

TECHNICAL GUIDE

**TOUGH GUN Robotic
Torch System
For the
FANUC ARC Solution Arm**

- **INSTALLATION**
- **GOOSENECK OPTIONS**
- **MAINTENANCE**
- **SPECIFICATIONS**
- **TROUBLE SHOOTING**
- **OPTIONS**
- **PARTS BREAKDOWN**

*Certified ISO 9001 :2000.
Please read instructions prior to use.
Save this manual for future reference*

TABLE OF CONTENTS	PAGE
WARRANTY	2
1.0 - INSTALLATION	
1.1 FRONT END.....	3-5
1.2 GOOSENECK INSTALLATION AIR COOLED.....	5
1.3 GOOSENECK INSTALLATION TG ICE.....	6
2.0 – GOOSENECK OPTIONS	6
3.0 – MAINTENANCE	
3.1 LIMIT SWITCH – REPLACEMENT/ADJUSTMENT.....	7
3.2 CONSUMABLES.....	7
3.3 LINER.....	8
4.0 – SPECIFICATION	
4.1 AMPERAGE RATINGS.....	8
5.0 – TROUBLE SHOOTING	8
6.0 – OPTIONS	
6.1 WIRE BRAKE OPTION.....	9
6.2 AIR BLAST OPTION.....	9
7.0 – PARTS BREAKDOWN	
7.1 AIR COOLED.....	10
7.2 TOUGHGUN ICE.....	11

GENERAL SAFETY

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.

WARRANTY

Tregaskiss MIG Guns and parts are warranted to be free of defects in material and/or workmanship as stated below. If within that period, any Tregaskiss gun or part thereof is found to be defective under normal and recommended use, Tregaskiss will at their option, repair, replace or issue credit for the value of the defective unit. All claims against this warranty must be submitted through a factory-authorized distributor. Use of non-Tregaskiss parts and/or consumables with these guns may damage or severely limit performance of the TOUGH GUN and may limit or void any warranties. Tregaskiss will not assume responsibility for incidental damages or expenses by any defect whatsoever.

TOUGH GUN MIG guns and components -	120 days
TOUGH GUN handles and trigger switches -	lifetime
TOUGH GUN Reamer and components -	1 year
TOUGH GUN Robotic peripherals: Clutch, Sprayer, Wire Cutter, Clutch Disc and Robotic Arms -	1 year

If product is being returned for Warranty Repair or Replacement, a Return Authorization Form will be faxed for completion and will reference a Return Authorization Number. No charge replacements or repaired product will be sent out once returned product has been evaluated and warranty has been determined. If a replacement needs to be sent immediately, a purchase order number is required and the goods will be billed until warranty is determined.

THANK YOU....

For selecting a Tregaskiss TOUGH GUN[®] Robotic MIG Torch. 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 is made from durable materials and components engineered to perform in a rugged welding environment. Your TOUGH GUN has undergone numerous quality checks to ensure high performance.

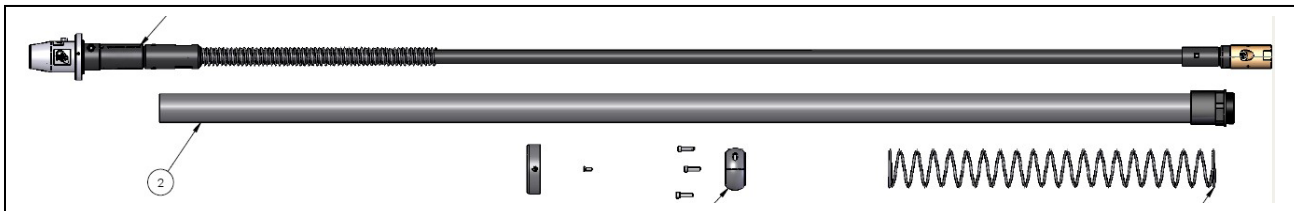
The instructions and illustrations in this technical guide make it easy for you to maintain your TOUGH GUN. **Please read, understand, and follow all safety procedures.**

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 (800) 787-6966 or fax (800) 665-0400.** Our trained technicians are available between 8:30 AM and 4:30 PM, and will answer your application or repair questions.

Tregaskiss employees build TOUGH 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 SYSTEM COMPONENTS

- The TOUGH GUN Robotic Torch System (5600 Series) for the FANUC ARC Solution Arm comes complete with the following components:
 - Solution Arm Torch
 - Featuring the Low-Stress Robotic Unicable
 - Protective Conduit
 - Hardware Kit
 - Spring and Spring Retention Clasp



The complete 56XX Solution Arm Torch System is complete with Solution Arm Torch, protective conduit, hardware kit, protective cover, spring, and spring retention clasp.

- Also Sold Separately:
 - Liner, Power Pin, Gooseneck, and Consumables (Retaining Head, Contact Tip and Nozzle)

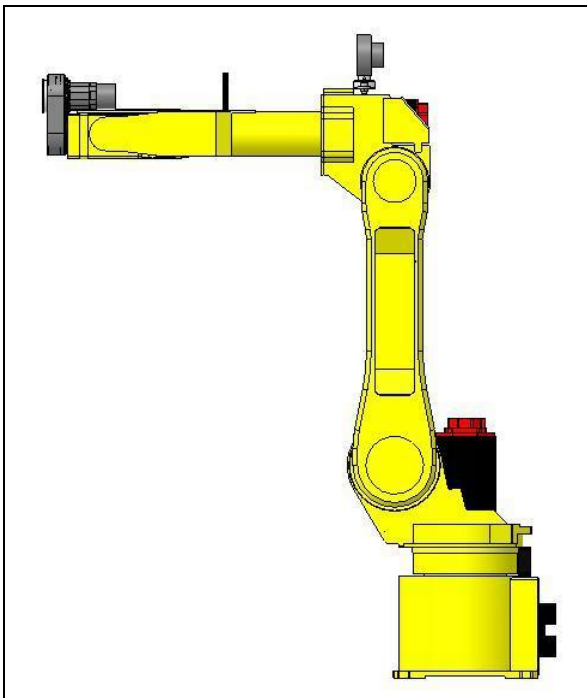
1.0 INSTALLATION OF THE COMPLETE TORCH SYSTEM

Tregaskiss Solution Arm Torch System	FANUC Robot Model	Feeder Position
5606	100 iBe	on robot
5607	120 iBe	on robot
5608	100/120iBe	remote mounted
5609	100/120iBe	remote mounted
5610	100/120iBe	remote mounted
5611	M-710iC/20L	on robot
5611	100/120iBe	remote mounted

This chart provides a cross-reference for choosing the correct Tregaskiss Torch for FANUC robots that are capable of using the ARC Solution Arm System

STEP #1: ROBOT SET-UP

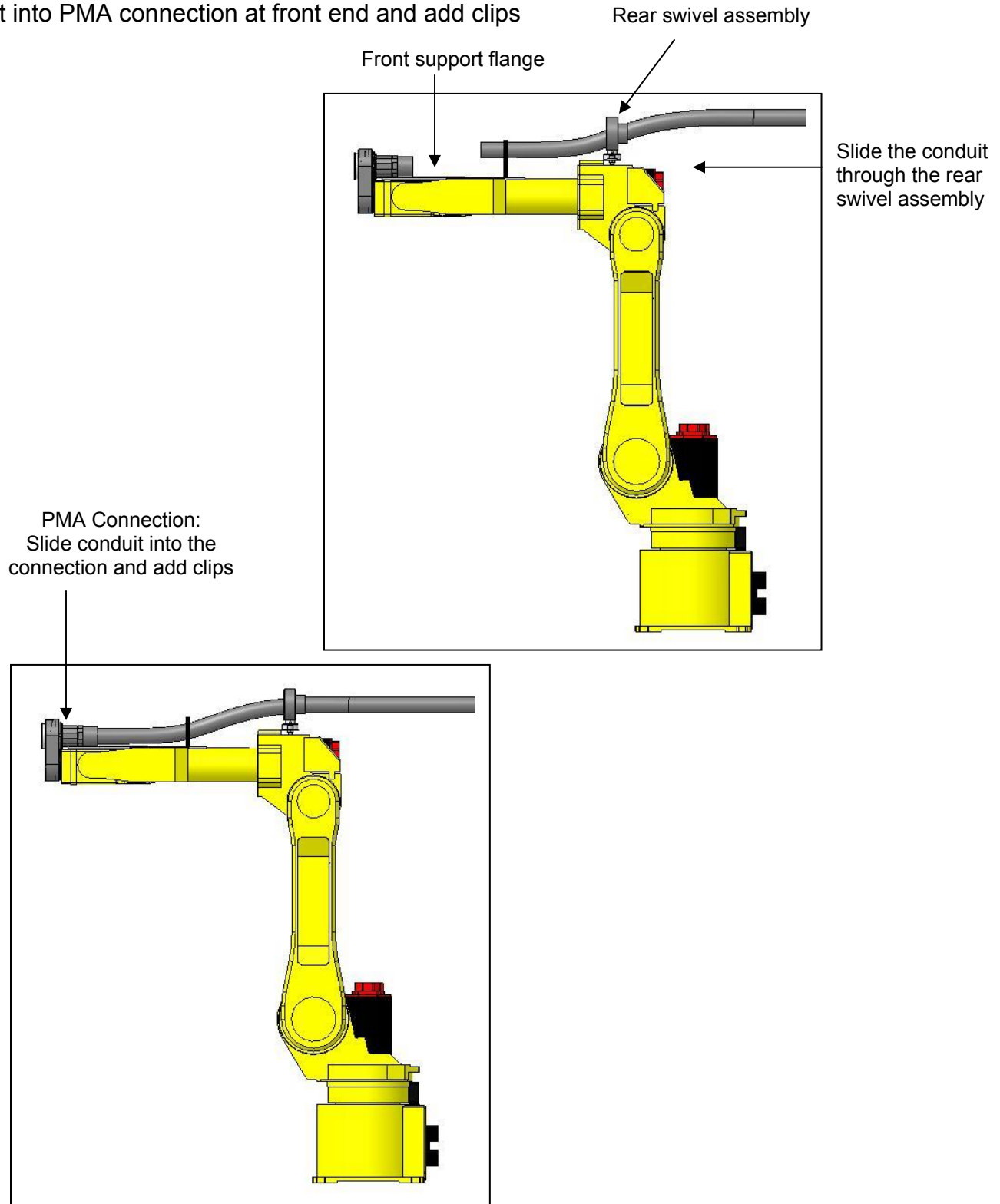
- Remove all contents from the packaging and remove zip ties
- Place the J5 axis of the robot to zero



Place the J5 axis of the FANUC robot to zero. The position should look like the photo shown here.

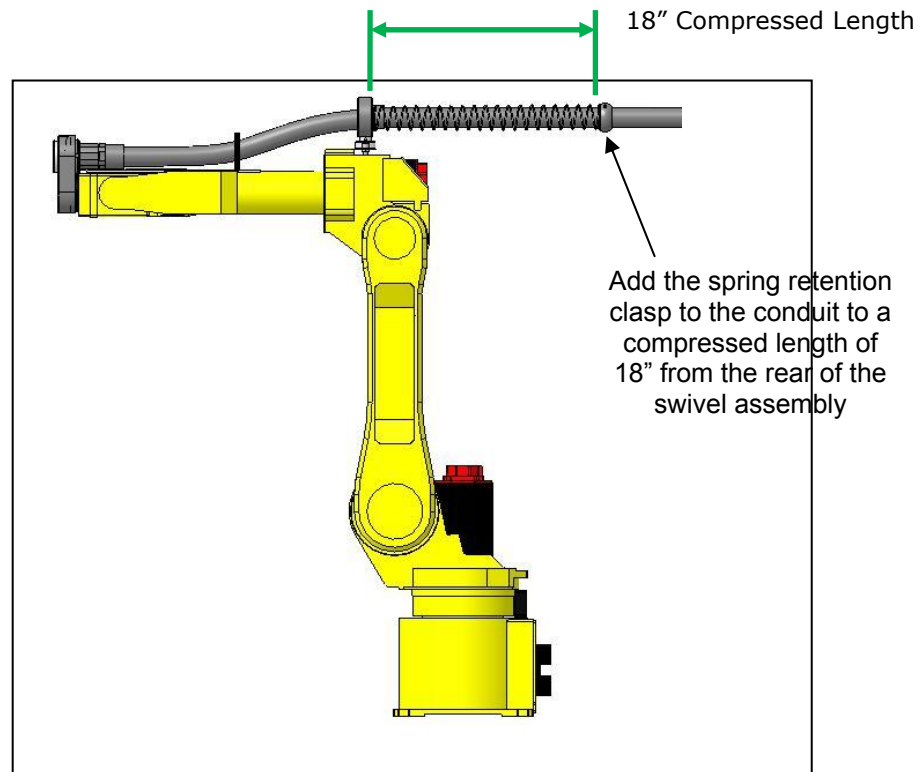
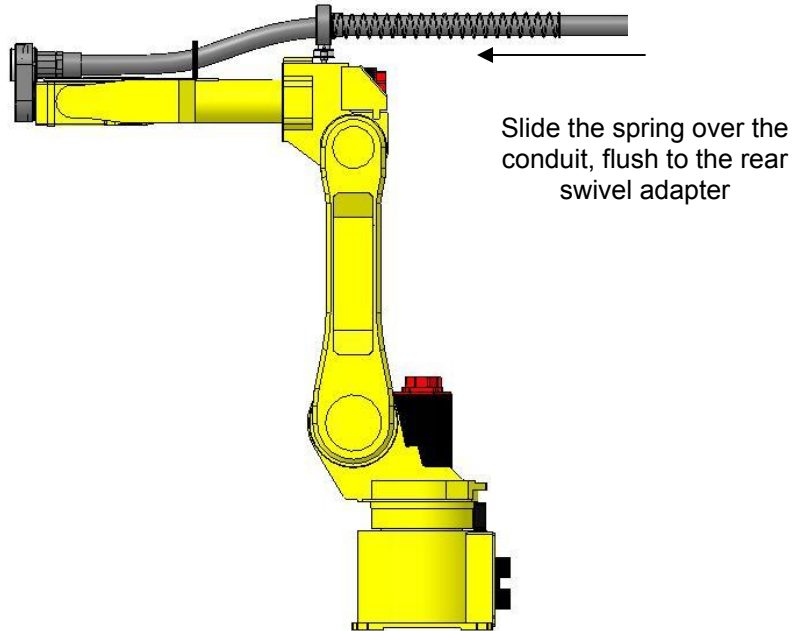
STEP #2: INSTALLING THE PROTECTIVE CONDUIT

- Separate the torch assembly (5606-2) from the protective conduit
- Install the conduit from rear of swivel assembly
- Pass the conduit over the front support flange, and
- Insert into PMA connection at front end and add clips



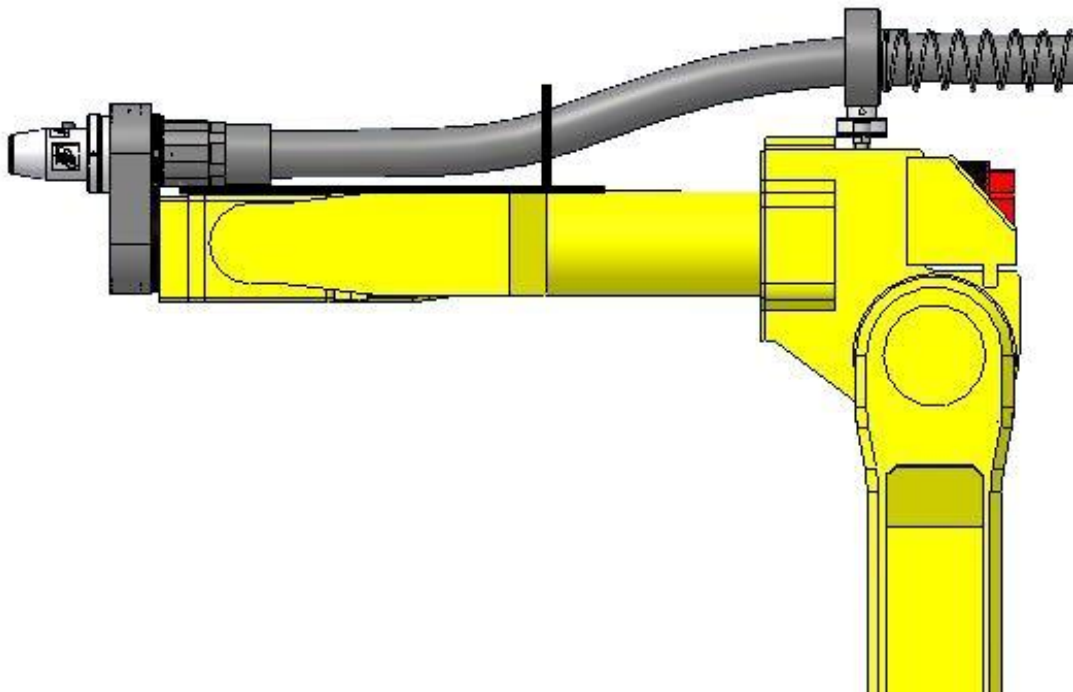
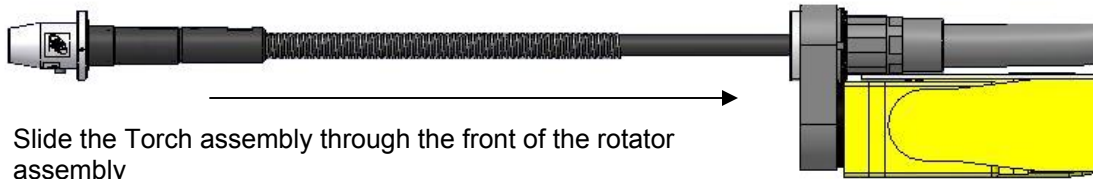
STEP #3: ADDING THE SPRING SYSTEM

- Run the spring over the conduit (from the back), to where it is flush with the rear of the swivel assembly
- Compress the spring from the 19" free length to 18" (or 1" of compression) from the rear swivel assembly
- Tighten spring retention clasp over the protective conduit



STEP #4: INSTALLING THE TORCH

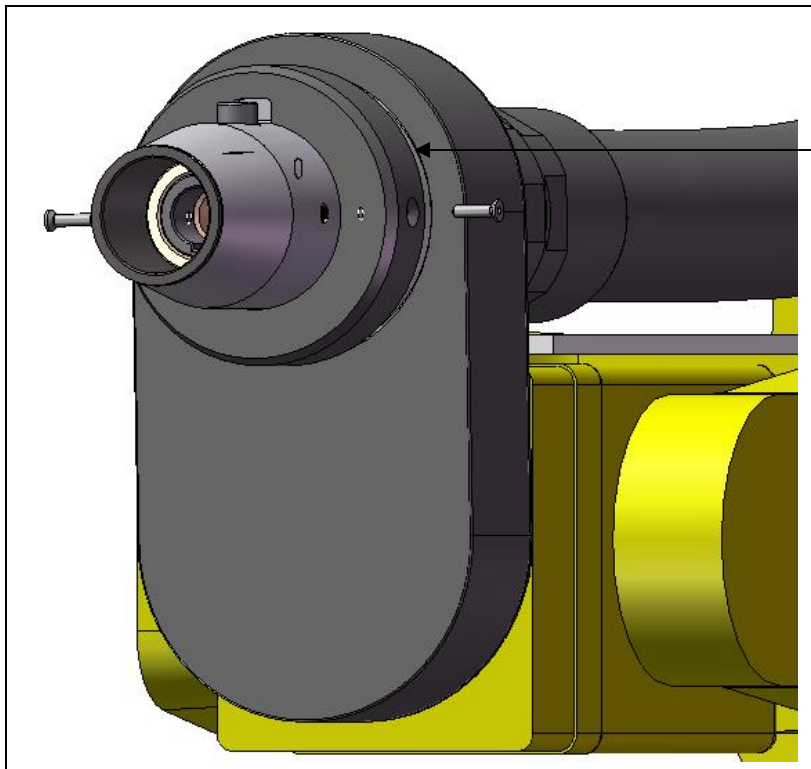
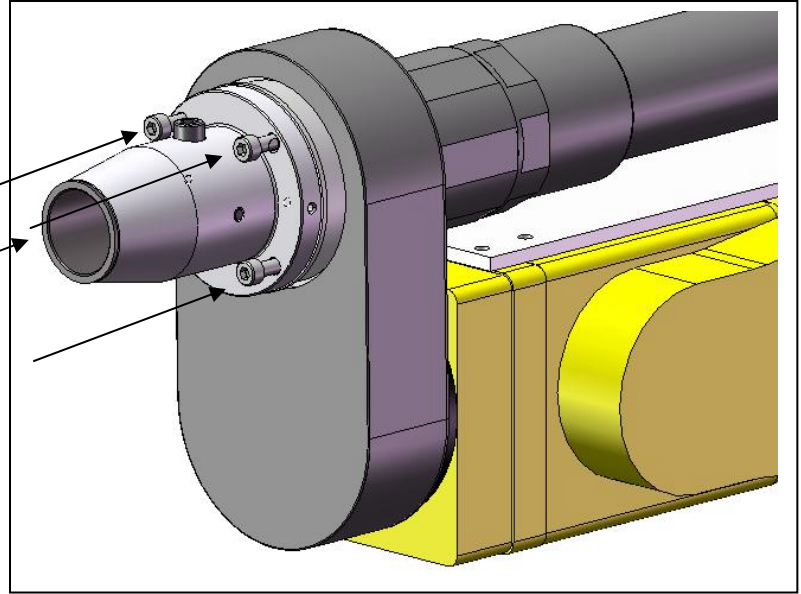
- Slide Torch through the front of the rotator assembly, passing through the protective conduit
- Another set of hands is recommended to hold the cable straight during assembly
- Pressure may have to be applied to insert the torch to the point where it can be fastened to the rear plastic housing



STEP #4: INSTALLING THE TORCH continued

- Fasten the torch housing to the front of the rotator mounting face
 - 4 screws can be found in the hardware kit
- Slide on the protective cover (2 screws are assembled to the cover).

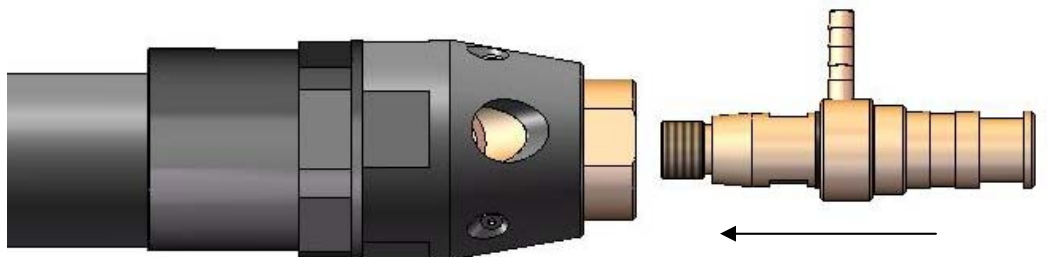
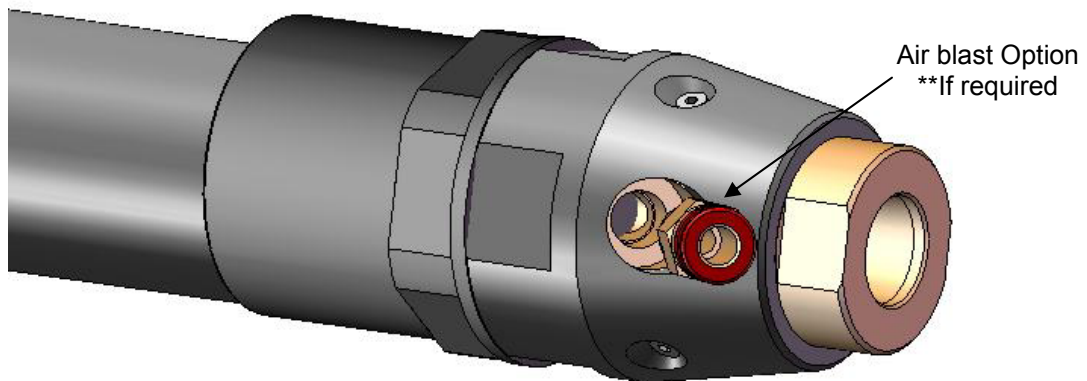
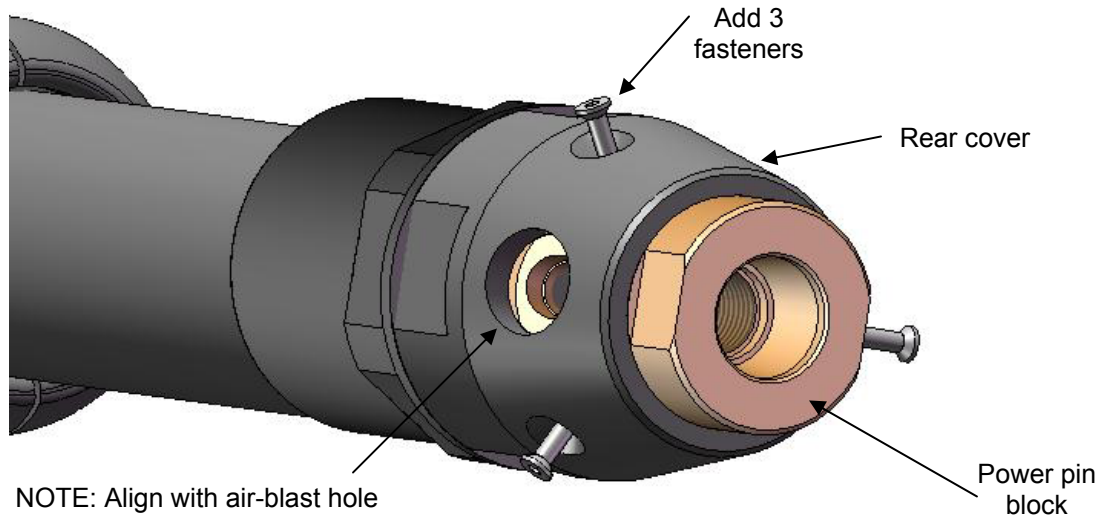
Install the front housing with the 4 fasteners found in the hardware kit



Slide the protective cover over the flange of the front housing and install the 2 fasteners

STEP #5: COMPLETING THE BACK-END OF THE TORCH

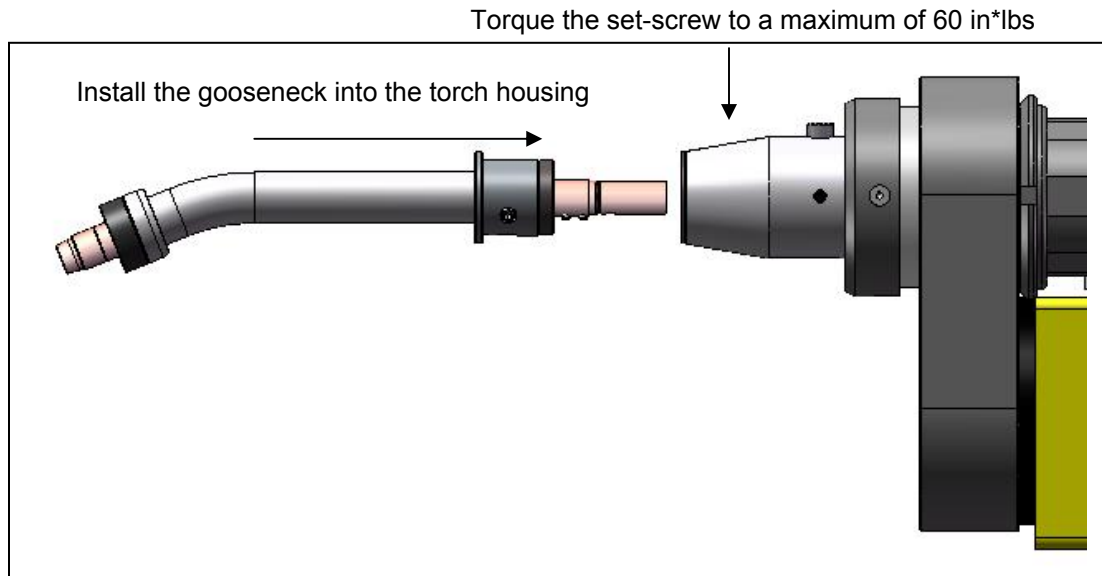
- Slide rear cover onto the power pin block of the torch
- Fasten with 3 screws (be sure to line up Air Blast holes)
- Install power pin
 - Torque to 18 ft*lbs
 - Gas hose should be attached to the wire feeder
- If using Air Blast option, this would be the time to install the Air Blast fitting



Install the power pin to a torque of
18 ft*lbs

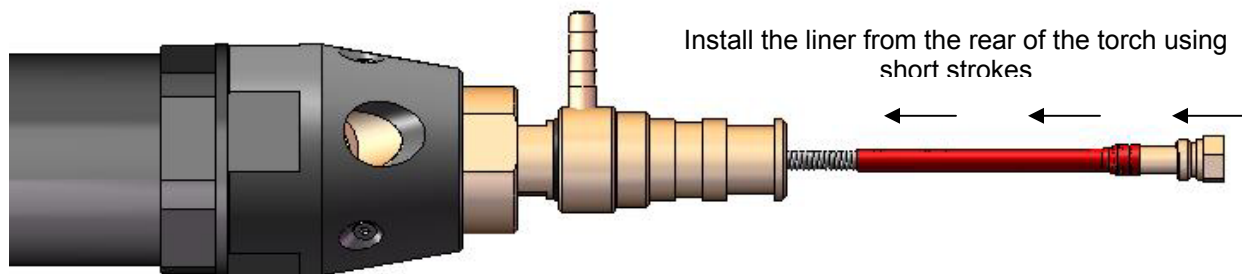
STEP #6: INSTALLING THE GOOSENECK AND CONSUMABLES

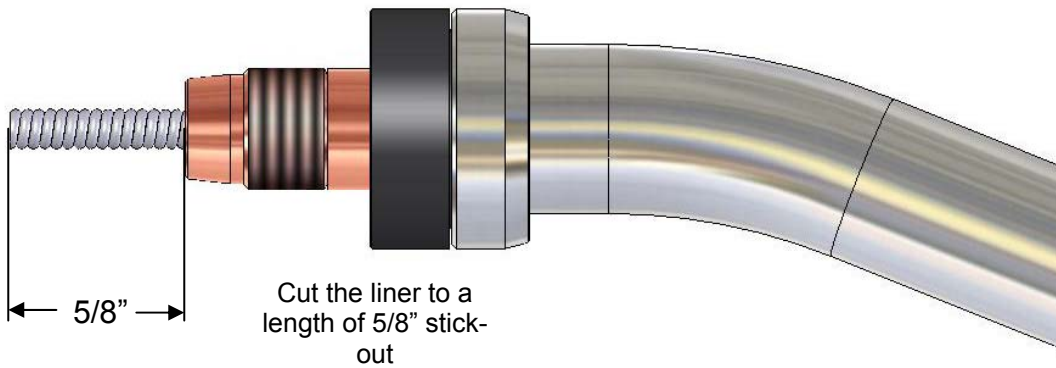
- Install gooseneck and torque to a maximum 60 in*lbs (Metric 5mm Allen Key).



STEP #7: CONVENTIONAL LINER INSTALLATION

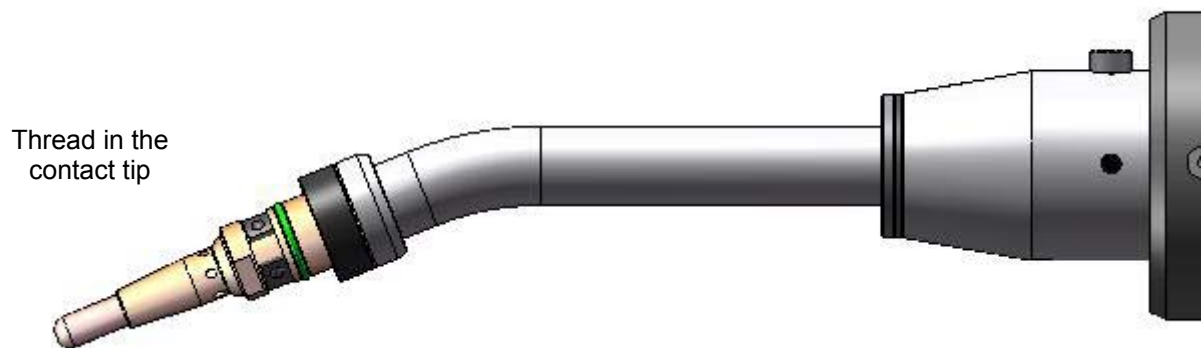
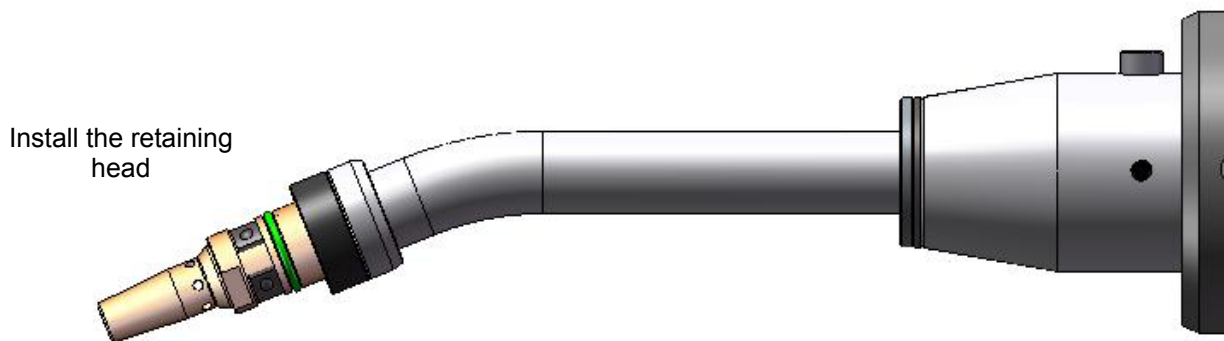
- Install liner through the power pin using short strokes
- Thread the liner retainer into the power pin to a snug fit using a 5/64" wrench
- At the front of the torch, cut the liner to 5/8" stick out
- Fit the gas hose to the power pin by using the gas barb
- Install power pin into the wire feeder



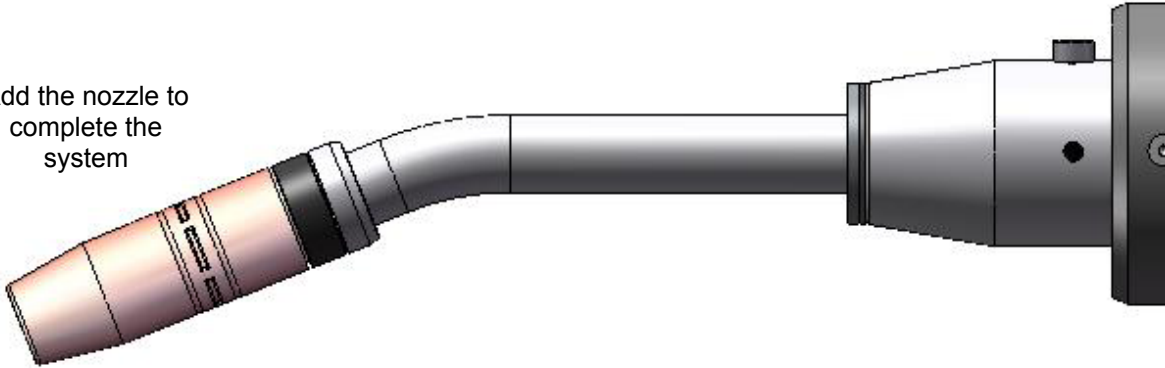


STEP # 8: INSTALLING CONSUMABLES

- Finally, install front-end consumables (sold separately)
 - Retaining head
 - Contact tip
 - Nozzle



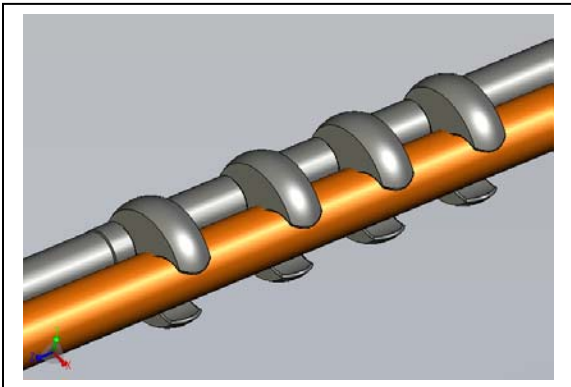
Add the nozzle to complete the system



REPLACING A TORCH OR UNICABLE

QUESTION: Do you have the Original or NEW Torch?

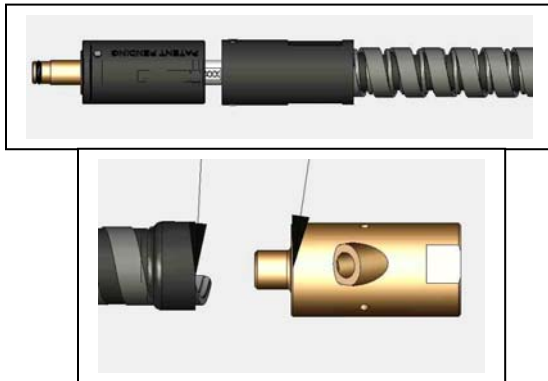
- If the torch system to be replaced is of the Original design (See the photo below), it features:
 - Separate power cable and core tube (hytel)
 - The power cable is a distinct orange color
- There are also a series of distinct spacer pucks



The Original Torch system for the Solution Arm involves a separate power cable and core tube that is separated by spacer pucks. If your torch has this design, a complete Torch must be ordered (56XX-2) since the front-housings are not compatible with the NEW design

- **IF** you have this style of torch, the entire Torch (56XX-2) must be replaced
 - Order a 56XX-2 (ex. 5606-2 for the 5606 Torch System)
 - See the information under the heading “REPLACING A COMPLETE TORCH”

- IF you do not have this style of Torch, you have a system based on the NEW Low-Stress Robotic Unicables



If your torch features a Low-Stress Robotic Uncable (shown to the left), it is possible to replace the uncable without having to replace the entire Torch. See the heading "REPLACING A LOW-STRESS ROBOTIC UNICABLE" below.

- It is then possible to replace only the uncable (see below under the heading "REPLACING A LOW-STRESS ROBOTIC UNICABLE")

REPLACING A COMPLETE TORCH (56XX-2)

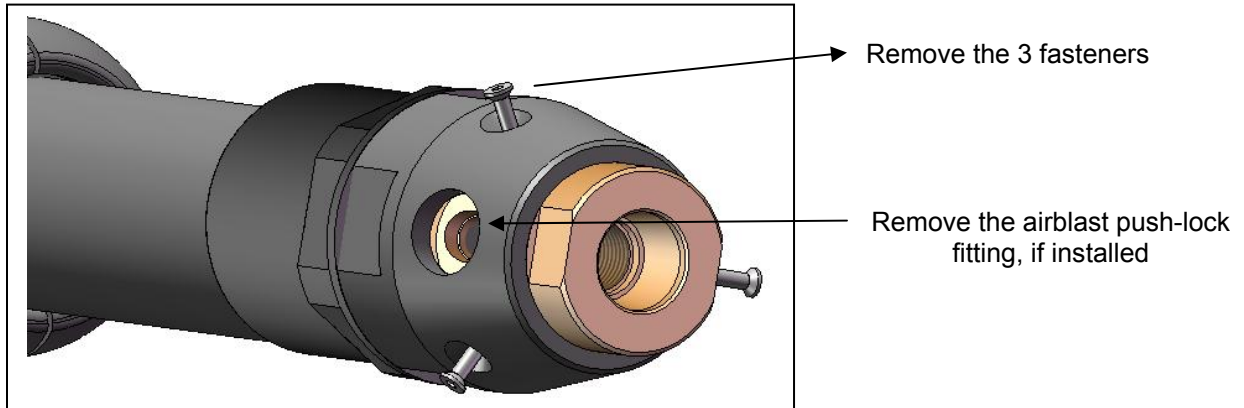
- All replacement torches are of the NEW design based on the Low-Stress Robotic Uncable platform
- IF you have the Original style of torch (as described above), the entire Torch must be replaced
 - Order a 56XX-2 (ex. 5606-2 for the 5606 Torch System)
 - XX dictates the length of the torch, ex. The 5606 requires the 5606-2 replacement torch
- Repeat Steps 4 to 8 as described above in section "INSTALLATION OF THE COMPLETE TORCH SYSTEM"
- The replacement Torch should look like the photo below
- IF you have the NEW style torch (shown in the photo below) and require a new power cable, it is now possible to replace only the uncable without replacing the front-housing (see "REPLACING A LOW-STRESS UNICABLE" section found below)



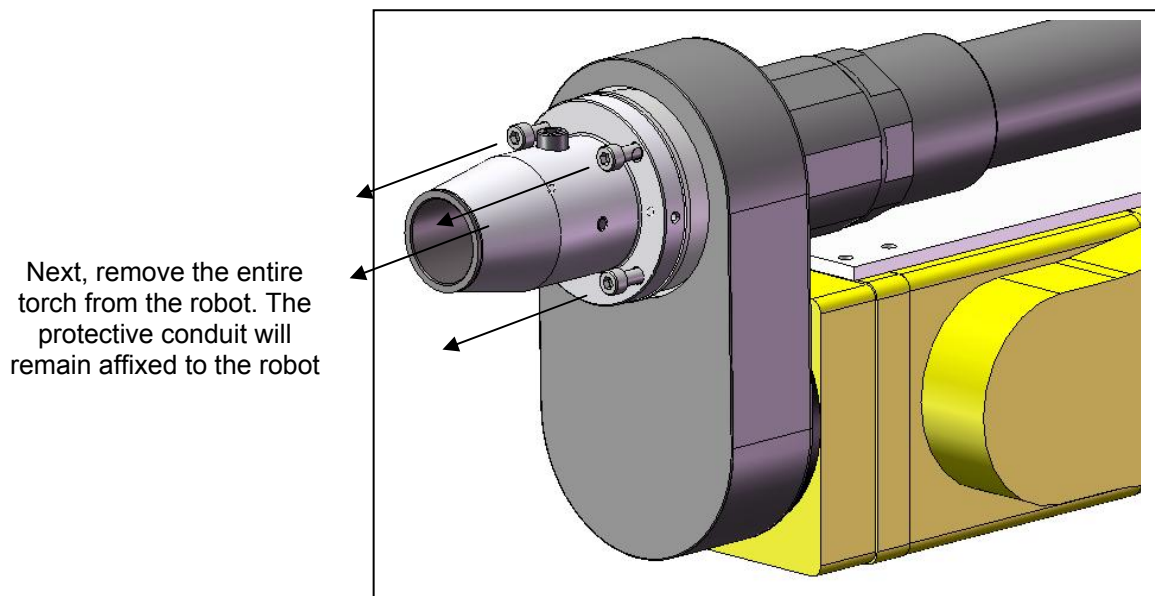
The 56XX-2, shown here, is complete with the new Low-Stress Robotic Uncable and the front housing.

REPLACING A LOW-STRESS ROBOTIC UNICABLE

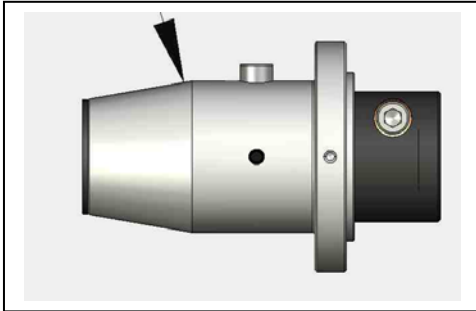
- If the Low-Stress Robotic Unicable requires replacement, follow these steps:
 - Order part Number: 56XX-3 (ex. 56XX-3 for the 5606)
 - Remove the gas hose from the power pin
 - Remove the power pin from the feeder
 - Remove the 3 fasteners at the rear cover
 - Remove air-blast push-lock fitting if installed to the torch



- Remove the torch from the front of the robot



- Remove the Low-Stress Unicable from the front-housing and replace with the new uncable



To replace the Low-Stress Robotic Uncable, remove the uncable from the Front-Housing and replace with the NEW uncable

- Tighten the fastener to 60 in*lbs
- Repeat Steps 4 to 8 as above in section “INSTALLATION OF THE COMPLETE TORCH SYSTEM”

QUESTIONS/COMMENTS/CHALLENGES?

- If you require further assistance, please contact Tregaskiss Technical Services at the following phone number(s):



THE FREEDOM TO INNOVATE

USA Phone: 1-800-618-6966
Fax: 1-800-311-1530

Canada Phone: 1-800-787-6966
Fax: 1-800-665-0400

International Phone: +1-246-430-9880
Fax: +1-646-219-3923

www.tregaskiss.com

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