

TOUGH GUN® TA3 Robotic Air-Cooled MIG Gun

OWNER'S MANUAL

January 2025

OM-TA3-3.1-F

Robotic, Air-Cooled, ThruArm™ MIG
(GMAW) Welding Gun for FANUC® Robots



bernardtregaskiss.com/TechnicalSupport
1-855-MIGWELD (644-9353)(US & Canada)

Thank You for Choosing Tregaskiss®

Thank you for selecting a Tregaskiss product. Before installing, compare the equipment received against the invoice to verify that the shipment is complete and undamaged. It is the responsibility of the purchaser to file all claims of damage or loss that may have occurred during transit with the carrier.

The owner's manual contains general information, instructions and maintenance to help better maintain your MIG gun or peripheral. Please read, understand and follow all safety precautions.

While every precaution has been taken to assure the accuracy of this owner's manual, Tregaskiss assumes no responsibility for errors or omissions. Tregaskiss assumes no liability for damages resulting from the use of information contained herein. The information presented in this owner's manual is accurate to the best of our knowledge at the time of printing. Please reference bernardtregaskiss.com for updated material.

For customer support and special applications, please call the Tregaskiss Customer Service Department at 1-855-MIGWELD (644-9353) (US & Canada) or +1-519-737-3000 (International), fax 1-519-737-1530, or email at cs@itwmig.com. Our trained Customer Service Team is available between 8:00 a.m. and 5:30 p.m. EST, and will answer your product application or repair questions.

Tregaskiss manufactures premium robotic MIG (GMAW) welding guns, peripherals and consumables. For more information on other premium Tregaskiss products, contact your local Tregaskiss distributor or visit us on the web at bernardtregaskiss.com.

Subject to Change – The information presented in this manual is accurate to the best of our knowledge at the time of printing. Please visit bernardtregaskiss.com for the most up-to-date information.

Additional Material – For additional support materials such as spec sheets, troubleshooting information, how-to guides and videos, animations, online configurators and much more, please visit bernardtregaskiss.com.

Scan this QR Code with your smart phone for immediate access to bernardtregaskiss.com/TechnicalSupport



TABLE OF CONTENTS

DECLARATION OF CONFORMITY	V
DECLARATION OF CONFORMITY	VI
SECTION 1 — SAFETY PRECAUTIONS — READ BEFORE USING	1
1-1 Symbol Usage	1
1-2 Arc Welding Hazards	1
1-3 California Proposition 65 Warnings	3
1-4 Principal Safety Standards	3
1-5 EMF Information	3
SECTION 2 — CONSIGNES DE SÉCURITÉ — LIRE AVANT UTILISATION	4
2-1 Symboles utilisés	4
2-2 Dangers relatifs au soudage à l'arc	4
2-3 Proposition californienne 65 avertissements	6
2-4 Principales normes de sécurité	6
2-5 Informations relatives aux CEM	6
SECTION 3 — PRECAUCIONES DE SEGURIDAD — LEA ANTES DE USAR	7
3-1 Uso de símbolos	7
3-2 Peligros en soldadura de arco	7
3-3 Advertencias de la Proposición 65 del estado de California	9
3-4 Estándares principales de seguridad	9
3-5 Información sobre los campos electromagnéticos (EMF)	9
SECTION 4 — PRODUCT WARRANTY	10
4-1 Product Warranty	10
SECTION 5 — SPECIFICATIONS	11
5-1 System Components	11
5-2 Through-Arm Robotic Articulation Limits for LSR Unicables	11
SECTION 6 — INSTALLATION FOR FANUC® iD SERIES	12
6-1 Installing Gun to FANUC iD Series Robot	12
6-2 Installing Power Pin to Uncable	13
6-3 Installing LSR Uncable to FANUC iD Series Robots	14
6-4 Installing the Neck	15
6-5 Installing the QUICK LOAD® Liner	16
6-6 Installing Gun to Wire Feeder	17
6-7 Connecting Wire Brake and/or Air Blast	18

SECTION 7 — INSTALLATION FOR FANUC® IC SERIES	19
7-1 Installing Gun to FANUC iC Series Robot	19
7-2 Installing Aluminum Spacer	20
7-3 Installing Power Pin to Unicable	21
7-4 Installing LSR Unicable to FANUC iC Series Robots	22
7-5 Installing the Front Housing	23
7-6 Installing the Fastener Cover	24
7-7 Installing the Neck	25
7-8 Installing the QUICK LOAD® Liner	26
7-9 Installing Gun to Wire Feeder	27
7-10 Connecting Wire Brake and/or Air Blast	28
SECTION 8 — REPLACEMENT	29
8-1 Changing Consumables	29
8-2 Changing the Neck	30
8-3 Changing the Liner	31
8-4 Changing the Euro Connection	32
8-5 Changing TOUGH GUN I.C.E.™ Components	33
8-6 Replacing the Wire Brake	34
SECTION 9 — TECHNICAL DATA	35
9-1 Center of Mass Coordinates - 22 Degree	35
9-2 Center of Mass Coordinates - 45 Degree	36
SECTION 10 — PARTS LIST	37
10-1 Air-Cooled System - FANUC iC Series	37
10-2 TOUGH GUN I.C.E. System - FANUC iC Series	38
10-3 Air-Cooled System - FANUC iD Series	39
10-4 TOUGH GUN I.C.E. System - FANUC iD Series	40
SECTION 11 — TROUBLESHOOTING	41
11-1 Troubleshooting Table	41
ADDITIONAL SUPPORT MATERIALS	43

DECLARATION OF CONFORMITY

for European Community (CE marked) products



Tregaskiss, 2570 North Talbot Rd., Oldcastle, Ontario N0R 1L0 Canada declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
Tregaskiss TOUGH GUN TA3 Series	TA1XXXXXXXX (Configurable #)

Council Directives:

- 2014/35/EU Low voltage
- 2011/65/EU and amendment 2015/863 Restriction of the use of certain hazardous substances in electrical and electronic equipment

Electronic equipment standards:

- EN IEC 60974-7:2019 Arc welding equipment – Part 7: Torches
- EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signatory:

A handwritten signature in black ink, appearing to read "David A. Werba".

March 22, 2017

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

DECLARATION OF CONFORMITY
for United Kingdom (UKCA marked) products



Tregaskiss, 2570 North Talbot Rd., Oldcastle, Ontario NOR 1L0 Canada declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
Tregaskiss TOUGH GUN TA3 Series	TA1XXXXXXXX (Configurable #)

Council Directives:

- S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016
- S.I. 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations

Standards:

- EN IEC 60974-7:2019 Arc welding equipment – Part 7: Torches
- EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signatory:

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

August 18, 2021

Date of Declaration



SECTION 1 — SAFETY PRECAUTIONS — READ BEFORE USING



Protect yourself and others from injury – read, follow, and save these important safety precautions and operating instructions.

1-1 Symbol Usage



DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE – Indicates statements not related to personal injury.

 – Indicates special instructions.



This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2 Arc Welding Hazards



The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in section 1-4 Principal Safety Standards on page 3, and in welding power source Owner's Manual. Read and follow all Safety Standards.



Only qualified persons should install, operate, maintain, and repair this equipment. A qualified person is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.



During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

- Always wear dry insulating gloves.
- Insulate yourself from work and ground.
- Do not touch live electrode or electrical parts.



- Do not store or use equipment in standing water.
- Replace worn, damaged, or cracked guns or cables.
- Turn off welding power source before changing contact tip or gun parts.
- Keep all covers and handle securely in place.

FUMES AND GASES can be hazardous.

- Keep your head out of the fumes.
- Ventilate area, or use breathing device. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



MOVING PARTS can injure.

- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.



WELDING can cause fire or explosion.

- Do not weld near flammable material.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Watch for fire; keep extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



BUILDUP OF GAS can injure or kill.

- Shut off compressed gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.



- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear body protection made from leather or flame-resistant clothing (FRC). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

HOT PARTS can burn.

- Allow gun to cool before touching.
- Do not touch hot metal.
- Protect hot metal from contact by others.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.



- Check for noise level limits exceeding those specified by OSHA.
- Use approved ear plugs or ear muffs if noise level is high.
- Warn others nearby about noise hazard.

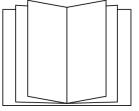
WELDING WIRE can injure.

- Keep hands and body away from gun tip when trigger is pressed.



READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the Manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform installation, maintenance, and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



1-3 California Proposition 65 Warnings

 **WARNING:** This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

1-4 Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: www.aws.org.

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute. Website: www.safetyequipment.org.

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1. Website: safetyequipment.org.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

SR7 2024-01

1-5 EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). The current from arc welding (and allied processes including spot welding, gouging, plasma arc cutting, and induction heating operations) creates an EMF field around the welding circuit. EMF fields may interfere with some medical implants, e.g. Pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passersby or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.

3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source wire feeder.

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 — CONSIGNES DE SÉCURITÉ — LIRE AVANT UTILISATION



Pour écarter les risques de blessure pour vous-même et pour autrui — lire, appliquer et ranger en lieu sûr ces consignes relatives aux précautions de sécurité et au mode opératoire.

2-1 Symboles utilisés



DANGER! – Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.



Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

AVIS – Indique des déclarations pas en relation avec des blessures personnelles.

 – Indique des instructions spécifiques.



Ce groupe de symboles veut dire Avertissement! Attention! DANGER DE CHOC ELECTRIQUE, PIECES EN MOUVEMENT, et PIECES CHAUDES. Reportez-vous aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout danger.

2-2 Dangers relatifs au soudage à l'arc



Les symboles donnés ci-après sont utilisés dans tout le manuel pour attirer l'attention sur les dangers possibles et pour indiquer le type de danger dont il s'agit. Quand on voit le symbole, prendre garde et suivre les directives correspondantes pour éviter le danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les Normes de sécurité principales, et dans le Guide d'utilisation de la source de courant de soudage. Lire et suivre toutes les Normes de sécurité.



L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées. Une personne qualifiée est définie comme celle qui, par la possession d'un diplôme reconnu, d'un certificat ou d'un statut professionnel, ou qui, par une connaissance, une formation et une expérience approfondies, a démontré avec succès sa capacité à résoudre les problèmes liés à la tâche, le travail ou le projet et a reçu une formation en sécurité afin de reconnaître et d'éviter les risques inhérents.



Au cours de l'utilisation, tenir toute personne à l'écart et plus particulièrement les enfants.

UN CHOC ÉLECTRIQUE peut tuer.



- Porter toujours des gants secs et isolants.
- S'isoler de la pièce et de la terre.
- Ne jamais toucher une électrode ou des pièces électriques sous tension.
- Ne stockez pas et n'utilisez pas l'équipement dans de l'eau stagnante.
- Remplacer les pistolets ou câbles de soudage qui sont endommagés, usés ou craquelés.
- Mettre la soudeuse hors tension avant de remplacer un bec contact ou des pièces de pistolet.
- S'assurer que tous les couvercles et poignées sont fermement assujettis.

LES FUMÉES ET LES GAZ peuvent être dangereux.



- Garder la tête hors des fumées.
- Aérer la zone de travail ou porter un appareil respiratoire. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquels est exposé le personnel.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.

Les PIÈCES MOBILES peuvent causer des blessures.



- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

Le SOUDAGE peut provoquer un incendie ou une explosion.



- Ne pas souder à proximité de matériaux inflammables
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 et AWS A6.0 (voir les Normes de Sécurité).
- Prendre garde aux incendies et toujours avoir un extincteur à proximité.

- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.

L'ACCUMULATION DE GAZ risquent de provoquer des blessures ou même la mort.



- Fermer l'alimentation du gaz comprimé en cas de non utilisation.
- Veiller toujours à bien aérer les espaces confinés ou se servir d'un respirateur d'adduction d'air homologué.

LE RAYONNEMENT DE L'ARC peut brûler les yeux et la peau.

Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant le soudage.



- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter une protection corporelle en cuir ou des vêtements ignifugés (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.

LES PIÈCES CHAUDES peuvent provoquer des brûlures.



- Laisser refroidir le pistolet avant de le toucher.
- Ne pas toucher d'objets métalliques chauds.
- Abriter les objets métalliques contre tout contact par les personnes à proximité.

Le BRUIT peut endommager l'ouïe.

Le bruit des processus et des équipements peut affecter l'ouïe.



- Vérifier si les niveaux de bruit excèdent les limites spécifiées par l'OSHA.
- Utiliser des bouches-oreilles ou des serre-tête antibruit approuvés si le niveau de bruit est élevé.

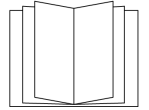
- Avertir les personnes à proximité au sujet du danger inhérent au bruit.

LES FILS DE SOUDAGE peuvent provoquer des blessures.



- Éloigner les mains et le corps de la buse du pistolet après avoir appuyé sur la gâchette.

LIRE LES INSTRUCTIONS.



- Lire et appliquer les instructions sur les étiquettes et le Mode d'emploi avant l'installation, l'utilisation ou l'entretien de l'appareil. Lire les informations de sécurité au début du manuel et dans chaque section.
- N'utiliser que les pièces de remplacement provenant du fabricant.
- Effectuer l'installation, l'entretien et toute intervention selon les manuels d'utilisateurs, les normes nationales, provinciales et de l'industrie, ainsi que les codes municipaux.

2-3 Proposition californienne 65 avertissements



AVERTISSEMENT – Ce produit peut vous exposer à des produits chimiques tels que le plomb, reconnus par l'État de Californie comme cancérigènes et sources de malformations ou d'autres troubles de la reproduction

Pour plus d'informations, consulter www.P65Warnings.ca.gov.

2-4 Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: www.aws.org.

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute. Website: www.safetysupply.com.

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1 from Global Engineering Documents. Website: www.aws.org.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

SR7_fre 2024-01

2-5 Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d'un soudage à l'arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les champs électromagnétiques produits peuvent causer interférence à certains implants médicaux, p. ex. les stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: par exemple, des restrictions d'accès pour les passants ou une évaluation individuelle des risques pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l'exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d'un côté et à distance de l'opérateur.

3. Ne pas courber et ne pas entourer les câbles autour de votre corps.
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.
6. Ne pas travailler à proximité d'une source de soudage, ni s'asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

En ce qui concerne les implants médicaux :

Les porteurs d'implants doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

SECTION 3 — PRECAUCIONES DE SEGURIDAD — LEA ANTES DE USAR



Protéjase usted mismo y a otros contra lesiones — lea, cumpla y conserve estas importantes precauciones de seguridad e instrucciones de utilización.

3-1 Uso de símbolos



PELIGRO! — Indica una situación peligrosa que, si no se la evita, resultará en muerte o lesión grave. Los peligros posibles se muestran en los símbolos adjuntos o se explican en el texto.



Indica una situación peligrosa que, si no se la evita, podría resultar en muerte o lesión grave. Los peligros posibles se muestran en los símbolos adjuntos, o se explican en el texto.

AVISO — Indica precauciones no relacionadas a lesiones personales.

 — Indica instrucciones especiales.



Este grupo de símbolos significa ¡Advertencia!, ¡Cuidado! **CHOQUE O DESCARGA ELÉCTRICA, PIEZAS QUE SE MUEVEN**, y peligros de **PARTES CALIENTES**. Consulte los símbolos y las instrucciones relacionadas que aparecen a continuación para ver las acciones necesarias para evitar estos peligros.

3-2 Peligros en soldadura de arco



Los símbolos mostrados abajo se usan en todo este manual para llamar la atención a e identificar los posibles peligros. Cuando vea el símbolo, preste atención y siga las instrucciones relacionadas para evitar el peligro. La información de seguridad dada abajo es solamente un resumen de la información más completa de seguridad que se encuentra en los estándares de seguridad, y la fuente de alimentación para soldadura del Manual del usuario. Lea y siga todas las normas de seguridad.



Solamente personal cualificado debe instalar, utilizar, mantener y reparar este equipo. La definición de personal cualificado es cualquier persona que, debido a que posee un título, un certificado o una posición profesional reconocida, o gracias a su gran conocimiento, capacitación y experiencia, haya demostrado con éxito la capacidad para solucionar o resolver problemas relacionados con el trabajo, el proyecto o el tema en cuestión, además de haber asistido a una capacitación en seguridad para reconocer y evitar los peligros que implica el proceso.



Durante su operación mantenga lejos a todos, especialmente a los niños.

UNA DESCARGA ELÉCTRICA puede matarlo.



- Siempre use guantes aislantes secos.
- Aíslese usted mismo del trabajo y la tierra.
- No toque electrodo eléctricamente vivo o partes eléctricamente vivas.
- No guarde ni use el equipo en aguas quietas.
- Reemplace antorchas o cables desgastados, dañados o rotos.
- Repare o reemplace aislamiento de la pistola o del cable que esté desgastado, dañado o agrietado.
- Apague la máquina de soldar antes de cambiar los tubos de contacto o piezas de la antorcha.
- Mantenga todas las tapas y asa bien seguras en sitio.

HUMO y GASES pueden ser peligrosos.



- Mantenga su cabeza fuera del humo.
- Ventile el lugar o use un aparato para respirar. El método recomendado para determinar la ventilación adecuada es tomar muestras de la composición y cantidad de humos y gases a los que está expuesto el personal.
- Lea y entienda las Hojas de datos del material (SDS) y las instrucciones del fabricante relacionadas con los adhesivos, metales, consumibles, recubrimientos, limpiadores, refrigerantes, desengrasadores, fundentes y metales.

Las PIEZAS MÓVILES pueden provocar lesiones.



- Aléjese de toda parte en movimiento.
- Aléjese de todo punto que pellizque, tal como rodillos impulsados.

EL SOLDAR puede causar fuego o explosión.



- No suelde cerca de material inflamable
- No suelde en recipientes que han contenido combustibles, ni en recipientes cerrados como tanques, tambores o tuberías, a menos que estén preparados correctamente de acuerdo con la norma AWS F4.1 y AWS A6.0 (vea las normas de seguridad).
- Siempre mire que no haya fuego y mantenga un extinguidor de fuego cerca.
- Lea y entienda las Hojas de datos del material (SDS) y las instrucciones del fabricante relacionadas con los adhesivos, metales, consumibles, recubrimientos, limpiadores, refrigerantes, desengrasadores, fundentes y metales.

EL AMONTONAMIENTO DE GAS puede enfermarle o matarle.



- Cierre el suministro de gas comprimido cuando no lo use.
- Siempre dé ventilación a espacios cerrados o use un respirador aprobado que reemplaza el aire.

LOS RAYOS DEL ARCO pueden quemar sus ojos y piel.



Los rayos del arco de un proceso de suelda producen un calor intenso y rayos ultravioletas fuertes que pueden quemar los ojos y la piel. Las chispas se escapan de la soldadura.

- Use una careta para soldar aprobada equipada con un filtro de protección apropiado para proteger su cara y ojos de los rayos del arco y de las chispas mientras esté soldando o mirando. (véase los estándares de seguridad ANSI Z49.1 y Z87.1).
- Use anteojos de seguridad aprobados que tengan protección lateral.
- Use pantallas de protección o barreras para proteger a otros del destello, reflejos y chispas, alerte a otros que no miren el arco.
- Use protección para el cuerpo hecha de cuero o de prendas resistentes a las llamas (FRC). Entre la protección para el cuerpo se incluye la ropa sin aceite, como guantes de cuero, una camisa gruesa, pantalones sin vuelta, calzado alto y una gorra.

PARTES CALIENTES pueden causar quemaduras severas.



- Permita que la antorcha se enfríe antes de tocarla.
- No toque metal caliente.
- Proteja a otros del contacto con el metal caliente.

EL RUIDO puede trastornar su oído.



Ruido proveniente de algunos procesos o equipo puede dañar el oído.

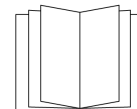
- Chequee los límites del nivel del ruido si exceden aquellos especificados por OSHA.
- Use tapas para los oídos o cubiertas para los oídos si el nivel del ruido es demasiado alto.
- Advierta a otros que estén cerca del peligro del ruido.

EL ALAMBRE de SOLDAR puede causarle heridas.



- Mantenga las manos y el cuerpo lejos del tubo de contacto de la antorcha cuando se haya presionado el gatillo.

LEER INSTRUCCIONES.



- Lea y siga cuidadosamente las instrucciones contenidas en todas las etiquetas y en el Manual del usuario antes de instalar, utilizar o realizar tareas de mantenimiento en la unidad. Lea la información de seguridad incluida en la primera parte del manual y en cada sección.
- Utilice únicamente piezas de reemplazo legítimas del fabricante.
- Los trabajos de instalación y mantenimiento deben ser ejecutados de acuerdo con las instrucciones del manual del usuario, las normas del sector y los códigos nacionales, estatales y locales.

3-3 Advertencias de la Proposición 65 del estado de California



ADVERTENCIA: Este producto puede exponerlo a químicos, incluso plomo, que el estado de California conoce como causantes de cáncer, defectos de nacimiento u otros daños reproductivos.

Para obtener más información, acceda a www.P65Warnings.ca.gov.

3-4 Estándares principales de seguridad

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: www.aws.org.

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute. Website: www.safetysupply.com.

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1 from Global Engineering Documents. Website: www.aws.org.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

SR7_spa 2024-01

3-5 Información sobre los campos electromagnéticos (EMF)

La corriente que fluye a través de un conductor genera campos eléctricos y magnéticos (EMF) localizados. La corriente del arco de soldadura (y otras técnicas afines como la soldadura por puntos, el ranurado, el corte por plasma y el calentamiento por inducción) genera un campo EMF alrededor del circuito de soldadura. Los campos EMF pueden interferir con algunos dispositivos médicos implantados como, por ejemplo, los marcapasos. Por lo tanto, se deben tomar medidas de protección para las personas que utilizan estos implantes médicos. Por ejemplo, aplique restricciones al acceso de personas que pasan por las cercanías o realice evaluaciones de riesgo individuales para los soldadores. Todos los soldadores deben seguir los procedimientos que se indican a continuación con el objeto de minimizar la exposición a los campos EMF generados por el circuito de soldadura:

1. Mantenga los cables juntos retorciéndolos entre sí o uniéndolos mediante cintas o una cubierta para cables.
2. No ubique su cuerpo entre los cables de soldadura. Disponga los cables a un lado y apartelos del operario.

3. No enrolle ni cuelgue los cables sobre su cuerpo.
4. Mantenga la cabeza y el tronco tan apartados del equipo del circuito de soldadura como le sea posible.
5. Conecte la pinza de masa en la pieza lo más cerca posible de la soldadura.
6. No trabaje cerca de la fuente de alimentación para soldadura, ni se siente o recueste sobre ella.
7. No suelde mientras transporta la fuente de alimentación o el alimentador de alambre.

Acerca de los aparatos médicos implantados:

Las personas que usen aparatos médico implantados deben consultar con su médico y el fabricante del aparato antes de llevar a cabo o acercarse a soldadura de arco, soldadura de punto, ranurar, hacer corte por plasma, u operaciones de calentamiento por inducción. Si su doctor lo permite, entonces siga los procedimientos de arriba.

SECTION 4 — PRODUCT WARRANTY

4-1 Product Warranty

Limited Warranty

Bernard and Tregaskiss' Products shall, from the date of original purchase (or, solely with respect to Low Stress Robotic Unicables packaged with any Bernard and Tregaskiss® Robotic MIG Gun, from the date the product goes into production for its intended use) and for the period set forth below, be free from defects in material and workmanship. To obtain repair or replacement of any Product, the covered Product must be delivered, transportation pre-paid by Purchaser, to the address specified by Bernard and Tregaskiss on its Returned Materials Authorization, with: (i) written proof of warranty coverage (e.g., Purchaser dated purchase order); (ii) serial number on product (if any); (iii) the Product's installed location within Purchaser's facility and usage of the Product; and (iv) written specification of any alleged defect(s). In the event the foregoing materials are not timely provided to Bernard and Tregaskiss by claimant, warranty coverage will be determined by Bernard and Tregaskiss, in its sole discretion. For the avoidance of doubt, the warranty period for any Product or part/component of any Product that is replaced or repaired by Bernard and Tregaskiss under the foregoing warranty is not extended or renewed at the time of such replacement or repair. **The Warranty against defects does not apply to: (1) consumable components or ordinary wear items; (2) products which are improperly altered, modified, stored, installed, operated, handled, used or neglected or use of the Products with equipment, components or parts not specified or supplied by Bernard and Tregaskiss or contemplated under the Product documentation; or (3) Products which have not been operated, maintained, and repaired pursuant to Product documentation provided by Tregaskiss. Purchaser shall pay Bernard and Tregaskiss for all warranty claim costs incurred by Tregaskiss (including inspection, labor, parts, testing, scrap and freight) due to warranty claims submitted by Purchaser which are not covered by Bernard and Tregaskiss' warranty.**

- Bernard® BTB Semi-Automatic Air-Cooled MIG Guns: **1 year**; *Lifetime warranty on straight handles, straight handle switches, and rear strain relief*
- Bernard® W-Gun™ and T-Gun™ Semi-Automatic Water-Cooled MIG Guns: **180 days**
- Bernard® TGX® Chassis and Bernard TGX Ready To Weld MIG Guns: **90 days**
- Tregaskiss® Robotic MIG Guns and Components: **1 year**
- Tregaskiss® Automatic MIG Guns: **1 year**
- Tregaskiss® TOUGH GUN® Reamer:
 - When factory-equipped with lubricator: **2 years** when factory-equipped with lubricator
 - When (i) factory-equipped with lubricator and (ii) used exclusively with Tregaskiss® TOUGH GARD® Anti-Spatter Liquid: **3 years** when both (i) and (ii)

- Tregaskiss® TOUGH GUN® Robotic Peripheral (Clutch, Sprayer, Wire Cutter, Arms): **1 year**
- Tregaskiss® Low-Stress Robotic Unicables (LSR+ Unicables): **6 months**

Service Warranty

Bernard and Tregaskiss warrants the Services shall conform to any mutually agreed upon specifications or statements of work. Purchaser's sole remedy, and Bernard and Tregaskiss's sole liability, for a breach of the foregoing warranty is for Tregaskiss, at its option, to re-perform the Services or credit Purchaser's account for such Services.

Limitation of Liability and Remedies

BERNARD AND TREGASKISS WILL NOT BE LIABLE, AND PURCHASER WAIVES ALL CLAIMS AGAINST BERNARD AND TREGASKISS FOR INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, DOWN TIME, LOST PROFITS OR COMMERCIAL LOSSES, WHETHER OR NOT BASED UPON TREGASKISS' NEGLIGENCE OR BREACH OF WARRANTY OR STRICT LIABILITY IN TORT OR ANY OTHER CAUSE OF ACTION. IN NO EVENT WILL BERNARD AND TREGASKISS' LIABILITY IN CONNECTION WITH THE AGREEMENT OR SALE OF BERNARD AND TREGASKISS' PRODUCTS OR SERVICES EXCEED THE PURCHASE PRICE OF THE SPECIFIC PRODUCTS OR SERVICES AS TO WHICH THE CLAIM IS MADE.

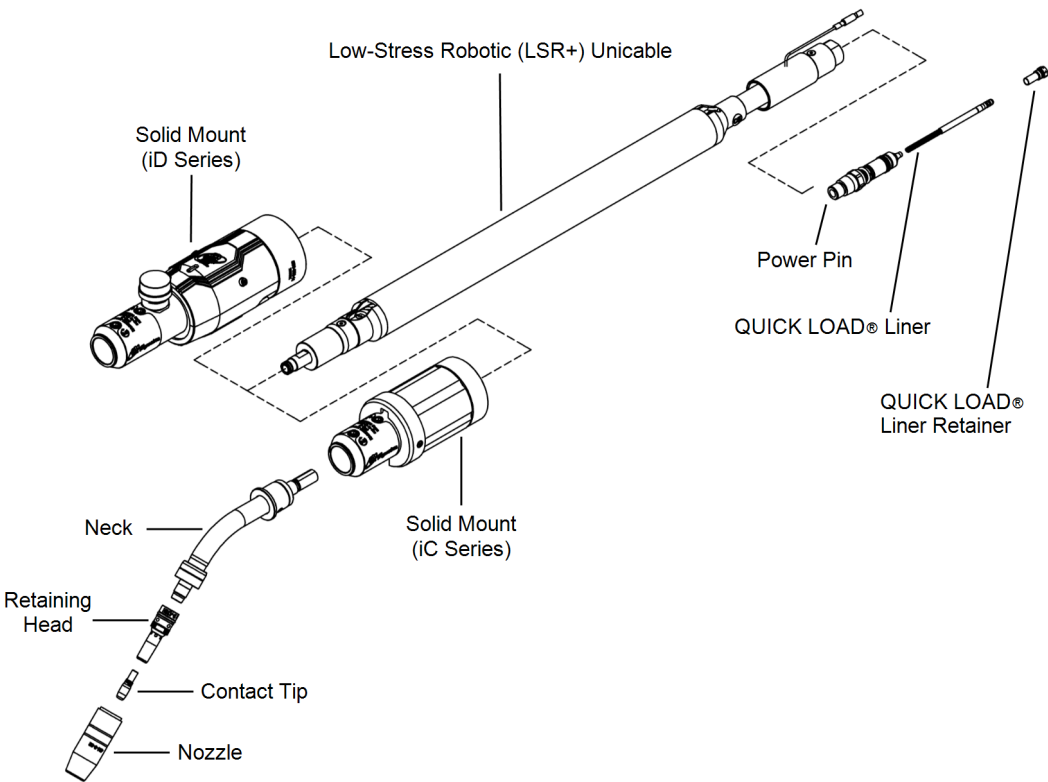
SECTION 5 — SPECIFICATIONS

5-1 System Components

Robotic MIG Gun for GMAW Welding

Duty Cycle Rating: 100%: 350 amps with Mixed Gases

For complete parts list, please see Section 10 — Parts List on page 37.



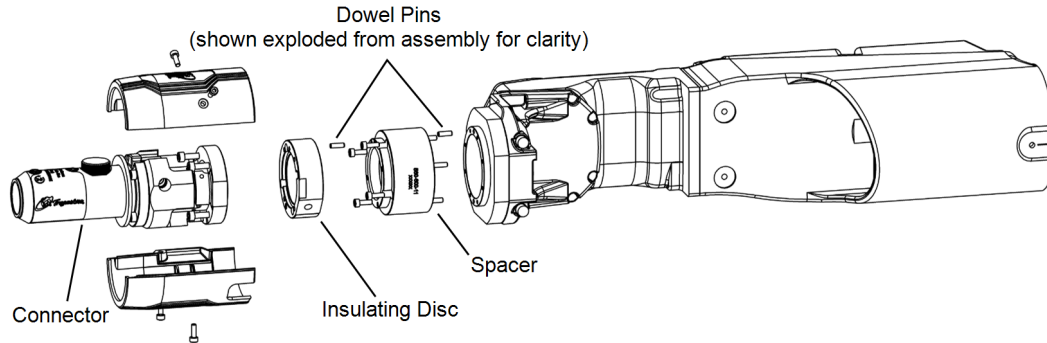
5-2 Through-Arm Robotic Articulation Limits for LSR Uncables

Axis	Articulation Limit
5	+/- 90°
4+6	+/- 270°

NOTE: Any articulation beyond these limits is considered abuse of the cable and will accelerate LSR+ uncable wear.

SECTION 6 — INSTALLATION FOR FANUC® ID SERIES

6-1 Installing Gun to FANUC iD Series Robot



NOTE: Position the robot with the wrist and top axis 180 degrees parallel to each other to properly complete the gun installation. Loosen feeder adjustment bolts so the feeder slides freely.

1. Remove the outer cover:
 - a. Unthread (x3) M4 SHCS using a 3 mm Allen wrench.
 - b. Unthread (x1) M4 SHCS using a 3 mm Allen wrench, and pull apart both cover halves.
 - c. Insulating disc should remain in place, located by dowel.
2. Install spacer to robot mounting face using the dowel pin as a guide, and make sure it is fully seated on the robot wrist.

IMPORTANT: Ensure space is uniform all the way around the robot wrist before proceeding (see Figure 6-B).

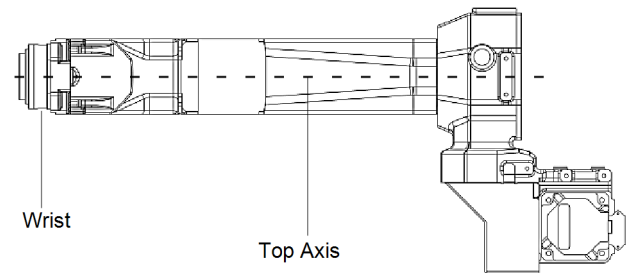
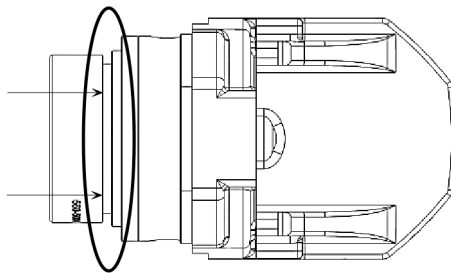


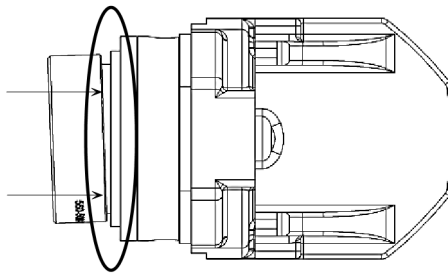
Figure 6-A

Figure 6-B

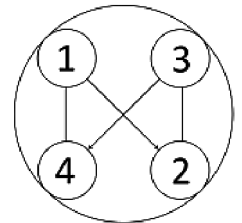
Figure 6-C



CORRECT! Spacing is uniform



STOP! Spacing is not uniform - **DO NOT**



3. Using the supplied tightening pattern in Figure 6-C, attach the spacer using the provided M4x0.7x12 SHCS (x4). Torque to 45 in-lbs (5 Nm).
4. Install the insulating disc, being sure to align dowel pin with associated hole on the spacer face.
NOTE: Dowel will be pressed into disc prior to shipping.
5. Fully seat the insulating disc on the spacer. **NOTE:** Do not use the fasteners to pull the face of the insulating disc to the face of the spacer, as damage will occur.
IMPORTANT: Ensure space is uniform all the way around the robot wrist before proceeding (see Figure 6-B).
6. Using the supplied tightening pattern in Figure 6-C, attach the insulating disc using the provided M4x0.7x12 SHCS (x4). Torque to 25 in-lbs (2.8 Nm). **IMPORTANT:** Installing differently than as instructed can result in cracking or breaking of the insulating disc.
7. Fasten connector housing to the insulating disc using M5x0.8x25 SHCS (x4). Torque to 25 in-lbs (2.8 Nm). **Do not over-tighten.**
NOTE: When properly fastened, the head of the SHCS will not stick out past the face of the insulating disc.

6-2 Installing Power Pin to Unicable

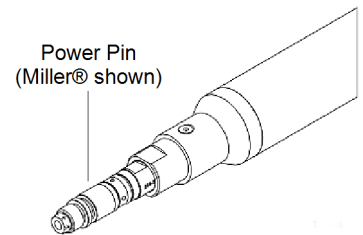


A. Standard Power Pins

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 ensure the pin is secure and will not come loose.

1. Thread power pin into the adapter of the LSR+ Unicable.
2. 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.
3. Torque to 18 ft-lbs.

Figure 6-D

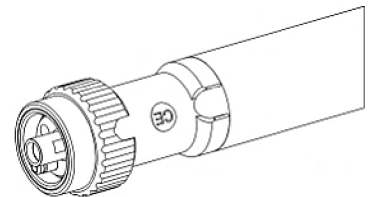


B. Euro Connections

NOTE: The Euro connection comes factory-installed.

No installation required.

Figure 6-E



6-3 Installing LSR Unicable to FANUC iD Series Robots



1. Insert the LSR Unicable through the wrist and arm of the robot (see Figure 1-KK).
2. Firmly grasp the LSR Unicable at the location intended.
3. Insert unicable connector into connector housing. Ensure components are fully seated.
4. Push the two components together firmly until *Contact Surface 1* and *Contact Surface 2* are touching (see Figure 1-KL).
5. Secure by tightening M6x16 SHCS using a 5 mm Allen wrench. Torque to 80 in-lbs (9 Nm) (see Figure 1-KL).
6. Re-install the outer cover (see Figure 1-KM):
 - a. Put both cover halves back together and install (x1) M4 SHCS using a 3 mm Allen wrench.
 - b. Install (x3) M4 SHCS using a 3 mm Allen wrench.

Figure 6-F

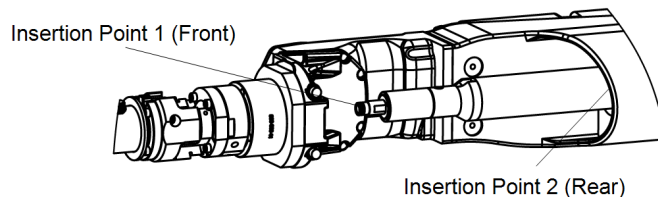


Figure 6-G

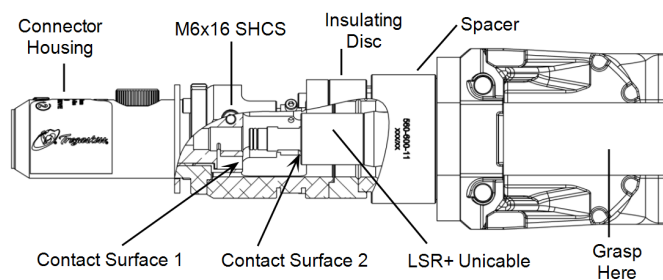
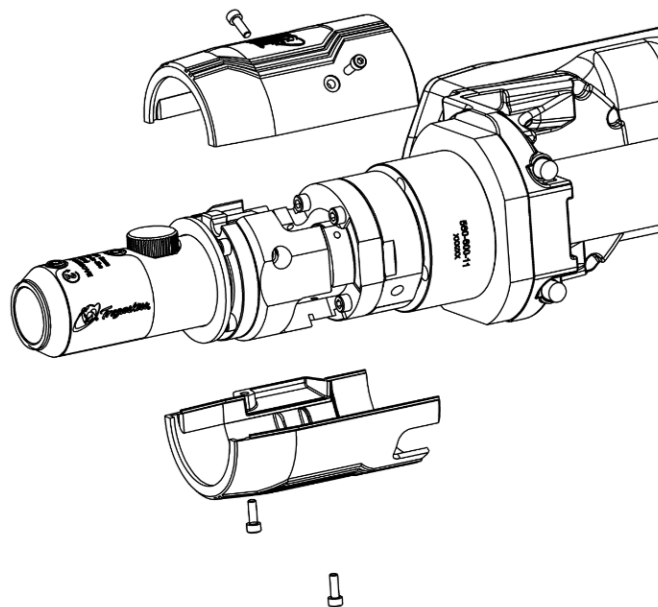


Figure 6-H



6-4 Installing the Neck



1. Align dowels on neck with keyway in connector housing and insert neck into the connector housing until it is fully seated.
2. Tighten set screw #1 (1 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).
3. Tighten set screw #2 (2 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).

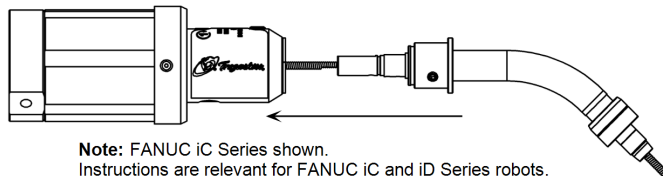
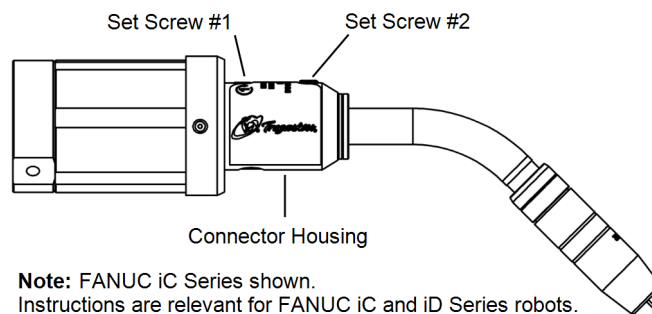


Figure 6-I

Note: FANUC iC Series shown.
Instructions are relevant for FANUC iC and iD Series robots.

Figure 6-J



Note: FANUC iC Series shown.
Instructions are relevant for FANUC iC and iD Series robots.

6-5 Installing the QUICK LOAD® Liner



1. Insert brass end of the QUICK LOAD Liner into the liner retainer until firmly seated.
2. Insert non-brass end of the 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.
3. Thread the QUICK LOAD Liner Retainer into the power pin. Torque to 30 in-lbs (3.5 Nm).
4. Push liner back into front of gun and hold in place.
5. Trim liner to a 1/2" (12.7 mm) stick out.
6. Remove any burrs that may obstruct wire feed.

NOTE: All future QUICK LOAD Liner installations will take place at the front of the gun (see section 8-3 Changing the Liner on page 31).

Figure 6-K

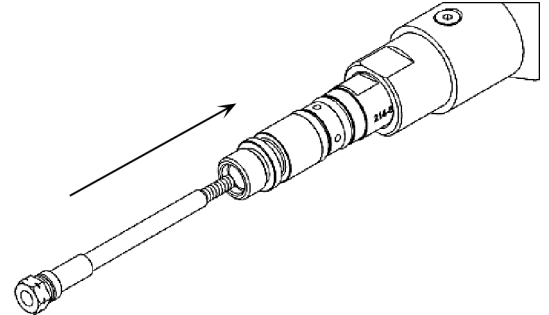
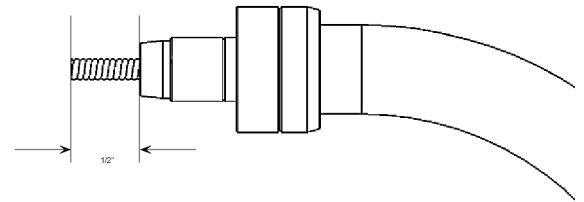


Figure 6-L



6-6 Installing Gun to Wire Feeder



1. Ensure that the bolts clamping the feeder to the bracket on the robot are loosened.
2. Install power pin on the rear of the unicable into the feeder.
3. Slide the feeder toward the front of the robot. This will create a necessary curve in the cable to allow for proper operation.

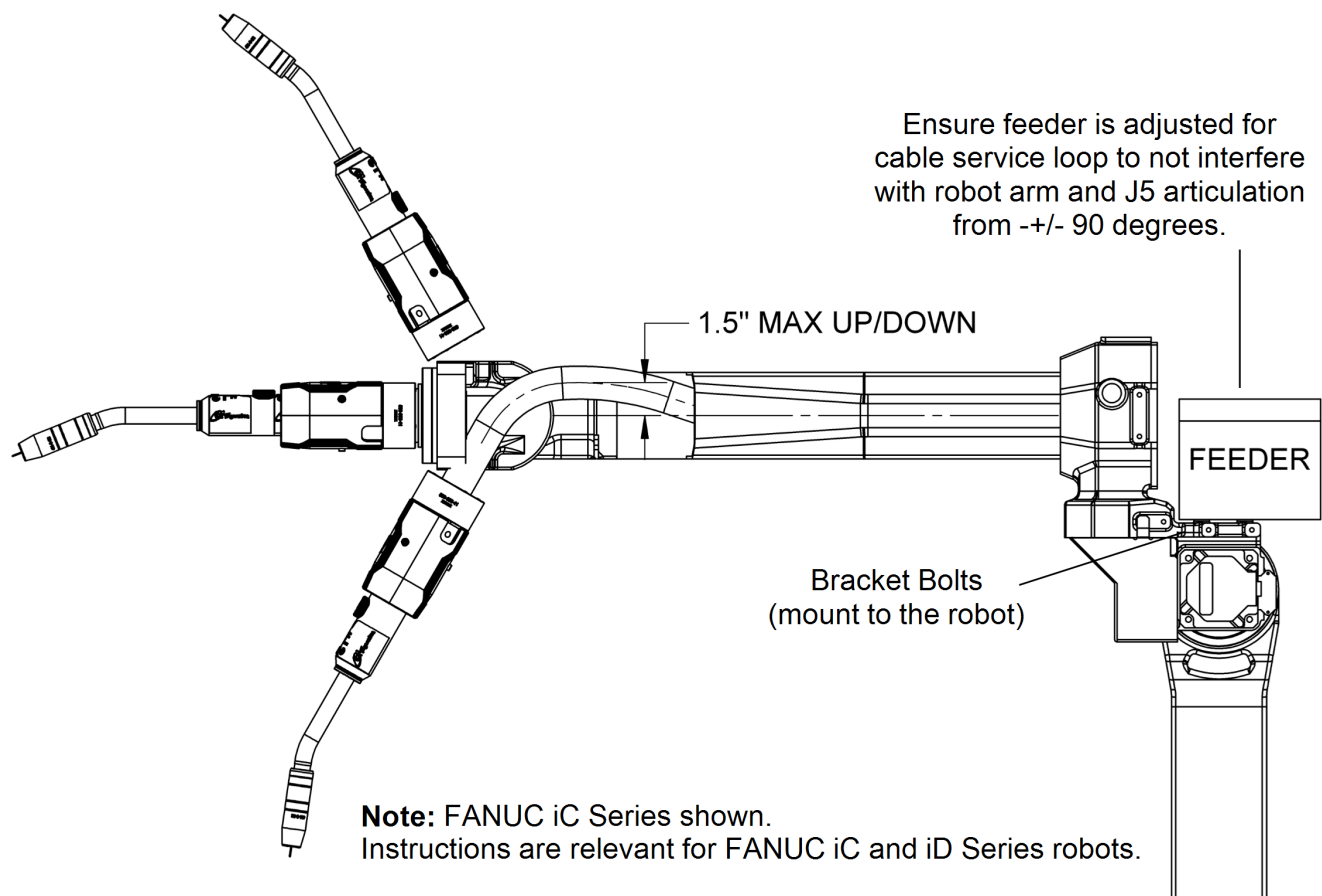
REMINDER: The robot's top axis must be at 180 degrees during installation.

4. Articulate J5 and allow cable to push / pull feeder into a neutral position.

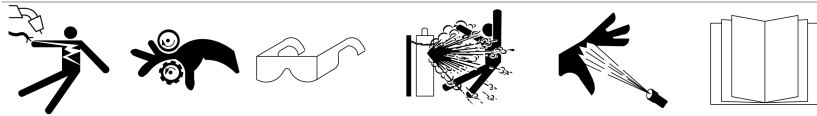
NOTE: The feeder should be pressed forward far enough that the centerline of the unicable should bow up or down by no more than 1.5" and its highest point should not interfere with the robot casting / through-arm cover.

5. When J5 articulation has been verified, tighten feeder bracket bolts to manufacturer's recommendations to ensure that feeder remains in the proper position.

Figure 6-M



6-7 Connecting Wire Brake and/or Air Blast



A. Wire Brake

1. Route wire brake air line to designated control valve in your facility (not provided).
2. 40-60 psi air supply required for proper operation.

B. Air Blast

1. Route air blast air line to designated control valve in your facility (not provided).
2. 80-100 psi air supply required for proper operation.

SECTION 7 — INSTALLATION FOR FANUC® IC SERIES

7-1 Installing Gun to FANUC iC Series Robot



NOTE: Position the robot with the wrist and top axis 180 degrees parallel to each other to properly complete the gun installation. Loosen feeder adjustment bolts so the feeder slides freely.

1. Begin by installing insulating disc, being sure to align dowel pin with associated hole on robot mounting face. **NOTE:** Dowel pin will be pressed into disc prior to shipping.
2. Fully seat insulating disc on robot wrist. **NOTE:** Do not use the fasteners to pull the face of the insulating disc to the face of the robot wrist, as damage will occur. **IMPORTANT:** Ensure space is uniform all the way around the robot wrist before proceeding (see Figure 7-D).
3. Using the supplied tightening pattern in Figure 7-E, attach the insulating disc using the provided M4x0.7x12 SHCS (x4). Torque to 25 in-lbs (2.8 Nm). **IMPORTANT:** Installing differently than as instructed can result in cracking or breaking of the insulating disc.

NOTE: When properly fastened, the head of the SHCS will not stick out past the face of the insulating disc.

Figure 7-A

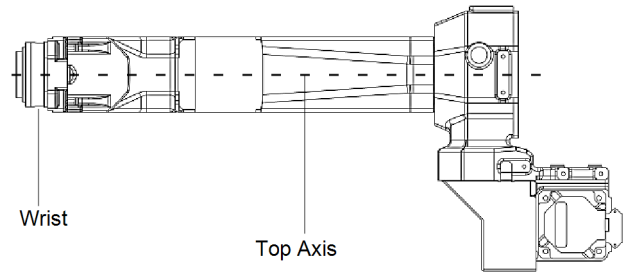


Figure 7-B

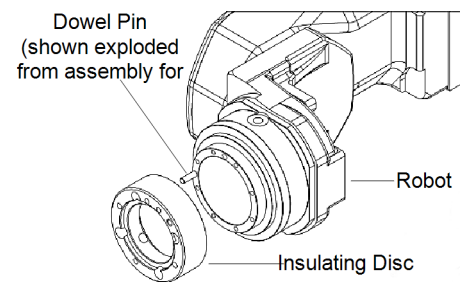


Figure 7-C

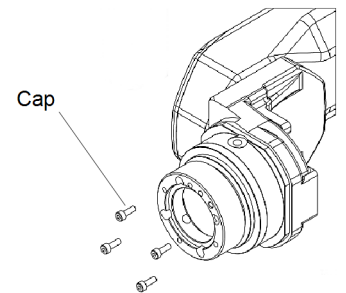


Figure 7-D

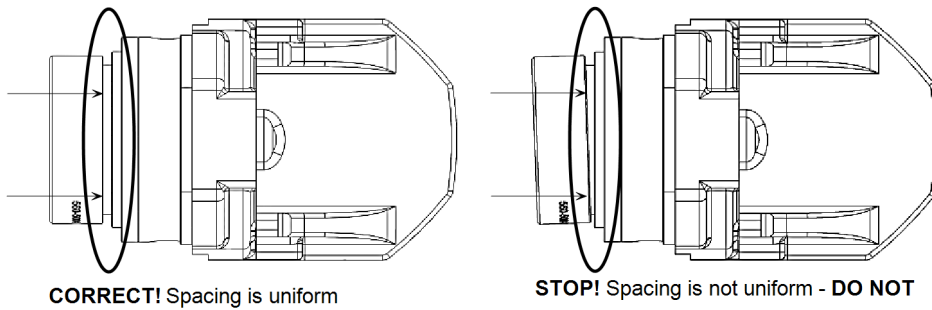
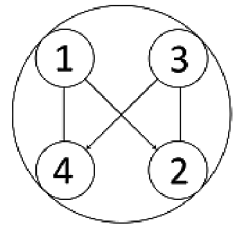


Figure 7-E



7-2 Installing Aluminum Spacer



1. Install aluminum spacer, aligning the dowel pin to the dowel hole on the insulating disc.
NOTE: Dowel will be pressed into aluminum prior to shipping.
2. Using the supplied tightening pattern in Figure 7-E section 7-1 Installing Gun to FANUC iC Series Robot on page 19, install provided M5x0.8x25 SHCS (x4) and torque to 25 in-lbs (2.8 Nm). **Do not over-tighten.**

Figure 7-F

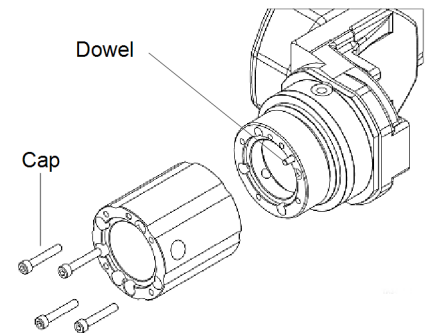
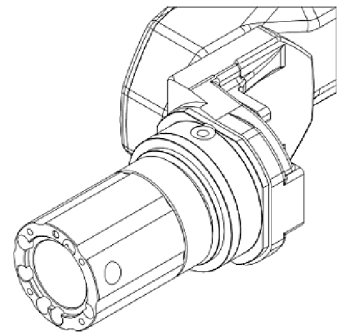


Figure 7-G



7-3 Installing Power Pin to Unicable

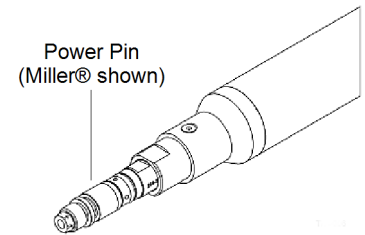


A. Standard Power Pins

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 ensure the pin is secure and will not come loose.

1. Thread power pin into the adapter of the LSR+ Unicable.
2. 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.
3. Torque to 18 ft-lbs.

Figure 7-H

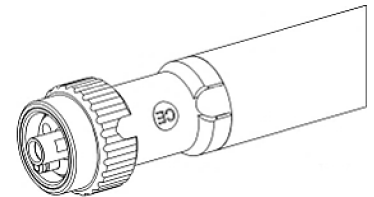


B. Euro Connections

NOTE: The Euro connection comes factory-installed.

No installation required.

Figure 7-I

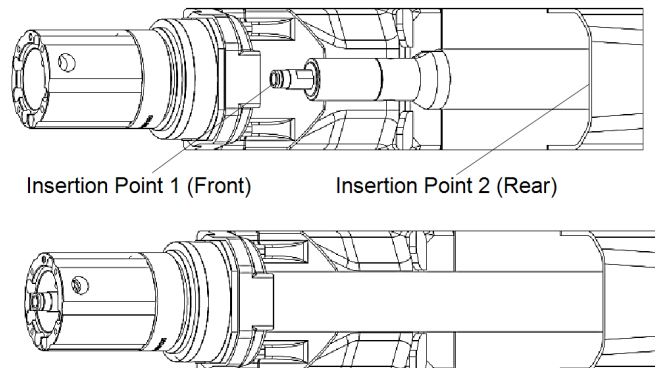


7-4 Installing LSR Uncable to FANUC iC Series Robots



1. Feed the uncable through the wrist and arm of the robot (see Figure 1-DU). Leave 6" of uncable hanging out the front of the wrist.

Figure 7-J



7-5 Installing the Front Housing



1. Firmly grasp the uncable at the location indicated.
2. Next, bring the connector housing toward the uncable and insert fully onto the pin at the end of the uncable.
3. Force the two components together until *Contact Surface 1* and *Contact Surface 2* are touching firmly (see Figure 7-K).
4. Fasten the connector housing to the LSR+ Uncable by tightening the front housing cap screw M6x1x12. Torque to 80 in-lbs (9 Nm).
5. Fasten connector housing to the aluminum spacer using M5x0.8x16 cap screws (x4). Torque to 50 in-lbs (5.5 Nm).

Figure 7-K

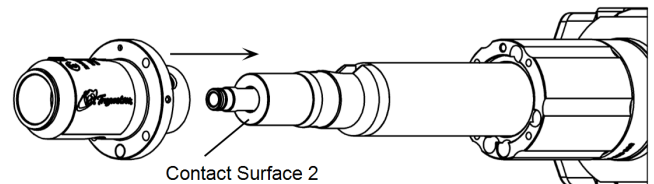
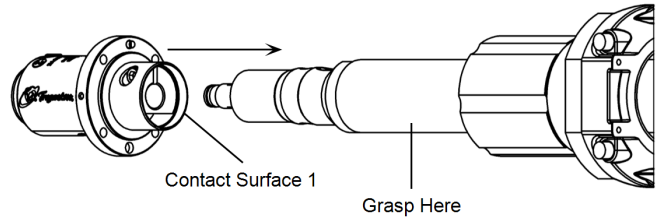


Figure 7-L

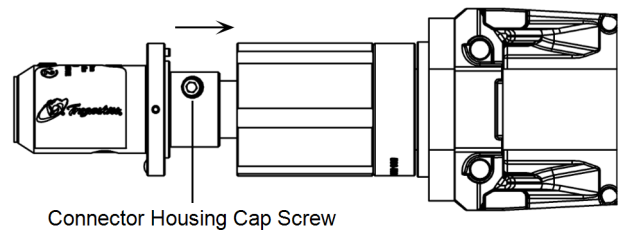
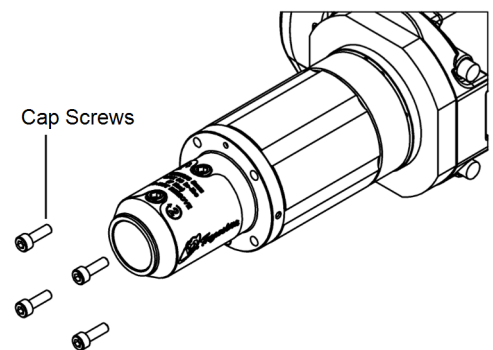


Figure 7-M



7-6 Installing the Fastener Cover



1. Slide the fastener cover up and into place, and then attach using flat head cap screws (x2). Torque to 12 in-lbs (1.4 Nm).

Figure 7-N

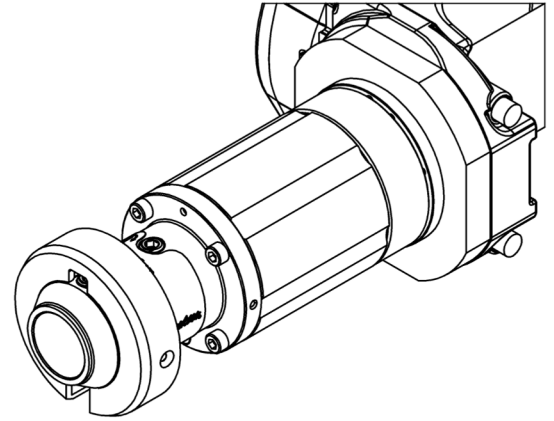
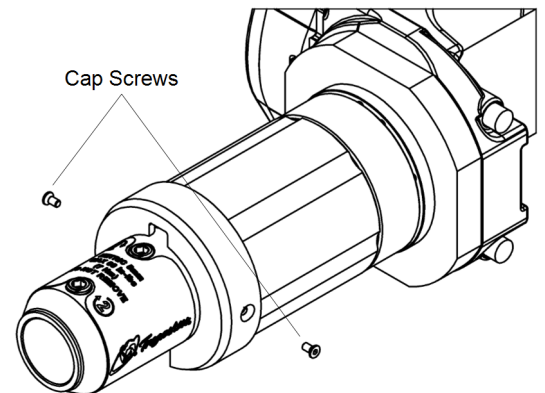


Figure 7-O



7-7 Installing the Neck



1. Align dowels on neck with keyway in connector housing and insert neck into the connector housing until it is fully seated.
2. Tighten set screw #1 (1 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).
3. Tighten set screw #2 (2 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).

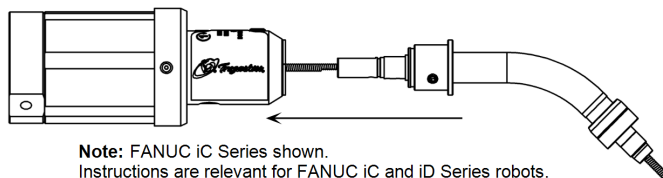
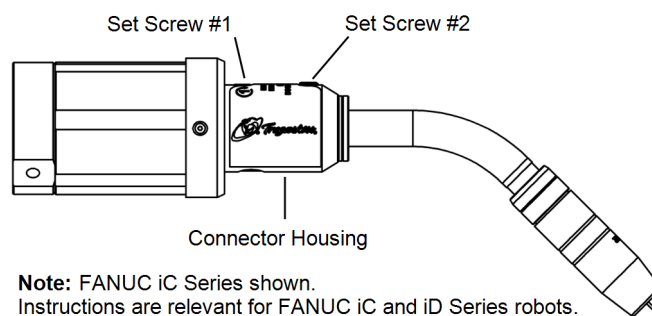


Figure 7-P

Note: FANUC iC Series shown.
Instructions are relevant for FANUC iC and iD Series robots.

Figure 7-Q



Note: FANUC iC Series shown.
Instructions are relevant for FANUC iC and iD Series robots.

7-8 Installing the QUICK LOAD® Liner



1. Insert brass end of the QUICK LOAD Liner into the liner retainer until firmly seated.
2. Insert non-brass end of the 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.
3. Thread the QUICK LOAD Liner Retainer into the power pin. Torque to 30 in-lbs (3.5 Nm).
4. Push liner back into front of gun and hold in place.
5. Trim liner to a 1/2" (12.7 mm) stick out.
6. Remove any burrs that may obstruct wire feed.

NOTE: All future QUICK LOAD Liner installations will take place at the front of the gun (see section 8-3 Changing the Liner on page 31).

Figure 7-R

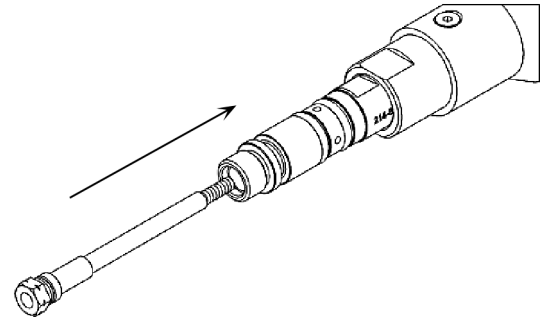
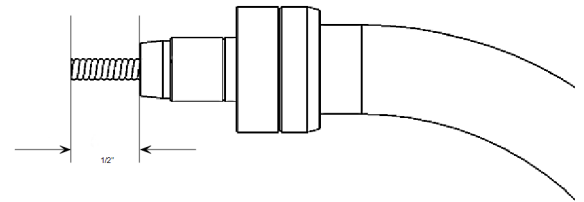


Figure 7-S



7-9 Installing Gun to Wire Feeder



1. Ensure that the bolts clamping the feeder to the bracket on the robot are loosened.
2. Install power pin on the rear of the unicable into the feeder.
3. Slide the feeder toward the front of the robot. This will create a necessary curve in the cable to allow for proper operation.

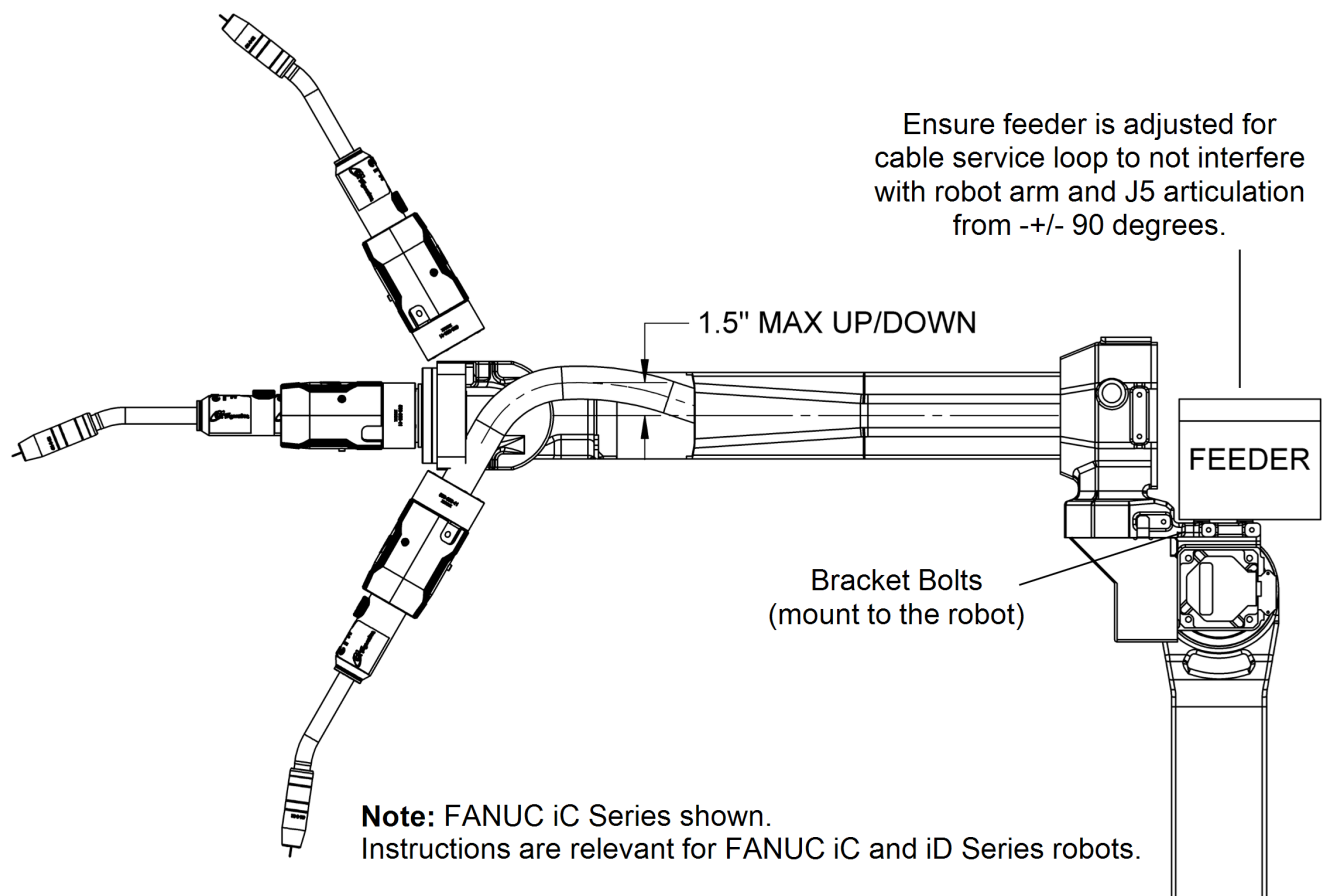
REMINDER: The robot's top axis must be at 180 degrees during installation.

4. Articulate J5 and allow cable to push / pull feeder into a neutral position.

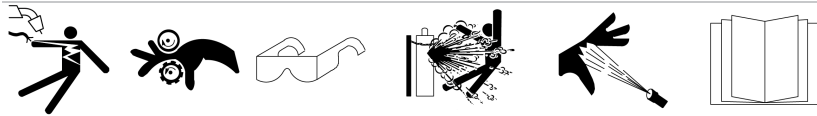
NOTE: The feeder should be pressed forward far enough that the centerline of the unicable should bow up or down by no more than 1.5" and its highest point should not interfere with the robot casting / through-arm cover.

5. When J5 articulation has been verified, tighten feeder bracket bolts to manufacturer's recommendations to ensure that feeder remains in the proper position.

Figure 7-T



7-10 Connecting Wire Brake and/or Air Blast



A. Wire Brake

1. Route wire brake air line to designated control valve in your facility (not provided).
2. 40-60 psi air supply required for proper operation.

B. Air Blast

1. Route air blast air line to designated control valve in your facility (not provided).
2. 80-100 psi air supply required for proper operation.

SECTION 8 — REPLACEMENT

8-1 Changing Consumables

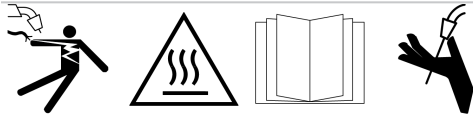
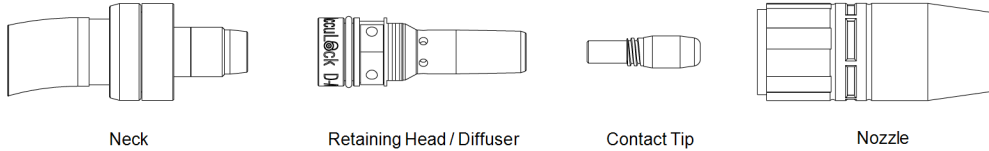


Figure 8-A



IMPORTANT NOTE:

- Be sure all consumables are tightened properly and fully seated before welding to prevent overheating.

A. Changing the Nozzle

1. Pull slip-on nozzles off with a twisting motion.
2. When installing the nozzle, ensure that it is fully seated.

B. Changing the Contact Tip

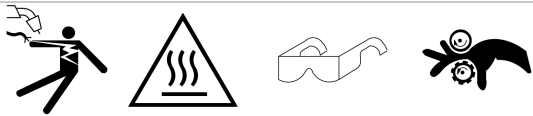
1. Thread the contact tip into the retaining head / diffuser.
2. Torque to 30 in-lbs (3.5 Nm).

C. Changing the Retaining Head / Diffuser

1. Thread the retaining head / diffuser onto neck with a 5/8" (16 mm) wrench.
2. Torque to 80 in-lbs (9 Nm).

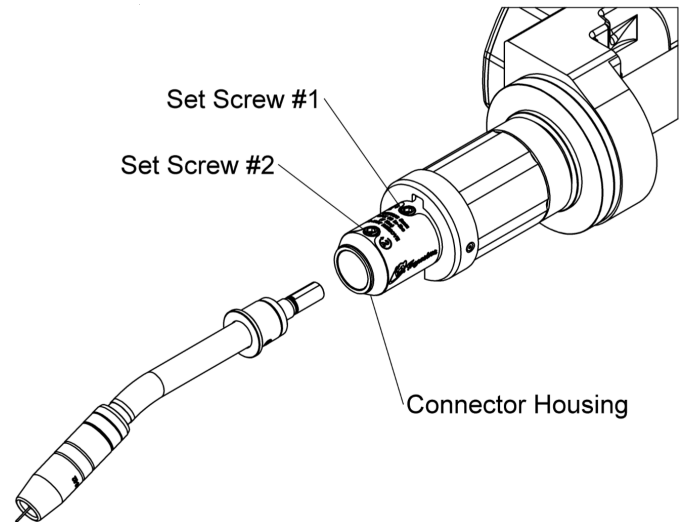
IMPORTANT: DO NOT use pliers to remove or tighten the heavy duty retaining head / diffuser or scoring may result.

8-2 Changing the Neck

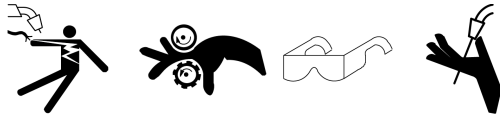


1. Insert new neck into connector housing until neck is fully seated.
2. Tighten set screw #1 (1 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).
3. Tighten set screw #2 (2 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).

Figure 8-B



8-3 Changing the Liner



A. Changing QUICK LOAD® Liner

NOTE: Ensure power supply is off before proceeding.

1. Remove consumables (nozzle, contact tip and retaining head / diffuser) (see 1-1 Changing Consumables on page 1).
2. Remove existing QUICK LOAD Liner by pulling it out from the neck.
3. Insert the new QUICK LOAD Liner through the neck using the welding wire as a guide. Short strokes will prevent kinking.
4. Once the liner stops feeding, give it an extra push until it bottoms out in the liner retainer in the power pin to ensure it is inserted completely. **NOTE:** Be careful not to kink the liner.
5. Push liner back into gun and hold in place. Using liner gauge, trim liner to a 1/2" stick-out. **HELPFUL HINT:** Before cutting the liner with wire inside, mark the liner using the gauge and then pull the liner out beyond the end of the welding wire; then cut the liner and push it back into place securely. This will help with feeding the wire through the contact tip afterward.
6. Remove any burr that may obstruct wire feed.
7. Reinstall front-end consumables onto neck.

Figure 8-C

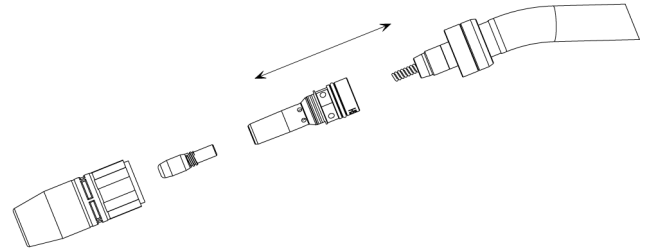


Figure 8-D

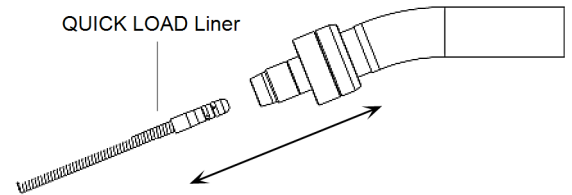
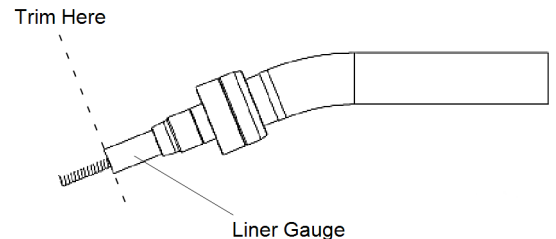
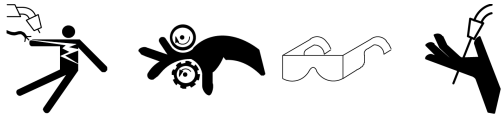


Figure 8-E



8-4 Changing the Euro Connection



1. Remove M5x6 mm countersunk fasteners.
2. Slide the hand nut over the Euro power pin body.
3. Torque the power pin body to the threaded end of the unicable at 18 ft-lbs (24 Nm) using 7/8" and 13/16" wrenches.

NOTE: You may have to pull back on the outer conduit to achieve this.

4. Once the power pin body is in place, pull the conduit down over it. Rotate the conduit so that the holes on the power pin line up with the holes on the plastic end of the conduit.
5. Reinstall fasteners.

Figure 8-F

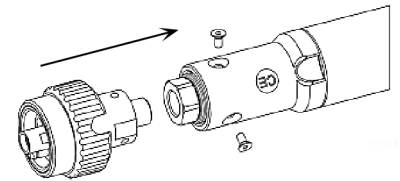
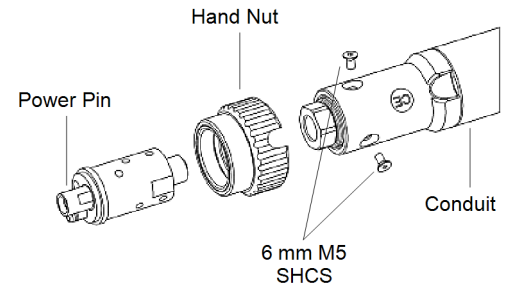
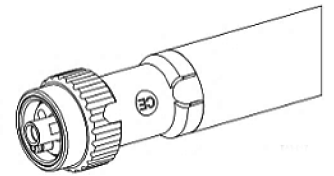


Figure 8-G



8-5 Changing TOUGH GUN I.C.E.™ Components

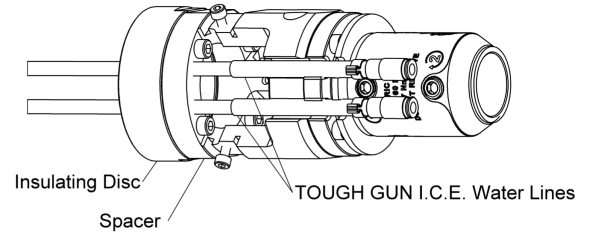


A. Changing the Water Lines

NOTE: Make sure water supply is turned off before changing the water lines.

1. Remove the outer cover.
2. Pull the water lines through the spacer and insulating disc.
3. Replace the outer cover.

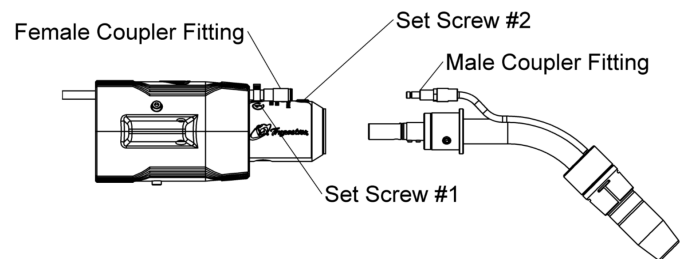
Figure 8-H



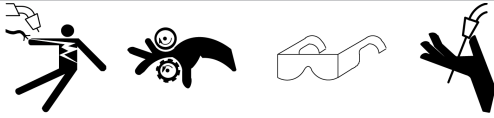
B. Installing the Neck

1. Align dowels on neck with keyway in connector housing and insert neck into the connector housing until it is fully seated.
2. Connect neck male coupler fitting to water line female coupler fitting.
3. Tighten set screw #1 (1 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).
4. Tighten set screw #2 (2 on sticker) clockwise with a 5 mm Allen wrench and torque to 60 in-lb (7 Nm).

Figure 8-I



8-6 Replacing the Wire Brake



1. Remove power pin from feeder.
2. Trim and remove excess wire.
3. Remove front-end consumables and neck, including jump liner.
4. Shut off and disconnect 1/8" air supply at the wire brake pushing unit (see Figure 8-J).
5. Unthread and remove the wire brake pushing unit to allow the wire guide to be released (see Figure 8-K).
6. Carefully slide the wire guide using the wire guide tool out of the gun body (see Figure 8-L).
7. Inspect for wear and swap for proper wire size as required.
NOTE: 0.035"-0.045" with one guide, 0.052"-1/16" with another.
8. Reinstall appropriate wire guide using the wire guide tool with the flats oriented (see Figure 8-L). Align the hole with pushing unit pin (see Figure 8-K).
9. Reinstall the wire brake pushing unit by threading it in until it stops, and then reconnect the air lines and turn on the air pressure.
10. Reinstall power pin to feeder.
11. Reinstall consumables and neck, including the jump liner.
12. Feed wire through the gun.
13. Disconnect drive rolls to allow wire to be pulled through the gun. Pull 6'-8' out of the gun. **NOTE:** The wire should pull through the gun easily. If the wire binds, double check the wire guide to ensure it's the proper size.
14. Activate the wire brake via the robot controller and attempt to pull additional wire out from gun. **NOTE:** The wire should no longer move.

Figure 8-J

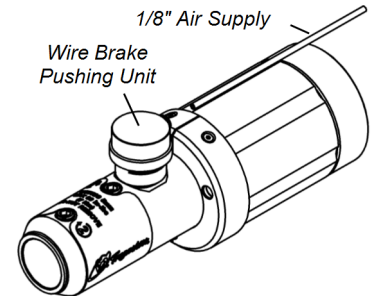


Figure 8-K

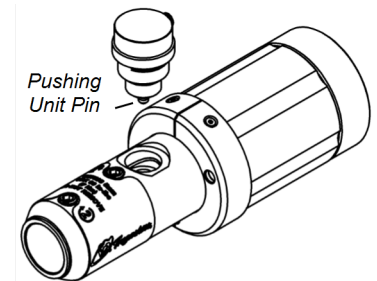
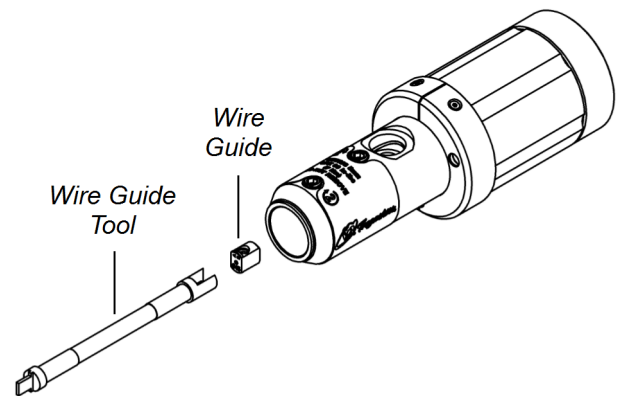
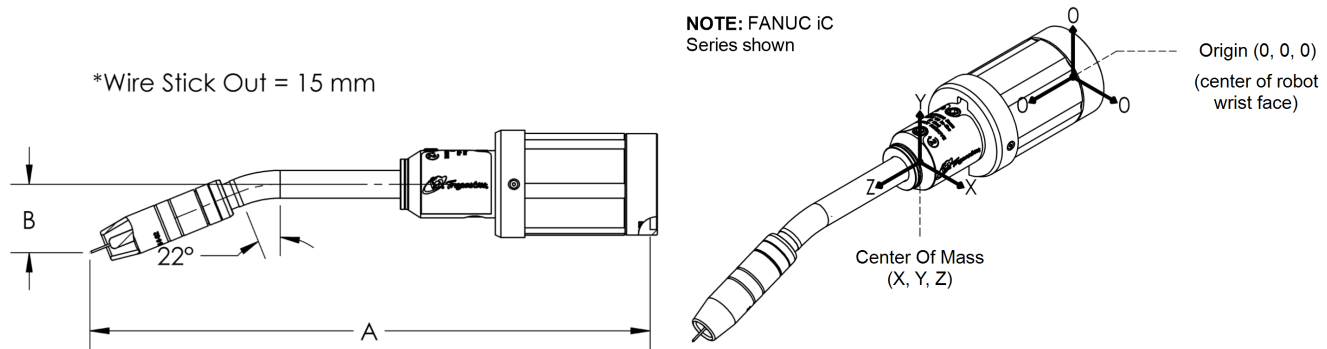


Figure 8-L



SECTION 9 — TECHNICAL DATA

9-1 Center of Mass Coordinates - 22 Degree



Solid Mount (iC Series) - 22 Degree

Neck	A	B	X	Y	Z	Weight
405-22QC	386.00 mm	47.00 mm	0.185 mm	-3.203 mm	137.039 mm	1.535 kg
405-22QCL	443.00 mm	47.00 mm	0.176 mm	-3.054 mm	153.503 mm	1.609 kg
405-22QCL1	499.00 mm	47.00 mm	0.169 mm	-2.924 mm	170.313 mm	1.680 kg

Solid Mount (iD Series) - 22 Degree

Neck	A	B	X	Y	Z	Weight
405-22QC	461.00 mm	47.00 mm	-0.263 mm	-3.135 mm	172.810 mm	1.974 kg
405-22QCL	519.00 mm	47.00 mm	-0.253 mm	-3.020 mm	187.185 mm	2.048 kg
405-22QCL1	574.00 mm	47.00 mm	-0.245 mm	-2.919 mm	201.919 mm	2.120 kg

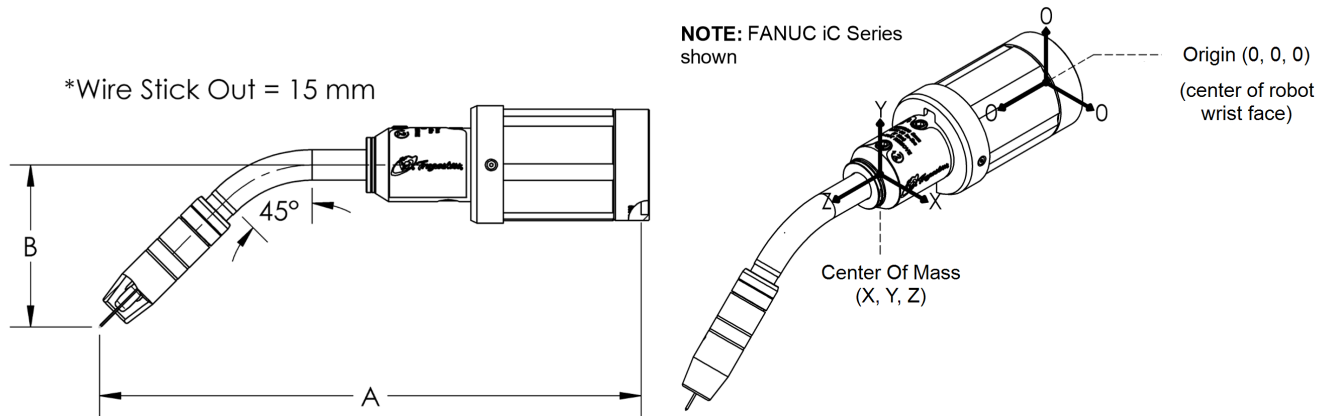
Solid Mount with Wire Brake (iC Series)- 22 Degree

Neck	A	B	X	Y	Z	Weight
405-22QC	421.00 mm	47.00 mm	0.164 mm	-1.576 mm	149.408 mm	1.864 kg
405-22QCL	479.00 mm	47.00 mm	0.158 mm	-1.515 mm	163.948 mm	1.939 kg
405-22QCL1	534.00 mm	47.00 mm	0.152 mm	-1.461 mm	178.880 mm	2.010 kg

Solid Mount with Wire Brake (iD Series)- 22 Degree

Neck	A	B	X	Y	Z	Weight
405-22QC	461.00 mm	47.00 mm	-0.268 mm	-2.014 mm	172.156 mm	2.053 kg
405-22QCL	519.00 mm	47.00 mm	-0.259 mm	-1.943 mm	186.019 mm	2.128 kg
405-22QCL1	574.00 mm	47.00 mm	-0.251 mm	-1.880 mm	200.259 mm	2.199 kg

9-2 Center of Mass Coordinates - 45 Degree



Solid Mount (iC Series) - 45 Degree

Neck	A	B	X	Y	Z	Weight
405-45QC	338.00 mm	100.00 mm	0.188 mm	-8.774 mm	129.496 mm	1.511 kg
405-45QCL	385.00 mm	120.00 mm	0.181 mm	-12.027 mm	142.600 mm	1.571 kg
405-45QCL1	440.00 mm	120.00 mm	0.172 mm	-11.521 mm	160.189 mm	1.654 kg
405-45QCL2	490.00 mm	120.00 mm	0.165 mm	-11.089 mm	175.989 mm	1.718 kg

Solid Mount (iD Series) - 45 Degree

Neck	A	B	X	Y	Z	Weight
405-45QC	413.00 mm	100.00 mm	-0.266 mm	-7.450 mm	166.487 mm	1.950 kg
405-45QCL	460.00 mm	120.00 mm	-0.258 mm	-10.031 mm	177.866 mm	2.010 kg
405-45QCL1	516.00 mm	120.00 mm	-0.248 mm	-9.711 mm	193.364 mm	2.093 kg
405-45QCL2	566.00 mm	120.00 mm	-0.240 mm	-9.421 mm	207.210 mm	2.157 kg

Solid Mount with Wire Brake (iC Series)- 45 Degree

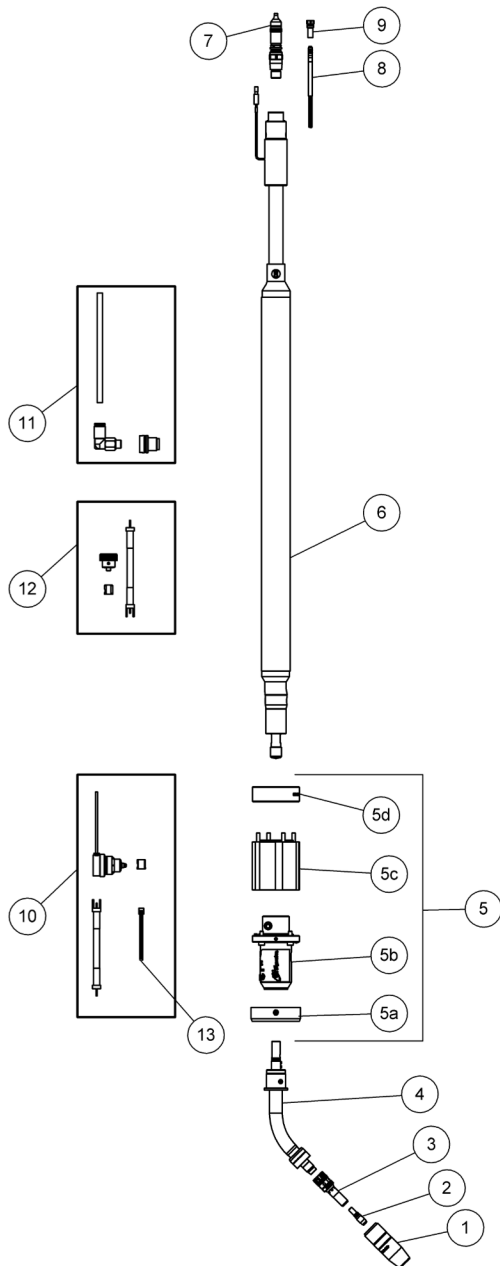
Neck	A	B	X	Y	Z	Weight
405-45QC	373.00 mm	100.00 mm	0.166 mm	-6.128 mm	142.924 mm	1.841 kg
405-45QCL	420.00 mm	120.00 mm	0.161 mm	-8.899 mm	154.436 mm	1.900 kg
405-45QCL1	475.00 mm	120.00 mm	0.154 mm	-8.608 mm	170.083 mm	1.984 kg
405-45QCL2	525.00 mm	120.00 mm	0.149 mm	-8.338 mm	184.135 mm	2.048 kg

Solid Mount with Wire Brake (iD Series)- 45 Degree

Neck	A	B	X	Y	Z	Weight
405-45QC	413.00 mm	100.00 mm	-0.272 mm	-6.148 mm	166.073 mm	2.030 kg
405-45QCL	460.00 mm	120.00 mm	-0.264 mm	-8.668 mm	177.032 mm	2.089 kg
405-45QCL1	516.00 mm	120.00 mm	-0.254 mm	-8.412 mm	191.995 mm	2.172 kg
405-45QCL2	566.00 mm	120.00 mm	-0.246 mm	-8.170 mm	205.390 mm	2.237 kg

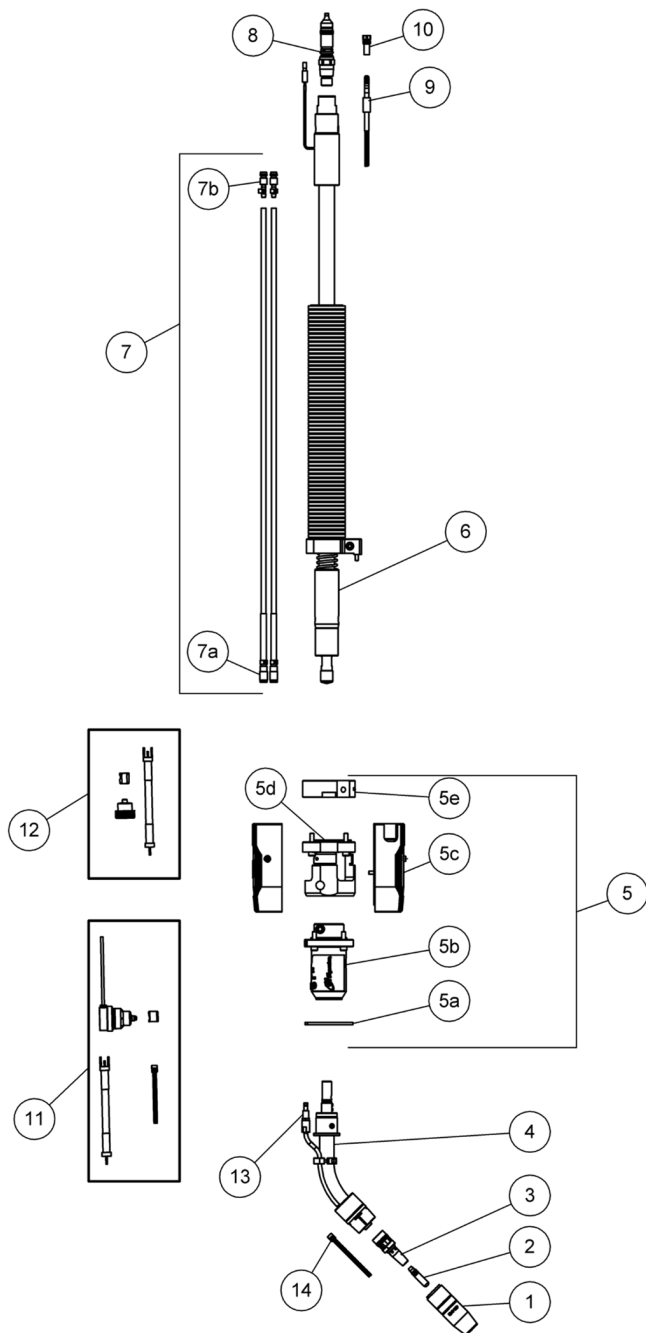
SECTION 10 — PARTS LIST

10-1 Air-Cooled System - FANUC iC Series



ITEM	PART #	DESCRIPTION
1	See SP-TA3	Nozzle
2	See SP-TA3	Contact tip
3	See SP-TA3	Retaining head / diffuser
4	405-22QC	Neck, air-cooled, 22 degree, short length
	405-22QCL	Neck, air-cooled, 22 degree, medium length
	405-22QCL1	Neck, air-cooled, 22 degree, long length
	405-45QC	Neck, air-cooled, 45 degree, short length
	405-45QCL	Neck, air-cooled, 45 degree, medium length
	405-45QCL1	Neck, air-cooled, 45 degree, long length
	405-45QCL2	Neck, air-cooled, 45 degree, extended length
5	560-500	Solid mount assembly kit
	560-502	Solid mount assembly kit (for guns equipped with air blast)
	W560-500-045	Solid mount assembly kit (for guns equipped with wire brake, 0.030"-0.045" wire)
	W560-500-116	Solid mount assembly kit (for guns equipped with wire brake, 0.052"-1/16" wire)
	W560-500-045A	Solid mount assembly kit (for guns equipped with air blast and wire brake, 0.030"-0.045" wire)
	W560-500-116A	Solid mount assembly kit (for guns equipped with air blast and wire brake, 0.052"-1/16" wire)
5a	560-200-4	Fastener cover (included in Item 5)
5b	560-500-3	Connector housing (included in Item 5)
	560-500-3A	Connector housing (for guns equipped with air blast) (included in Item 5)
	W560-500-3-045	Connector housing (for guns equipped with wire brake, 0.030"-0.045" wire) (included in Item 5)
	W560-500-3-116	Connector housing (for guns equipped with wire brake, 0.052"-1/16" wire) (included in Item 5)
	W560-500-3-045A	Connector housing (for guns equipped with air blast and wire brake, 0.030"-0.045" wire) (included in Item 5)
	W560-500-3-116A	Connector housing (for guns equipped with air blast and wire brake, 0.052"-1/16" wire) (included in Item 5)
5c	560-500-10	Front spacer (included in Item 5)
5d	560-500-11	Insulating disc (included in Item 5)
6	See SP-TA3	LSR+ Unicable
7	See SP-TA3	Power pin
8	See SP-TA3	Liner
9	See SP-TA3	QUICK LOAD Liner Retainer
10	WB-045	Wire brake kit (for 0.030"-0.045" wire sizes)
	WB-116	Wire brake kit (for 0.052"-1/16" wire sizes)
11	560-500FA	Front Air blast kit
	560-500A	Rear Air blast kit
12	399WB	Wire brake plug kit
13	495-18-35	Jump liner, 0.030"-0.045" wire sizes (for guns equipped with wire brake)
	495-18-116	Jump liner, 0.052"-1/16" wire sizes (for guns equipped with wire brake)

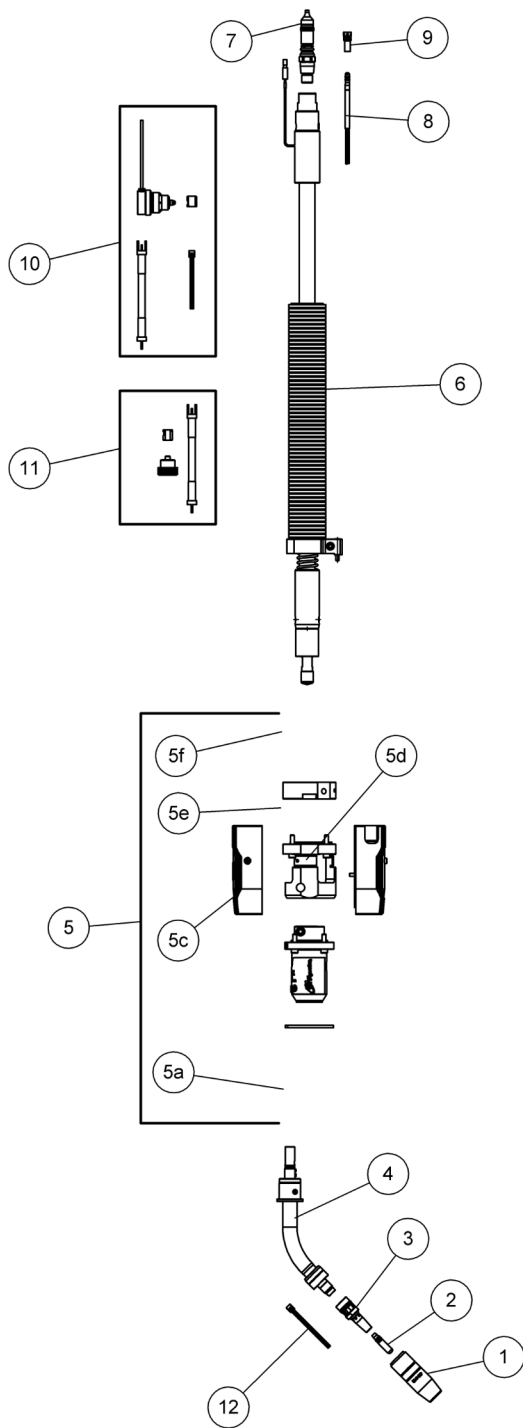
10-2 TOUGH GUN I.C.E. System - FANUC iC Series



ITEM	PART #	DESCRIPTION
1	See SP-TA3	Nozzle
2	See SP-TA3	Contact tip
3	See SP-TA3	Retaining head / diffuser
4	See SP-TA3	Neck, TOUGH GUN I.C.E. assembly
5	560-501	Solid mount assembly kit
	W560-501-045	Solid mount assembly kit (for guns equipped with wire brake, 0.035"-0.045" wire)
	W560-501-116	Solid mount assembly kit (for guns equipped with wire brake, 0.052"-1/16" wire)
5a	560-501-12	Fastener cover (included in Item 5)
5b	560-501-3	Connector housing (included in Item 5)
	W560-501-3-045	Connector housing (for guns equipped with wire brake, 0.035"-0.045" wire) (included in Item 5)
	W560-501-3-116	Connector housing (for guns equipped with wire brake, 0.052"-1/16" wire) (included in Item 5)
5c	560-501-2	Outer cover (included in Item 5)
5d	560-501-10	Front spacer (included in Item 5)
5e	560-501-11	Insulating disc (included in Item 5)
6	See SP-TA3	LSR+ Unicable
7	560-501-2	TOUGH GUN I.C.E. water lines
7a	810-10-5	Double shut-off coupler (x2) + clamps (x2) (included in Item 7)
7b	658-2	Quick connect brass fittings, male (x2) + clamps (x2) (included in Item 7)
8	See SP-TA3	Power pin
9	See SP-TA3	Liner
10	See SP-TA3	QUICK LOAD Liner Retainer
11	WB-045^	Wire brake kit option for 0.030"-0.045" wire sizes
	WB-116^	Wire brake kit option for 0.052"-1/16" wire sizes
12	399WB	Wire brake plug kit
13	590-8	Water line fittings, male (x2)
14	495-18-35	Jump liner (for guns equipped with wire brake, 0.030"-0.045" wire)
	495-18-116	Jump liner (for guns equipped with wire brake, 0.052"-1/16" wire)

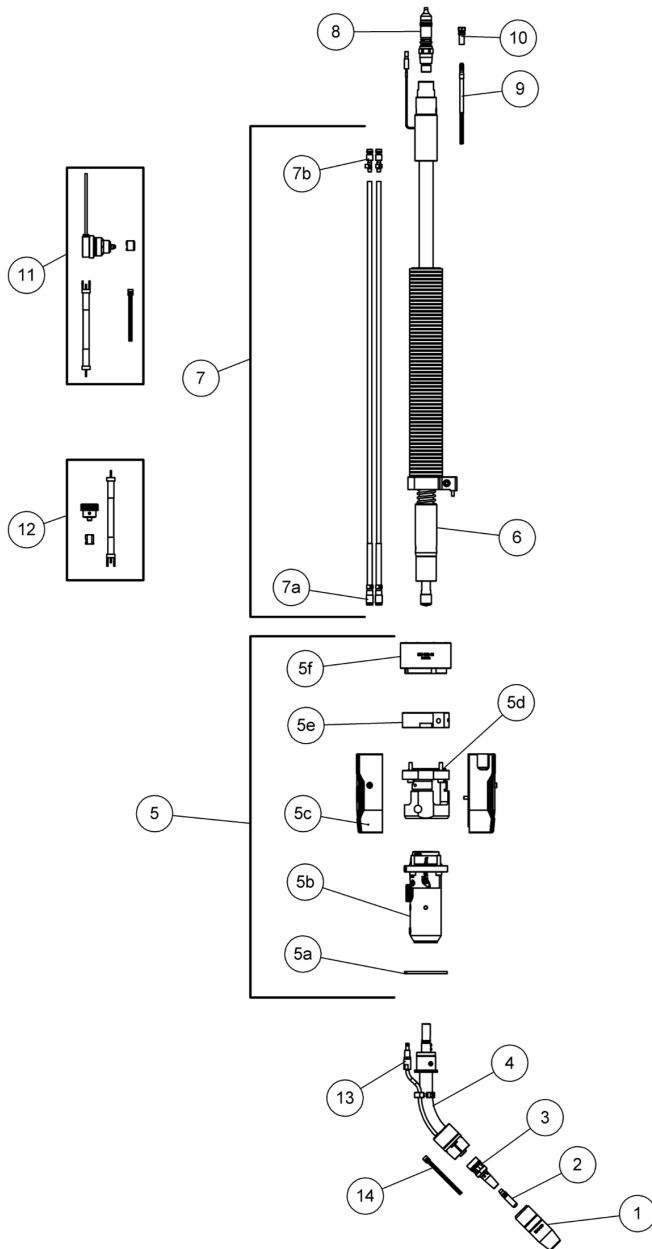
^Appropriate connector housing (see **Item 5b** above) required if retrofitting wire brake

10-3 Air-Cooled System - FANUC iD Series



ITEM	PART #	DESCRIPTION
1	See SP-TA3	Nozzle
2	See SP-TA3	Contact tip
3	See SP-TA3	Retaining head / diffuser
4	405-22QC	Neck, air-cooled, 22 degree, short length
	405-22QCL	Neck, air-cooled, 22 degree, medium length
	405-22QCL1	Neck, air-cooled, 22 degree, long length
	405-45QC	Neck, air-cooled, 45 degree, short length
	405-45QCL	Neck, air-cooled, 45 degree, medium length
	405-45QCL1	Neck, air-cooled, 45 degree, long length
	405-45QCL2	Neck, air-cooled, 45 degree, extended length
5	560-600	Solid mount assembly kit
	560-600W-045	Solid mount assembly kit (for guns equipped with wire brake, 0.030"-0.045" wire)
	560-600W-116	Solid mount assembly kit (for guns equipped with wire brake, 0.052"-1/16" wire)
5a	580-400-4	Rubber washer (included in Item 5)
5b	560-600-3	Connector housing (included in Item 5)
	560-600W-3-045	Connector housing (for guns equipped with wire brake, 0.030"-0.045" wire) (included in Item 5)
	560-600W-3-116	Connector housing (for guns equipped with wire brake, 0.052"-1/16" wire) (included in Item 5)
5c	580-400-7	Outer cover (included in Item 5)
5d	560-501-10	Spacer (included in Item 5)
5e	560-501-11	Insulating disc (included in Item 5)
5f	560-600-11	Spacer (included in Item 5)
6	See SP-TA3	LSR+ Unicable
7	See SP-TA3	Power pin
8	See SP-TA3	Liner
9	See SP-TA3	QUICK LOAD Liner Retainer
10	WB-045	Wire brake kit (for 0.030"-0.045" wire sizes)
	WB-116	Wire brake kit (for 0.052"-1/16" wire sizes)
11	399WB	Wire brake plug kit
12	495-18-35	Jump liner (for guns equipped with wire brake, 0.030"-0.045" wire)
	495-18-116	Jump Liner (for guns equipped with wire brake, 0.052"-1/16" wire)

10-4 TOUGH GUN I.C.E. System - FANUC iD Series



ITEM	PART #	DESCRIPTION
1	See SP-TA3	Nozzle
2	See SP-TA3	Contact tip
3	See SP-TA3	Retaining head / diffuser
4	See SP-TA3	Neck, TOUGH GUN I.C.E. assembly
5	560-600I	Solid mount assembly kit
	560-600IW-045	Solid mount assembly kit (for guns equipped with wire brake, 0.035"-0.045" wire)
	560-600IW-116	Solid mount assembly kit (for guns equipped with wire brake, 0.052"-1/16" wire)
5a	560-501-12	Rubber washer (included in Item 5)
5b	560-600I-3	Connector housing (included in Item 5)
	W560-501-3-045	Connector housing (for guns equipped with wire brake, 0.035"-0.045" wire) (included in Item 5)
	W560-501-3-116	Connector housing (for guns equipped with wire brake, 0.052"-1/16" wire) (included in Item 5)
5c	560-5-2	Outer cover (included in Item 5)
5d	560-501-10	Front spacer (included in Item 5)
5e	560-501-11	Insulating disc (included in Item 5)
5f	560-600-11	Spacer (included in Item 5)
6	See SP-TA3	LSR+ Unicable
7	560-501-2	TOUGH GUN I.C.E. water lines
7a	810-10-5	Double shut-off coupler (x2) + clamps (x2) (included in Item 7)
7b	658-2	Quick connect brass fittings, male (x2) + clamps (x2) (included in Item 7)
8	See SP-TA3	Power pin
9	See SP-TA3	Liner
10	See SP-TA3	QUICK LOAD Liner Retainer
11	WB-045^	Wire brake kit option for 0.030"-0.045" wire sizes
	WB-116^	Wire brake kit option for 0.052"-1/16" wire sizes
12	399WB	Wire brake plug kit
13	590-8	Water line fittings, male (x2)
14	495-18-35	Jump liner (for guns equipped with wire brake, 0.030"-0.045" wire)
	495-18-116	Jump liner (for guns equipped with wire brake, 0.052"-1/16" wire)

^Appropriate connector housing (see **Item 5b** above) required if retrofitting wire brake

SECTION 11 — TROUBLESHOOTING

11-1 Troubleshooting Table

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Electrode does not feed.	1. Feeder relay. 2. Broken control lead. 3. Poor adaptor connection. 4. Improper / worn drive roll. 5. Drive roll tension misadjusted. 6. Burn back to contact tip. 7. Wrong size liner. 8. Buildup inside of liner.	1. Consult feeder manufacturer. 2. a. Test and connect spare control lead. b. Install new cable. 3. Test and replace leads and/or contact pins. 4. Replace drive roll. 5. Adjust tension at feeder. 6. See 'Contact tip burn back'. 7. Replace with correct size. 8. Replace liner or clean out with compressed air, check condition of electrode.
2. Contact tip burn back.	1. Improper voltage and/or wire feed speed. 2. Erratic wire feeding. 3. Improper tip stickout. 4. Improper electrode stickout. 5. Faulty ground.	1. Adjust parameters. 2. See 'Erratic wire feeding'. 3. Adjust nozzle / tip relationship. 4. Adjust wire stickout. 5. Replace cables and/or connections.
3. Tip disengages from the gas diffuser.	1. Worn retaining head / diffuser. 2. Improper tip installation. 3. Extreme heat or duty cycle.	1. Replace tip and/or gas diffuser / retaining head / diffuser. 2. Install as per section 8-1 Changing Consumables on page 29. 3. Replace with heavy duty consumables. See appropriate Spec Sheet for details.
4. Short contact tip life.	1. Contact tip size 2. Electrode eroding contact tip. 3. Exceeding duty cycle.	1. Replace with proper size. 2. Inspect and/or change drive rolls. 3. Replace with properly rated Tregaskiss MIG Gun.
5. Erratic arc.	1. Worn contact tip. 2. Buildup inside of liner. 3. Wrong tip size. 4. Not enough bend in neck.	1. Replace contact tip. 2. Replace liner, check condition of electrode. 3. Replace with correct tip size. 4. Replace with 45° neck.
6. Erratic wire feeding.	1. Buildup inside of liner. 2. Wrong size liner. 3. Improper drive roll size. 4. Worn drive roll. 5. Improper guide tube relationship. 6. Improper wire guide diameter. 7. Gaps at liner junctions. 8. Feeder malfunction. 9. Worn contact tip.	1. Replace liner, check condition of electrode. 2. Replace with new liner of proper size. 3. Replace with proper size drive roll. 4. a. Replace with new drive roll. b. Repair worn drive roll. 5. a. Adjust / replace guide as close to drive rolls as possible. b. Eliminate all gaps in electrode path. 6. Replace with proper guide diameter. 7. a. Replace with new liner trimmed as per section 8-3 Changing the Liner on page 31. b. Replace guide tube / liner trimming as close to mating component as possible. 8. Consult feeder manufacturer. 9. Inspect and replace.*
7. Extreme spatter.	1. Improper machine parameters. 2. Improper tip installation. 3. Improper shielding gas coverage. 4. Contaminated wire or workpiece.	1. Adjust parameters. 2. Adjust nozzle / tip relationship. 3. a. Verify shielding gas coverage. b. Verify gas mixture. 4. Clean wire and workpiece.

8. Porosity in weld.	1. Insulator worn. 2. Gas diffuser damaged 3. Extreme heat or duty cycle. 4. Solenoid faulty. 5. No gas. 6. Flow improperly set. 7. Gas ports plugged. 8. Ruptured gas hose. 9. Control circuit loss. 10. Worn, cut or missing o-rings. 11. Loose fittings.	1. Replace nozzle / insulator. 2. Replace gas diffuser or o-rings. 3. Replace with heavy duty consumables. 4. Replace solenoid. 5. a. Install full tanks. b. Check supply. c. Check for hose leaks. 6. Adjust flow. 7. a. Clean or replace gas diffuser. b. Clean nozzle. 8. Repair or replace cable or line. 9. See 'Electrode does not feed'. 10. Replace o-rings. 11. Tighten gun and cable connections to specified torque. See Section 8 — Replacement on page 29.
9. Gun running hot.	1. Exceeding duty cycle. 2. Loose or poor power connection.	1. a. Replace with properly rated Tregaskiss MIG Gun. b. Decrease parameters to within gun rating. 2. a. Clean, tighten or replace cable grounding connection. b. Tighten gun and cable connections to specified torque. See Section 8 — Replacement on page 29.
10. Liner is discolored.	1. Short circuit to electrode. 2. Broken copper stranding in power cable.	1. Isolate electrode reel from feeder and drive block. Consult feeder manufacturer's manual. 2. Replace unicable.
11. Sporadic feeding of aluminum electrode.	1. Tip galling. 2. Synthetic liner melting. 3. Wire deformed by feeder rolls.	1. Inspect and replace the contact tip.* 2. a. Replace liner. b. Replace with composite liner. c. Replace the neck and jump liner. 3. Adjust drive rolls as per feeder manufacturer's manual.

**In some cases with aluminum and mild steels, it may be necessary to use a contact tip with either a larger or smaller bore size.*

ADDITIONAL SUPPORT MATERIALS

For additional support materials such as Spec Sheets, troubleshooting information, how-to guides and videos, animations, online configurators and much more, please visit Tregaskiss. Scan the QR Code with your smart phone for immediate access to bernardtregaskiss.com/TechnicalSupport.



Scan to view the TOUGH GUN® TA3 MIG Gun Owner's Manual



Scan to view the TOUGH GUN® TA3 MIG Gun Spec Sheet



Scan to view the AccuLock™ R (Robotic) Consumables Spec Sheet



Scan to view Tregaskiss® Owner's Manuals and Spec Sheets



Tregaskiss

2570 North Talbot Road
Windsor, Ontario NOR 1L0
Canada

For more information, visit us at bernardtregaskiss.com

Phone: 1-855-MIGWELD (644-9353) (US & Canada)
Fax: 1-519-737-1530

