

## **TECHNICAL GUIDE**

### **TOUGH GUN™ ThruArm™ G1 Series Robotic MIG Guns**

- **AVAILABLE PRODUCTS**
- **EXPLODED VIEW & PARTS LIST**
- **ORDERING INFORMATION**

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

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## THANK YOU....

...for selecting a TOUGH GUN™ ThruArm™ G1 Series Robotic MIG Gun from Tregaskiss. Manufacturing operations demand extremely dependable robotic equipment. With this in mind, the TOUGH GUN MIG 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 the harshest welding environment. Your TOUGH GUN MIG Gun is completely assembled and ready to weld, and has undergone numerous quality checks to ensure high performance.

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 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.

# GENERAL SAFETY INFORMATION

Before installation or operation of TOUGH GUN 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. 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.)



## **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.

<b>PRODUCT</b>	<b>WARRANTY PERIOD</b>
TOUGH GUN™ Robotic MIG Guns and Components	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.

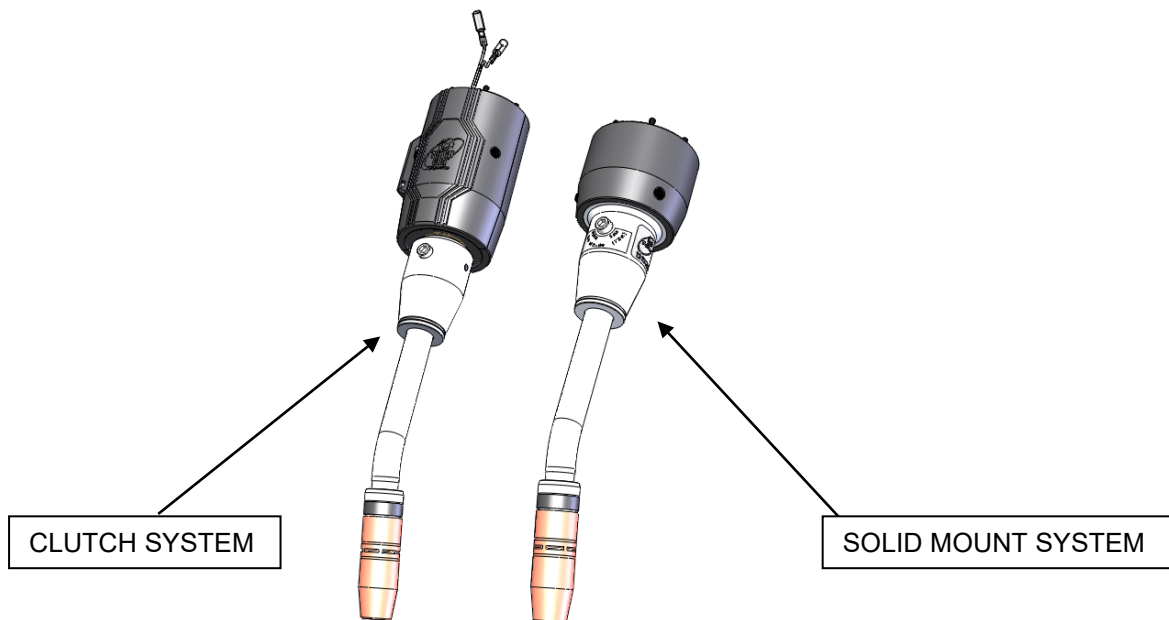
Genuine Tregaskiss™ parts must be used for safety and performance reasons or the warranty becomes invalid. Warranty shall not apply if accident, abuse, or misuse damages a product, or if a product is modified in any way except by authorized Tregaskiss personnel.

# 1.0 – AVAILABLE TOUGH GUN THRUARM G1 SERIES PRODUCTS

The TOUGH GUN ThruArm G1 Series is available for the following robot brands and models. Also available in the chart below are part numbers to key components of the system. For additional parts, see **Section 2.1.2 CLUTCH SYSTEM PARTS LIST** and **Section 2.2.2 SOLID MOUNT SYSTEM PARTS LIST**.

ROBOT BRAND	ROBOT MODEL	CLUTCH	SOLID MOUNT	LSR UNICABLE	
				CLUTCH	SOLID MOUNT
<b>ABB®</b>	IRB1600ID	N/A	A58G1S	-	58SA024
<b>ABB</b>	1520ID	N/A	A58G1S	-	58SA024
<b>ABB</b>	IRB2600ID-15/1.85	N/A	A258G1S	-	58SA028
<b>ABB</b>	IRB2600ID-8/2.00	N/A	A258G1S	-	58SA029
<b>KUKA®</b>	KR 5 ARC HW	K5800	-	58CK023	-
<b>KUKA</b>	KR 16 ARC HW	-	K5800S	-	58SK030
<b>KUKA</b>	KR 16 L8 HW	K5800	-	58CK027	-
<b>Motoman®</b>	EA1400 XRC	5800	5800S	58CM016	58SM016
<b>Motoman</b>	EA1900 XRC	5800	5800S	58CM017	58SM017
<b>Motoman</b>	EA1400N	5800	5800S	58CM001	58SM001
<b>Motoman</b>	EA1900N	5800	5800S	58CM002	58SM002
<b>Motoman</b>	SSA2000	5800	5800S	58CM001	58SM001
<b>Motoman</b>	MA1400	5800	5800S	58CM001	58SM001
<b>Motoman</b>	VA1400	5800	5800S	58CM001	58SM001
<b>Motoman</b>	MA1440	M58G1	M58G1S	58CM035	58SM035
<b>Motoman</b>	MA2010	M58G1	M58G1S	58CM038	58SM038
<b>Motoman</b>	MA3100	5800	5800S	58CM031	N/A
<b>OTC Daihen®</b>	AII-B4	D25800	N/A	58CD025	N/A
<b>OTC Daihen</b>	AII-B4L	D25800	N/A	58CD026	N/A
<b>OTC Daihen</b>	AX-V4	D5800	N/A	58CD003	N/A
<b>OTC Daihen</b>	AX-V4L	D5800	N/A	58CD022	N/A
<b>OTC Daihen</b>	FD B4	D25800	N/A	58CD036	N/A
<b>Panasonic®</b>	TB1800WGIII	P58G1	P58G1S	58CP034	58SP034
<b>Panasonic</b>	TM-1400	P258G1	P258G1S	58CP037	58SP037
<b>COMAU®</b>	SMART5 ARC6	C58G1	N/A	58CM002	N/A

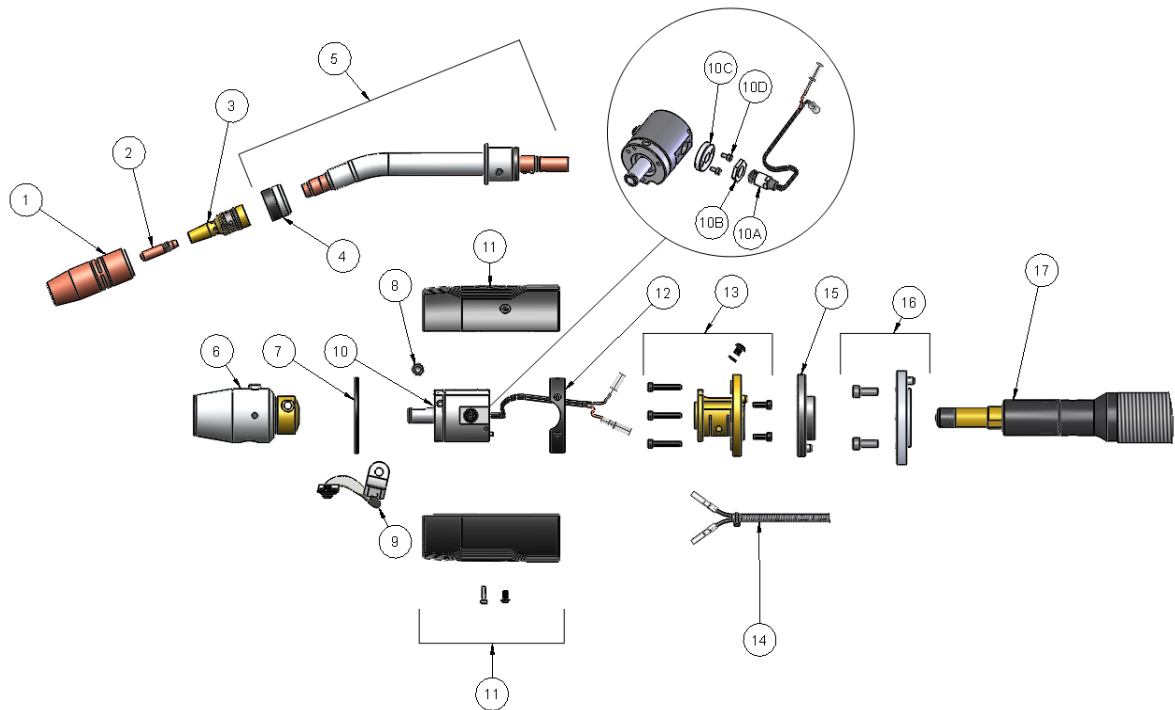
Additional TOUGH GUN ThruArm G1 Series products will be released for other robot models as soon they become available.



## 2.0 – EXPLODED VIEWS & PARTS LISTS

### 2.1 CLUTCH SYSTEM

#### 2.1.1 CLUTCH SYSTEM EXPLODED VIEW



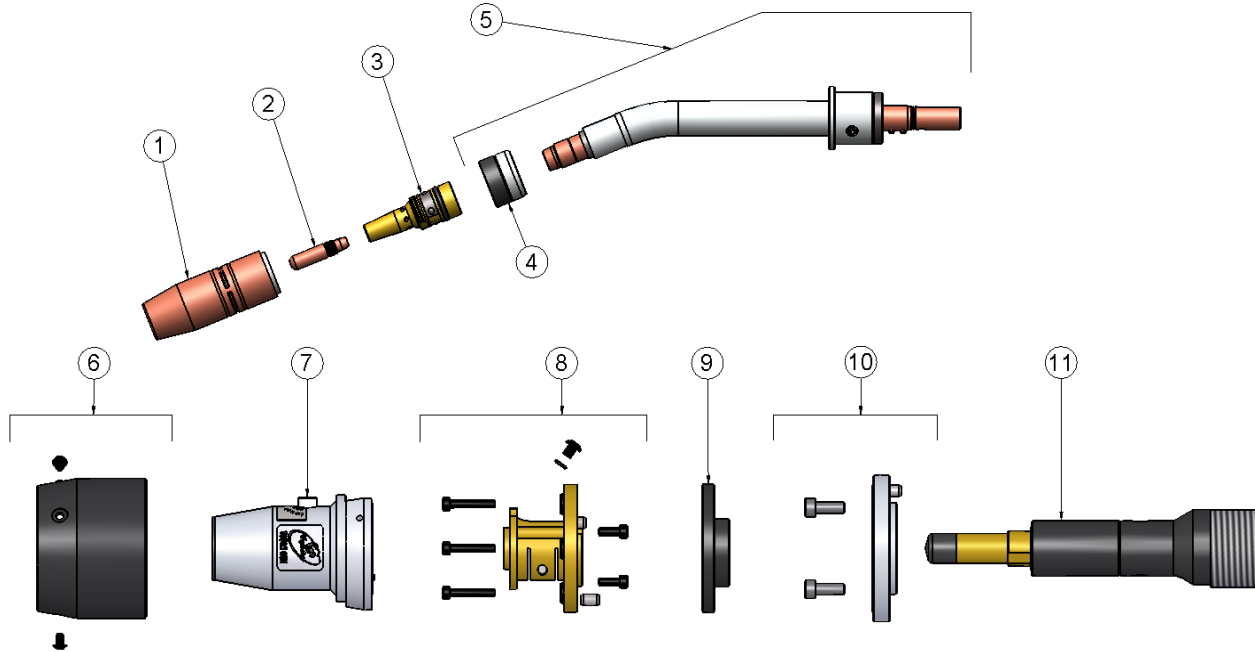
#### 2.1.2 CLUTCH SYSTEM PARTS LIST

ITEM	PART #	DESCRIPTION
1	401-x-xx	Nozzle
2	403-xx-xx	Contact Tip
3	404-32	Retaining Head
4	402-11-1	G1 Neck Insulator
5	405-22QC	Neck – 22 Degree
	405-45QC	Neck – 45 Degree
6	580-2	Connector Housing
7	580-2-3	Rubber Washer
8	580-3	Lock Pin and Screw
9	580-4	Shunt Cable Assembly
10	AS-714	Clutch Assembly
10A	AS-714-9	Clutch Switch Assembly
10B	AS-714-7-3	Hex Nut
10C	AS-714-7-2	Switch Base
10D	N/A	M3x0.5-6mmLG.SHCS
11	580-5A	Outer Cover Kit (Includes M4x0.7x8 and M3x0.5x12)
12	AS-114-3	Mounting Ring Assembly
13	580-19	Motoman® Cable Connector Kit (Includes Flange Cable Connector, M4x0.7-12LG.SHCS, M4x0.7-25LG.SHCS, M3x0.5-6LG.SBHCS)
	580-20	KUKA® Cable Connector Kit (includes Flange Cable Connector, M4x0.7-12 LG.SHCS, M4x0.7-25 LG. SHCS, M3x0.5-6 LG. SBHCS)
	580-21	Panasonic TB1800WGIII Cable Connector Kit (includes Flange Cable Connector, M4x0.7-12 LG. SHCS, M4x0.7-25 LG. SHCS, M3x0.5-6 LG. SBHCS)
14	AS-714-26	Control Cable - 120° Long

ITEM	PART #	DESCRIPTION
15	AS-114-1	Motoman® Insulating Disc
	AS-116-1	OTC® Insulating Disc
	AS-114-6	KUKA® Insulating Disc
	AS-115-1	Panasonic® TB1800WGIII Insulating Disc
16	AS-114-9	KUKA KR16 HW Transition Disc + M5x0.8-12LG.SHCS
	AS-114-10	COMAU® Smart5 Arc4 Transition Disc + M6x1-12LG.SHCS
	AS-116-2	OTC AII-B4 / AII-B4L / FD B4 Transition Disc + M5x0.8-10LG.SHCS
	AS-114-11 + AS-114-12	Panasonic TM-1400 Transition Disc + M5x0.8-70 LG.SHCS
	AS-114-13	Motoman MA1440 Spacer + M4x0.7-60 LG. SHCS
17	58CM001	Motoman (Models EA1400N, SSA2000, MA1400, VA1400) LSR Unicable
	58CM002	Motoman (Model EA1900N), COMAU Smart5 Arc6 LSR Unicable
	58CM016	Motoman (Model EA1400 XRC) LSR Unicable
	58CM017	Motoman (Model EA1900 XRC) LSR Unicable
	58CM031	Motoman (Model MA3100) LSR Unicable
	58CM035	Motoman (Model MA1440) LSR Unicable
	58CM038	Motoman (Model MA2010) LSR Unicable
	58CD003	OTC (Model AX-V4) LSR Unicable
	58CD022	OTC (Model AX-V4L) LSR Unicable
	58CD025	OTC (Model AII-B4) LSR Unicable
	58CD026	OTC (Model AII-B4L) LSR Unicable
	58CD036	OTC (Model FD B4) LSR Unicable
	58CK023	KUKA® (Model KR5 ARC HW) LSR Unicable
	58CK027	KUKA (Model KR16 L8 HW) LSR Unicable
	58CP034	Panasonic® (Model TB1800WGIII) LSR Unicable
	58CP037	Panasonic (Model TM-1400) LSR Unicable

## 2.2 SOLID MOUNT SYSTEM

### 2.2.1 SOLID MOUNT SYSTEM EXPLODED VIEW



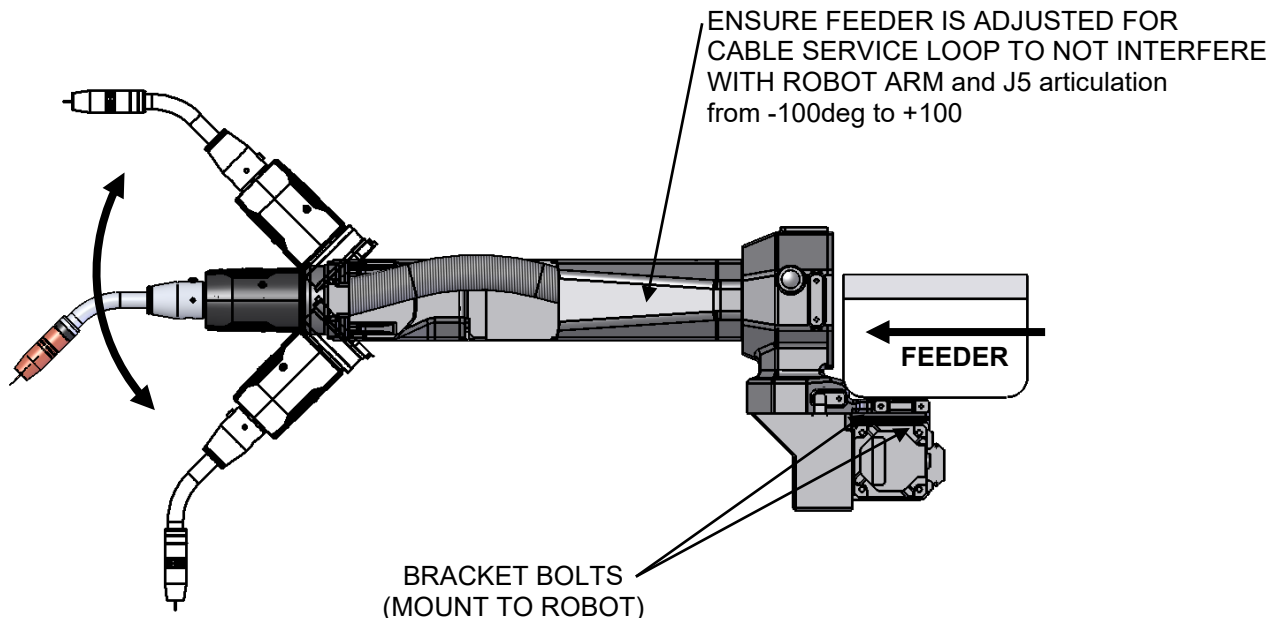
### 2.2.2 SOLID MOUNT SYSTEM PARTS LIST

ITEM	PART #	DESCRIPTION
1	401-x-xx	Nozzle
2	403-xx-xx	Contact Tip
3	404-32	Retaining Head
4	402-11-1	5800 Neck Insulator
5	405-22QC	Neck – 22 Degree
	405-45QC	Neck – 45 Degree
6	580-300-5-1	Outer Cover – Solid Mount
7	580-2S	Connector Housing
8	580-19	Motoman® Cable Connector Kit (includes Flange Cable Connector, M4x0.7-12 LG. SHCS, M4x0.7-25 LG. SHCS, M3x0.5-6 LG. SBHCS)
	580-20	KUKA® Cable Connector Kit (includes Flange Cable Connector, M4x0.7-12 LG. SHCS, M4x0.7-25 LG. SHCS, M3x0.5-6 LG. SBHCS)
	580-21	Panasonic® TB1800WGIII Cable Connector Kit (includes Flange Cable Connector, M4x0.7-12 LG. SHCS, M4x0.7-25 LG. SHCS, M3x0.5-6 LG. SBHCS)
9	AS-114-1	Motoman® Insulating Disc
	AS-116-1	OTC® Insulating Disc
	AS-114-6	KUKA® Insulating Disc
	AS-115-1	Panasonic® TB1800WGIII Insulating Disc
10	AS-114-7	ABB® 1600ID Transition Disc + M6x1-16 LG. SHCS
	AS-114-8	ABB 2600ID Transition Disc + M8x1.25-12 LG. SHCS
	AS-114-9	KUKA KR16HW Transition Disc + M5x0.8-12 LG. SHCS
	AS-114-11 + AS-114-12	Panasonic TM-1400 Transition Disc + M5x0.8-70 LG. SHCS

ITEM	PART #	DESCRIPTION
11	58SM001	Motoman® (Models EA1400N, SSA2000, MA1400, VA1400) LSR Uncable
	58SM002	Motoman (Model EA1900N) LSR Uncable
	58SM016	Motoman (Model EA1400 XRC) LSR Uncable
	58SM017	Motoman (Model EA1900 XRC) LSR Uncable
	58SM031	Motoman (Model MA3100) LSR Uncable
	58SM035	Motoman (Model MA1440) LSR Uncable
	58SM038	Motoman (Model MA2010) LSR Uncable
	58SA024	ABB® (Model IRB 1600ID) LSR Uncable
	58SA028	ABB (Model IRB 2600ID 15/1.85) LSR Uncable
	58SA029	ABB (Model IRB 2600ID 8/2.00) LSR Uncable
	58SK030	KUKA (Model KR 16 ARC HW) LSR Uncable
	58SP034	Panasonic® (Model TB1800WGIII) LSR Uncable
	58SP037	Panasonic (Model TM-1400) LSR Uncable

### 3.0 – INSTALLING THE GUN TO THE FEEDER

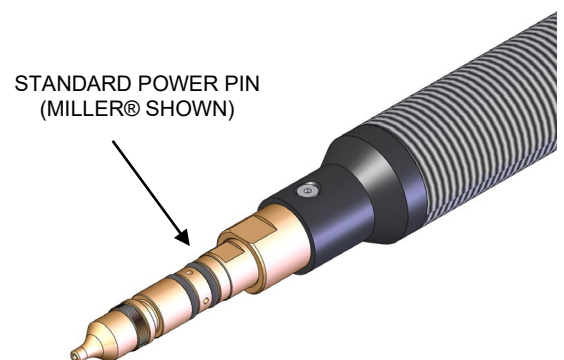
- Ensure that the bolts clamping the feeder to the bracket on the robot are loosened.
- Insert power pin on the rear of the unicable into the feeder.
- Slide the feeder towards the front of the robot. This will create a necessary curve in the cable to allow for proper operation. **REMINDER:** The robot's top axis must be at 180 degrees during installation.
- Secure the feeder and validate robotic articulation of J5.
  - *The feeder should be pressed forward far enough that the centerline of the unicable should bow at its highest point and not interfere with the robotic casting / ThruArm cover (See diagram below).*
- Tighten feeder bracket bolts to manufacturer's recommendations to ensure that feeder remains in the proper position, when J5 articulation has been verified.



### 4.0 – INSTALLING THE PIN TO THE LSR UNICABLE

#### 4.1 STANDARD POWER PINS

- Install power pin onto the LSR Unicable.
  - NOTE:** Power pins incorporate a taper to seat and lock the pin to the rear handle block. Make sure the power pin is tightened in the block with a wrench to insure the pin is secure and will not come loose.
    - Thread power pin into the adaptor of the LSR Unicable.
    - Tighten the power pin into the rear block using a 1" (25 mm) wrench on the rear block and a 5/8" (16 mm) or 3/4" (19 mm) wrench on the power pin.



#### 4.2 AUTOLENGTH PINS

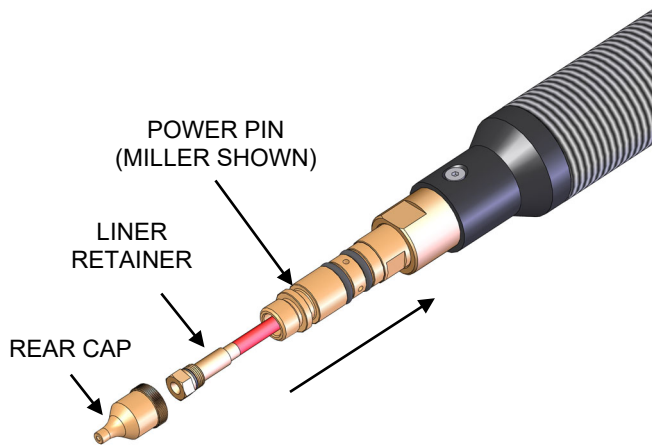
**IMPORTANT NOTE:** For AutoLength™ Pin installation instructions, refer to technical insert INS074 or visit [Tregaskiss.com/AutoLength](http://Tregaskiss.com/AutoLength).

### 4.3 EURO CONNECTIONS

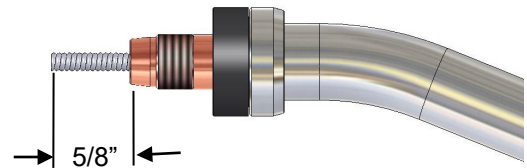
- The Euro connection comes factory installed. No installation required.



### 5.0 – INSTALLING QUICK LOAD LINER



- Remove the rear cap of the power pin.
- Insert brass end of liner into the liner retainer until firmly seated.
- Insert non-brass end of QUICK LOAD™ Liner into back of the gun and push through until it emerges from the front of the gun and the liner retainer makes contact with the power pin.
- Thread the QUICK LOAD Liner retainer (#415-26) into the power pin. Torque to 30 in.-lbs. (3.5 Nm).
- Re-thread the cap of the power pin back on (hand tighten).
- Push liner back into front of gun and hold in place.
- Trim liner to a 5/8" (16 mm) stick out.
- Remove any burrs that may obstruct wire feed.



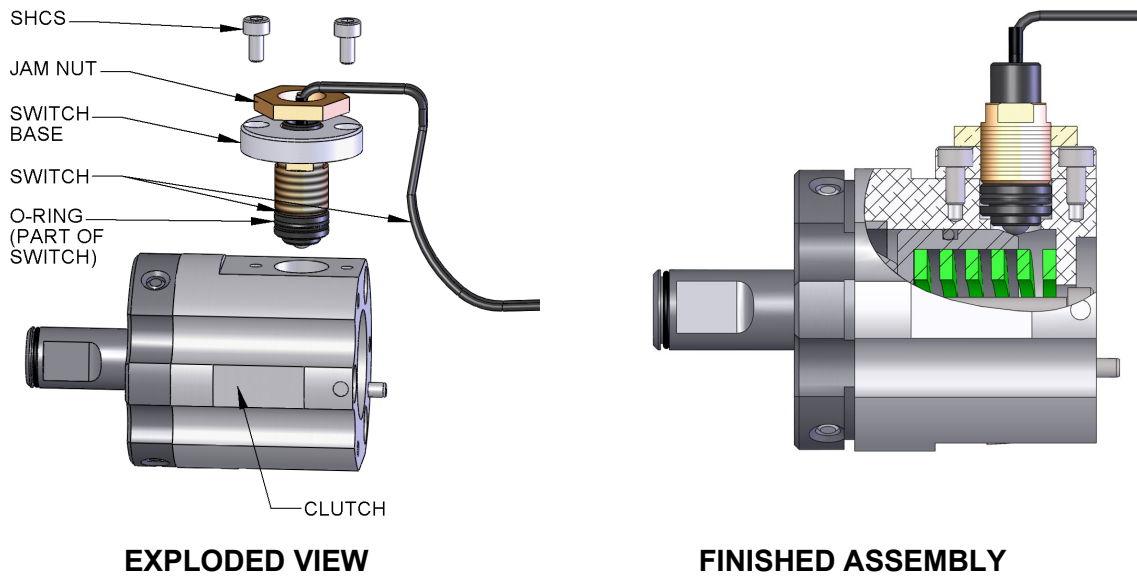
**IMPORTANT NOTE:** To install a QUICK LOAD Liner into the AutoLength System, refer to technical insert INS088 or visit [Tregaskiss.com/AutoLength](http://Tregaskiss.com/AutoLength).



## 6.0 – MAINTENANCE

### 6.1 REPLACEMENT / ADJUSTMENT OF CLUTCH LIMIT SWITCH

- Feed wires of switch through center holes of switch base and jam nut as shown in exploded view.
- Thread switch base far enough down on the switch body so that the switch will not bottom out when the assembly is fastened to the clutch.
- Position switch assembly (with o-ring) in the clutch housing.
- Insert the two M3 x 0.5 x 6 Hex SHCS into the holes in the switch base and fasten assembly to the clutch.
- Adjust switch by rotating switch itself in the switch base to the appropriate depth. Check normally closed switch using ohmmeter to set desired level of sensitivity.
- Once desired sensitivity is achieved, lock position of switch by torquing jam nut (50 in.-lbs../5.6 Nm) against switch base.

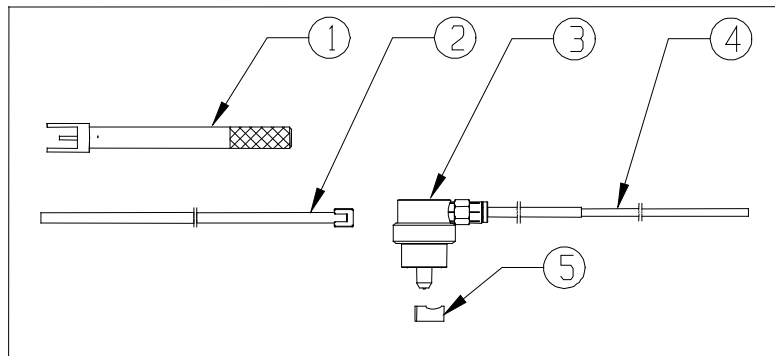


## 7.0 – OPTIONS

### 7.1 WIRE BRAKE

**NOTE:** Wire brake can only be used if gun was originally ordered with wire brake option. Neither the QUICK LOAD Liner nor the QUICK LOAD Liner AutoLength System is available for wire brake gun assemblies.

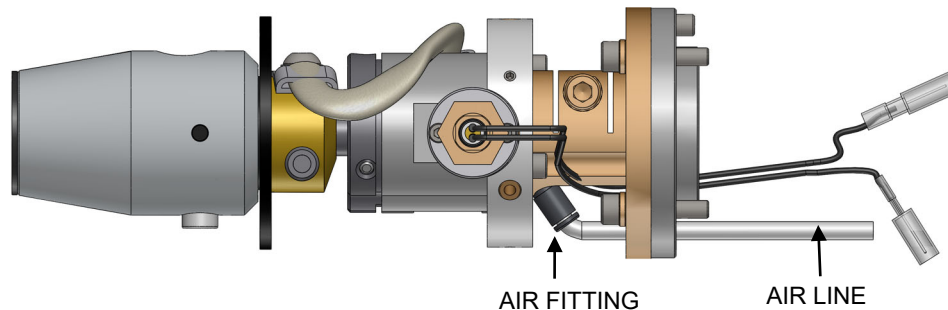
	PART #	DESCRIPTION
1	450-17	Holder Tool
2	495-18-35	Jump Liner for $\leq 0.045$ "
	495-18-116	Jump Liner for $\geq 0.052$ "
3	499	Pushing Unit
4	499-9-15	Air Line 15'
5	598	Holder for $\leq 0.045$ "
	598-116	Holder for $\geq 0.052$ "



### 7.2 AIR BLAST

**NOTE:** Run Air Blast Line through the same hole as the Control Cable. See Technical Manual M076 on our website for installation details or call Tech Services at 1-855-MIGWELD (644-9353) for assistance.

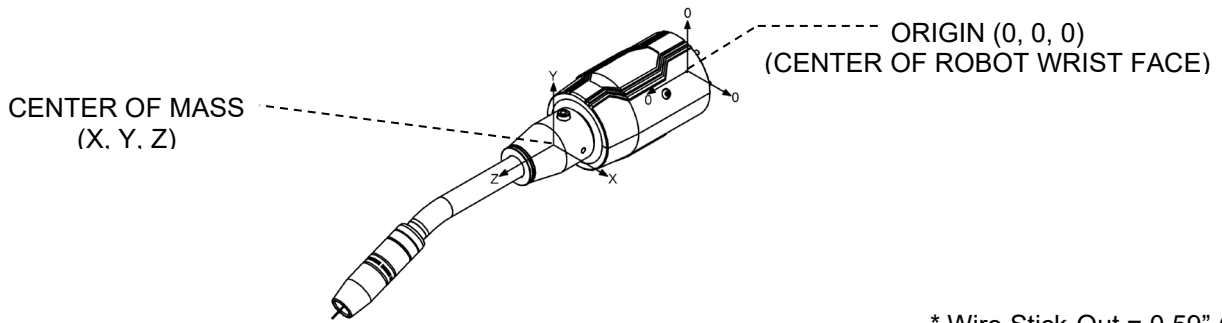
PART #	DESCRIPTION
580-A	Air Blast Kit (Includes 15' of Air Line and Air Fitting)



# 8.0 – TECHNICAL DATA

## 8.1 GUN CONFIGURATIONS – 22 DEGREE (CLUTCH)

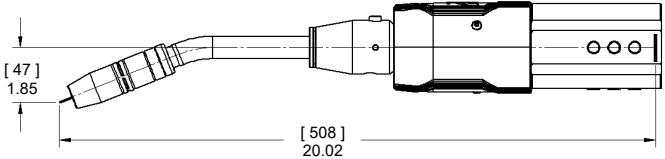
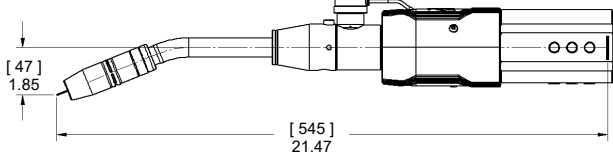
### CENTER OF MASS COORDINATES



\* Wire Stick-Out = 0.59" (15 mm)

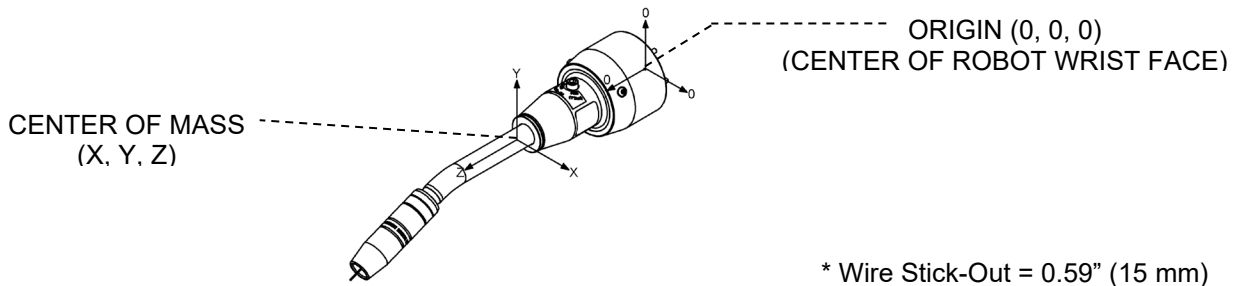
CLUTCH	CLUTCH (WIRE BRAKE)
<p><b>Motoman, OTC (AX-V4, AX-V4L), KUKA (KR5 HW, KR16 L8 HW), Panasonic (TB1800WGIII)</b></p> <p>MASS : 4.0 LBS (1.81 kg)            CENTER OF MASS:            X = -0.03" (-0.76 mm)            Y = -0.15" (-3.81 mm)            Z = 4.89" (124.20 mm)</p>	<p><b>Motoman, OTC (AX-V4, AX-V4L), KUKA (KR5 HW, KR16 L8 HW), Panasonic (TB1800WGIII)</b></p> <p>MASS : 4.73 LBS (2.14 kg)            CENTER OF MASS:            X = -0.02" (-0.51 mm)            Y = -0.09" (-2.29 mm)            Z = 5.50" (139.70 mm)</p>
<p><b>OTC (All B4, All B4L, FD B4), COMAU (Smart5 Arc6)</b></p> <p>MASS : 4.23 LBS (1.92 kg)            CENTER OF MASS:            X = -0.03" (-0.76 mm)            Y = -0.14" (-3.56 mm)            Z = 4.98" (126.49 mm)</p>	<p><b>OTC (All B4, All B4L, FD B4), COMAU (Smart5 Arc6)</b></p> <p>MASS : 4.96 LBS (2.25 kg)            CENTER OF MASS:            X = -0.02" (-0.51 mm)            Y = -0.08" (-2.03 mm)            Z = 5.60" (142.24 mm)</p>
<p><b>Panasonic (TM-1400)</b></p> <p>MASS : 4.68 LBS (2.12 kg)            CENTER OF MASS:            X = -0.02" (-0.57 mm)            Y = -0.15" (-3.77 mm)            Z = 6.54" (166.09 mm)</p>	<p><b>Panasonic (TM-1400)</b></p> <p>MASS : 5.53 LBS (2.51 kg)            CENTER OF MASS:            X = -0.02" (-0.53 mm)            Y = -0.072" (-1.84 mm)            Z = 7.16" (181.77 mm)</p>

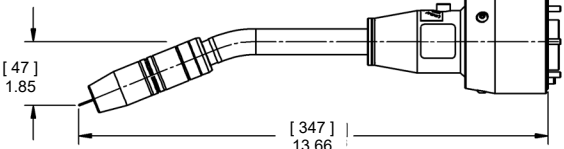
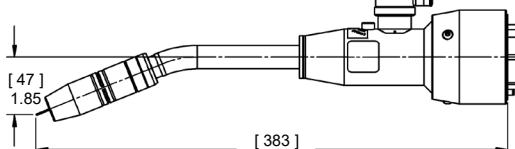
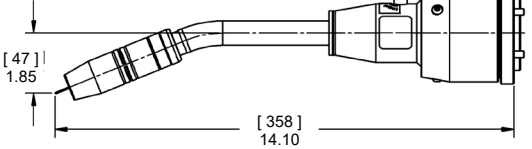
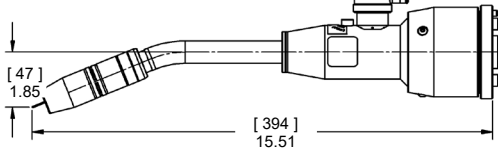
**CENTER OF MASS COORDINATES – 22 DEGREE (CLUTCH)** (Continued)

CLUTCH	CLUTCH (WIRE BRAKE)
<p><b>Motoman (MA1440 &amp; MA2010)</b></p>  <p>MASS : 5.35 LBS (2.43 kg)            CENTER OF MASS:            X = -0.02" (-0.50 mm)            Y = -0.13" (-3.19 mm)            Z = 7.19" (182.67 mm)</p>	<p><b>Motoman (MA1440 &amp; MA2010)</b></p>  <p>MASS : 6.21 LBS (2.82 kg)            CENTER OF MASS:            X = -0.02" (-0.47 mm)            Y = -0.06" (-1.54 mm)            Z = 7.86" (199.65 mm)</p>

**8.2 GUN CONFIGURATIONS – 22 DEGREE (SOLID MOUNT)**

**CENTER OF MASS COORDINATES**



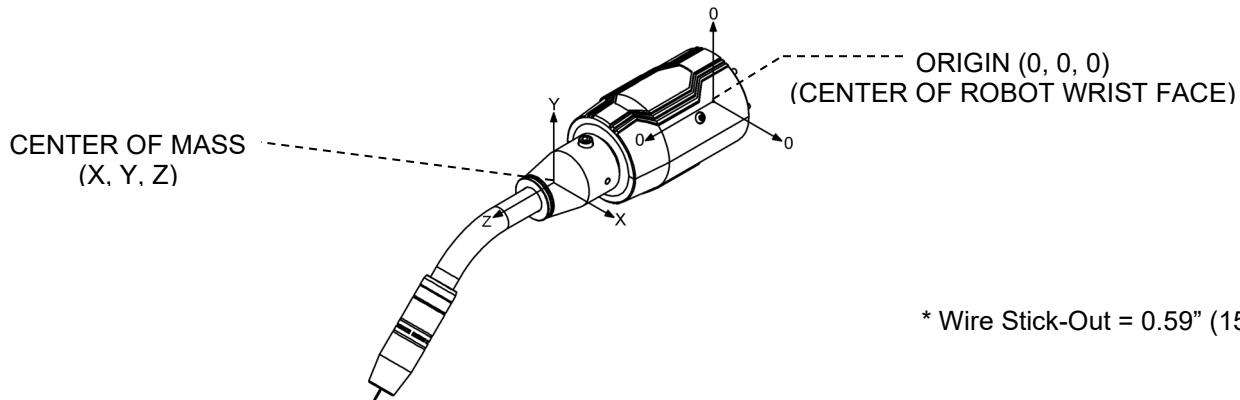
SOLID MOUNT	SOLID MOUNT (WIRE BRAKE)
<p><b>Motoman, Panasonic (TB1800WGIII)</b></p>  <p>MASS : 3.34 LBS (1.81 kg)            CENTER OF MASS:            X = -0.00            Y = -0.17" (-4.32 mm)            Z = 3.97" (100.84 mm)</p>	<p><b>Motoman, Panasonic (TB1800WGIII)</b></p>  <p>MASS : 4.08 LBS (1.85 kg)            CENTER OF MASS:            X = -0.00            Y = -0.09" (-2.29 mm)            Z = 4.42" (112.23 mm)</p>
<p><b>ABB (IRB1600ID), KUKA (KR16 HW)</b></p>  <p>MASS : 3.60 LBS (1.63 kg)            CENTER OF MASS:            X = -0.00            Y = -0.15" (-3.81 mm)            Z = 4.10" (104.14 mm)</p>	<p><b>ABB (IRB1600ID), KUKA (KR16 HW)</b></p>  <p>MASS : 4.34 LBS (1.97 kg)            CENTER OF MASS:            X = -0.00            Y = -0.09" (-2.29 mm)            Z = 4.58" (116.33 mm)</p>

**CENTER OF MASS COORDINATES – 22 DEGREE (SOLID MOUNT)** (Continued)

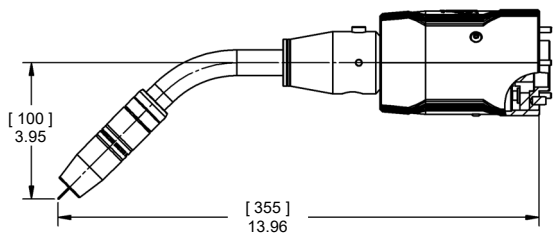
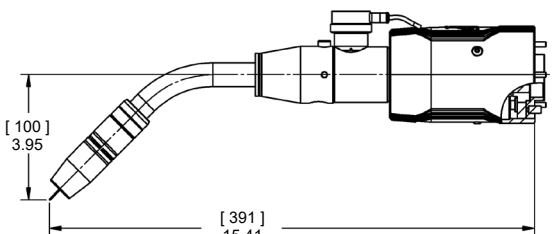
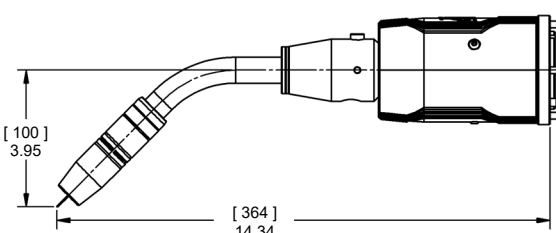
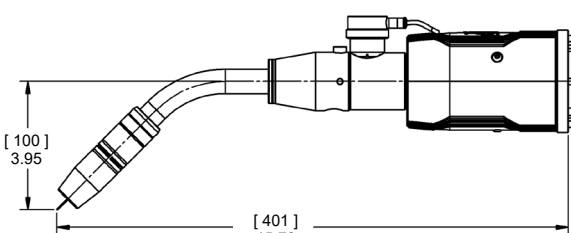
<b>SOLID MOUNT</b>		<b>SOLID MOUNT (WIRE BRAKE)</b>	
<p><b>ABB (IRB2600ID)</b></p> <p>MASS : 3.77 LBS (1.71 kg)            CENTER OF MASS:            X = -0.00            Y = -0.15" (-3.81 mm)            Z = 3.96" (100.58 mm)</p>	<p><b>ABB (IRB2600ID)</b></p> <p>MASS : 4.51 LBS (2.05 kg)            CENTER OF MASS:            X = -0.00            Y = -0.08" (-2.03 mm)            Z = 4.45" (113.03 mm)</p>		
<p><b>Panasonic (TM-1400)</b></p> <p>MASS : 4.14 LBS (1.88 kg)            CENTER OF MASS:            X = 0.000 (0.014 mm)            Y = -0.13" (-3.41 mm)            Z = 5.59" (141.91 mm)</p>	<p><b>Panasonic (TM-1400)</b></p> <p>MASS : 4.90 LBS (2.21 kg)            CENTER OF MASS:            X = 0.000 (0.008 mm)            Y = 0.76" (1.94 mm)            Z = 6.12" (155.49 mm)</p>		
<p><b>Motoman (MA1440 &amp; MA2010)</b></p> <p>MASS : 4.82 LBS (2.19 kg)            CENTER OF MASS:            X = 0.000 (0.01 mm)            Y = -0.11" (-2.82 mm)            Z = 6.29" (159.69 mm)</p>	<p><b>Motoman (MA1440 &amp; MA2010)</b></p> <p>MASS : 5.57 LBS (2.53 kg)            CENTER OF MASS:            X = 0.000 (0.008 mm)            Y = 0.06" (1.60 mm)            Z = 6.87" (174.42 mm)</p>		

### 8.3 GUN CONFIGURATIONS – 45 DEGREE (CLUTCH)

#### CENTER OF MASS COORDINATES



\* Wire Stick-Out = 0.59" (15 mm)

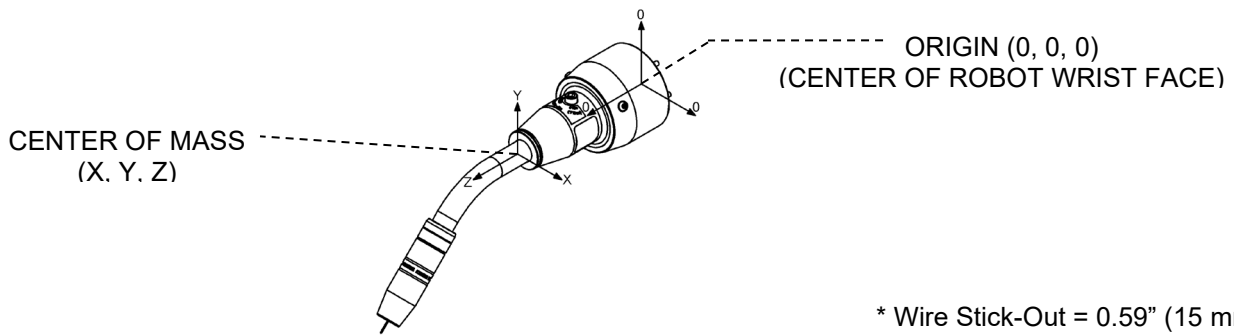
CLUTCH	CLUTCH (WIRE BRAKE)
<p><b>Motoman, OTC (AX-V4, AX-V4L), KUKA (KR5 HW, KR16 L8 HW), Panasonic (TB1800WGIII)</b></p>  <p>MASS : 3.92 LBS (1.78 kg) CENTER OF MASS: X = -0.03" (-0.76 mm) Y = -0.33" (-8.25 mm) Z = 4.60" (116.90 mm)</p>	<p><b>Motoman, OTC (AX-V4, AX-V4L), KUKA (KR5 HW, KR16 L8 HW), Panasonic (TB1800WGIII)</b></p>  <p>MASS : 4.65 LBS (2.11 kg) CENTER OF MASS: X = -0.02" (-0.51 mm) Y = -0.24" (-5.98 mm) Z = 5.24" (133.15 mm)</p>
<p><b>OTC (All B4, All B4L, FD B4), COMAU (Smart5 Arc6)</b></p>  <p>MASS : 4.15 LBS (1.88 kg) CENTER OF MASS: X = -0.03" (-0.76 mm) Y = -0.31" (-7.81 mm) Z = 4.71" (119.61 mm)</p>	<p><b>OTC (All B4, All B4L, FD B4), COMAU (Smart5 Arc6)</b></p>  <p>MASS : 4.89 LBS (2.22 kg) CENTER OF MASS: X = -0.02" (-0.51 mm) Y = -0.22" (-5.70 mm) Z = 5.36" (136.06 mm)</p>

**CENTER OF MASS COORDINATES – 45 DEGREE (CLUTCH) (Continued)**

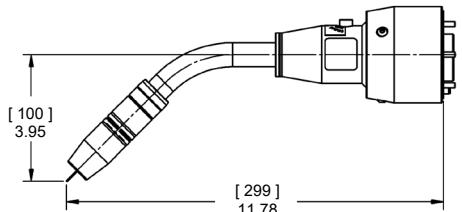
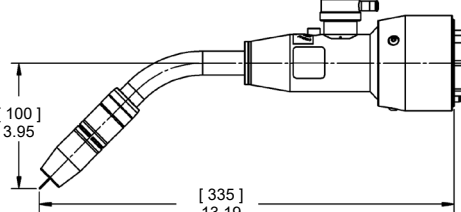
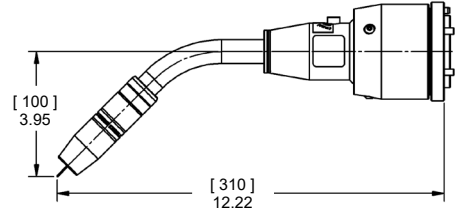
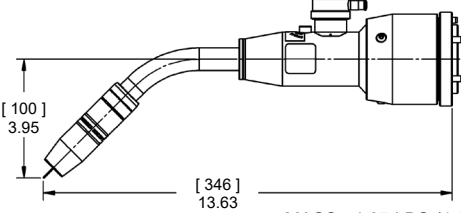
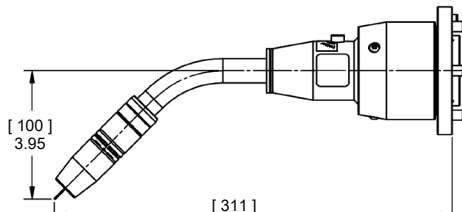
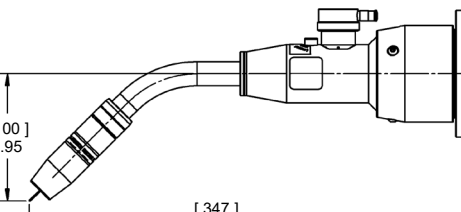
<b>CLUTCH</b>		<b>CLUTCH (WIRE BRAKE)</b>	
<b>Panasonic (TM-1400)</b>		<b>Panasonic (TM-1400)</b>	
<p>MASS : 4.60 LBS (2.09 kg)</p> <p>CENTER OF MASS:</p> <p>X = -0.02" (-0.58mm)</p> <p>Y = -0.30" (-7.61 mm)</p> <p>Z = 6.28" (159.49 mm)</p>		<p>MASS : 5.46 LBS (2.48 kg)</p> <p>CENTER OF MASS:</p> <p>X = -0.02" (-0.54mm)</p> <p>Y = -0.20" (-5.08 mm)</p> <p>Z = 6.93" (175.92 mm)</p>	
<b>Motoman (MA1440 &amp; MA2010)</b>		<b>Motoman (MA1440 &amp; MA2010)</b>	
<p>MASS : 5.27 LBS (2.39 kg)</p> <p>CENTER OF MASS:</p> <p>X = -0.02" (-0.51 mm)</p> <p>Y = -0.26" (-6.53 mm)</p> <p>Z = 6.95" (176.61 mm)</p>		<p>MASS : 6.13 LBS (2.78 kg)</p> <p>CENTER OF MASS:</p> <p>X = -0.02" (-0.48 mm)</p> <p>Y = -0.17" (-4.40 mm)</p> <p>Z = 7.64" (194.19 mm)</p>	

## 8.4 GUN CONFIGURATIONS – 45 DEGREE (SOLID MOUNT)

### CENTER OF MASS COORDINATES

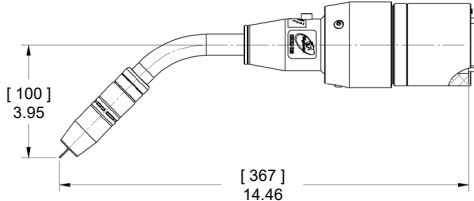
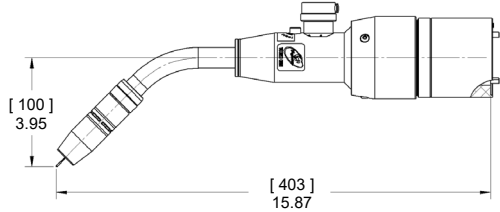
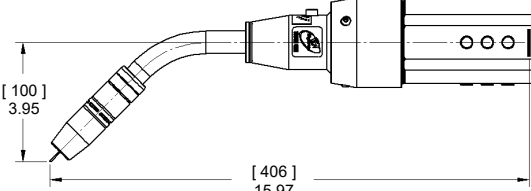
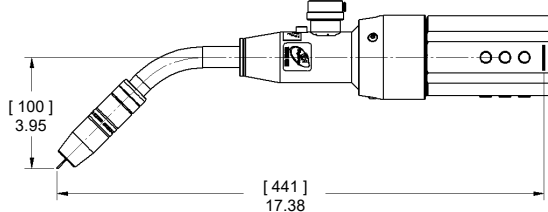


\* Wire Stick-Out = 0.59" (15 mm)

SOLID MOUNT	SOLID MOUNT (WIRE BRAKE)
<p><b>Motoman, Panasonic (TB1800WGIII)</b></p>  <p>MASS : 3.27 LBS (1.48 kg)            CENTER OF MASS:            X = -0.00            Y = -0.38" (-9.68 mm)            Z = 3.65" (92.78 mm)</p>	<p><b>Motoman, Panasonic (TB1800WGIII)</b></p>  <p>MASS : 4.01 LBS (1.82 kg)            CENTER OF MASS:            X = -0.00            Y = -0.27" (-6.76 mm)            Z = 4.14" (105.28 mm)</p>
<p><b>ABB (IRB1600ID), KUKA (KR16 HW)</b></p>  <p>MASS : 3.53 LBS (1.60 kg)            CENTER OF MASS:            X = -0.00            Y = -0.35" (-8.93 mm)            Z = 3.80" (96.60 mm)</p>	<p><b>ABB (IRB1600ID), KUKA (KR16 HW)</b></p>  <p>MASS : 4.27 LBS (1.94 kg)            CENTER OF MASS:            X = -0.00            Y = -0.25" (-6.32 mm)            Z = 4.32" (109.62 mm)</p>
<p><b>ABB (IRB2600ID)</b></p>  <p>MASS : 3.70 LBS (1.68 kg)            CENTER OF MASS:            X = -0.00            Y = -0.34" (-8.57 mm)            Z = 3.68" (93.37 mm)</p>	<p><b>ABB (IRB2600ID)</b></p>  <p>MASS : 4.44 LBS (2.01 kg)            CENTER OF MASS:            X = -0.00            Y = -0.24" (-6.11 mm)            Z = 4.20" (106.60 mm)</p>



**CENTER OF MASS COORDINATES – 45 DEGREE (SOLID MOUNT)** (Continued)

<b>SOLID MOUNT</b>		<b>SOLID MOUNT (WIRE BRAKE)</b>	
<p><b>Panasonic (TM-1400)</b></p>  <p>MASS : 4.08 LBS (1.85 kg)            CENTER OF MASS:            X = 0.00" (0.014 mm)            Y = -0.31" (-7.75 mm)            Z = 5.32" (135.03 mm)</p>	<p><b>Panasonic (TM-1400)</b></p>  <p>MASS : 4.82 LBS (2.19 kg)            CENTER OF MASS:            X = 0.00" (0.01 mm)            Y = -0.22" (-5.57 mm)            Z = 5.88" (149.34 mm)</p>		
<p><b>Motoman (MA1440 &amp; MA2010)</b></p>  <p>MASS : 4.75 LBS (2.15 kg)            CENTER OF MASS:            X = 0.00" (0.01 mm)            Y = -0.26" (-6.53 mm)            Z = 6.04" (153.46 mm)</p>	<p><b>Motoman (MA1440 &amp; MA2010)</b></p>  <p>MASS : 5.50 LBS (2.49 kg)            CENTER OF MASS:            X = 0.00" (0.01 mm)            Y = -0.19" (-4.78 mm)            Z = 6.64" (168.74 mm)</p>		

## 9.0 – ORDERING INFORMATION

**To order replacement parts** for your TOUGH GUN ThruArm G1 Series Robotic MIG Gun, please contact Tregaskiss Customer Service by phone at 1-855-644-9353 (Canada and USA) or +1-519-737-3030 (international).

**For help with configuring a part number** for a new TOUGH GUN ThruArm G1 Series Robotic MIG Gun, please visit [Tregaskiss.com/ThruArm](http://Tregaskiss.com/ThruArm) for detailed information or [Tregaskiss.com/ConfigureMyGun](http://Tregaskiss.com/ConfigureMyGun) to build your gun online. Tregaskiss Customer Service can also assist you by phone at 1-855-MIGWELD (644-9353) from within Canada and the USA. International customers can reach the same Tregaskiss Customer Service team by calling +1-519-737-3030.



**For Technical Support:**

**Canada & U.S.A. Phone:** 1-855-MIGWELD (644-9353)

**International Phone:** +1-519-737-3000

**Email:** [ts@tregaskiss.com](mailto:ts@tregaskiss.com)

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