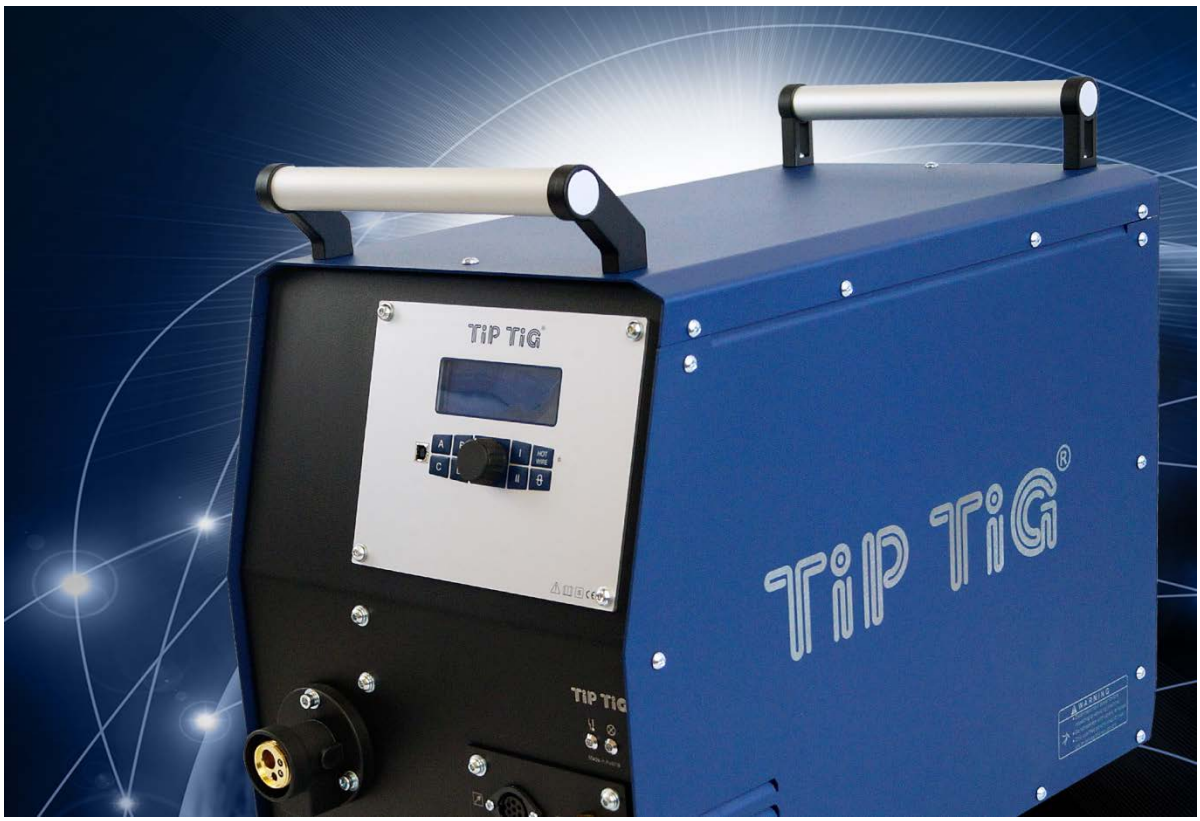
TIP TIG | USA

The Evolution of TIG



TIP TIG MANUAL
V6

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Preface

No matter the task, the new TIP TIG is up to the challenge, and then some. It offers far more power than the previous model, yet is delightfully simple to use. The redesigned wire feeder is as stunning to look at as it is to weld.

TIP TIG. Everything you want modern welding to be. Now even better.

We are very pleased that you have chosen to place your trust in our product. We place great value in ensuring that you draw great pleasure, benefit and work enhancement from your use of the TIPTIG Hot Wire Unit.

For that reason, we would like you to read through the operators manual thoroughly before installing and starting to use the TIPTIG Hot Wire Unit.

It will help you to familiarize yourself with your new product as rapidly as possible and to use it more efficiently.

This manual details the TIPTIG Hot Wire Unit, providing you with assistance and support in installing and getting started, as well as demonstrating how to use it safely and effectively.

We wish you the best of luck.

TIP TIG

Tip Tig

The TIP TIG process is a dynamic GTAW process that combines our patented vibratory effect of the wire in part with a hotwire current applied to the wire prior to entering the weld puddle.

- The vibratory effect is created by a linear forward/backward mechanical motion created by the custom wire feeder system
- The Hotwire current is created by a secondary power source within the Tip Tig unit.

How is the TIP TIG Process Operated?

- The TIP TIG process is operated by using a standard solid core MIG spool, a conventional TIG power supply with a minimum of 250 amps with HF start and trigger hold function because the TIP TIG process doesn't use a foot petal.
- The TIP TIG process can be operated in all welding positions both manually or combined with our automated equipment such as the TIP TIG Tractor, TIP TIG Orbital and TIP TIG Oscillator.

Weld Process Benefits from TIP TIG?

- The wire entering the weld pool is mechanically and electrically superimposed from the TIP TIG process which creates a high speed vibration and preheating of the weld wire while entering the weld puddle.
- The vibratory effect and the preheating of the wire create a more fluid weld puddle allowing for improved sidewall wetting and significant deposition rate increases as well as porosity off gassing.

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SAFETY PRECAUTIONS -READ BEFORE USING

Protect yourself and others from injury-read and follow these precautions

I - I Symbol Usage

Instead of the examination mark, the danger sign often shows the source of the danger in question. The yellow highlighted text contains details of how to prevent personal injury or substantial damage to property

Failure to comply with the instructions given may pose risk of injury '-or even danger of life!

NOTICE- Indicates statements not related to personal injury

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

I - II 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 he more complete safety information found in the Safety Standards listed in Section 1-V.Read and follow all Safety Standards

Only qualified persons should install,operate,maintain,and repair this unit

During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

Don't touch live electrical parts.

Wear dry, hole-free insulating gloves, and body protection

Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the of ground.

Do not use AC output in damp areas, if move, movement is confined, or if there is a danger of falling.

Use AC output ONLY if required for the welding process.

If AC output is required, remote output control is present on unit.

Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing: on metal structures such as floors,gratings,or scaffolds; when in cramped positions such as sitting,kneeling,or lying, or when there is a high risk of unavoidable or accidental contact with the work piece or ground.

Disconnected input power or stop engine before installing or servicing this equipment. Lockout/tag out input power according to OSHA 29 CFR 1910.147 (see Safety Standards).

Properly install and ground this equipment according to the Owner's Manual and national,state,and local codes.

Always verify the supply ground-check and be sure that input power cord ground wire is properly connected to ground terminal in disconnected box or that cord plug is connected to a properly grounded receptacle outlet.

When making input connections, attach proper grounding conductor-tor first-double-check connections.

Keep cords dry, free of oil and grease, and protected from hot metal and sparks.

Frequently inspect input power cord for damage or bare wiring-replace cord immediately if damaged-bare wiring can kill.

Turn off all equipment when not in use.

Do not use worn,damaged,undersized,or poorly spliced cables.

Do not drape cables over your body.

If earth grounding of the work piece is required, ground it directly with a separate cable.

Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain according to manual.

Wear a safety harness if working above floor level.

Keep all panels and covers securely in place.

Clamp work cable with good metal-to-metal contact to work piece or worktable as near the weld as practical.

Insulate work clamp when not connected to workspace to prevent contact with any metal object.

SIGNIFICANT DC VOLTAGE exists in Inverter welding power sources AFTER removal of input power!

Turn OFF inverter,diconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

HOT PARTS can burn.

Do not touch hot parts bare handle.

Allow cooling period before working on equip-ment.

To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

I - III Additional Symbols For Installation,Operation,And Maintenance

FIRE OR EXPLOSION hazard.

Do not install or place unit on,over,or near combustible surfaces

Do not install unit near flammables.

Do not overload building wring,-be sure power supply system is properly sized,rated,and protected to handle this unit

FALLING EQUIPMENT can injure.

Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.

Use equipment of adequate capacity to lift and support unit.

If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

Keep equipment (cables and cords)away from moving vehicles when working from an aerial location

Follow the guideline in the Applications Manual for the Revised NIOSH Lifting Equation (publication No.94-110) when manually heavy parts or equipment.

OVERUSE can cause OVERHEATIING

Allow cooling period, follow rated duty cycle

Reduce current or reduce duty cycle before starting to weld again

Do not block or filter airflow to unit.

FLYING SPARKS can injure.

Wear a face shield to protect eyes and face

Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face,hand,and body protection.

Sparks can cause fires-keep flammables away.

STATIC (ESD) can damage PC boards

Put on grounded wrist strap BEFORE handling boards or parts.

Use proper static-proof bags and boxes to store,move,or ship PC boards.

MOVING PARTS can injure.

Keep away from moving parts

Keep away from pinch points such as drive rolls.

WELDING WIRE can injure.

Do not press gun trigger(button) until instructed to do so.

Do not point gun toward any part of body, other people, or any metal threading welding wire

MOVING PARTS can injure.

Keep away from moving parts such as fan

Keep all doors,panels,covers and guards closed and securely in place

Have only qualified persons remove doors,panels,covers, or guards for maintenance and troubleshooting as necessary.

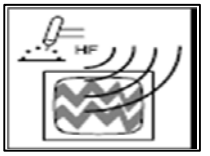
Reinstall doors,panels,covers or guards when maintenance is finished and before reconnecting input power.

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 maintenance and service according to the Owner's Manuals, industry standards, and national,state,and local codes



H.F.RADIATION can cause interference.

High-frequency (H.F) can interference with radio navigation, safety services,computers,and communications equipment.

Have only qualified persons familiar with electronic equipment perform this installation

The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation

If notified by the FCC about interference, stop using the equipment at once.

Have the installation regularly checked and maintained.

Keep high-frequency source doors and panels tightly shut, keep sparks gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

I - IV CALIFORNIA PROPOSITION 65 WARNINGS

Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and ,in some cases, cancer,
(California Health & Safety Section 25249.5 et.seq.)

I - V Principal Safety Standards

Safety in Welding,Cutting,and Allied Processes
ANSI StandardZ49.1 from Global Engineering Documents
(www.global.ihs.com)

Safety in Welding,Cutting,and Allied Processes
CSA Standard W 117.2 from Canadian Standards Association
(www.csa-international.com)

OSHA,Occupational Safety and Health Standards for General Industry
Title 29,Code of federal Regulations(CFR) Part 1910,Subpart Q and Part 1926,SubpartI from Government Printing Office
(www.osha.gov)

I - VI EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields(EMF).Welding current creates an EMF field around the welding circuit and welding equipment.EMF fields may interfere with some medical implants, e.g. peacemakers. Protective measures for persons wearing medical implants have to be taken. For example, access restrictions for passers-by or individu 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 an trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to work piece 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 or wire feeder.

General safety instructions

The recognized technical rules and applicable standards and regulations were followed and applied in the development and manufacture of the TIPTIG High Speed Hot Wire Unit.
The TIPTIG High Speed Hot Wire Unit is designed and manufactured such that, if used in accordance with it's designed purpose, any potential danger is largely avoided.
Ing.Siegfried Plasch nonetheless feels obliged to detail the following safety precautions which you should undertake in order to avoid any residual risk

Follow the operating instructions!

Caution! When using TIPTIG Hot Wire Unit, the following fundamental safety precautions must be taken in order to protect against electric shock, potential injury and fire risk. Read and follow the instructions for use,cleaning,care and maintenance given in this Technical Manual before beginning work. Keep the Technical Manual within easy reach of the machine operator and pass it on to new operators as and when appropriate

The TIPTIG High Speed Hot Wire Unit is only for commercial and industrial use. Any other use of this machine must be authorized in writing by the manufacturer-Ing.Siegfried Plasch. Only personnel that have trained for use and servicing of welding equipment may operate this machine
The operator for this equipment must carefully read and fully understand all the information contained within before the unit can be put into operation!
The information contained in this manual has been given the manufacturer's best knowledge. However, the manufacturer can't be held liable for the use of this information
Ing.Siegfried Plasch reserves the right to make any changes to this machine and/or operations manual without prior notice.

Check function!

Before beginning work, check that the guards and the TIPTIG Hot Wire Unit itself are in good working order. Check the torch and machine for damage and make sure that all parts in good working order!

Look out for damage!

All parts must be correctly fitted and all conditions to met ensure trouble-free operation of the machine. If the machine is damaged in any way, it must no longer be used. In such cases, ensure that the machine is professionally repaired. Identify the defect and mark the machine clearly so that it is not used until such time as the repair has been carried out.

Maintain good order!

Maintain good order in your work area! Disorder in a work area can cause accidents. Secure your workplace when leaving it.

Installation and servicing of the TIPTIG Hot Wire unit welding machines and components may only be performed in accordance with the national rules and regulations of the respective organization operators safety.
Never come into contact with any metal parts that are under stress or use with bare hands or wet clothing. During welding operation always wear safety gloves, welding helmet with correct filter!
Be especially careful that anything, such as clothing that comes in contact with the work area including the welding torch, welding ground clamp and welding machine are always dry.
Never work in wet clothing!
When working with metal in the work area or in areas with high voltage always be sure that all metal parts are isolated. Always use dry gloves and wear rubber soled shoes!
Also, make sure that you are standing on a dry, isolated underlay!
Do not use any worn or damages welding cable!
Make sure that any welding cables are not overloaded!
Turn off the TIPTIG Hot Wire Unit and the welding machines if it is not in use for long periods of time!
Do not leave the welding cable coiled up and do not wrap it around any parts of the equipment casing!
When leaving the TIPTIG Hot Wire Unit and the welding unit, make sure that it has been turned off and never leave it running unattended!
Make sure that the welding ground is connected close by the welding area to the work piece!
Poor Welding ground connections, or poor grounding taken from parts of the building or remote points decrease efficiency.
Furthermore the risk of electrical damage to equipment will increase!
Make sure that welding voltage can not come into contact with any chains or steel ropes from equipment such as powered lifts and cranes!

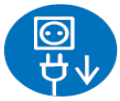
Wear suitable work wear and personal safety gear!

Damaging effect of the rays generated by the electrical arc and from any hot metals can lead to severe burns to unprotected skin and eyes.
To protect your eyes and body from damaging sparks and rays always use welding helmets with the proper certified filter lens. Also, wear the proper protective clothing etc., even if you are only observing the welding process
Any person in the vicinity of the work area must be advised not to look directly into the arc and that metal sparks could be sent through the air.
Protect your skin and hair with leather gloves and a welding helmet/mask from the rays and metal sparks emitted.
Protect the personnel in the surrounding work area from the welding rays and hot sparks with approved anti-flame retardant gear.
Gas tanks under pressure are a potential danger. Follow all safety measures as suggested by gas suppliers and the safety procedures imposed by safety inspectors!
Make sure that gas tanks are in a safe place and cannot fall over!

Do not use the welding equipment close to flammable liquids or gases!

Danger from electrical energy!

There is electrical equipment inside the TIPTIG Hot Wire Unit. Check the machine for external damage before beginning work. Check especially if wires and cables are damaged.



Do not continue working with the equipment if it is damaged.
Pull the plug! In the event of repairs and maintenance work, or when the equipment is not in use, always disconnect the mains power supply plug from wall socket

WARNING! Work on the electrical equipment may only be carried out by a qualified electrician. Only original spares may be used. Failure to comply with this requirement may result in users suffering accidents

Use only original parts!

WARNING! Use only spares as specified in this Manual. The use of non-approved parts may pose a risk of injury to you.

INSTALLATION TO 120V POWER

Make sure the correct power supply is connected!

The TIPTIG Hot Wire Unit must be connected to a socket outlet fitted with a properly installed ground contact.
Before connecting the TIPTIG Hot Wire Unit, make sure the main power cable and the plug are undamaged. Make sure the main voltage matches the specifications on the rating plate.
The TIPTIG Hot Wire Unit may only be connected to a voltage of 115/120VAC /50/60Hz.
The power circuit must be fuse-protected to a maximum of 16A.

Recommendation: To protect you against electric shock, the circuit should be protected by an GFI circuit-breaker(ground fault circuit-breaker)

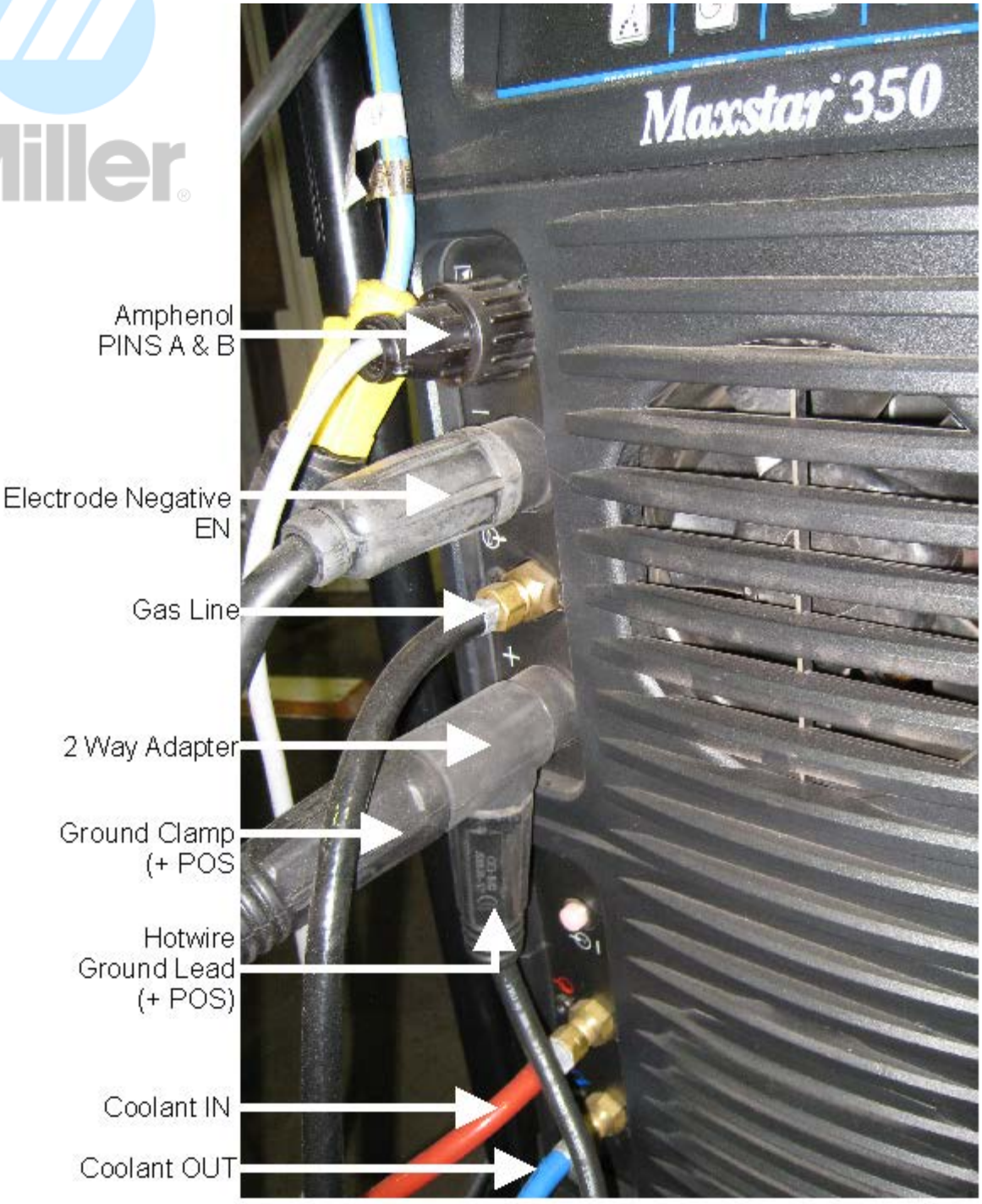
The TIPTIG Hot Wire Unit can now be operated as detailed in the "Operator control" section

Using in tanks and container structures!

Don't take the TIPTIG Hot Wire Unit into a tank or container structure!
It's possible to take only the TIPTIG Feeder into any tank and container structure!
You have only to separate the TIPTIG Feeder from the TIPTIG Trolley!
In this case the operating supply voltage is only 32 VAC!

TIP TIG POWER SUPPLY COMPATIBILITY CHART

Miller Electric	Lincoln Electric	Fronius	ESAB
Maxstar 280DX, 350, 400, 700, 800	Aspect 375	Magic wave, 3000, 4000, 5000	ET 301
Dynasty 280DX, 350, 400, 700, 800	Precision TIG 225, 275, 375	TransTIG 3000, 4000	HeliArc 281
Syncrowave 210, 250DX, 350LX	Invertec V311, V350Pro		Warrior 400, 500
Dimensions MP 452, 650, 652	Flextec 350X MP		
XMT MP 304, 350, 450	Powerwave S350, S500 MP		
MP PipeWorks / PipeWorks Field Pro			



MILLER MAXSTAR CONNECTION GUIDE

NOTE: DO NOT PLUG THE TIP TIG ONTO BACK OF POWERSUPPLY
USE SEPARATE 115V RECEPTACLE

MILLER MAXSTAR / DYNASTY
BASIC SETTINGS

POLARITY **(DC)** - Steel Alloys, Stainless Steel, Nickel, Copper, Titanium
(AC) - Aluminum, Magnesium

PROCESS - TIG HF IMPULSE is the standard selection for High Frequency Starts

OUTPUT - RMT 2T HOLD – is used in replace of a foot pedal to engage and hold the arc while welding.

AMP - Main Amperage Set

INERT GAS USED - 100% Argon used with a regular at 25-35 CF for most welding.

ADVANCED SETTINGS

PULSER – Not Recommended.

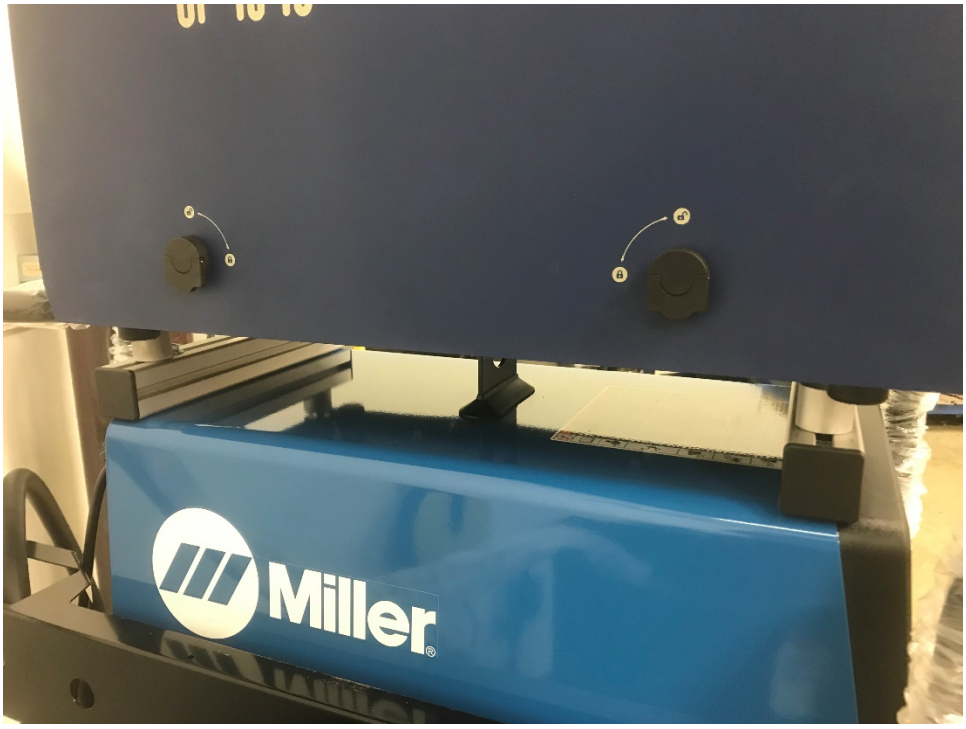
SEQUENCER - The TIP TIG Process does not require a foot pedal. The Sequencer settings is where you can control your start and stop settings in replace of the foot pedal.

INITIAL AMPERAGE (AMP VALUE)
INITIAL SLOPE TIME (TIME VALUE)
FINAL SLOPE TIME (TIME VALUE)
FINAL AMPERAGE (AMP VALUE)

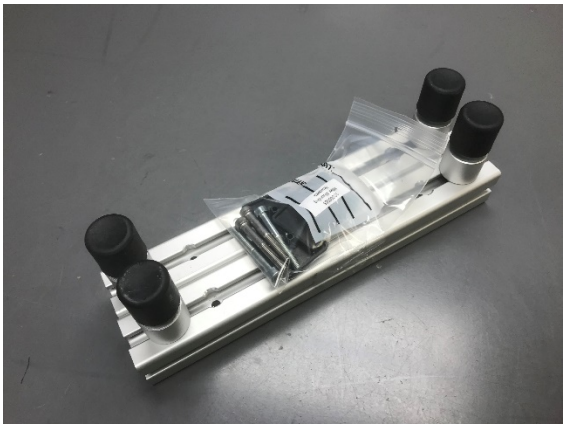
GAS/DIG - PreFlow and PostFlow provide shielding before and after the starts and stops and are set in seconds.

DO NOT PLUG THE TIP TIG INTO THE BACK OF YOUR POWERSUPPLY
AS THE HF INTERFERS WITH THE TIP TIG EQUIPMENT.
USE A SEPARATE 120V OUTLET.

Remove the 4 black screws on the top of your Miller power supply.

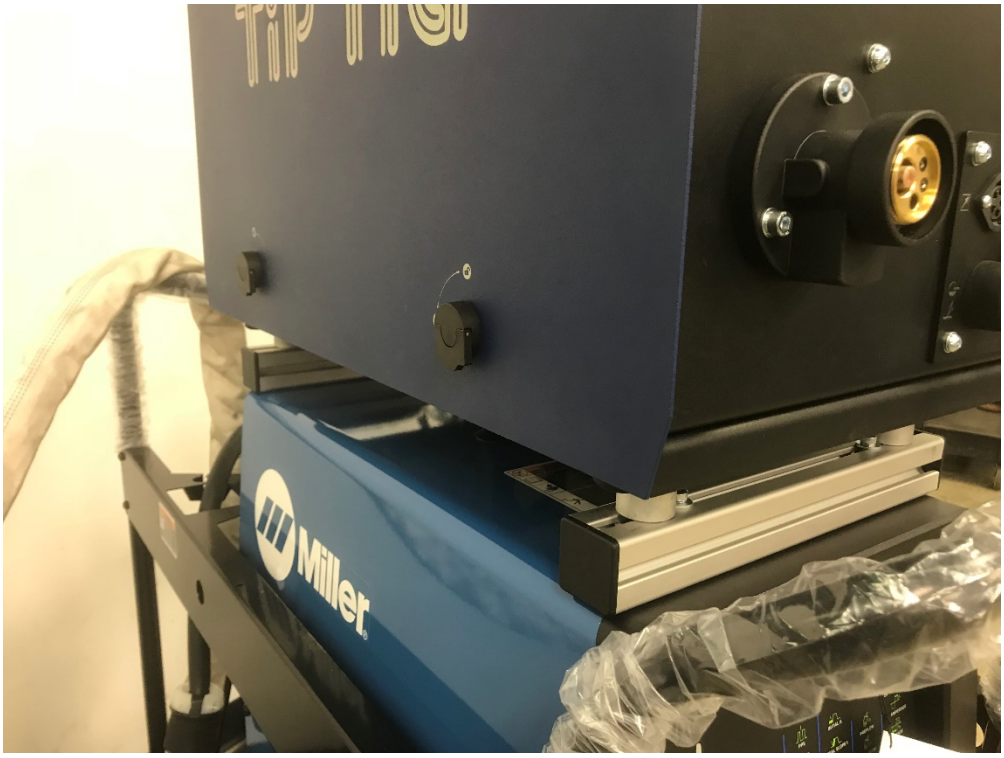


Mounting Kit PN#10000085



Set mounting hardware in place and install.

Adjust feet and position TIP TIG on top of resting pads as shown



GETTING STARTED SET AND TEST HOTWIRE AMPS

Make sure the interconnect cable is installed to the primary power supply and that the TIP TIG Unit is plugged into 120V.

Turn on the Primary Power Supply and Pump On.

Turn on Argon Gas and set to 25.

Turn the TIP TIG power switch located at the rear of the unit on.

The Hotwire Power Switch is located inside the unit near the weld wire location.

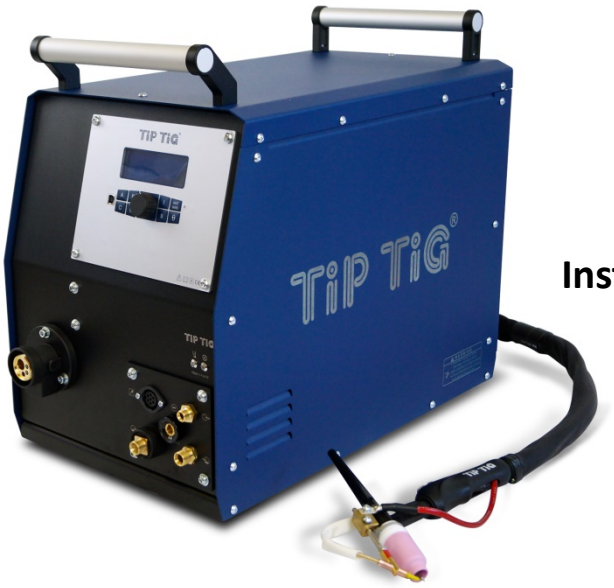
When first Powered On, The LED Indicator light will flash several times then become solid.

The Hot Wire Unit is activated

If welding Aluminum. DO NOT USE HOTWIRE….Power Off Hotwire

The Hot Wire Unit is activated.

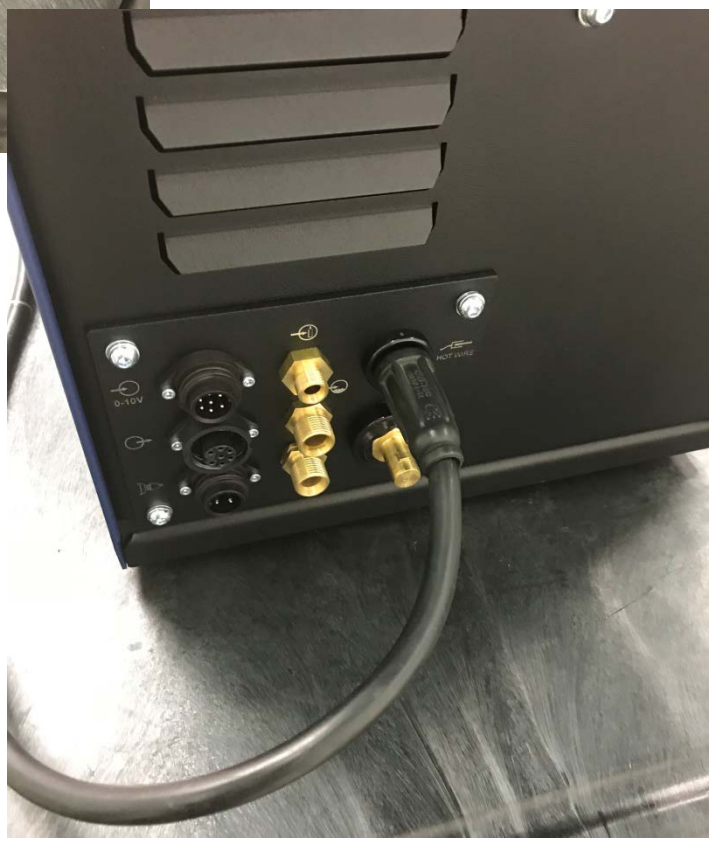
The Hot Wire Amp Range is from 60 to 95**. PRESET AT 80AMPS**



60 Amps for .030 DIA Wire
80 Amps for .035 DIA Wire
95 Amps for .045 DIA Wire

Install torch , set and test hotwire amps.

Hotwire test cable

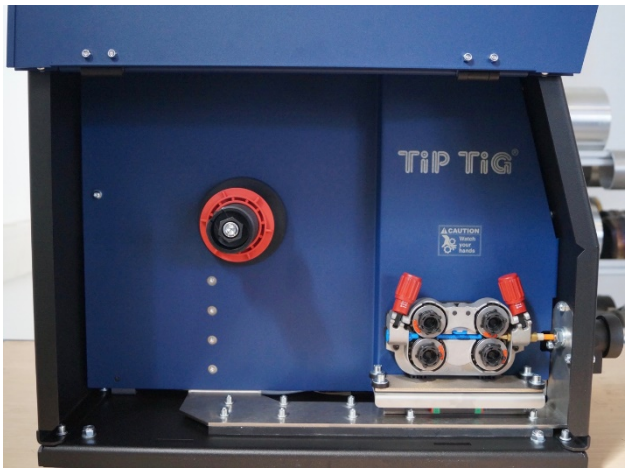


Install test cable as shown.
Make sure torch is installed with the 5pin bayonet connector at this point.

Put on DC AMPS
Put meter clamp around test cable.
Press wire feed button on torch.
Set amperage to .030”, .035”, .045” setting

.030 = 60AMP
.035 = 80AMP
.045 = 95AMP

Hotwire On / Off

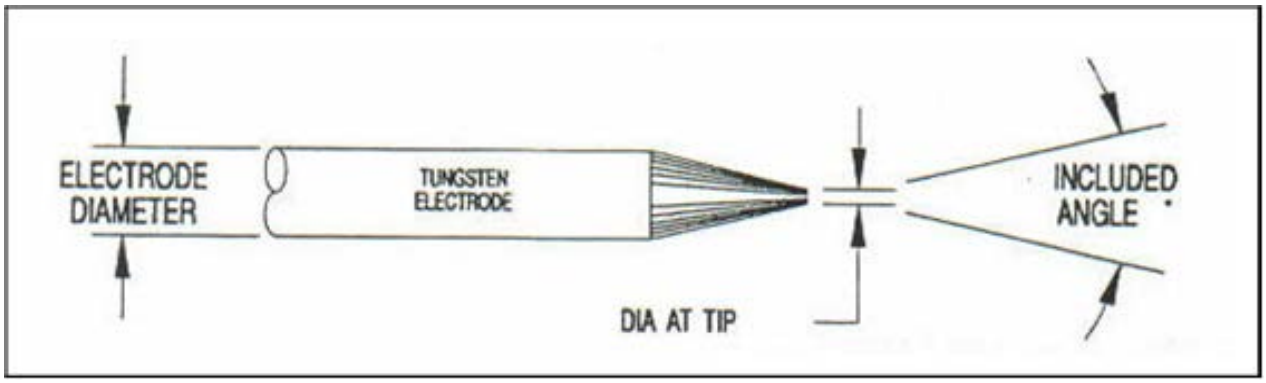


Make adjustment with flat head screw driver in the above location.

- Always Use a Good Quality Weld Wire.
- The preferred wire diameter is .030”, .035”, .045” based on wire type and availability.
- Plastic Reels are preferred over the Wire Steel Reels.
- Wire Steel Reels may ***Bend or Break Causing Wire Feed Problems***.
- With TIP TIG the Wire Cast and Helix are Important for good Feedability.
- Use standard 10LB, 33LB , 40LB Wire Spools on 8” and 12” DIA.

Tungsten Electrodes Sizes to Amperage Ranges

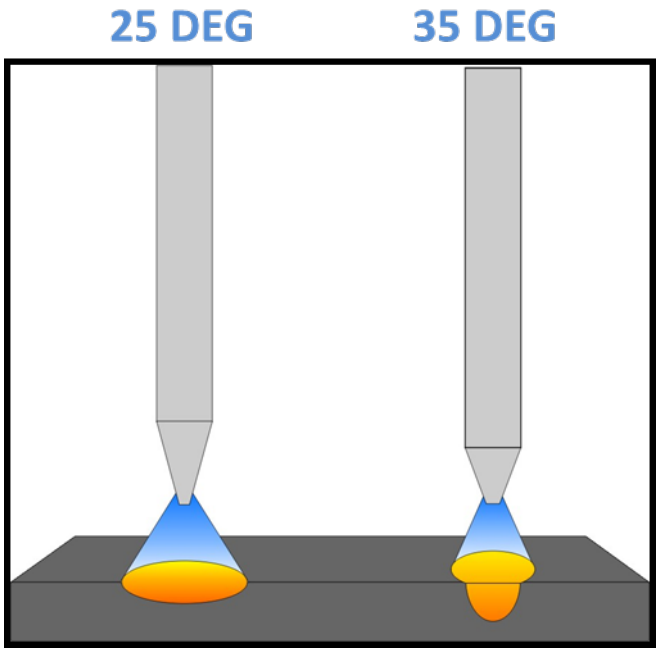
3/32" (.093") 2.4 mm = 60 - 250
1/8" (.125") 3.2 mm = 100 - 400
5/32" (.156") 4.0 mm = 160 - 500



With the TIP TIG Process, you will be welding with more wire so your weld current will be higher than normal. 150 – 350 amps is typical. You will have much longer arc on times. How the tungsten is sharpened will have dramatic effect on the weld duty cycle attained.

For manual TIP TIG welds you want an included angle of “25 degree” with a flat on the tungsten tip. This provides a wider arc plasma suited for most TIG welds.

For better penetration at high travel rates, you will need a included angle of “35 degree”. This angle provides a narrow, more concentrated arc plasma better suited for automation.



When installing a wire spool, make sure the drive wheels are set to the correct wire diameter.

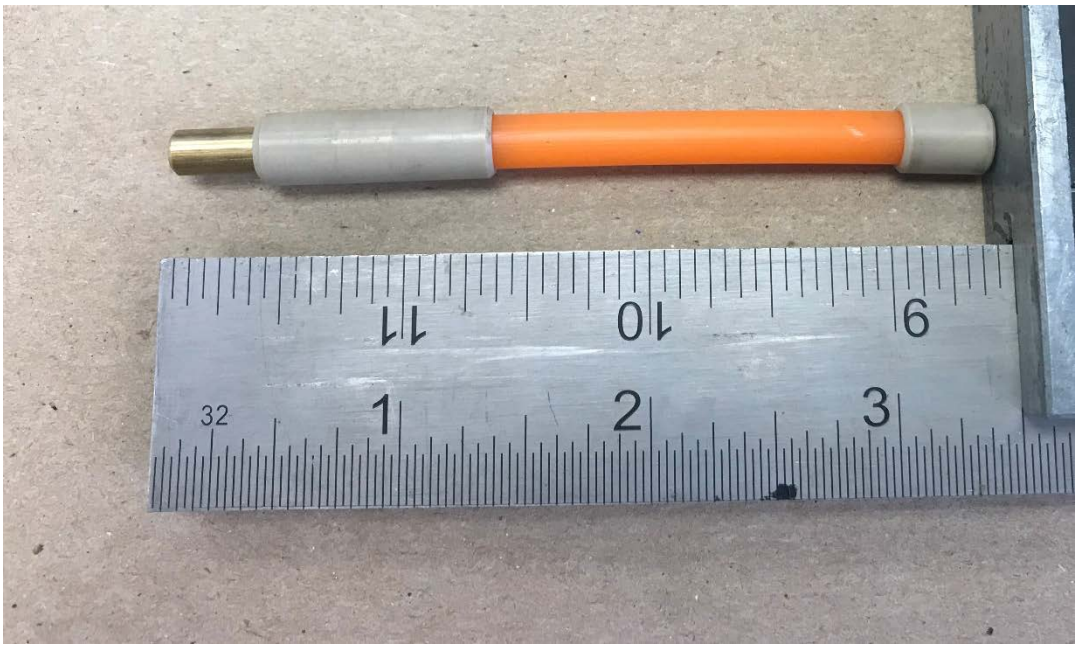
Each drive wheel is reversible.
The number shown on the front side of the drive wheel indicates the correct wire size used.

Available Drive Roll Sizes (.8-1.0) (.9)(1.0-1.2)(.1.2) (1.2-1.6)

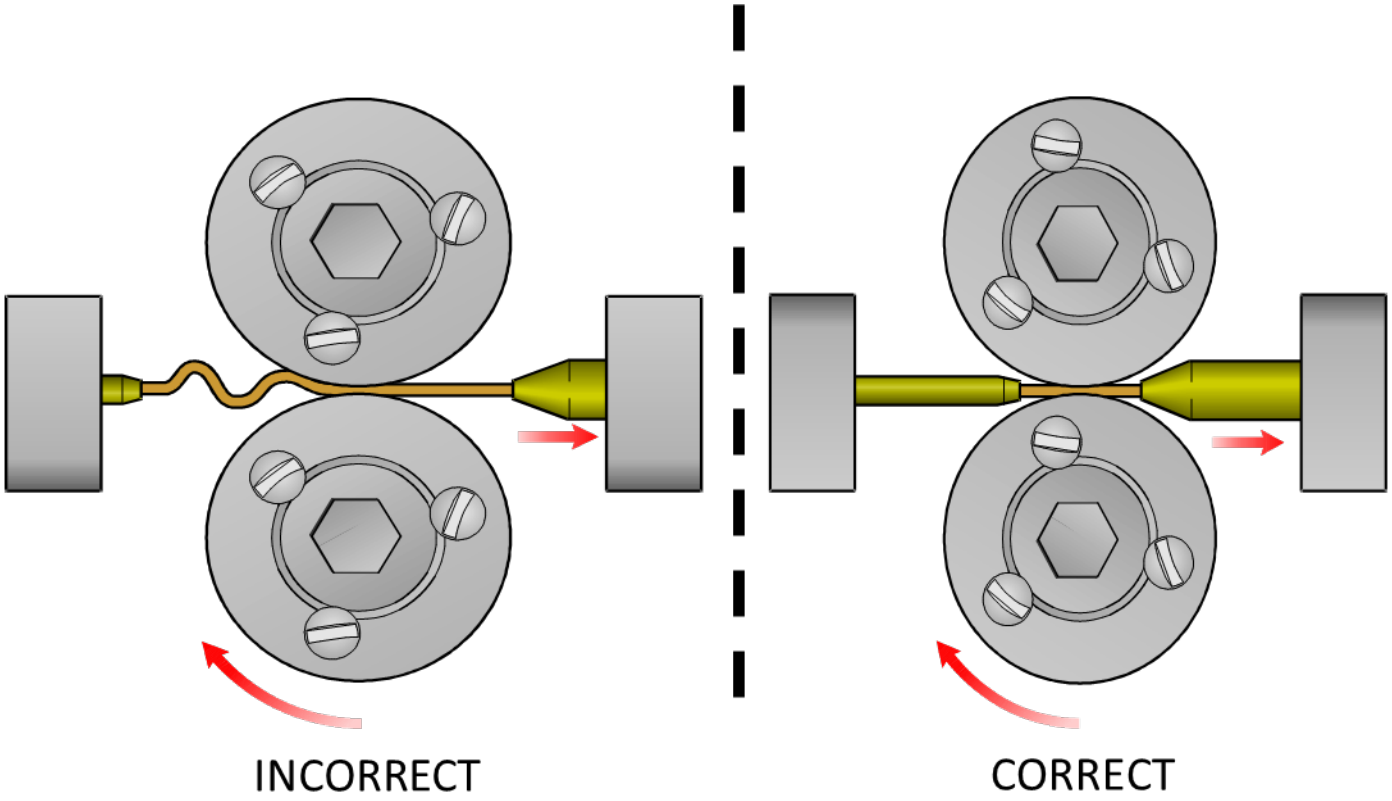
When removing or installing the torch,
make sure the TIP TIG TEFLON OUTLET TUBE is installed inside the main connection terminal as shown below

The TIP TIG TEFLON OUTLET TUBE is 3.5” Long.

The purpose of the TIP TIG TEFLON OUTLET TUBE is to keep the wire centered from the action of the wire feeder's forward and backwards motion and acts as the outlet guide for the wire.

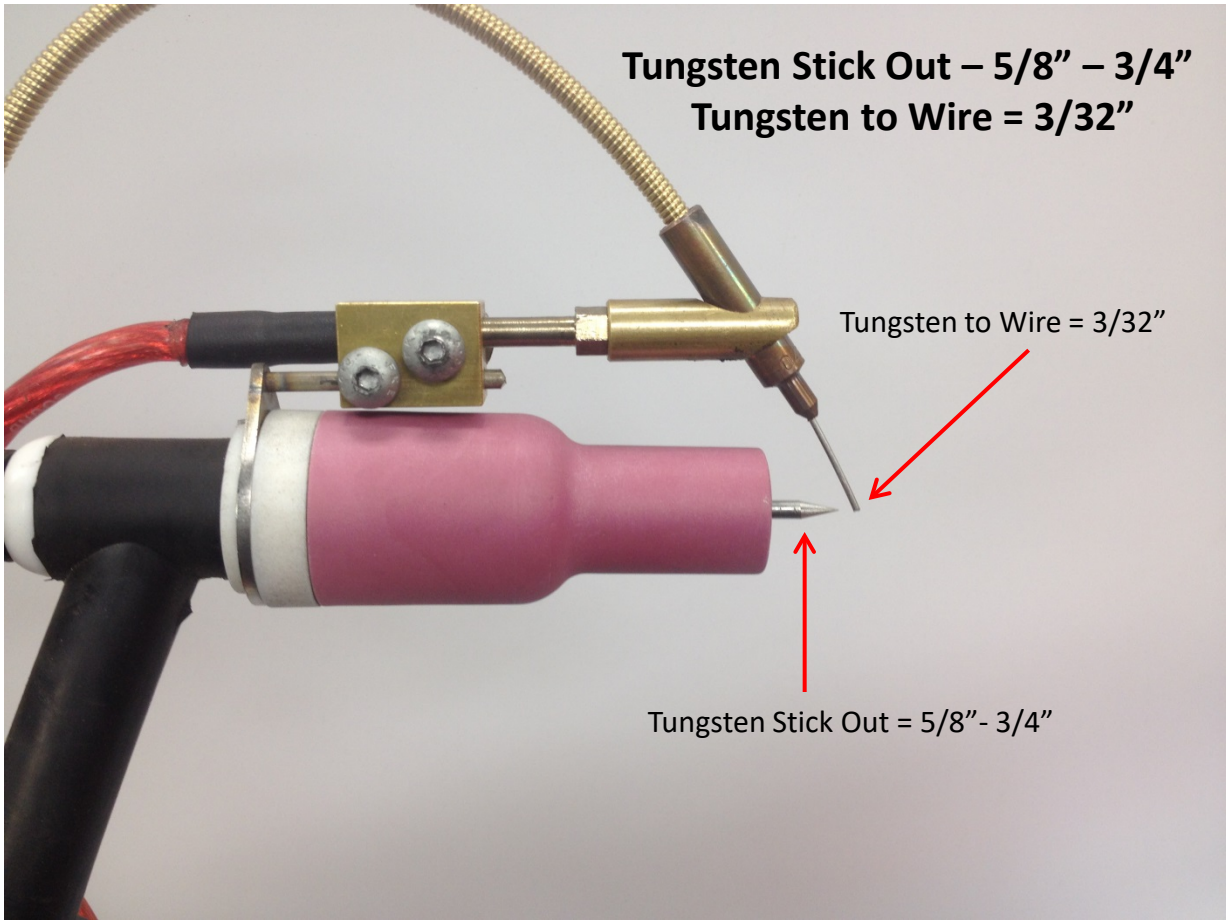


Make sure the Inlet Guide and the Outlet Guide are as close to the drive rolls as possible.
This will greatly reduce any wire feed issues.

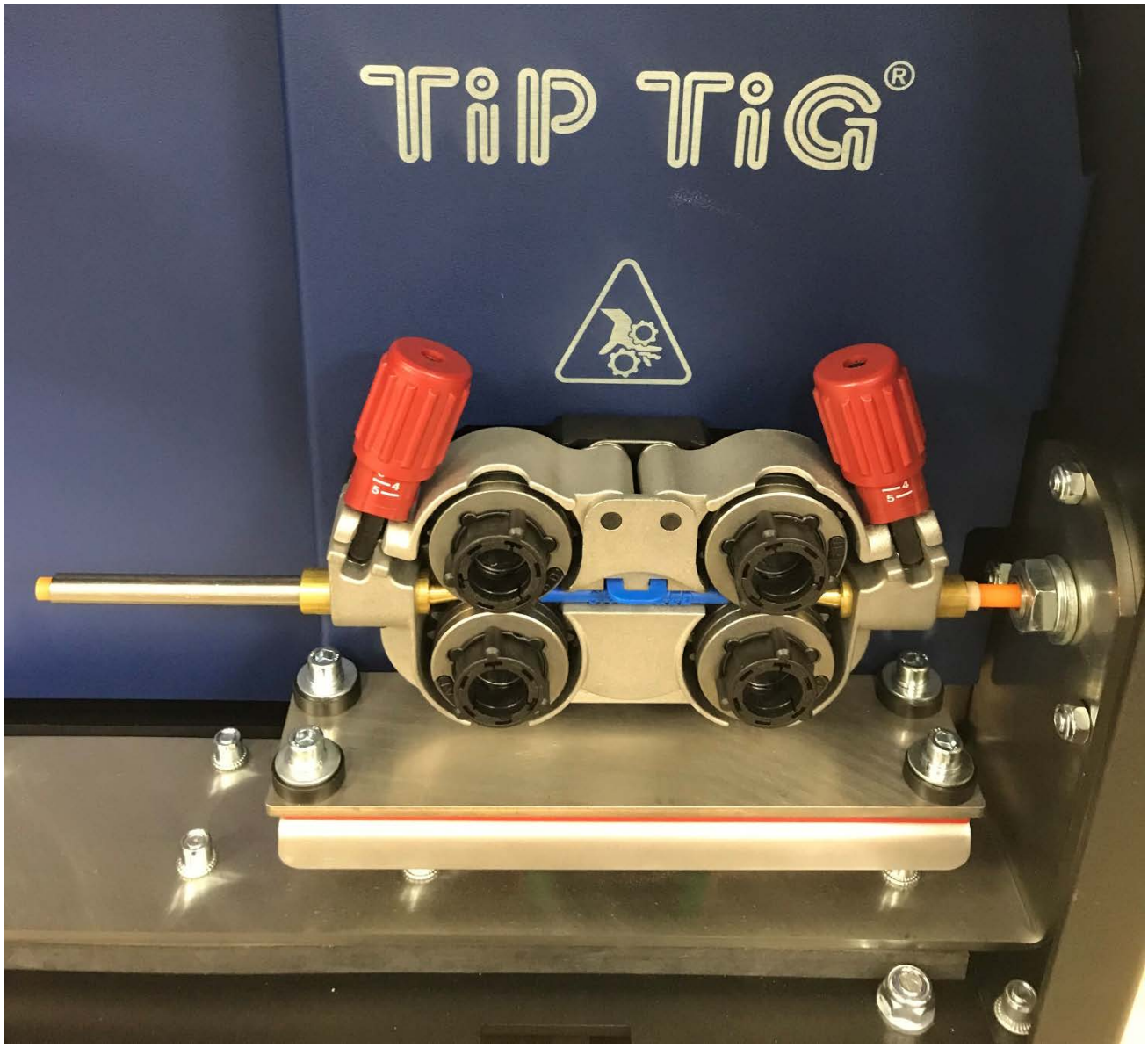


When installing the TIP TIG BRASS GUIDE, please ensure that the Brass guide is as close to the drive rolls without making contact with them.
Refer to the correct diagram above.

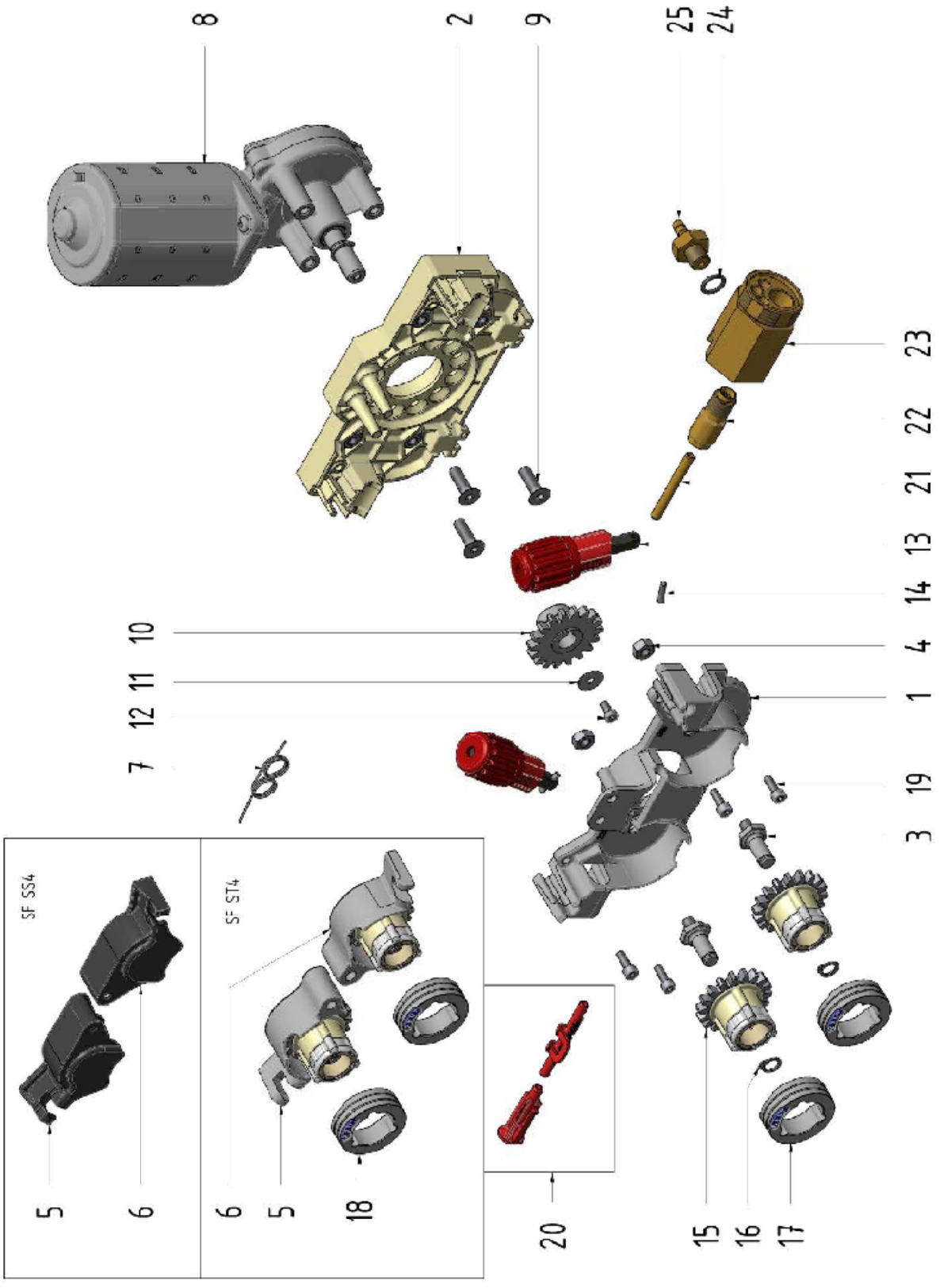
1. Remove all liner consumables so the torch is bare.
2. Make sure the correct drive rolls are installed.
3. Set the wire feed speed to 100.
4. Use a file to round off wire before inserting in into the TIP TIG.
5. Run the wire until it is about 12 inches past the handle.
6. Install liner and guide blocks…Make all settings as shown below.
7. Orientate the guide block to the desired position.
8. Run 15 inches of wire to ensure the wire cast has been straightened.
9. Set tensioners to around 3 and you are ready to weld.
10. Run the wire out for 30 seconds with the wire speed at 30 produce 45 linear inches of wire.
11. Adjust tension to achieve 45” of wire +/- 5 in 30 seconds



TIPTIG FOUR ROLL WIRE DRIVE OVERVIEW



TIPTIG FOUR ROLL WIRE DRIVE OVERVIEW



Pos	Qty	Describtion	Article-no
1	1	TIPTIG Feed plate front	88807200
2	2	TIPTIG Feed plate rear	88807202
3	2	TIPTIG Feed roll shaft	88807204
4	2	TIPTIG Hex-nut M6	88807206
5	1	TIPTIG Pressure arm assembly left SFT4	88807208
6	1	TIPTIG Pressure arm assembly right SFT4	88807208
7	1	TIPTIG Torsion spring	88807210
8	1	TIPTIG Motor-New Wire Drive	88807212
9	3	TIPTIG Motor fixation screws	88807214
10	1	TIPTIG Drive Gear	88807216
11	1	TIPTIG Flat washer	88807218
12	1	TIPTIG Machine screw	88807220
13	2	TIPTIG Pressur adjustment unit	88807222
14	2	TIPTIG Tapered pin	88807224
15	2	TIPTIG Quick change carrier gear	88807226
16	2	TIPTIG Circlip	88807228
17	2	TIPTIG Quick-change feed roll	see list
18	2	TIPTIG Quick change pressure roll	88807230
19	4	TIPTIG Machine screw	88807232
20	1	TIPTIG Wire guide set blue	88807234

Item	Suggested Interval	Action
Feed Rolls	Every 500 Hrs. or as needed	Inspect, Clean or Replace
Wire Guides	Every 500 Hrs. or as needed	Inspect, Replace
Quick-Change Gears	Every 3000 Hrs. or as needed	Inspect, Replace

Table 4 Maintenance Plan

TIPTIG WP 18 SC TORCH AND CONNECTIONS

NEW!!

TIPTIG EXTREME

Hotwire 18 Water Cooled Torch

Standard Length 14ft (4.25m)

Duty cycle 400A/100%

Up Function = Arc On and Off

Down Function = Wire On and Off

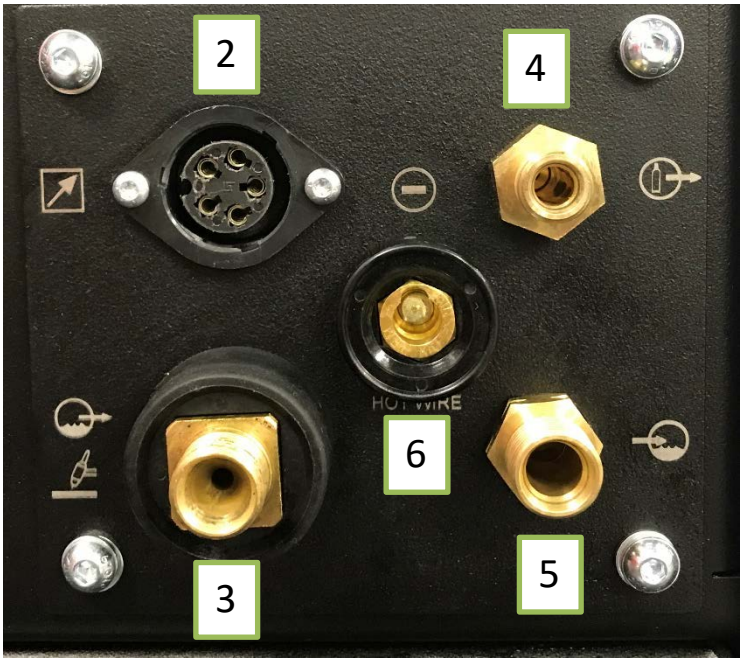
To Start the Weld process

Step 1 – Press Up Button to Start Arc
Step 2 – Press Down Button to Start Wire

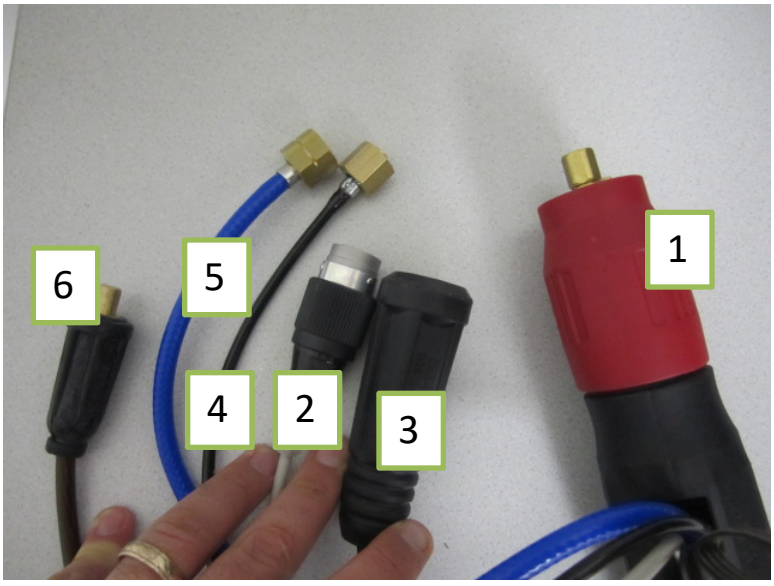
To Stop the Weld Process

Step 3 – Press Down Button to Stop Wire
Step 4 – Press Up Button to Stop Arc

TIP TIG FRONT CONNECTION



TIP TIG FEEDER
1 – 77700046 / 77700048
Main Torch Connection Terminal
2 – 88800457
5 Pin Female Bajonet Connector
3 – 77700162
Current / Water Connection G3/8 RH
4 -88800430
 Gas Connection G1/4 RH
5 – 88800431
Water Inlet Connection G3/8 LH
6 – 88800426
Hotwire Terminal 25



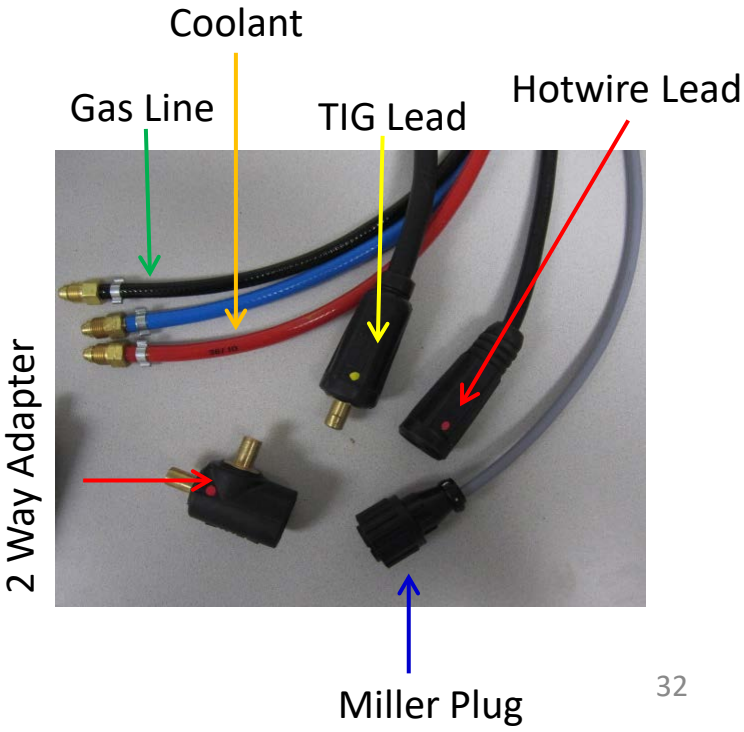
TIP TIG TORCH
1 - Torch Connection
2 - 7 Pin Male Bajonet Connector (NEW)
3 - Current / Water Connection G3/8 RH
4 - Gas Connection G1/4 RH
5 - Water Inlet Connection G3/8 LH
6 - Hotwire Terminal SK25

TIP TIG INTERCONNECTION CABLE AND GROUND

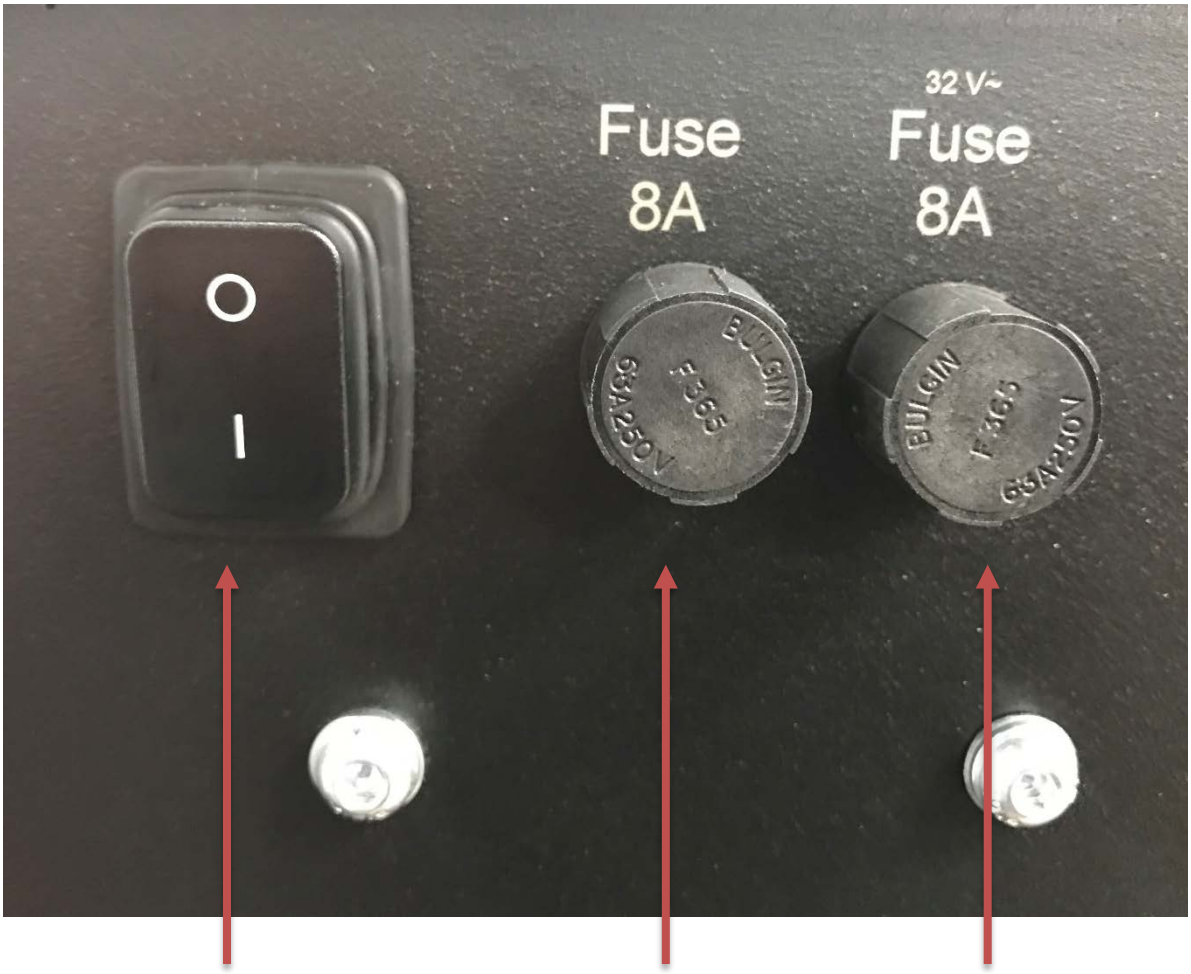
TIP TIG REAR CONNECTION

1) 120 VAC POWER TERMINAL	88800458
2) TIP TIG COMMUNICATION CONNECTION	0902160007
3) TIP TIG 0-10V (AUTOMATION ONLY)	0942200007
4) LH WATER FITTING 3/8”	88800431
5) RH WATER FITTING 3/8”	88800430
6) GAS FITTING 1/4”	88800429
7) Electro Negative Terminal	77700050
8) Hotwire Terminal	88800454

Working Ground Connection



TIP TIG REAR POWER CONNECTION

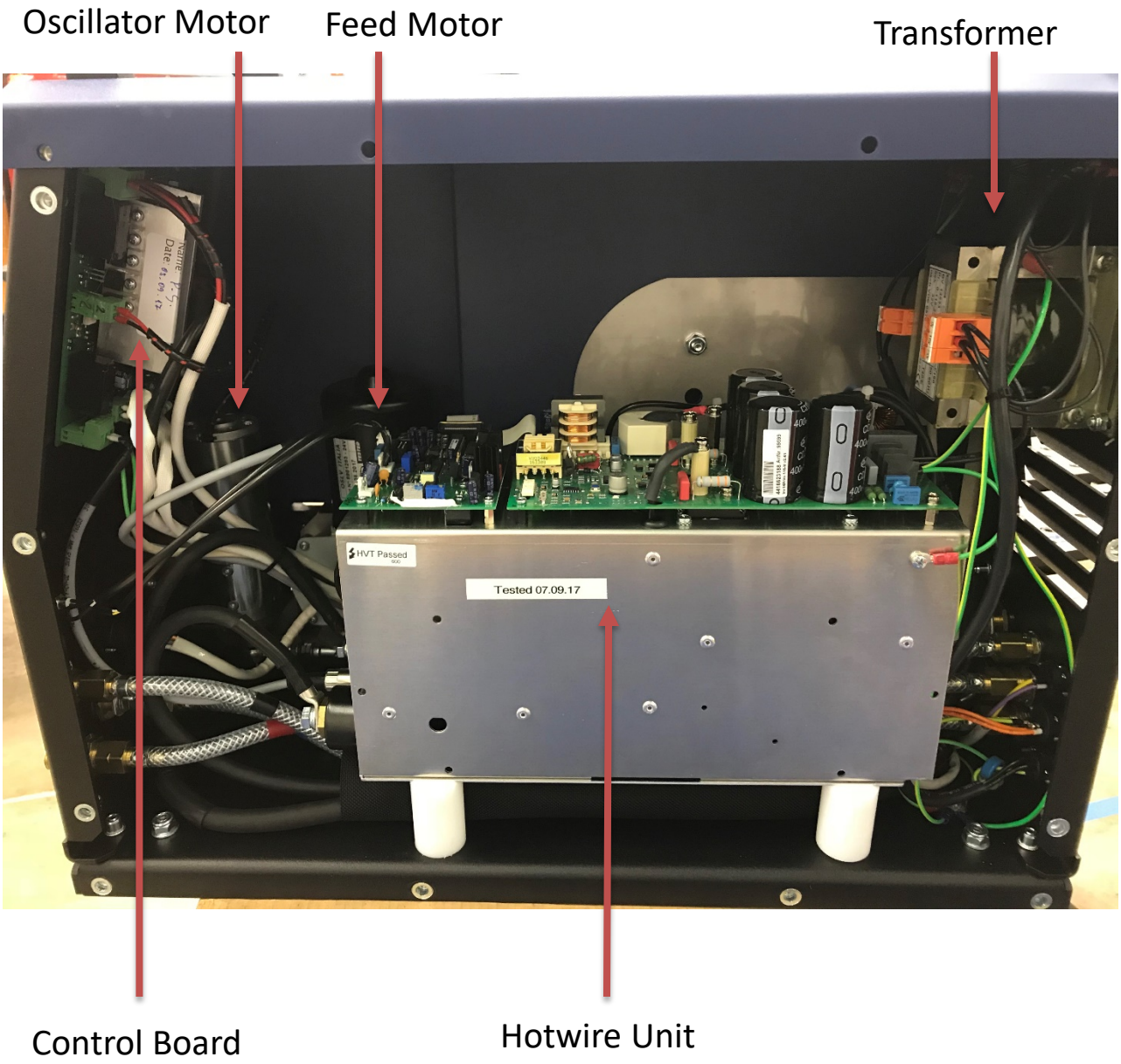


MAIN POWER

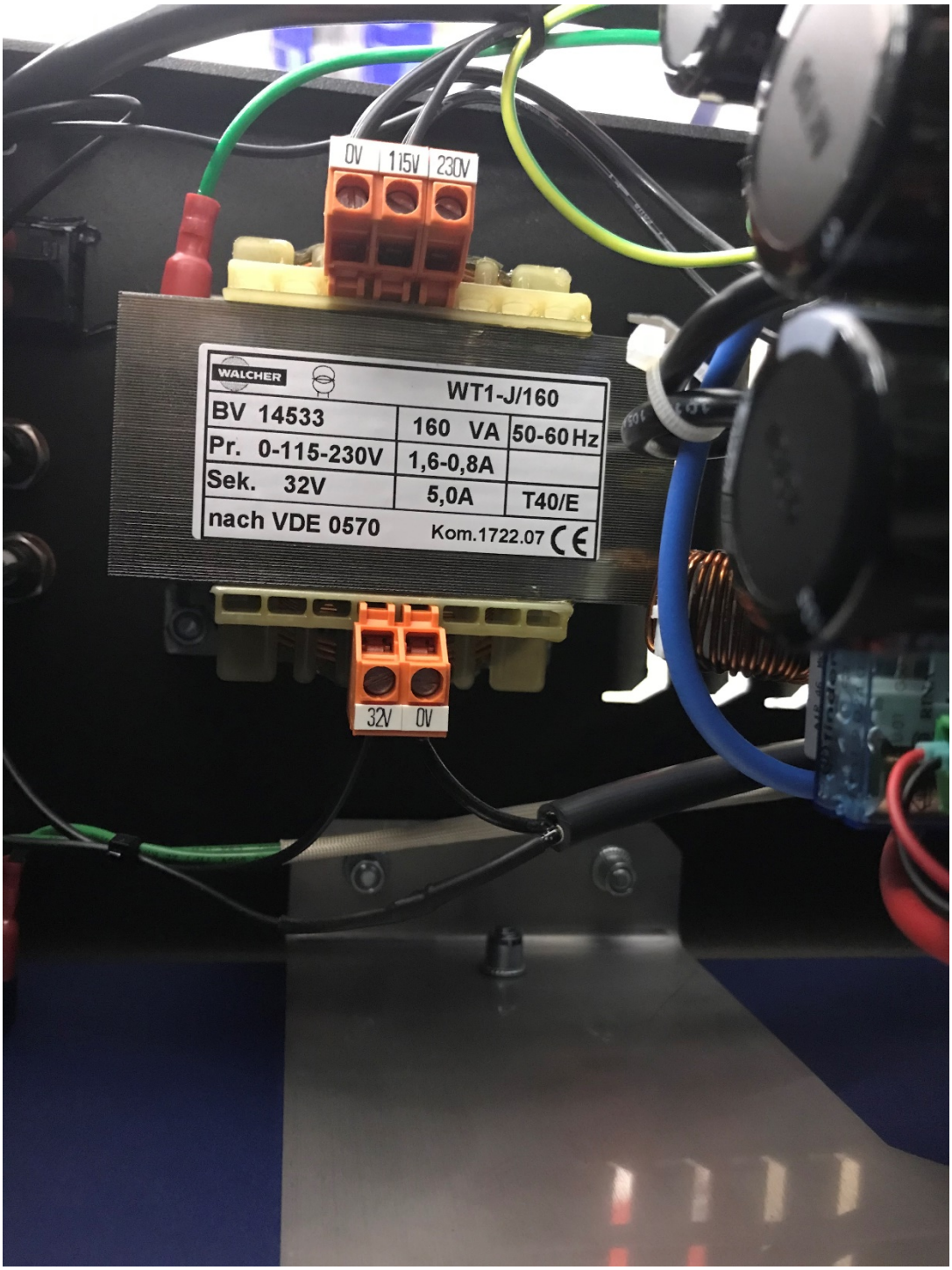
HOTWIRE FUSE
120V

FEEDER FUSE
32V

TIP TIG INSIDE OVERVIEW



TIP TIG TRANSFORMER



TIP TIG CONTROL BOARD

A = Wire Feed Speed

B = Frequency Adjustment

B = Weld Amps (In Equipped)

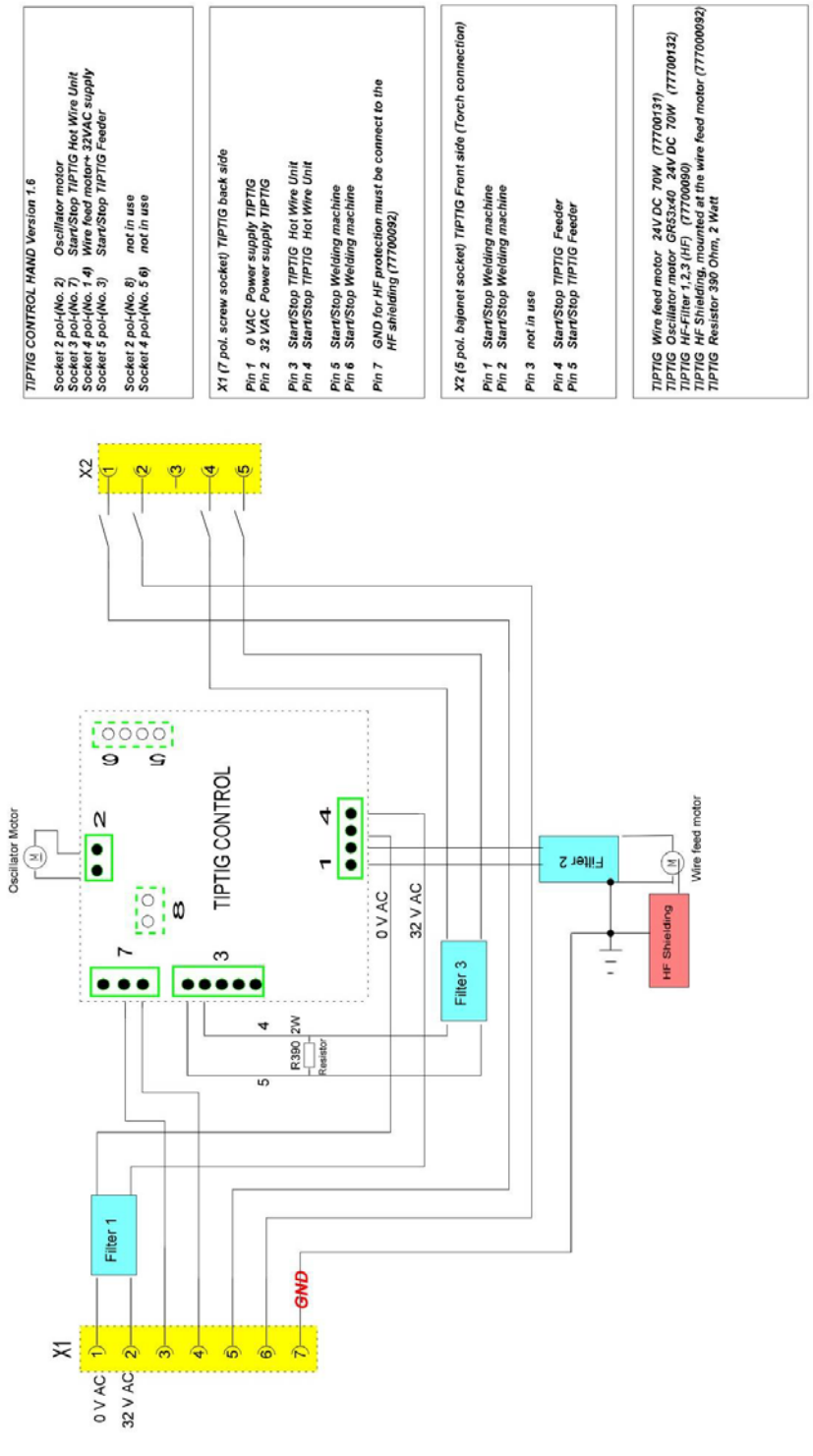
I = Toggle between 2 Stroke and 4 Stroke

Hotwire = On / Off

= Manual Wire Feed

TIPTIG	TIPTIG Hot Wire Unit can be use for TIG/PLASMA/LASER techniques TIPTIG Hot Wire Unit is suitable for Hot and Cold Wire Welding All filler diameters can be used (0.030in-0.063in) For Aluminum it's recommended 0.045in (0.063in) Use the welding machines with the water cooler running. If not you will damage the torch.
Display value feeding speed	**The display value:- multiplied by 2.5 is the result in inches!** Example: Factor 100 = 250inches/min (6.4m/min)!
Display value frequency	The value is as shown as factor! For all applications use 230!!
Display value start delay	The value is shown as factor! Useful for tack weld !
Display value wire retract delay	The value is shown as a factor! Is an option -normally not used!
Display value spot time	The value is shown as factor! Only for spot weld! To use spot time it's needed to adjust the mode spot function
Mode 4 -step	Generally select 4- stroke mode for hand welding > see page 8
Mode 2 -step	2- stroke mode mostly used for tack welding
UP/DOWN Function Wire Feed Speed	If a remote control or an UP/DOWN torch is used, it's possible to adjust wire speed+- 33% from the setup of wire feed value
Option UP/DOWN Function AMPS	If a remote control or an UP/DOWN torch is used, it's possible to adjust amps + -! This option belongs to the feature of the welding machine!

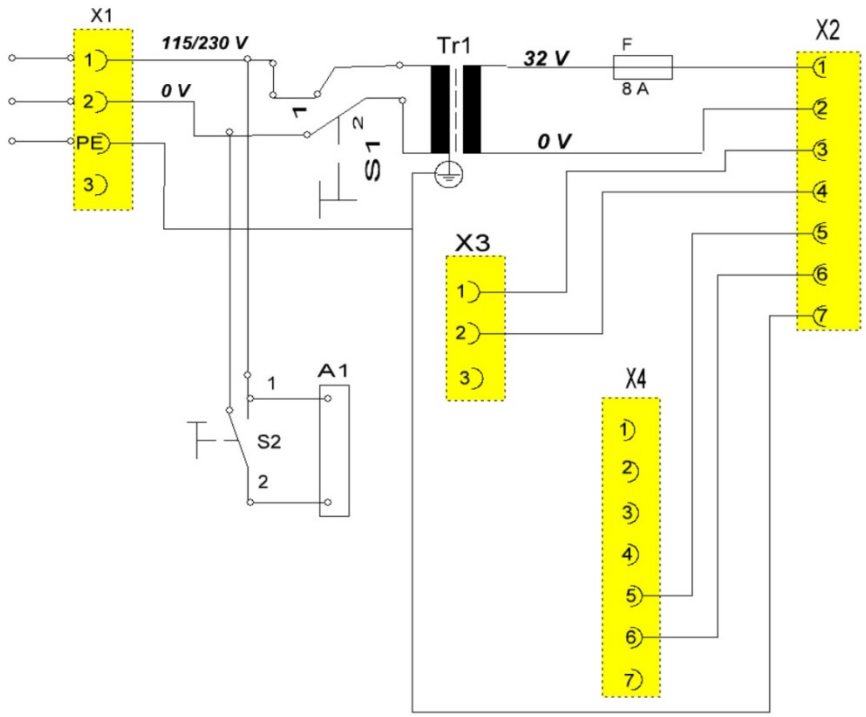
TIPTIG FEEDER HAND VERSION 1.6 CIRCUIT DIAGRAMM



Ing.Siegfried Plasch, Austria

01.03.2010

TIPTIG HOT WIRE MODUL CIRCUIT DIAGRAMM



TIPTIG HOT WIRE MODUL

X 1 Socket male screw 4-pol Input power supply
Pin 1 115/230V AC
Pin 2 0V AC
Pin 3 not in use
Pin PE

X 2 Socket male screw 7-pol (connection interconnecting cable)
Pin 1 32VAC
Pin 2 0VAC
Pin 3 Start/Stop TIPTIG Hot Wire Unit
Pin 4 Start/Stop TIPTIG Hot Wire Unit
Pin 5 Start/Stop Welding machine
Pin 6 Start/Stop Welding machine
Pin 7 GND-PE

X 3 Socket female screw 3-pol (Start/Stop connection Hot Wire Unit)
Pin 1 Start/Stop Hot Wire Current
Pin 2 Start/Stop Hot Wire Current
Pin 3 not in use

X 4 Socket female screw 7-pol (connecting cable to welding machine)
Pin 5 Start/Stop Welding machine
Pin 6 Strat/Stop Welding machine

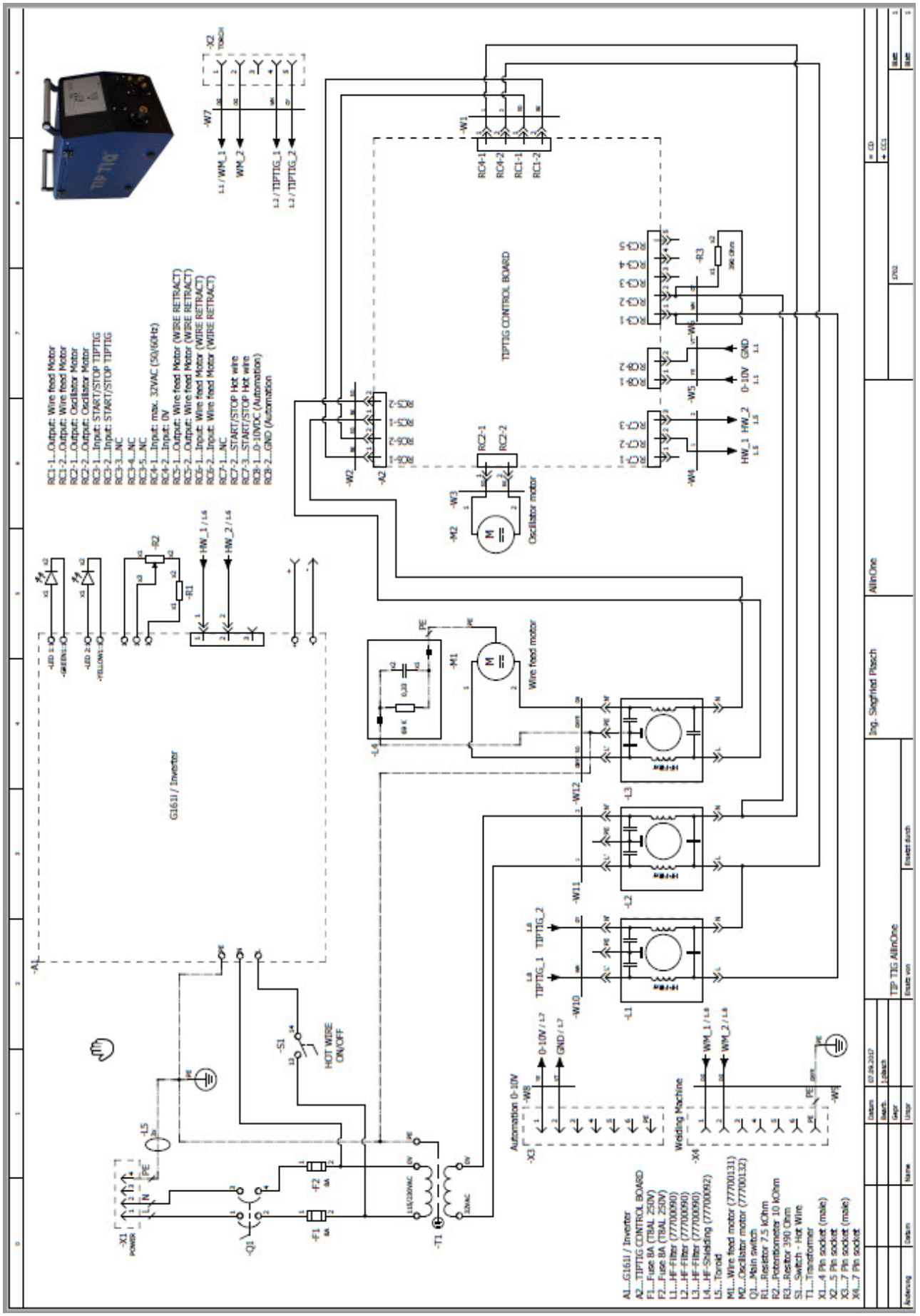
TR 1 Transfomer 115/230V AC 32VAC 250VA
S 1 Main switch (Back side of the Hot Wire Modul)
S 2 Switch ON/OFF TIPTIG Hot Wire Unit (Front side)
A 1 Input power supply TIPTIG Hot Wire Unit
F Fuse 8A (Transformer and TIPTIG Feeder)

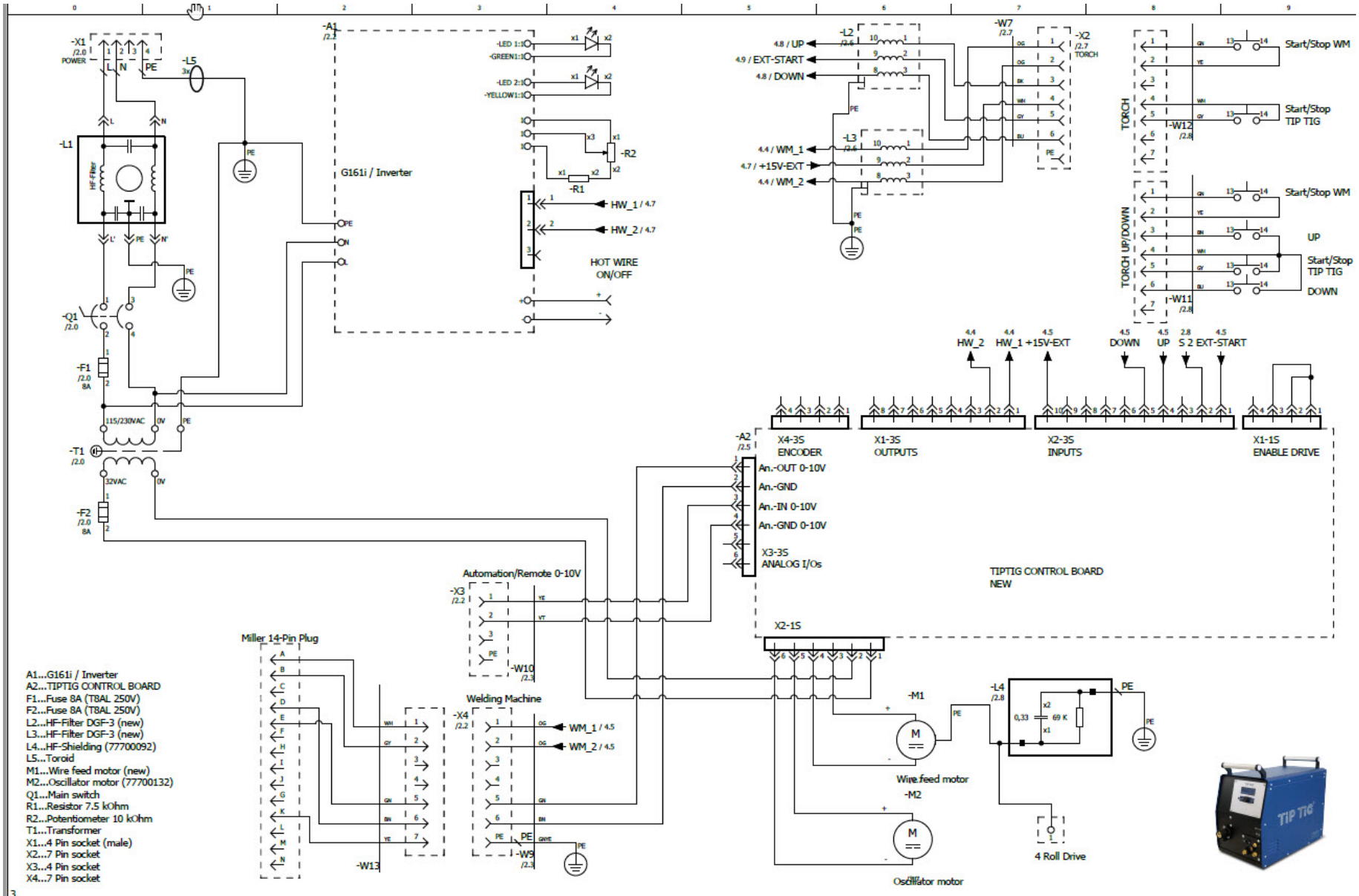
Ing.Siegfried Plasch, Austria

01.03.2010

TIP TIG ELECTRONICS AND POWER

V1.1


TIPTIG CONTROL BOARD
G161i / Inverter
Wire feed motor
Oscillator motor
HOT WIRE ON/OFF
Automation 0-10V
Welding Machine
TIP TIG AllinOne
Ing. Siegfried Plasch
AllinOne
A1...G161i / Inverter
A2...TIPTIG CONTROL BOARD
F1...Fuse 8A (TBAL 250V)
F2...Fuse 8A (TBAL 250V)
L1...HF-Filter (77700090)
L2...HF-Filter (77700090)
L3...HF-Filter (77700090)
L4...HF-Shielding (77700092)
L5...Toroid
M1...Wire feed motor (77700131)
M2...Oscillator motor (77700132)
Q1...Main switch
R1...Resistor 7.5 kOhm
R2...Potentiometer 10 kOhm
R3...Resistor 390 Ohm
S1...Switch - Hot Wire
T1...Transformer
X1...4 Pin socket (male)
X2...5 Pin socket
X3...7 Pin socket (male)
X4...7 Pin socket


-X1 /2.0 POWER
L N PE
-L5
-L1
HF-Filter
-A1 /2.2
G161i / Inverter
PE
N
L
-LED 1:1
-GREEN1:1
-LED 2:1
-YELLOW1:1
-R2
-R1
HW_1 / 4.7
HW_2 / 4.7
HOT WIRE ON/OFF
-Q1 /2.0
-F1 /2.0 8A
115/230VAC
0V
-T1 /2.0
32VAC
-F2 /2.0 8A
-L2 /2.6
-L3 /2.6
4.8 / UP
4.9 / EXT-START
4.8 / DOWN
4.4 / WM_1
4.7 / +15V-EXT
4.4 / WM_2
-W7 /2.7
-X2 /2.7 TORCH
TORCH
-W12 /2.8
Start/Stop WM
Start/Stop TIP TIG
TORCH UP/DOWN
-W11 /2.8
UP
DOWN
HW_2
HW_1
+15V-EXT
DOWN
UP
S 2 EXT-START
-A2 /2.5
X4-3S ENCODER
X1-3S OUTPUTS
X2-3S INPUTS
X1-1S ENABLE DRIVE
An.-OUT 0-10V
An.-GND
An.-IN 0-10V
An.-GND 0-10V
X3-3S ANALOG I/Os
TIPTIG CONTROL BOARD NEW
X2-1S
Automation/Remote 0-10V
-X3 /2.2
-W10 /2.5
Miller 14-Pin Plug
-W13
Welding Machine
-X4 /2.2
WM_1 / 4.5
WM_2 / 4.5
-W9 /2.5
-M1
Wire feed motor
-M2
Oscillator motor
-L4 /2.8
0,33
69 K
4 Roll Drive
A1...G161i / Inverter
A2...TIPTIG CONTROL BOARD
F1...Fuse 8A (T8AL 250V)
F2...Fuse 8A (T8AL 250V)
L2...HF-Filter DGF-3 (new)
L3...HF-Filter DGF-3 (new)
L4...HF-Shielding (77700092)
L5...Toroid
M1...Wire feed motor (new)
M2...Oscillator motor (77700132)
Q1...Main switch
R1...Resistor 7.5 kOhm
R2...Potentiometer 10 kOhm
T1...Transformer
X1...4 Pin socket (male)
X2...7 Pin socket
X3...4 Pin socket
X4...7 Pin socket
3
Datum 03.07.2018
Bearb. Jürgen
Gepr
Urspr
Änderung Datum Name
TIP TIG AllinOne
Ersatz von
Ersetzt durch
Ing. Siegfried Plasch
AllinOne new Control Board - Miller
= CD
+ CC3
1702
Blatt 4
Blatt 5

V2 NEW

WARRANTY INFORMATION

TIP TIG FEEDERS, TIPTIG HOTWIRE MODULES, TIP TIG POWERSUPPLYS

All TIP TIG systems have been calibrated from the manufacturer and are in compliance .

Within the warranty period of 12 Months from the date of purchase, TIP TIG USA will replace any warranted parts or components that fail due to such defects in material or workmanship. TIP TIG USA must be notified in writing within thirty (30) days of such defect or failure, at which time TIP TIG USA will provide information on the warranty claim procedures to be followed.

TIP TIG USA shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a North American location.

TIP TIG USA shall not bear the costs of transportation.

12 Month Parts and Labor

- Transformer
- Hotwire Unit
- PC Board
- Feed and Oscillator Motor
- Water Fitting and Bulkhead Connection
- Linear Motion Slide and Extenders
- Torches (Upon Initial Delivery Only)

What is Not Covered Under the Warranty

Consumable components; such as contact tips, nozzles, insulators, rings, collets gas lenses, back caps, liners, tungsten, universal tip guides or any torch accessory Is not covered under the manufactures warranty.

Causes for Warranty to be Voided

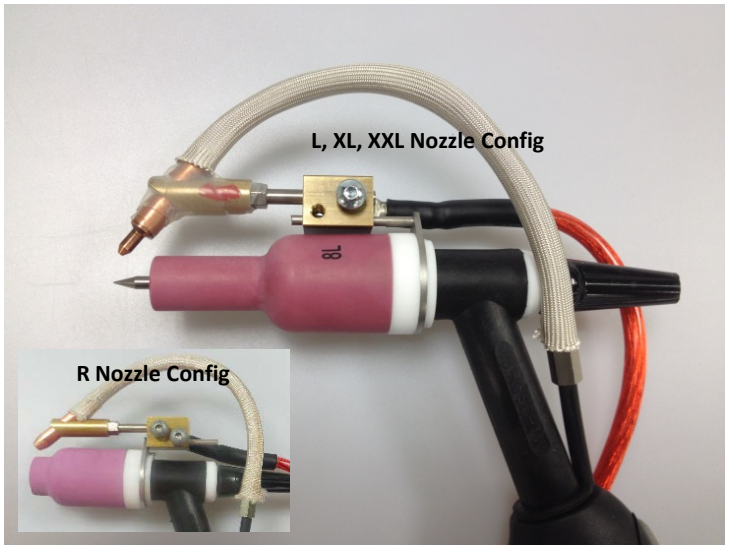
Damage, fault or failure due to alteration or repairs made by anyone other than Tip Tig USA shall void the warranty

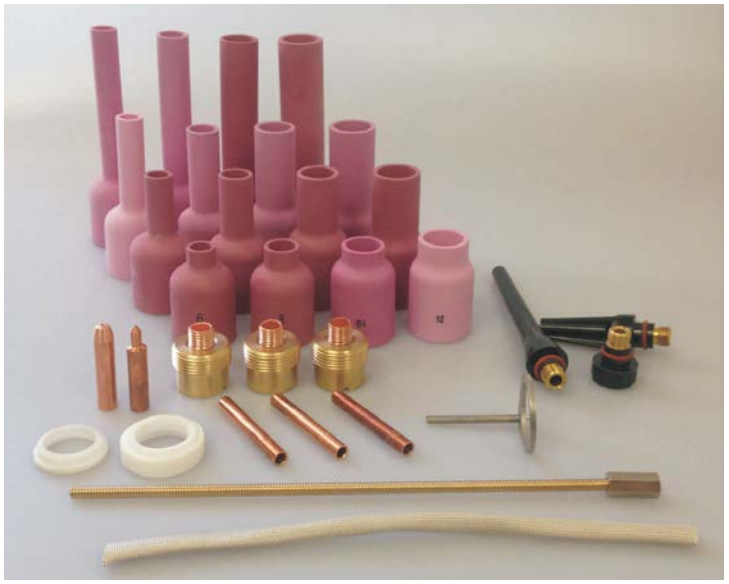
For TIPTIG Service please call:
856-312-8166

TIP TIG USA 155 E 9th Ave Suite A Runnemede, NJ 08078

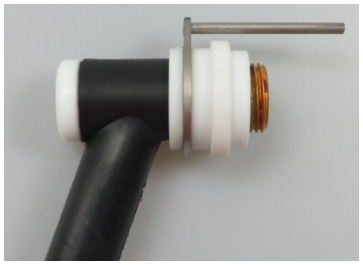
TIP TIG Extreme HW Torch SC18 4.0M
10002461

TIP TIG 18SC Torch Body Replacement
99903360





HD Insulator



Gas Lens
3/32”	99900524
1/8”	99900526
5/32”	99900528

Collets
3/32”	99901031
1/8”	99901032
5/32”	99901033

Ring
Outside F	77700630
Inside B	77700631

Standard Insulator
Ring	77700214
Nozzle	77700605

HD Insulator
Ring 1	77700208
Ring 2	77700209
Nozzle	77700210

Nozzles
#6 3/8” 77700530	#6XL 3/8” 77700575
#8 1/2” 77700532	#8XL 1/2” 77700576
#10 5/8” 77700533	#10XL 5/8” 77700577
#12 3/4” 77700534	#12XL 3/4” 77700578
#6L 3/8” 77700570	#6XXL 3/8” 77700585
#8L 1/2” 77700571	#8XXL 1/2” 77700586
#10L 5/8” 77700572	#10XXL 5/8” 77700587
#12L 3/4” 77700573	#12XXL 3/4” 77700588

Back Caps
Small	77700240
Med	77700241
Large	77700242

Tip Holder
39 Deg Fillet	77700686
42 Deg Butt	77700685

Liner
Bronze Liner	77700566-A

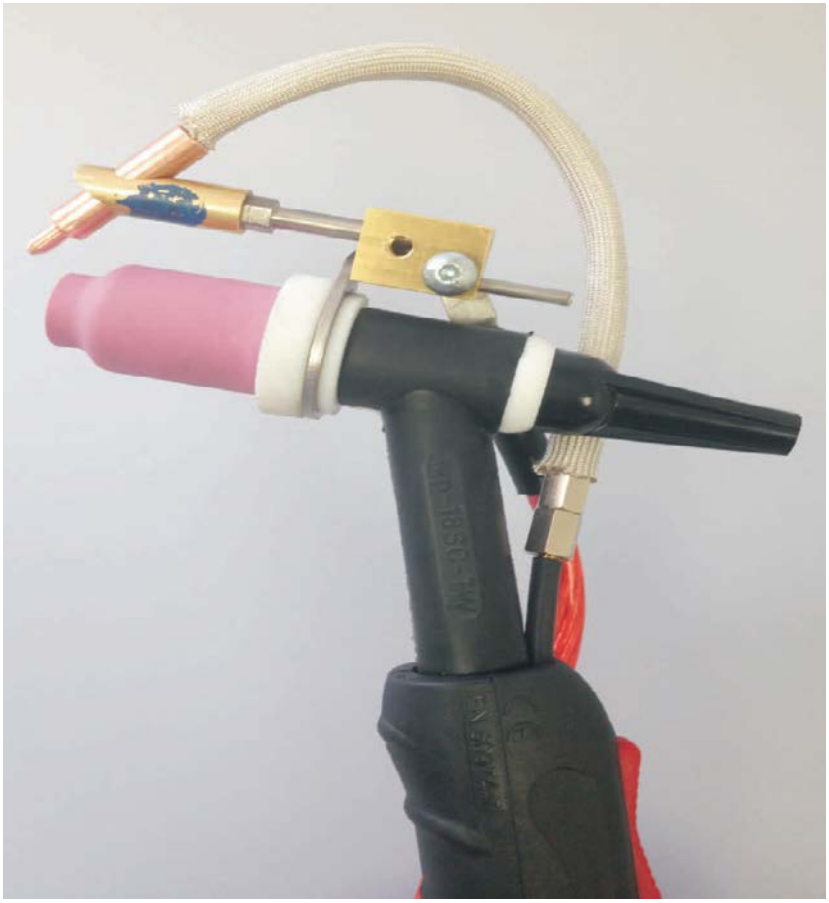
Insulator
Fiber Sleeve	60000215-A

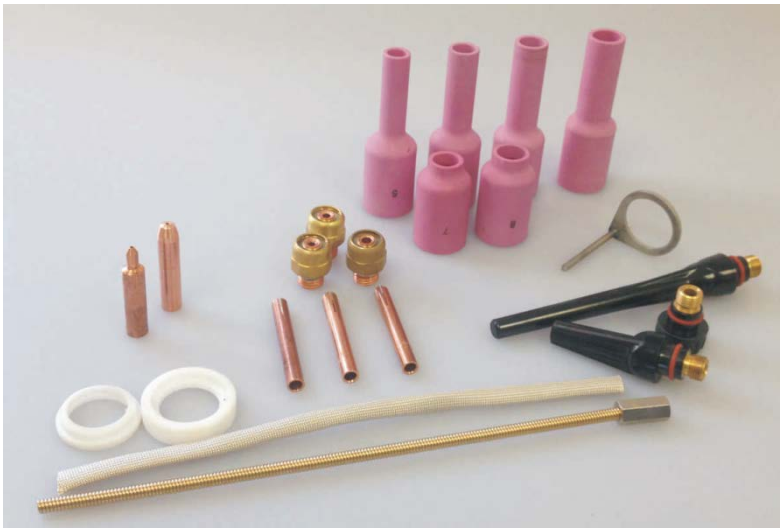
Tips Regular
Cooper .035”	77700536
Cooper .045”	77700537
Cooper .068”	77700538

Narrow Groove Tips
.035”	77700536B
.045”	77700537B

TIP TIG Extreme HW Torch SC18 4.0M
10002461

TIP TIG 18SC Torch Body Replacement
99903360





Gas Lens

3/32”	99900024
1/8”	99900026
5/32”	99900028

Collets

3/32”	99901031
1/8”	99901032
5/32”	99901033

Ring

77700631

Ring Insulator

77700214

Nozzle Insulator

77700252

Nozzles

#5 5/16”	99902050
#6 3/8”	99902052
#7 7/16”	99902054
#8 1/2”	99902056
#5L 5/16”	99902060
#6L 3/8”	99902062
#7L 7/16”	99902064
#8L 1/2”	99902066

Back Caps

Small	77700240
Med	77700241
Large	77700242

Tip Holder

39 Deg Fillet	77700686
42 Deg Butt	77700685

Liner

Bronze Liner	77700566-A

Insulator

Fiber Sleeve	60000215-A

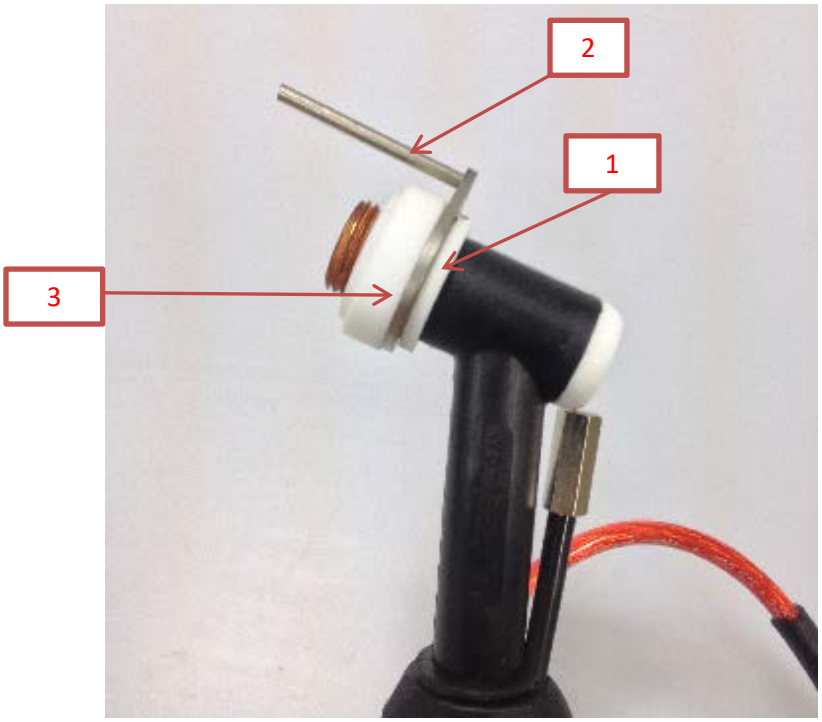
Tips Regular

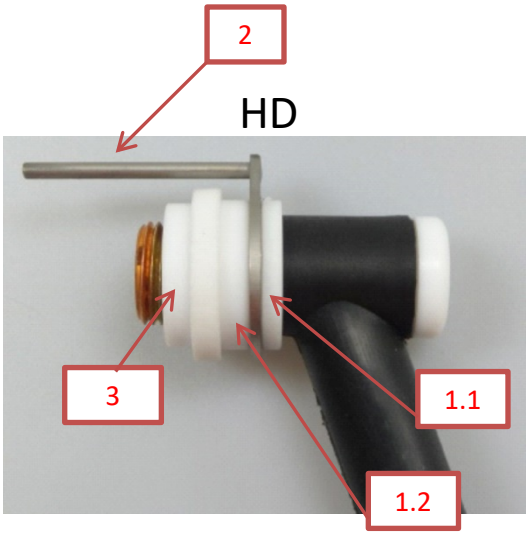
Cooper .035”	77700536
Cooper .045”	77700537
Cooper .068”	77700538

Narrow Groove Tips

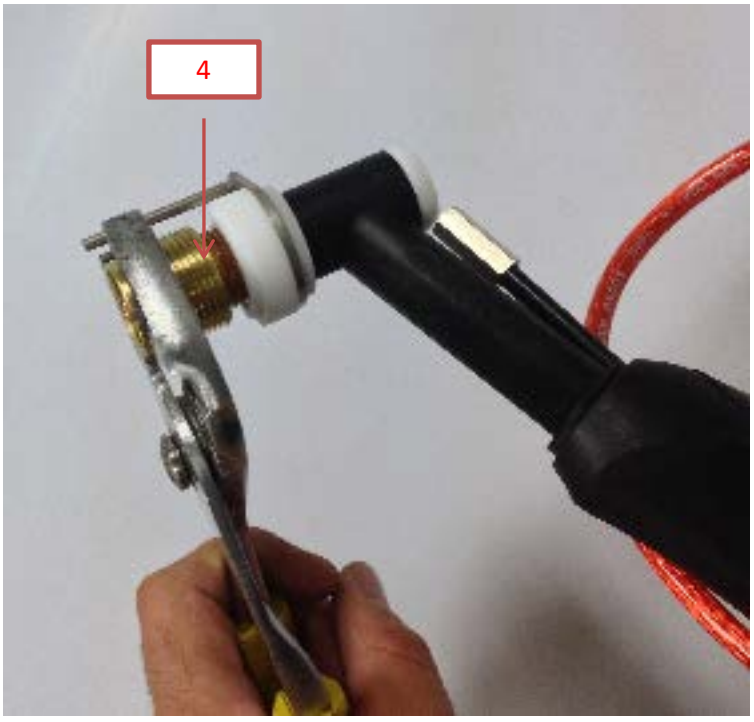
.035”	77700536B
.045”	77700537B

Standard

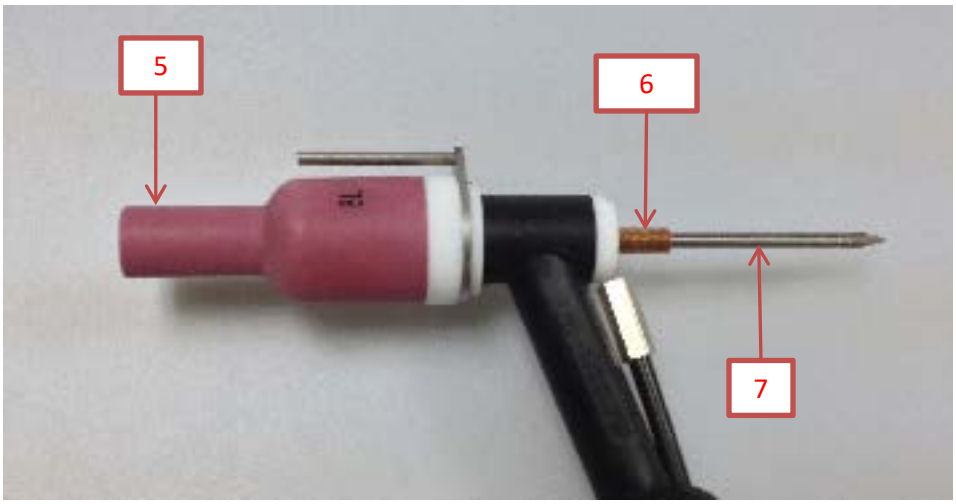




Step 1- Install the Ring Insulator
Step 2- Install the Ring for Universal Tip Holder
Step 3- Install the Nozzle Insulator



Step 4- Install the Gas Lens by hand, then tighten slightly with pliers as shown.

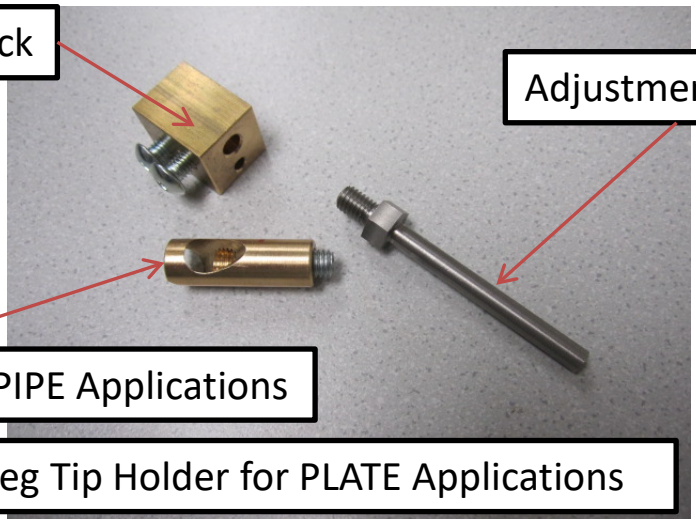


Step 5- Install the Gas Nozzle

Step 6- Install the Collet

Step 7- Install the Tungsten

Step 8- Install the Back Cap and tighten to secure the tungsten in place.



Tip / Liner Assembly

Includes:
Contact Tip
.035, .045
Liner
Fiberglass silicone
Sleeve

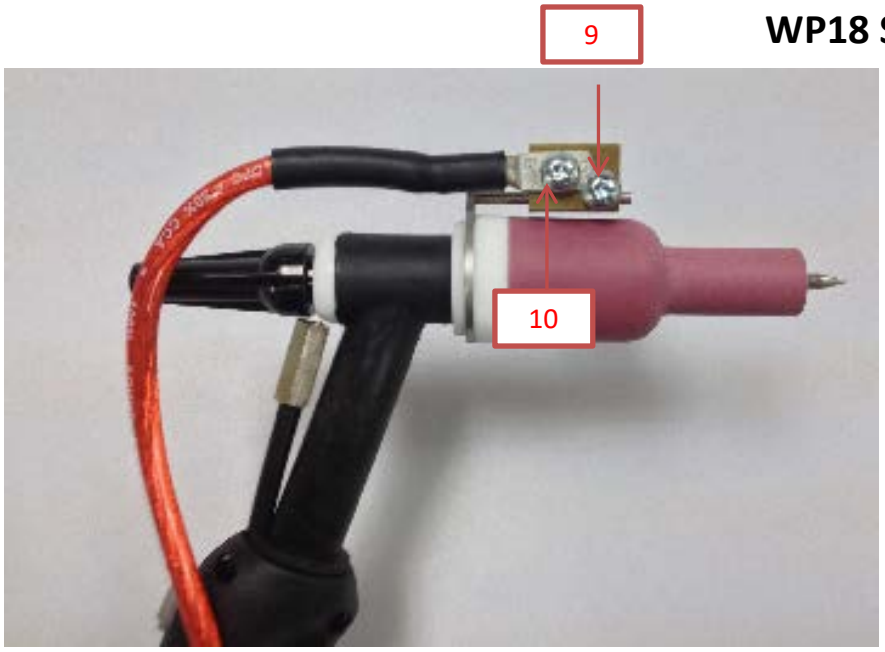
7.5” Liner Assembly will work on Regular and Large Nozzle Sizes

Loosen the Set Screw inside the Tip Holder

Install the weld repellant tape as shown.

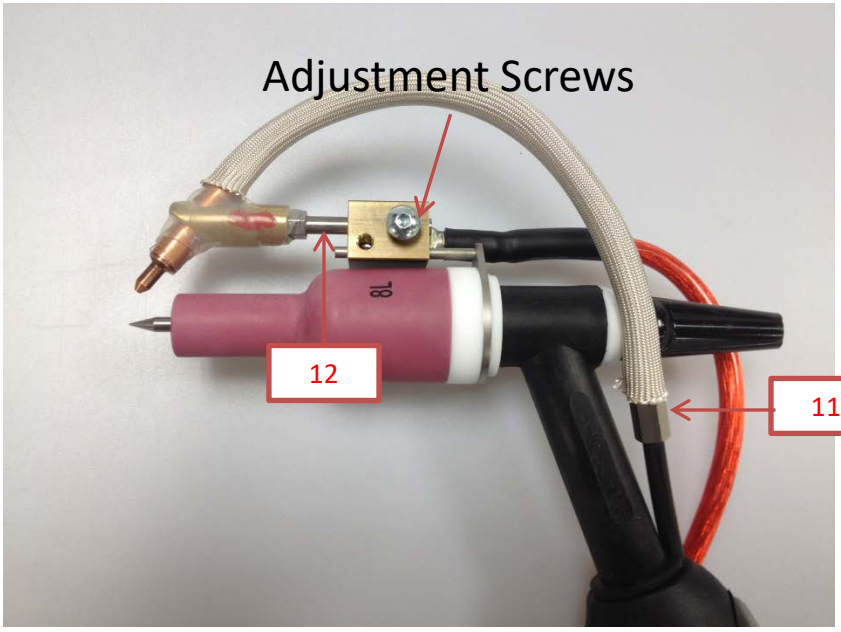
Install the Tip Assembly into the Tip Holder and tighten.

Install the Tip Assembly Shaft.



Step 9- Install the Assembly Holder Block to the Ring and secure with screw.
Step 10- Attach Hotwire Cable to Assembly Holder Block with screw..

Radius of Tip Assembly needs to have a uniformed radius
as shown for best wire feeding results

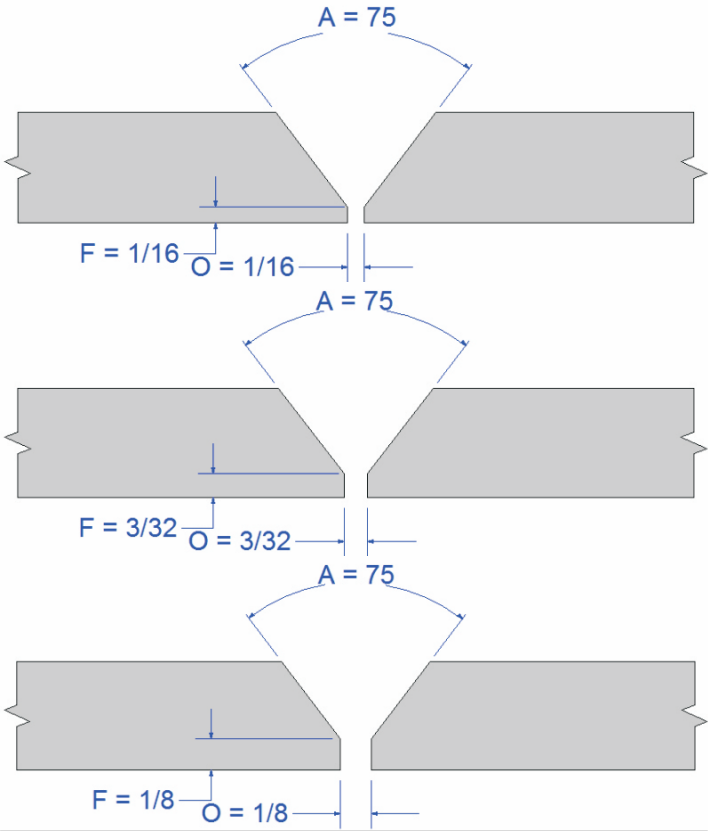


Push in liner and twist counter clockwise to seat in place.

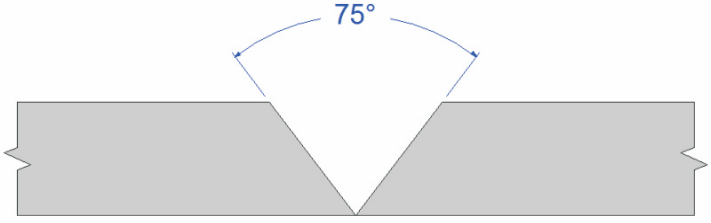
Step 11- Push in Liner Assembly to Hull Adapter on torch
Step 12- Connect Adjustment Shaft to Assembly Holder Block and tighten screws

Butt Weld Technique (Walking the Cup)

Open Root Geometries



Closed Root Geometries



PASS 1

OPEN ROOT (.035 Wire)

125 to 145 amps - 25 to 35 WFS

CLOSED ROOT (.035 Wire)

170 to 200 amps - 20 to 30 WFS

The heavier the wall the greater the amperage. as it acts as a heat sync.

Amperage also depends on the operator and his WFS and travel speed.

When rooting the pipe, you must stay on the leading edge of the puddle and maintain this throughout the process.

PASS 2 FILL

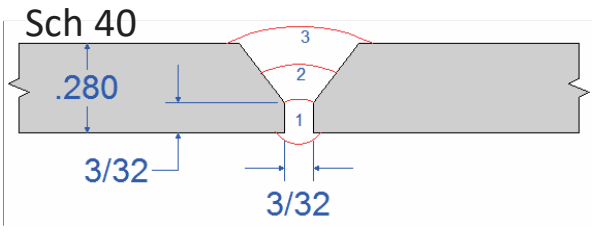
200 to 250 amps - 45 to 60 WFS

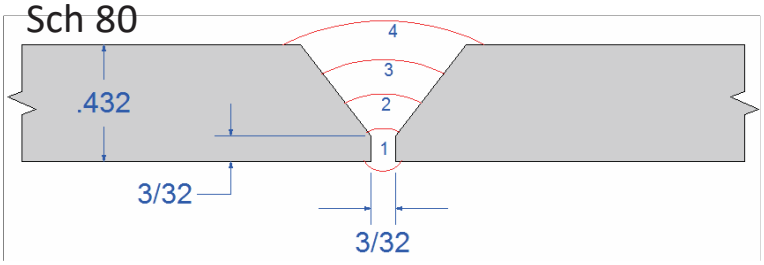
PASS 3 or PASS 3 - 4 CAP

170 to 200 amps - 30 - 40 WFS

2G Fixed, 5G Fixed, 6G Incline Fixed use lower settings.

1G Rotating use higher settings.





Semi-automatic HP GTAW Training Techniques
To Use With 5G Pipe Coupon (6”-XXS)

WELD COUPON PREPARATION

When you grind the coupon lands, use a 6” grinder with a ¼” thick blade, while pressing down flat to achieve a near perfect land. Finish with a file. Land size should be close to 3/32”.

WELD COUPON TACKS

Fit coupons using a 3/32” wire for the gap. Tack coupon with 4 tacks, the bottom tack will be approximately 1” long with the other 3, a ½” long. Feather all of the tacks, with the ½” tacks ground considerably more, to be able to consume them, if the welder is able to run past them when coming up the wall. Only feather the 1” tack on the ends, because you will need the extra metal in the center to start on.

TORCH SET-UP AND WELDING OF ROOT WELD BEAD

Start with a #8 cup.

Tungsten stick-out will be determined by positioning torch vertical to the top tack, and loosen tungsten until it hits the tack, then tighten it.

Position the wire feed guide even with the cup. Run wire out past the tungsten, and set a 7/64” to 3/32” gap between the wire and the tungsten by loosening the 2 thumb screws located at the rear of the wire feeder block rod.
An Allen wrench can be used as a feeler gauge.

While holding torch vertical, twist feeder block until wire is in a vertical line with the tungsten. Set machine to parameters located on the parameter limit sheets.

Position the tungsten at the center of the bottom tack. (This machine has an upslope, to give you time for last second adjustments.) Press the power on switch and weave tungsten across tack until achieving full power. Continue weaving while holding the torch in the same place until tack becomes fluid. Press wire on switch, and start welding while rocking the cup in a Z type weave. Hold on the sides, and move across center rapidly. Your progression will be slower on the bottom, and faster on the sides and top. Torch angle will be determined by the tungsten tip riding barely above the puddle. If you have to stop at a tack, walk up onto the center of the tack, turn wire off, then the power.

Reverse direction of torch while power down-slopes. This will keep you from consuming the feather edge. If you stick or dip your tungsten tip, you will need to stop and change out the tungsten. You will need to feather end of weld before resuming weld.

TORCH SET-UP AND WELDING OF HOT PASS BEAD

First you will need to determine if a #10 or #12 cup is needed. Position the cup horizontally from the side of the pipe. Tilt the back end of the torch down approximately 10 to 20 degrees. You need to have a minimum gap of ¼" from the bottom of the cup to the center of the root weld. If there is less distance than that, you will need to change to a #12 cup.

Tungsten stick-out will be determined by positioning torch horizontal to the side if the root weld. Tilt the back end of the torch approximately 10 to 20 degrees and the tungsten will need to touch the weld. Run wire out past the tungsten, and set a 1/8" gap between the end of the tungsten, and the wire.

Set machine to parameters located on the parameter limit sheets.
Start welding at the bottom, proceeding upward, while holding at the sides, and moving rapidly across the center.

Remember the tungsten needs to barely ride above the puddle.

TORCH SET-UP AND WELDING OF FILLER PASSES

It will be the same as for hot passes except that when a #12 cup gets close to bottoming out at the center of the previous weld, and the bottom of the cup, you will need to change back to a #10 cup. This will be after the hot pass, or first filler pass. Cup size of the remainder of weld passes will be determined by welder preference, and or geometry of the previous weld bead placement. Set machine to parameters located on the parameter limit sheets.

Note: Cup sizes will differ with welder preference, but for this training, we will start with these sizes.

Techniques To Use With 5G Pipe Coupon (6” Sch. 80)

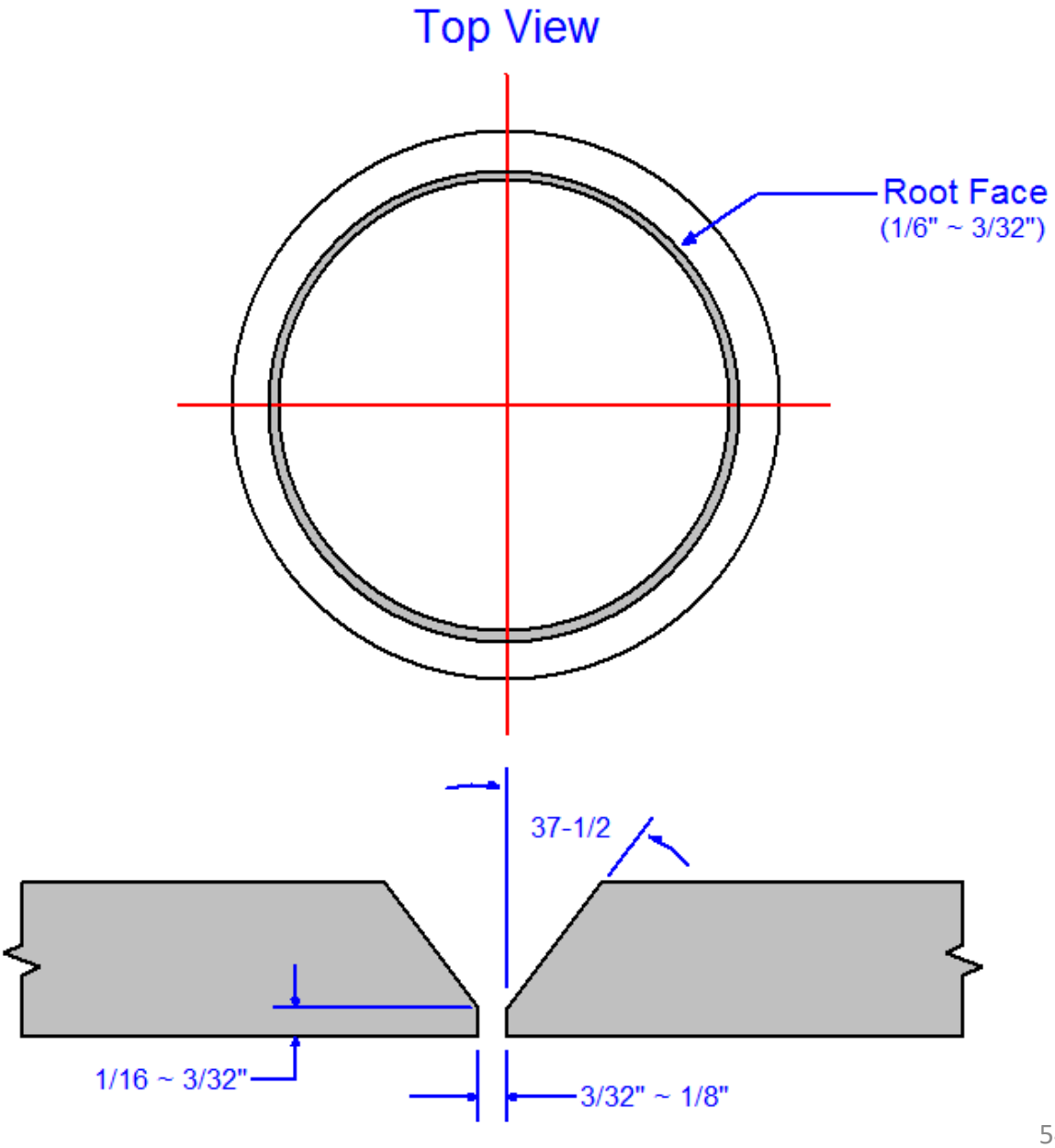
This will be the same as welding 6”-XXS except you will start with a #6 cup for the root. Then progress to a # 8 cup for the hot pass, a # 10 cup for the filler, and a # 12 cup for the cap. For the cap you might want to increase the wire to tungsten distance from 3/32” to 7/64”.

Note: Cup sizes will differ with welder preference, but for this training, we will start with these sizes.

TIPTIG Manual Semi-Automatic GTAW Process
Open Root Technique

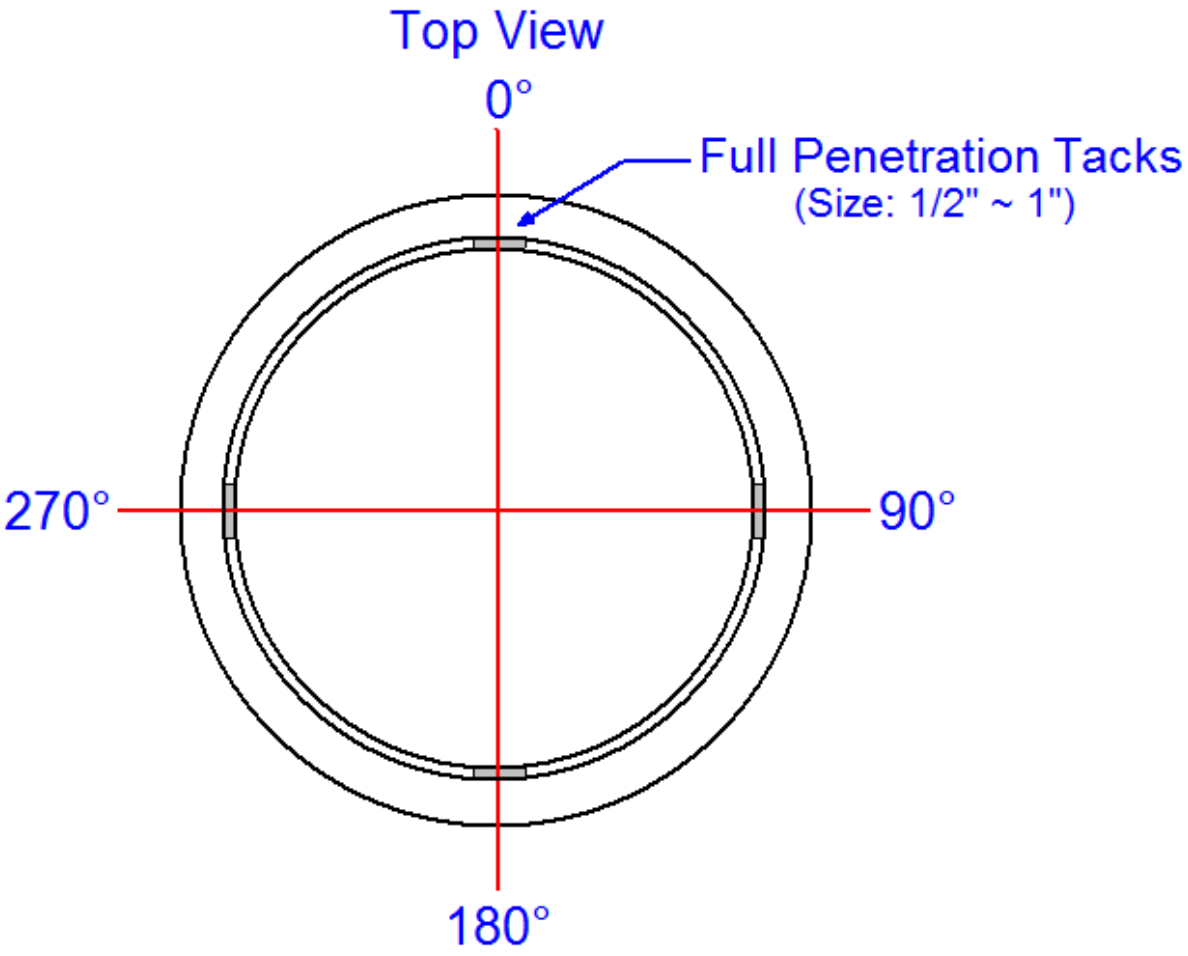
WELD COUPON PREPARATION

When grinding the coupon root face, use a 4” grinder with a ¼” thick blade, while pressing down flat to achieve a near perfect land. Finish with a file.
Root face size should be close to 3/32” and Pipe Bevel 37.5.



WELD COUPON TACKS

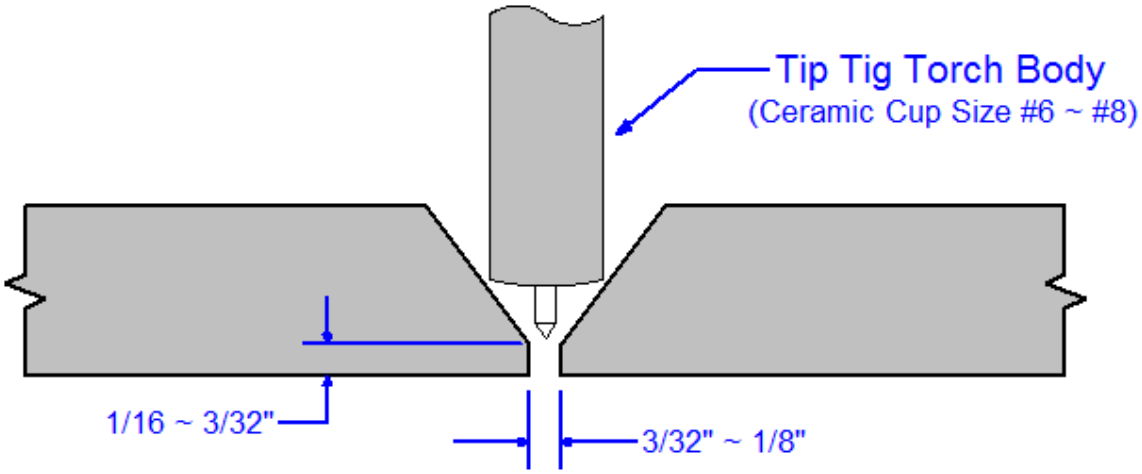
Fit coupons using a 3/32” tig weld wire for the gap. Tack coupon with 4 tacks, the bottom tack will be approximately 1” long with the other 3, a ½” long. Feather all of the tacks, with the ½” tacks ground considerably more, to be able to consume them, if the welder is able to run past them when coming up the wall. Only feather the 1” tack on the ends, you will need the extra metal in the center to start on.



TORCH SET-UP

Start with #6 or #8 cup.

Tungsten stick-out will be determined by positioning torch vertical to the top of the pipe, and loosen tungsten until it reaches the top of the root face, then secure the tungsten.

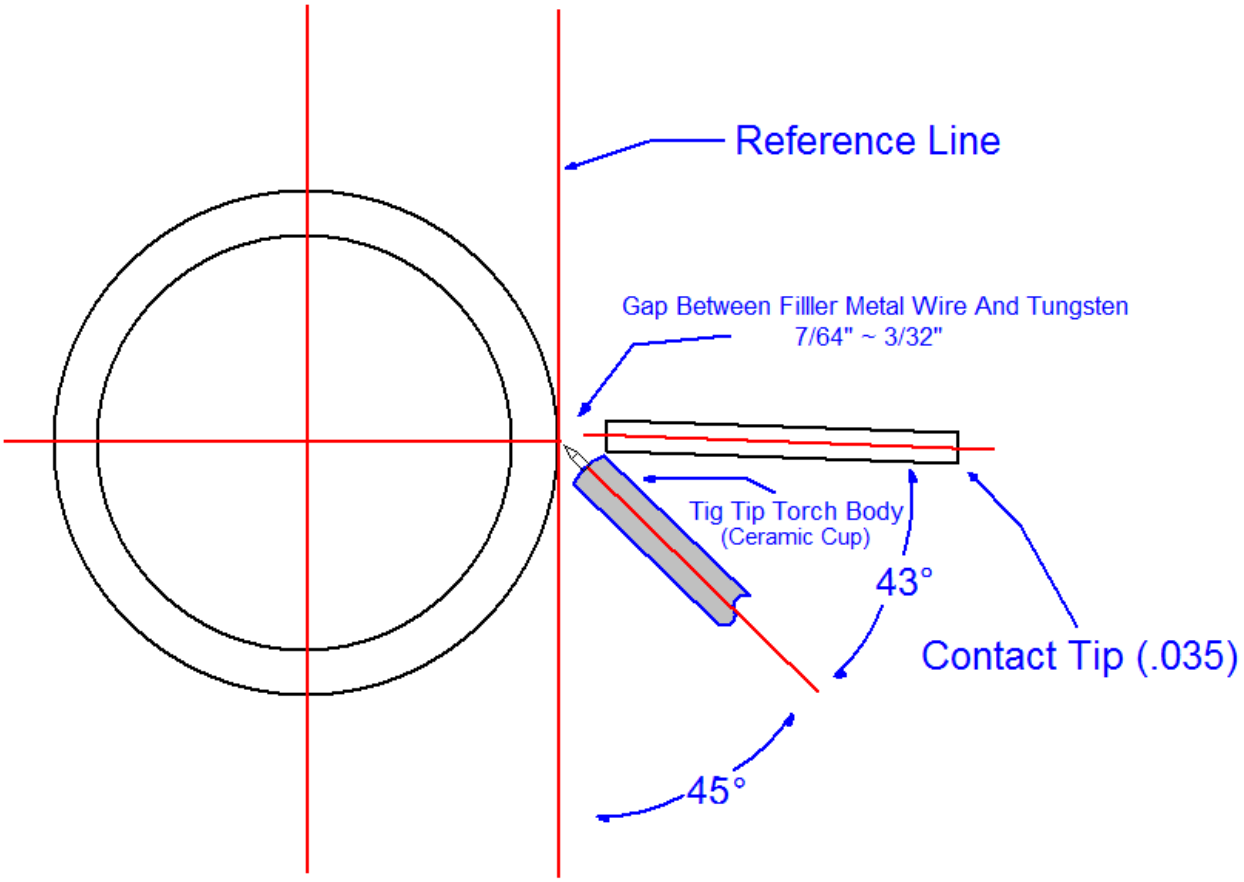


Welding Technique – Open Root Groove

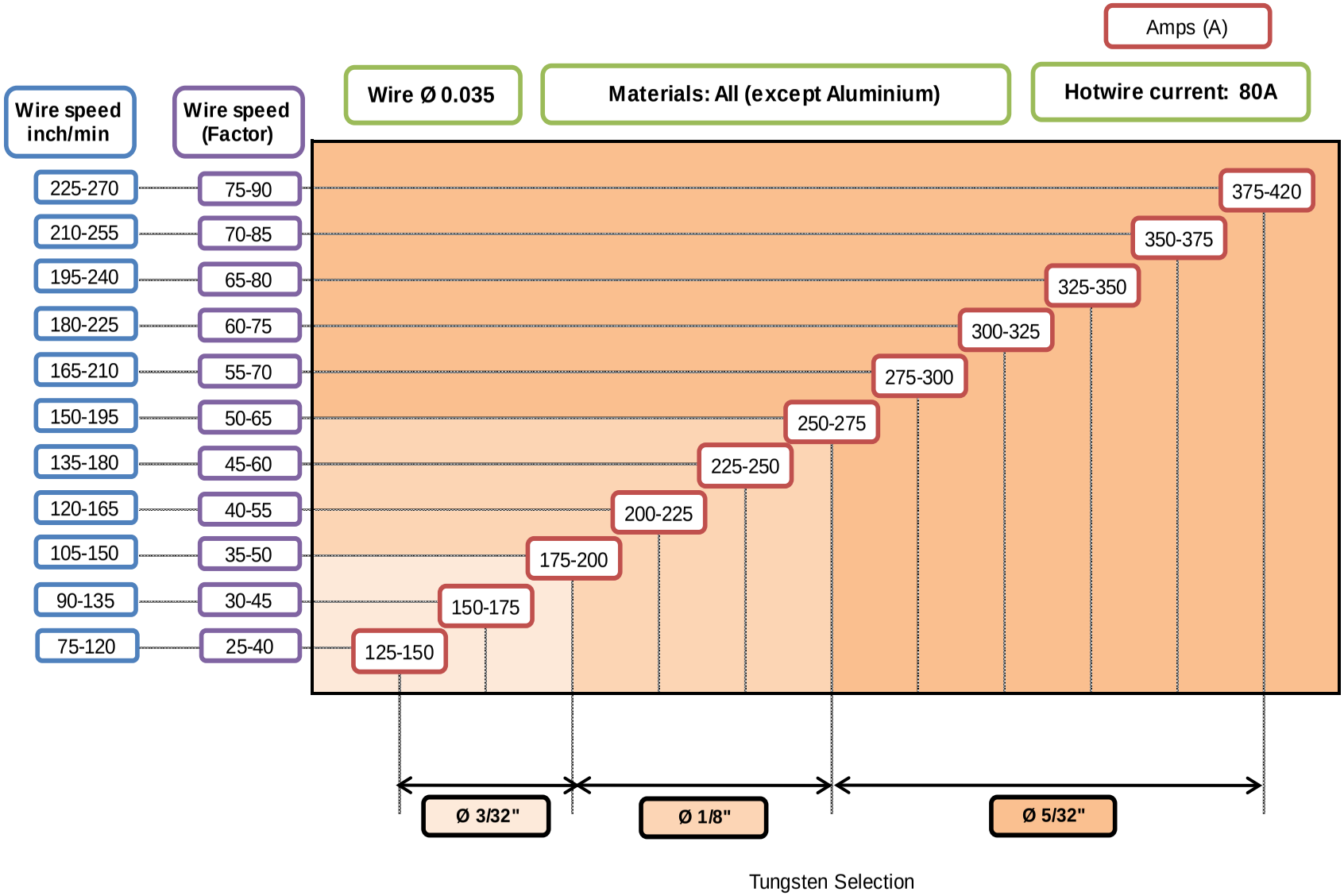
Position the wire feed guide (contact tip) even with the cup. Run wire out past the tungsten, and set a 7/64” to 3/32” gap between the wire and the tungsten by loosening the 2 thumb screws located at the rear of the wire feeder block.
While holding torch vertical, twist feeder block until wire is in a vertical line with the tungsten.

Position the tungsten at the center of the bottom tack. Press the power on switch and weave tungsten across tack until achieving full power. Continue weaving while holding the torch in the same place until tack becomes a molted puddle. Press wire on switch, and start welding while rocking the cup in a Z type weave. Hold on the sides, and move across center rapidly. Your progression will be slower on the bottom, and faster on the sides and top.

Torch angle will be determined by the tungsten tip riding barely above the puddle. If you have to stop at a tack, walk up onto the center of the tack, turn wire off, then the power. Reverse direction of torch while power down-slopes. This will keep you from consuming the feather edge. If you stick or dip your tungsten tip, you will need to stop and change out the tungsten. You will need to feather end of weld before resuming weld.



TIP TIG WELD DATA CHART

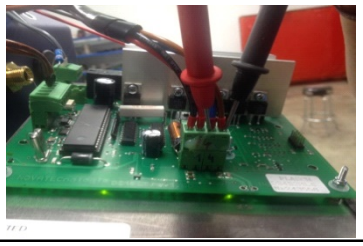
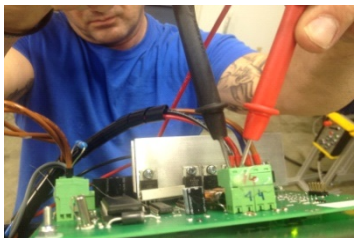
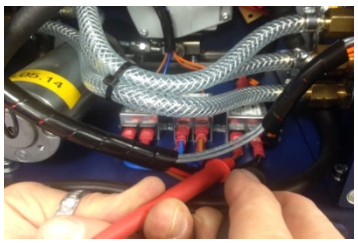


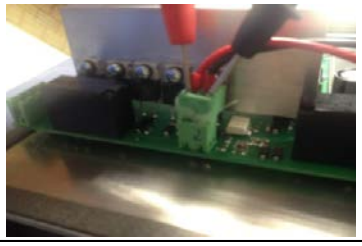
Tungsten Selection

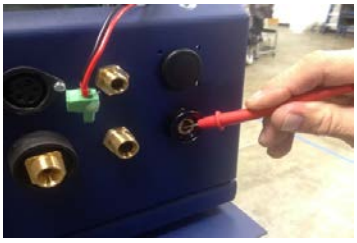
TIPTIG Hand Hotwire Welding Wire Ø 0.035 and Ø0.045in!

Baseline Start Up Parameters!

Please test all parameters before start of any work!

Troubleshooting Guide	
Trouble	Remedy
PC Board will not power / LED Display Blank	Check 120V AC Input Power Supply from power cord plug end. Check fuse on real panel Check 120V AC at transformer with meter  Check 32V AC at transformer with meter  Remove front panel PC board. Test PLUG 14 (BR/BL) for 32V AC 
If all of the above checks show voltage, PC Board is faulty and needs to be replaced.	
Feeder Motor will not operate when button pressed on torch.	Check to make sure PC Board has voltage. Check fuse on rear panel. Continue the test using a torch that is properly working. Check PLUG 14 (BK/RD) for 5 - 32V DC Press Wirefeed button on torch. If voltage is present, continue to next step If voltage isnt present, check torch button  Check HF Filter input for 5 - 32V DC Press Wirefeed button on torch. If voltage is present, continue to next step If voltage isnt present, check torch button 

Trouble	Remedy
	Cont. Check HF Filter onput for 5 - 32V DC Press Wirefeed button on torch. If voltage is present, continue to next step If voltage isn't present, filter is faulty 
If all of the above checks show voltage, Wirefeed Motor is faulty and needs to be replaced.	
Oscillator Motor will not operate when button pressed on	Check to make sure PC Board has voltage. Check fuse on rear panel. Continue the test using a torch that is properly working. Check PLUG 2 (BK/RD) for 24V DC Press Wirefeed button on torch. If voltage is present, oscillator motor faulty If there is still no voltage, bad PC board. 
If all of the above checks show voltage, Wirefeed Motor is faulty and needs to be replaced.	
No Hotwire Input Power	Check to make sure On/ Off switch on front panel is on. Check to make sure GREEN LED is on. Check 120V AC at transformer with meter  Check the wire terimination behind the front on/off switch for 120V AC power. Check the lower 2 wires first which confirms 120V AC power from transformer. Check the upper 2 wires second which confirms 120V AC power flowing thru the on/off switch. If voltage isn't present, switch is faulty 
If all of the above checks show voltage, Hotwire is faulty and needs to be replaced.	

Trouble	Remedy
No Hotwire Output Amperage / Voltage	Check to make sure On/ Off switch on front panel is on. Check to make sure GREEN LED is on. Connect probe from the female hotwire dinse connection on the interconnect cable to the female dinse panel mount as shown below   With the 5 pin connector from the torch plugged into the wirefeed connection press the wire feed button, the output voltage will be 12V Next you will see that we made a cable for testing output. This cable has a small and large dinse male connector. Connect to the same locations shown above with this special cable.  Clamp your meter around the cable With the 5 pin connector from the torch plugged into the wirefeed connection press the wire feed button, and set the POT to 80 amps  You should see your AMP setting on your meter Adjust you POT to ensure proper function and that the amperage changes If no adjustment is seen, replace POT Check to make sure all dinse connections are properly installed Check to make sure Hotwire ground is connected to power supply
If all of the above checks show no amperage, Hotwire is faulty and needs to be replaced.	

Trouble	Remedy
Wire Feeding Issues	Worn drove rolls or pressure device not set properly. Replace or adjust as needed Drive rolls not mateched properly to wire size. Correct drive rolls Wire not riding true inside drive rolls. Adjust Incorrect radius for bronze liner on gun. Liner should be 7.5" from the handle with the hull device shown just below the WP18 torch body. Wire to tip size not matched properly. Try the next larger tip size. Worn or defective bronze liner. Replace Liner in torch defective. Replace Tension on pressure device not set correctly. Adjust pressure to correct wire slippage Wire Spool too tight. Adjust pressure at hub to correct drag of wire. Make sure outlet tube and brass guide are concentric in feeder assembly.
No Hi Frequency	Power supply not set to TIG HF. Bad torch ground. Check to make sure there isn't a short on the gun side where the torch body is not properly shielded. Bad ground inside TIP TIG feeder. Check that ground lugs do not have interference with chassis. Correct as needed.
Tungsten burnback	Wrong polarity set. Correct Positive to groundand hotwire. Negative to TIG cable.

Preventative Maintenance	
Daily	
Drive Roll Alignment	Check for excessive wear and wire alignment inside the groove. Re-align upper drive rolls or replace drive rolls to the approate wire size.
Inlet and Outlet Guides	Check for excessive wear and wire alignment inside the groove. Outlet guide should move freely between the brass guide and the torch connection. Adjust or replace as needed.
Wire Pressure Device	Drive rolls should move freely. Tension should start as 3 then adjus +/- as needed. The pressure arms should latch and unlatch smoothly. Adjust or replace as needed.
Coolant Levels	Make sure the power supply is full with coolant before use. Add coolant as needed.
Water / Gas Connections	Check for any cracked or worn fittings on the front and back of feeder. Replace as needed.
Wire Spool Hub	Check wire spool hub tension. Too much tension will cause the wire to slip. Adjust the tension so the spool stops the instant the wire is turned off.

Every 3 Months	
Air clean	Use compressed air to blow out the inside of the feeder.
Oscillator Connecting Rod	Check the connecting rod attached to the oscillator motor for wear and excessive noise Remove 4 screws on the face of the PC Board. Visually inspect and check rod for excessive wear and visual damage. Replace as needed
Bulkhead Dinse Connections	Remove side panel on hotwire module. Check to make sure all dinse connections are tightly secured to the panel mounts. Tightly secure connections to the panel mount.

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