Unicables (LSR Unicables)	2 years

Tregaskiss reserves the right to repair, replace or refund the purchase price of non-conforming product. Product found not defective will be returned to the Buyer after notification by Customer Service.

Tregaskiss makes no other warranty of any kind, expressed or implied, including, but not limited to the warranties of merchantability or fitness for any purpose. Tregaskiss shall not be liable under any circumstances to Buyer, or to any person who shall purchase from Buyer, for damages of any kind. Including, but not limited to any, direct, indirect incidental or consequential damages or loss of production or loss of profits resulting from any cause whatsoever, including, but not limited to, any delay, act, error or omission of Tregaskiss.

Genuine Tregaskiss parts must be used for safety and performance reasons or the warranty becomes invalid. Warranty shall not apply if accident, abuse, or misuse damages a product, or if a product is modified in any way except by authorized Tregaskiss personnel.

GENERAL SAFETY

Before installation or operation of TOUGH GUN ROBOTIC MIG Guns, please read the safety precautions listed below.

1. Do not touch live electrical parts. The following should be checked to prevent electrical shock:
    - faulty or damaged equipment is repaired or replaced
    - equipment is off when not in use
2. Ensure that all safety devices, guards, shields or barriers are properly in place and connected correctly before allowing operation of the equipment.
3. CSA Standard W117.2 CODE FOR SAFETY IN WELDING AND CUTTING obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.
4. ANSI Standard Z49.1 CODE FOR SAFETY IN WELDING AND CUTTING obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

CALIFORNIA PROPOSITION 65 WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer.

This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. *Wash hands after use.*

(California Health & Safety Code Section 25249.5 at seq.)

THANK YOU…

…for selecting a Tregaskiss™ TOUGH GUN™ Robotic Water-Cooled MIG Gun. Manufacturing operations demand extremely dependable robotic equipment. With this in mind, the TOUGH GUN was designed and engineered to be a reliable tool to support high production within a robotic cell. As the name implies, the TOUGH GUN MIG Gun is made from durable materials and components engineered to perform in a rugged, welding environment.

The instructions and illustrations in this technical guide make it easy for you to maintain your TOUGH GUN MIG Gun. Please read, understand, and follow all safety procedures. Keep this Technical Guide booklet as a handy reference when ordering complete guns, parts and special options.

For technical support and special applications, please call the Tregaskiss Technical Service Department toll free (in North America) at 1-855-MIGWELD (644-9353) or fax 1-877-737-2111. Our trained technicians are available between 8:00 a.m. and 5:00 p.m. EST and will answer your application or repair questions.

Tregaskiss employees build TOUGH GUN MIG Guns for the world's welding professionals. We are always striving to improve our products and services, and would appreciate receiving your suggestions or comments. Please contact us immediately if you experience any safety or operating problems.

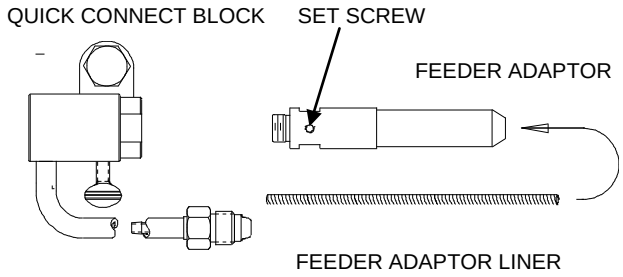
1.0 – INSTALLATION

WARNING: **Ensure water supply is on before operating gun.**

1.1 INSTALLING QUICK CONNECT BLOCK TO FEEDER

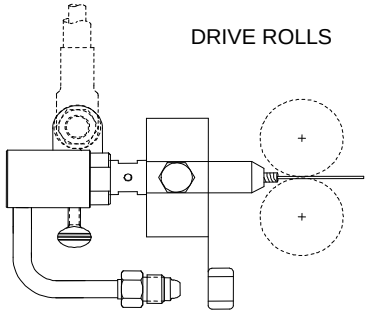
STEP #1

- Insert the correct feeder adaptor liner for desired wire diameter (2 provided) flush with the threaded end of the feeder adaptor.
- Tighten set screw.
- Thread feeder adaptor into Quick Connect block and tighten.



STEP #2

- Position assembly into feeder adaptor and trim liner within 1/16" (1.6 mm) of the drive rolls and remove burrs if necessary.
- Secure assembly into feeder.
- Thread gas hose nipple into feeder gas fitting.
- Connect power cable to 1/2" (13 mm) power bolt with appropriate lug.
- **Tighten all connections.**
- Feed welding wire through assembly by hand.

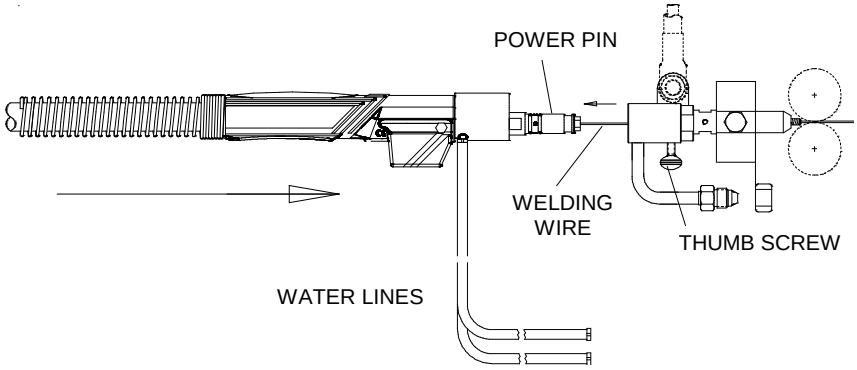


1.2 INSTALLING GUN TO QUICK CONNECT BLOCK

Ensure correct liner and contact tip are utilized. Examine and replace power pin o-rings if necessary.

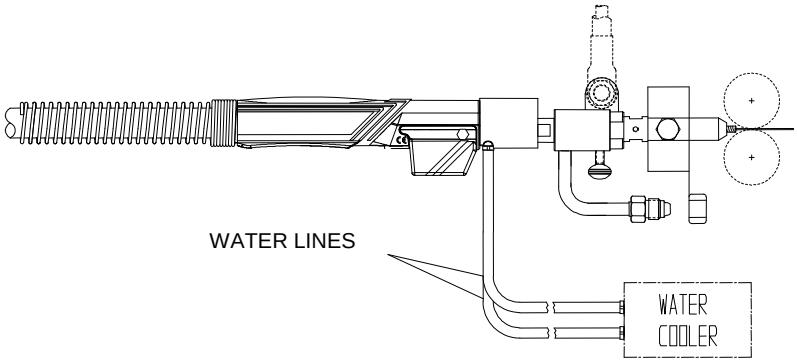
STEP #1

- Guide welding wire into power pin.
- Insert power pin to shoulder.
- Tighten thumbscrew securely.



STEP #2

- Securely clamp blue hose on rear housing to “Water Out” on water cooler and red hose on rear housing to “Water In” on water cooler.



***WARNING:* To prevent torch damage, it is highly advised that a Flow Sensor rated at 0.5gpm be used at all times (Part Number 659-50).**

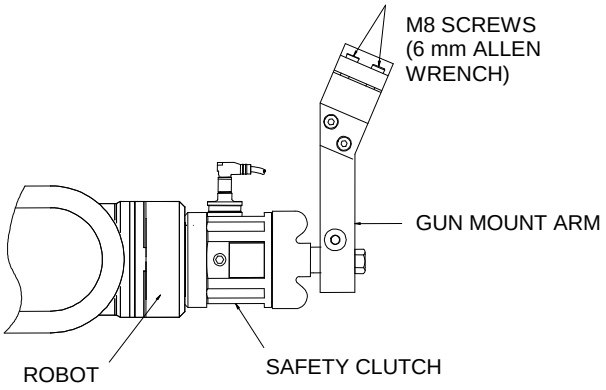
***WARNING*: Ensure water supply is on before operation.**

- Water flow sensor should be used to ensure water is on.
- Recheck proper gas flow, drive roll pressure, voltage, and wire feed speed

1.3 INSTALLING GUN TO GUN MOUNT ARM

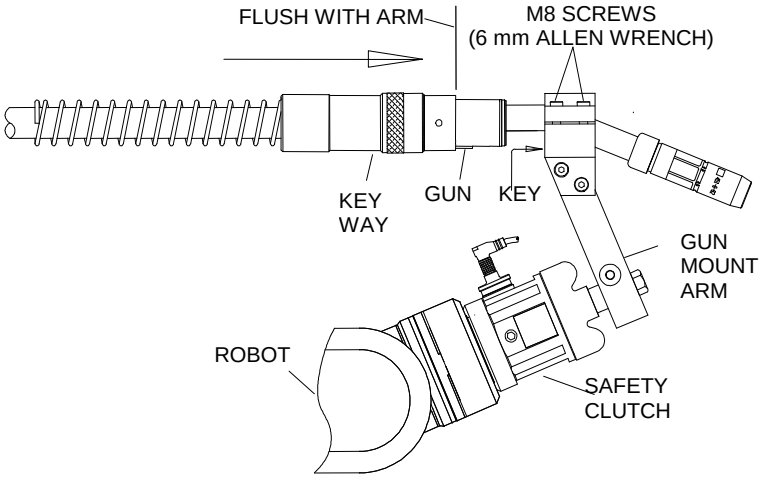
STEP #1

- With arm mounted to robot, loosen the two screws on gun mount arm with 6 mm Allen wrench.



STEP #2

- Insert gun, nozzle first, into opening of gun mount arm. Ensure that key on gun housing is lined up with and fully inserted into key way in gun mount arm.
- Tighten two screws on gun mount arm with 6 mm Allen wrench.

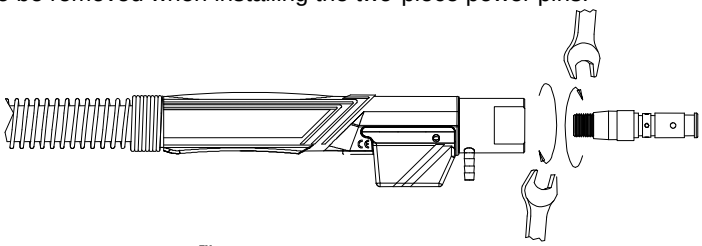


1.4 INSTALLING GUNS EQUIPPED WITH "DIRECT PLUG-INS"

IMPORTANT: The thread-in two-piece power pin incorporates a taper to seat and lock in the power pin to the rear handle block. Make sure power pin is tightened in the block with a wrench to insure pin is secure and will not come loose.

NOTE: The rear handle and screws do not have to be removed when installing the two-piece power pins.

- Thread power pin into the rear handle block.
- Tighten the power pin into the rear block using a 1 1/4" (32mm) wrench on the rear block and a 5/8" (16mm) or 3/4" (19mm) wrench on the power pin.
- Install liner. See Section 2.3 Liner Replacement
- Install gun to feeder. – See Below.



- **Miller®, Lincoln®, Hobart®, Tweco® #4 and #5 Power Pin**
  - Insert power pin to shoulder and secure.
  - Insert control plug to control housing of gun.
  - Insert control plug into feeder.
  - Feed welding wire into power pin by hand and tighten drive rolls.
  - On Lincoln® it is necessary to connect gas hose to barbed fitting on power pin.
- **Bernard™ Style and Euro-Connector**
  - Feed welding wire through female adaptor by hand and tighten drive rolls.
  - Guide welding wire into connector on gun, carefully insert connector into female adaptor and tighten Euro handnut or Bernard® style locking collar.
- **Esab® Power Pin (Non Euro Style)**
  - Insert power pin to shoulder and secure.
  - Feed welding wire into power pin by hand and tighten

2.0 – MAINTENANCE

2.1 NOZZLE AND CONTACT TIP SYSTEMS

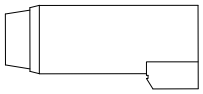
Removal - 650 amp

- Before removal of nozzle, ensure water supply is turned off. Water can be turned off by removing the neck.
- Flip nozzle clasp from neck and pull nozzle straight off.
- Remove contact tip using pliers.
- Remove retaining head using 1/2" wrench.

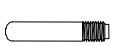
Removal - 450 amp

- Pull slip on nozzles off with a clockwise twisting motion.
- Remove contact tip using pliers.
- Remove retaining head using 1/2" wrench (5/8" TOUGH LOCK).

NOTE: Ensure that all parts are tightened before welding and water supply is turned on.

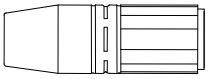


NOZZLE 650 AMP

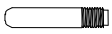


HEAVY DUTY CONTACT TIP CONVENTIONAL

RETAINING HEAD CONVENTIONAL

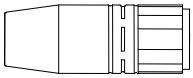


NOZZLE 450 AMP



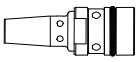
HEAVY DUTY CONTACT TIP CONVENTIONAL

RETAINING HEAD CONVENTIONAL



NOZZLE 450 AMP

HEAVY DUTY TOUGH LOCK CONTACT TIP

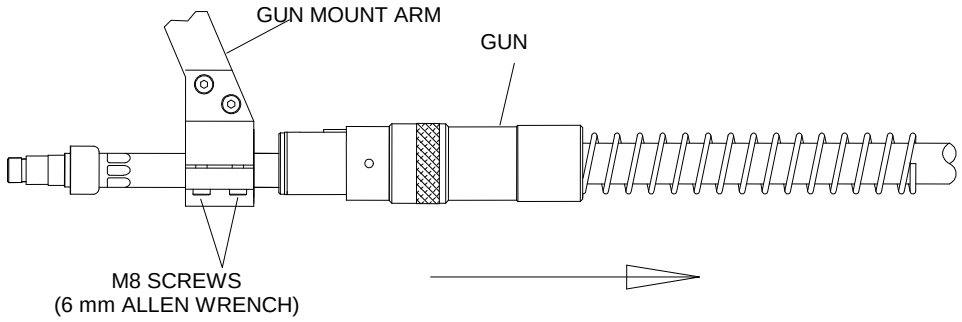


RETAINING HEAD TOUGH LOCK

2.2 NECK REPLACEMENT

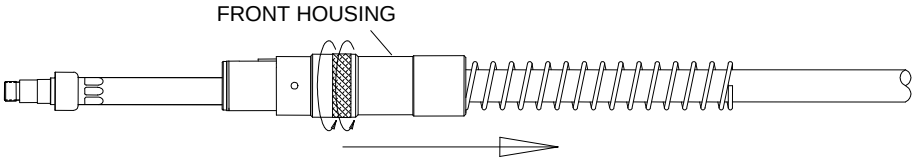
STEP #1

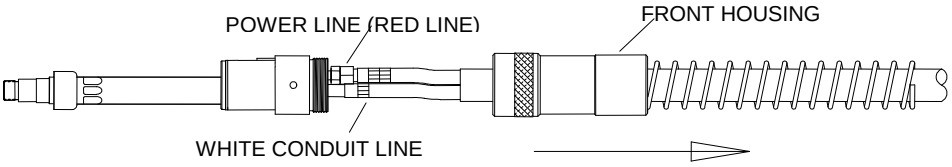
- Remove gun from gun mount arm by loosening screws with 6 mm Allen wrench and pulling gun through.



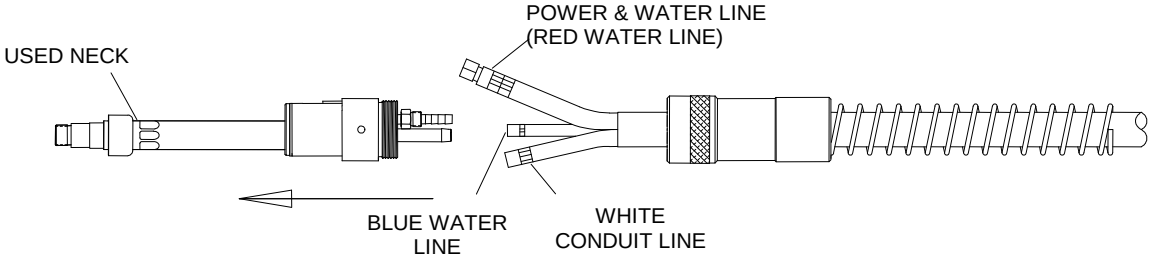
STEP #2

- Turn handnut on gun housing approximately three times counter-clockwise (until free floating).
- Pull handnut back to expose hose connections.





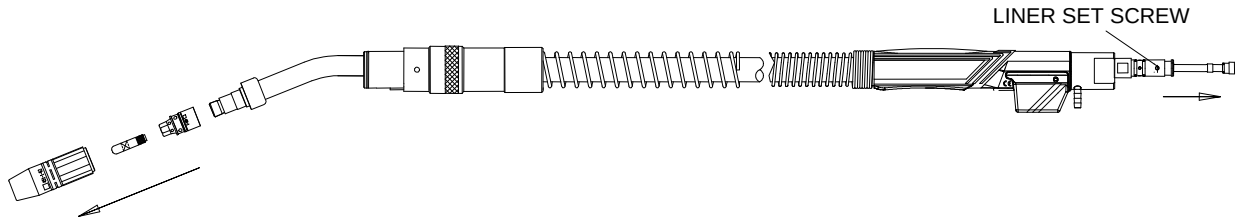
STEP #3



- Cut blue water line and white conduit line clamps and remove each line.
- Unthread red water line connections and remove neck.
- Reattach all lines and follow procedure in reverse order to assemble with replacement neck.

2.3 LINER REPLACEMENT

STEP #1

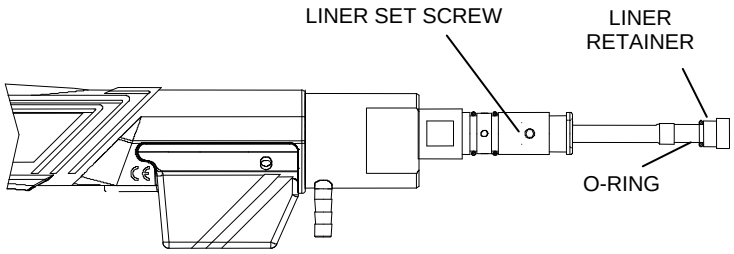


NOTE: Ensure power supply is off and gun is removed from feeder before proceeding.

- Remove nozzle, tip and gas diffuser.
- If power pin uses a liner set screw, loosen the set screw using a 5/64” Allen wrench.
- If power pin is thread-in liner type, using a 10 mm wrench, turn thread-in liner collet counter-clockwise until liner is free from the power pin.
- With gun straightened, grip conduit liner with pliers and remove.

STEP #2

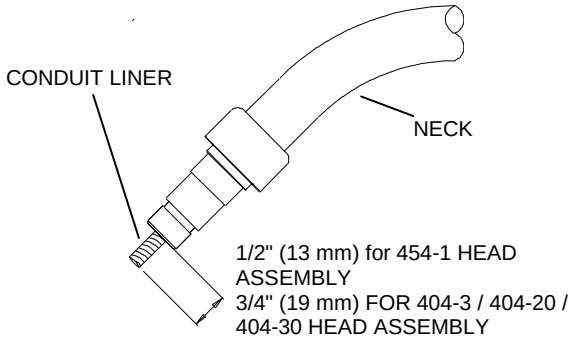
- Feed replacement liner through gun using short strokes to avoid kinking. Twist liner clockwise if necessary.
- If power pin uses a liner set screw:
- Seat liner retainer with o-ring to shoulder inside bore of power pin.
- Secure by tightening liner set screw. Do not overtighten.
- If power pin is thread-in type:
- Using a 10 mm wrench, turn thread-in liner retainer in a clockwise direction and tighten in power pin.



STEP #3

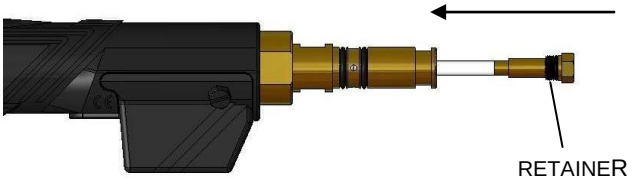
IMPORTANT

- If using the 454-1 Retaining Head, trim conduit liner with 1/2” (13 mm) stickout. If using the 404-3/404-20/404-30 retaining heads, trim conduit liner with 3/4" (19 mm) tip stickout
- Remove any burr that may obstruct wire feed, especially on flat wire type conduit liner.

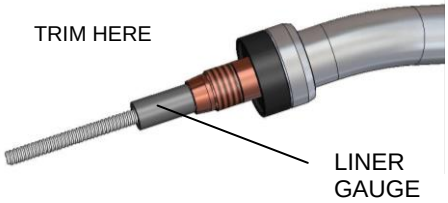


2.3.1 QUICK LOAD™ LINER REPLACEMENT

Initial installation – When replacing conventional liner with QUICK LOAD™ Liner:

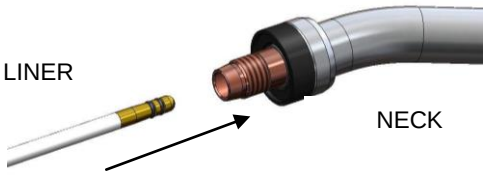


1. Install the initial QUICK LOAD Liner from the back of the gun with retainer attached (using the same procedure as installing a conventional liner). Future replacements will be done from the front.
2. Push liner back into gun and hold in place. Using liner gauge, trim conduit liner with 3/4" (20 mm) stick out.
3. Feed wire through liner.
4. Reinstall consumables.

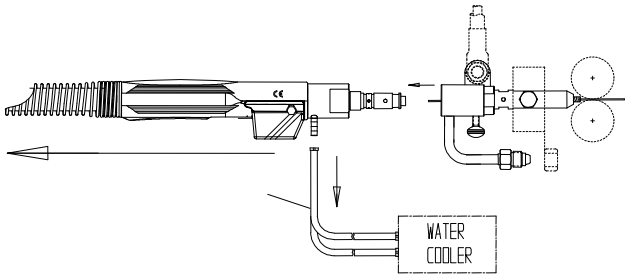


Replacement of QUICK LOAD Liner

1. Remove consumables (nozzle, contact tip and retaining head)
2. Remove existing QUICK LOAD Liner
3. Insert the liner through the neck using the wire as a guide. Short strokes will prevent the wire from kinking.
4. Once the liner stops feeding, give it an extra push to ensure it is inserted completely.
5. Using liner gauge, trim conduit liner with 3/4" (20 mm) stick out.
6. Feed wire through liner.
7. Reinstall consumables.



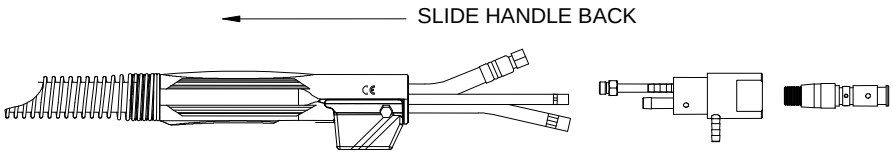
2.4 POWER PIN BLOCK REPLACEMENT



STEP #1

- Terminate water supply.
- Remove water lines from gun.
- Remove gun from feeder.
- Remove liner (ref. Section 2.3 "Liner Replacement").
- Remove 2 rear-housing screws with 5/16" nut driver.

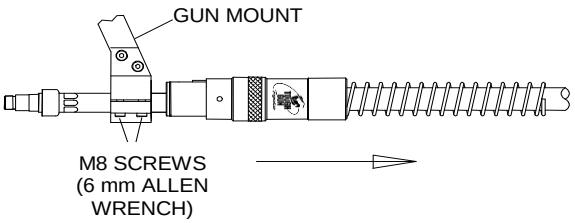
STEP #2



- Slide rear housing back to expose hose connections.
- Cut clamps on blue water line and white conduit line at unicable connection and remove lines.
- Unthread red water line connection and remove line.
- Replace used power pin with new one and repeat steps in reverse order to assemble.

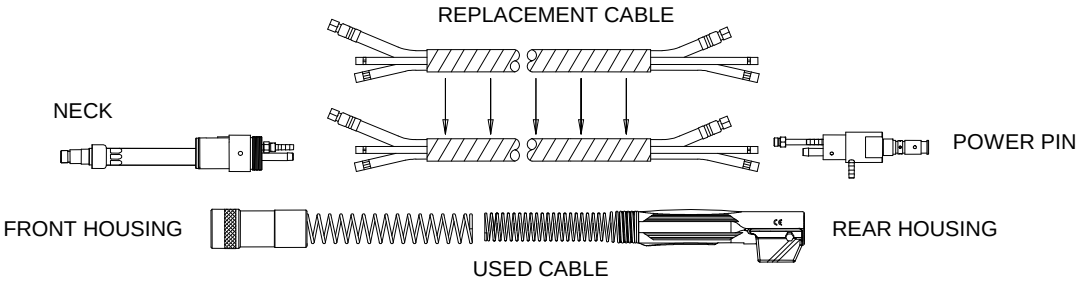
2.5 CABLE ASSEMBLY REPLACEMENT

STEP #1



- Loosen two screws on gun mount arm by using 6 mm Allen wrench and remove gun.
- Remove liner from gun (ref. Section 2.3 “Liner Replacement”).
- Remove neck from gun (ref. Section 2.2 “Neck Replacement”).
- Remove power pin and rear housing from gun.

STEP #2



- All parts should be removed at this point from the unicable.
- Repeat procedure in reverse to assemble gun with replacement cable.

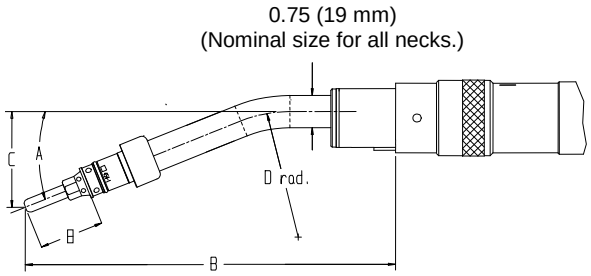
3.0 – TECHNICAL DATA

3.1 GUN AMPERAGE RATINGS

GUN MODEL	60% DUTY CYCLE - MIXED GASES OR 100% DUTY CYCLE - CO2
450 amp	450 amp
650 amp	650 amp

NOTE: Ratings are based on tests that comply with IEC 60974-7 standards.

3.2 NECK DIMENSIONS

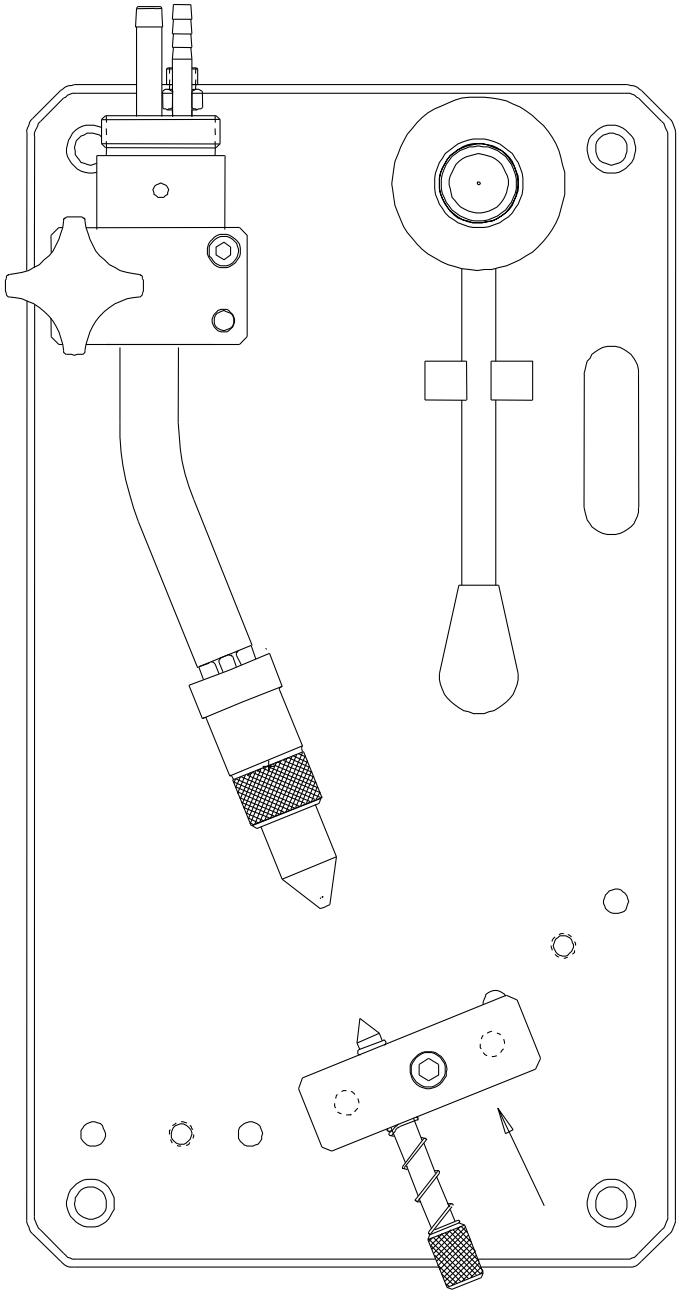


NECK	A	B		C		D		E	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
458-22	22°	8.55	217.2	2.23	56.5	3.00	76.2	1.493	37.9
458-45	45°	7.79	197.9	3.57	90.7	3.00	76.2	1.493	37.9
458-60	60°	7.23	183.6	5.30	134.6	3.00	76.2	1.493	37.9
458-180	180°	8.97	227.8	---	---	---	---	1.493	37.9
658-22	22°	8.55	217.2	2.23	56.5	3.00	76.2	1.493	37.9
658-45	45°	7.79	197.9	3.57	90.7	3.00	76.2	1.493	37.9
658-60	60°	7.23	183.6	5.30	134.6	3.00	76.2	1.493	37.9
658-180	180°	8.97	227.8	---	---	---	---	1.493	37.9

4.0 – TROUBLESHOOTING

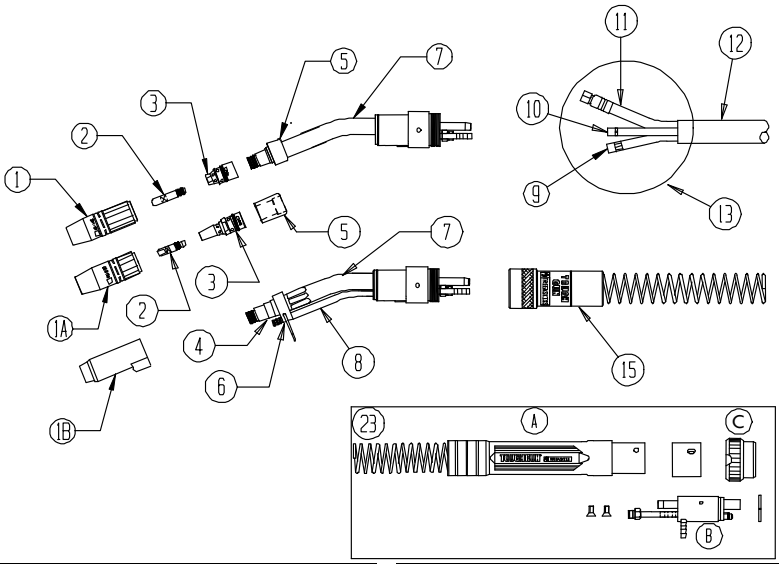
PROBLEM	POSSIBLE CAUSE
Poor Wire Feed	• conduit liner clogged or kinked • incorrect liner size or contact tip • liner cut too short and not seating properly in gas diffuser • drive rolls too tight resulting in scoring of welding wire • welding wire dirty, rusty or too much cast
Short Tip Life	• drive rolls too tight resulting in scoring of welding wire • welding wire dirty, rusty or too much cast • uncoated wire being used, increasing usage • wrong tip size • gun being run beyond its amperage range
Gun Overheating	• loose retaining screw on quick connect block • insufficient gauge power cable and/or ground cable • gun being run beyond its amperage range • electrical malfunction in power source
Weld Porosity	• spatter built up in nozzle blocking gas • leaks in gas hose or improper connection • rings on power pin are cut or damaged • inner tube loose from connector cone • poor wire feed (see above) • improper shielding gas or welding wire • rusty or poor quality welding wire • parent metal rusty or contaminated or high in sulphur content • gas flow improperly set
Gun Leaking	• power cable burnt • leak in neck • o-ring(s) on nozzle deteriorating (650 amp only)

5.0 – G-458 NECK INSPECTION SPECIFICATIONS



- Remove consumables from neck (nozzle, retaining head, neck insulator, etc.).
- Insert neck into fixture and tighten securely.
- Push check pin towards neck and see if point lines up with small hole in end of gauging point.
- If neck is not aligned, slip bending handle over gauging point and bend until alignment is correct.
- Remove gauging point and neck in reverse order as described above.
- Store parts for your fixture in the locations provided to prevent misplacing them.

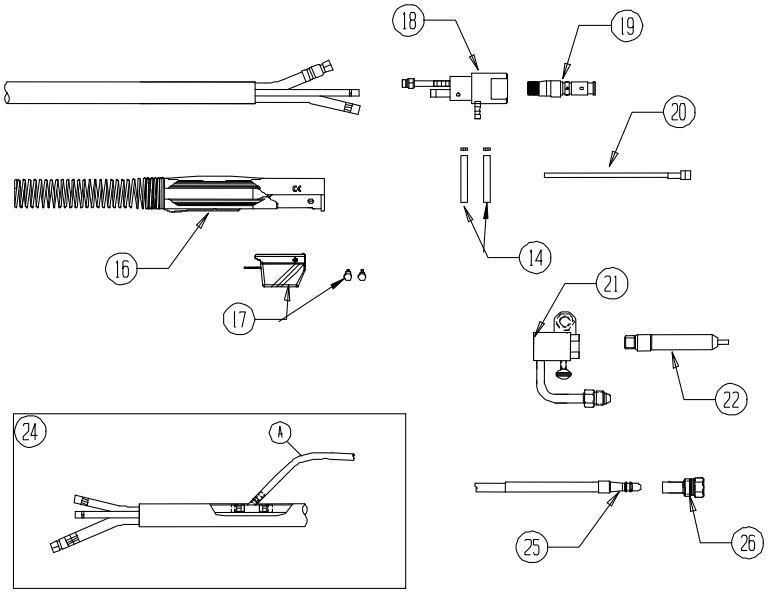
6.0 – EXPLODED VIEW AND PARTS LIST



Numbers in this column correspond to the exploded view images above.

	PART #	DESCRIPTION
1		**450 AMP STANDARD NOZZLES FOR USE WITH 454-1 RETAINING HEAD**
	451-5-62	5/8" (16 mm) BORE - 1/4" (6 mm) TIP RECESS
	451-5-75	3/4" (19 mm) BORE - 1/4" (6 mm) TIP RECESS
	451-6-62	5/8" (16 mm) BORE - 1/8" (3 mm) TIP RECESS
	451-6-75	3/4" (19 mm) BORE - 1/8" (3 mm) TIP RECESS
		450 AMP HEAVY DUTY NOZZLES - FOR USE WITH 454-1 RETAINING HEAD
	451-1-62	5/8" (16 mm) BORE - 1/4" (6 mm) TIP RECESS
	451-1-75	3/4" (19 mm) BORE - 1/4" (6 mm) TIP RECESS
1A		**450 AMP STANDARD NOZZLES – FOR USE WITH 404-30 RETAINING HEAD**
	401-4-50	1/2" (12 mm) BORE - 1/8" (3 mm) TIP RECESS
	401-4-62	5/8" (16 mm) BORE - 1/8" (3 mm) TIP RECESS
	401-4-75	3/4" (19 mm) BORE - 1/8" (3 mm) TIP RECESS
	401-42-50	1/2" (12 mm) BORE - 1/8" (3 mm) TIP RECESS - BOTTLENECK
	401-48-50	1/2" (12 mm) BORE - 1/8" (3 mm) TIP STICK OUT - BOTTLENECK
	401-44-50	1/2" (12 mm) BORE - FLUSH TIP - BOTTLENECK
	401-48-62	5/8" (16 mm) BORE - FLUSH TIP - BOTTLENECK
		450 AMP HEAVY DUTY NOZZLES – FOR USE WITH 404-30 RETAINING HEAD
	401-5-62	5/8" (16 mm) BORE -
	401-5-75	3/4" (19 mm) BORE - 1/4" (6 mm) TIP RECESS
	401-6-50	1/2" (12 mm) BORE - 1/8" (3 mm) TIP RECESS
	401-6-62	5/8" (16 mm) BORE - 1/8" (3 mm) TIP RECESS
	401-6-75	3/4" (19 mm) BORE - 1/8" (3 mm) TIP RECESS
1B		**650 AMP WATER-COOLED NOZZLES – For use with 454-1 Retaining Head**
	651-5-62	5/8" (16 mm) BORE – ¼" (6 mm) TIP RECESS
	651-5-75	¾" (19 mm) BORE – ¼" (6 mm) TIP RECESS
	651-6-62	5/8" (16 mm) BORE – 1/8" (3 mm) TIP RECESS
	651-6-75	7/8" (19 mm) BORE – 1/8" (3 mm) TIP RECESS
		650 AMP WATER-COOLED NOZZLES For use with 404-30 Retaining Head
	650-5-62	5'8 (16 mm) BORE – ¼" (6 mm) TIP RECESS
	650-5-75	¾" (19 mm) BORE – ¼" (6 mm) TIP RECESS
	650-6-62	5/8" (16 mm) BORE – 1/8" (3 mm) TIP RECESS
	650-6-75	¾" (19 mm) BORE – 1/8" (3 mm) TIP RECESS
2		**HEAVY DUTY CONTACT TIPS - 5/16" (8 mm) OD**
	403-1-35	FOR .035 (.9 mm) WIRE
	403-1-1.0	FOR 1 mm WIRE
	403-1-45	FOR .045 (1.2 mm) WIRE
	403-1-52	FOR .052 (1.3 mm) WIRE
	403-1-116	FOR 1/16" (1.6 mm) WIRE
	403-1-564	FOR 5/64 (2.0 mm) WIRE
	403-1-332	FOR 3/32 (2.4 mm) WIRE
	403-1-364	FOR 3/64 ALUMINUM (1.2 mm) WIRE
	403-1-1.8	FPR 1/16 ALUMINUM (1.8 mm) WIRE

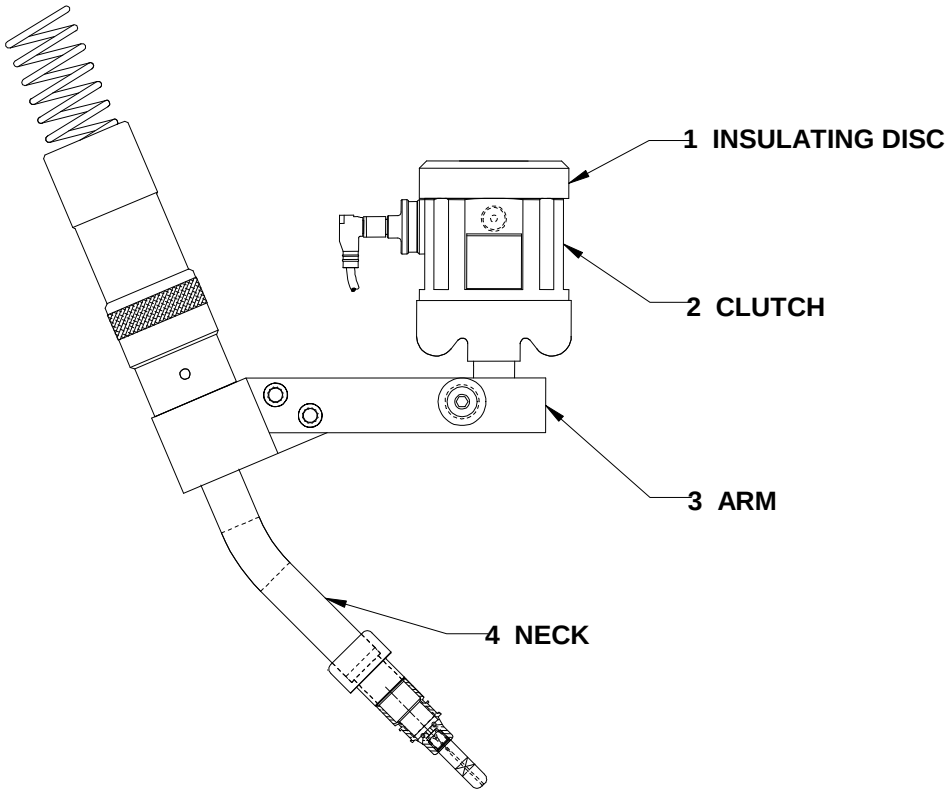
	PART #	DESCRIPTION
		TOUGH LOCK® CONTACT TIPS – 5/16" (8 mm) O.D.
	403-20-30	For .030" (.8 mm) WIRE
	403-20-35	For .035" (.9 mm) WIRE
	403-20-1.0	For 1.0 mm WIRE
	403-20-45	For .045" (1.2 mm) WIRE
	403-20-364	For 3/64" (1.2 mm) WIRE
	403-20-52	For .052" (1.3 mm) WIRE
	403-20-1.4	For 1.4 mm WIRE
	403-20-116	For 1/16" (1.6 mm) WIRE
	403-20-564	For 5/64" (2.0 mm) WIRE
	403-20-332	For 3/32" (2.4 mm) WIRE
3	404-30	TOUGH LOCK RETAINING HEAD
	404-30WC	TOUGH LOCK RETAINING HEAD – 650 AMP WATER COOLED
	454-1	RETAINING HEAD
	454-1-2	RETAINING RING ONLY
	402-10	O-RING ONLY
4	655-1	INSULATING RING
5	402-7	NECK INSULATOR – 404-30 Retaining Head / 449 Necks
	452-1	NECK INSULATOR - 454-1 Retaining Head /458 Necks
	452-3	NECK INSULATOR - 404-30 Retaining Head /450 Necks
6	652	WATER MANIFOLD ASSEMBLY – 650 AMP
	430-2	NOZZLE CLASP
	652-4	QUICK CONNECT WATER FITTING
	652-5	O-RING GREEN (10)
7		**NECKS FOR TOUGH LOCK CONSUMABLES**
	449-22	NECK – 22° FOR TOUGH LOCK – 450 AMP
	449-45	NECK – 45° FOR TOUGH LOCK – 450 AMP
	449-180	NECK – 180° FOR TOUGH LOCK – 450 AMP
	649-22	NECK – 22° FOR TOUGH LOCK – 650 AMP
	649-45	NECK – 45° FOR TOUGH LOCK – 650 AMP
	649-180	G0OSENECK - 180° FOR TOUGH LOCK – 650 AMP
		STANDARD NECKS
	458-22	NECK - 22° FOR 450 AMP
	458-45	NECK - 45° FOR 450 AMP
	458-180	NECK - STRAIGHT FOR 450 AMP
	658-22	NECK - 22° FOR 650 AMP
	658-45	NECK - 45° FOR 650 AMP
	658-60	NECK - 60° FOR 650 AMP
	658-180	NECK - STRAIGHT FOR 650 AMP
		(All 658 series models c/w manifold, water jumpers & fittings.)
	652-5	O-rings (3)



	PART #	DESCRIPTION
8	655-1-60	ARMORED WATER JUMPERS – 650-AMP
9		**INTERNAL WATER LINE (C/W (2) 656-1 CLAMPS)**
	656-15	15' (4.5 m) SERVICE
10		**CONDUIT (C/W (2) 657-1 CLAMPS)**
	657-15	15' (4.5 m) SERVICE
	657-1	CONDUIT CLAMP
11		**POWER CABLE ASSEMBLY**
	659-4	4' (1.22 m) SERVICE – ACTUAL LENGTH: 3.5' (1.06 m)
	659-4.5	4.5' (1.37 m) SERVICE – ACTUAL LENGTH: 4.5' (1.22 m)
	659-5	5' (1.52 m) SERVICE – ACTUAL LENGTH: 4.5' (1.37 m)
	659-6	6' (1.83 m) SERVICE – ACTUAL LENGTH: 5.5' (1.67 m)
	659-8	8' (2.44 m) SERVICE – ACTUAL LENGTH: 7.5 ' (2.28 m)
	659-10	10' (3.05 m) SERVICE – ACTUAL LENGTH: 9.5' (2.89 m)
12		**OUTER JACKET**
	590-3-15	LEATHER WRAP
	663-1-15	OUTER JACKET 15' - TUBULAR STYLE
13	661-4	CABLE BUNDLE - 4' (1.22 m)
	661-4.5	CABLE BUNDLE - 4.5'
	661-5	CABLE BUNDLE - 5'
	661-6	CABLE BUNDLE - 6'
	661-8	CABLE BUNDLE - 8'
	661-10	CABLE BUNDLE - 10'
14	658	RED WATER LINE - OUT (C/W (1) 656-1 CLAMP)
	658-1	BLUE WATER LINE - IN (C/W (1) 656-1 CLAMP)
		(LOCATED AT QUICK CONNECT BLOCK ASSEMBLY)
15	497	FRONT HOUSING ASSEMBLY (C/W STRAIN RELIEF)
16	666-10	REAR HANDLE W/ SPRING STRAIN RELIEF
17	416-5	REAR HOUSING
	411-3M	MOUNTING SCREWS (2)
18	664-400	POWER PIN BLOCK
19	214	TWECO #4
	214-2	LINCOLN
	214-4	L-TEC
	214-7	LINCOLN (SHORT)
	214-6-116	MILLER 1/16
	214-12	TWECO #5
	214-13	PANASONIC

	PART #	DESCRIPTION
20		CONDUIT LINERS
	415-35-2	FOR .035 (.9 mm) ALUM. WIRE - 15' (5 m)
	415-35-6	FOR .035 - .045 (.9 mm – 1.2 mm) WIRE - 6' (2 m)
	415-35-10	FOR .035 - .045 (.9 mm – 1.2 mm) WIRE - 10' (3.05 m)
	415-35-15	FOR .035 - .045 (.9 mm – 1.2 mm) WIRE – 15'
	415-116-6	FOR .045" – 1/16" (1.2 mm - 1.6 mm) WIRE - 6' (2 m)
	415-116-10	FOR .045" – 1/16" (1.2 mm - 1.6 mm) WIRE - 10' (3.05 m)
	415-116-15	FOR .045" – 1/16" (1.2 – 1.6 mm) WIRE – 15'
	415-332-15	FOR .078" - 3/32" (2 mm - 2.4 mm) WIRE - 15' (5 m) FLAT wd
21		FEEDER ADAPTOR REQUIREMENTS (Sold Separately)
	417	QUICK CONNECT BLOCK ASSEMBLY
	417-1	RETAINING SCREW
	417-2	GAS HOSE ADAPTOR
	417-3	POWER BOLT
	417-4	GAS HOSE & NIPPLE
22		FEEDER ADAPTORS (To be used with 417 Quick Connect Block)
	418-1	AIRCO®
	418-2	CANADIAN LIQUID AIR
	418-3	ESAB (NON EURO STYLE) & HOBART (BETA MIG)
	418-4	HOBART 27
	418-5	LINCOLN (LN-4, LN-5) & LINDE (SWM-31)
	418-6	LINCOLN (LN-7, LN-8, LN-9, LN-22, LN-25 suitcase)
	418-7	LINDE (SWM-14)
	418-8	LINDE (all models except SWM-14, -31, -32, L-TECH 35)
	418-9	MILLER (10A, 30A) (MILLERMATIC 35S FEEDER)
	418-10	MILLER (52E, 54E, 521, 522 Series & MILLERMATIC 200, 250 & 60)
	418-11	SYSTEMATICS
	418-13	OXOMATIC
	418-20	FEEDER ADAPTOR EXTENSION
	418-21	GILLILAND
	418-26	LINCOLN ADAPTOR (NA2)
23	675	EURO-CONNECTOR OPTION
A	675-2	EURO HOUSING
B	675-10	EURO-CONENCTOR BODY
C	425-2	HAND NUT
24		AIR BLAST OPTION
A	656-15	AIR LINE
25	415-35-6Q	QUICK LOAD LINER FOR 035-045 WIRE 6FT
	415-116-6Q	QUICK LOAD LINER FOR 045-116 WIRE 6FT
26	415-26	QUICK LOAD LINER - RETAINER

7.0 – COMPLETE ASSEMBLY OPTIONS



	PART #	DESCRIPTION
1		INSULATING DISCS
	AS-101-01	BLANK
	AS-101-2	ABB® IRB-1400, IRB-1500, IRB-2000, IRB6, MILLER® MRV-2, MRV-10, FANUC®, ARCMATE 100, 120, 100I, 120I, MOTOMAN® SK6, OTC MRV-6, DR-4400
	AS-101-4	ABB® IRB-2400
	AS-101-5	OTC DR200
	AS-101-6	OTC
	AS-101-12	PANASONIC® W0500, ABB MAC500
	AS-102-5	KUKA®
	AS-102-6	HITACHI® PW-10
	AS-102-7	MILACRON® T3-776
	AS-102-8	COMAU® SMART-3S
	AS-102-10	MOTOMAN® K6, K10 HITACHI® M6060
	AS-102-11	HITACHI® M5030, M6030
	AS-102-12	PANASONIC® AW – 500
	AS-102-13	KUKA® KR6-2
	AS-102-14	KUKA® KR125-1
	AS-103-3	FANUC ARCMATE® JR, SR
	AS-103-4	KUKA® KR15 FOR GENESIS
	AS-104-3	MILACRON®
	AS-105-1	MILLER® MRK-5
	AS-105-2	MILLER® MRH-2, MR-1000

	PART #	DESCRIPTION
	AS-106-1	MOTOMAN® L10W, L106 PANASONIC® AW7000
	AS-106-3	MITSUBISHI® MZ10
	AS-106-4	PANASONIC® AW-010A, AW-8010, VR-008A, VR-006A AND VR-006AL11
	AS-106-6	PANASONIC® AW-005A, AW-005C, AND AW-005CL
	AS-106-7	MOTOMAN: SV3
	AS-106-8	FANUC ARC MATE 50IL
	AS-106-9	KAWASAKI FS-10L
	AS-107-1	NACHI® 7603
	AS-107-2	NACHI® VORG-35
	AS-107-3	NACHI® SC15
	AS-107-4	NACHI® SC-50 AND SC 35-01
	AS-107-6	NACHI
	AS-107-7	NACHI SC06F-01, SC06F-02
	AS-107-9	NACHI 8633
	AS-110-1	PUMA® ALL KAWASAKI® ALL
2	AS-708	SAFETY CLUTCH
3	AS-306-1	FOR 180° NECK
	AS-306-2	FOR 22° NECK
	AS-306-3	FOR 45° NECK

8.0 – ORDERING INSTRUCTIONS

8.1 EXAMPLE OF STANDARD MODEL NO.

4810-45

- Wire Size
- Standard Lengths 4' (1.2 m), 6' (1.8 m) 8' (2.4 m), 10' (3.05 m) (other lengths available upon request)
- 8 - Robotic
- Amperage: 4 - 450 Amp, 6 - 650 Amp

8.2 EXAMPLE OF CUSTOM BUILT GUN

NOTE: Optional numbers should be added only if desired option is not included on standard gun model.

E 4810-45-60-9-AQ

- Use these special codes to order special gun features.
  - E - Euro Connector
  - M - Miller ® Power Pin
  - TW - Tweco® #5 Style Power Pin
- Standard Gun Model Number
- Wire Size
- Angle of Neck (22°, 45° or 60°)
- Liner for Aluminum Wire - Add Suffix 9
- A - Airblast / Q – QUICK LOAD Liner

8.3 GUN STANDARDS CHART

Standard models are shipped with the following components.

MODEL	NECK	NOZZLE	H.D. HEAD	CONTACT TIP
450 amp	458-180	451-5-75	454-1	403-1
650 amp	658-180	651-5-75	454-1	403-1

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Email: techservices@tregaskiss.com

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