



Instruction Manual
Utility Stations
Revised 06/2014

D/F MACHINE SPECIALTIES, INC.

MIG & TIG Welding Products, Consumables & Accessories

1750 Howard Drive, North Mankato, MN 56003

Phone: (507) 625-6200 Fax: (507) 625-6203

Email: sales@dfmachinespecialties.com

www.dfmachinespecialties.com

UTILITY STATIONS



INSTRUCTION, PARTS & SPECIFICATIONS MANUAL

D/F MACHINE SPECIALTIES is a world leader in the design, development, and manufacture of “MIG” (GMAW) & “TIG” (GTAW) welding products, consumables and accessories. D/F offers several types of manual Air or Water-Cooled “MIG” welding tools, and with the increased use of automated and robotic welding systems, a demand has been created for welding tools of the highest quality, durability and interchangeability. For over forty years, D/F welding products have been used extensively on “MIG” and “TIG” welding applications. This experience, coupled with patented design features, unavailable on any other competitive equipment, has made D/F welding tools the most advanced “MIG” and “TIG” welding guns and barrels for semi-automatic, automatic or robotic welding applications.

This Catalog is a guide to helping you select the proper tool for a given semi-automatic, automatic or robotic welding application. The following is only a partial listing of available semi-automatic, automatic and robotic guns. For further information on special “MIG” and “TIG” requirements, please consult the factory.

Customer satisfaction and customer benefits are the center points of all strategic contents

The spirit of the D/F Machine Specialties personnel is to listen to and to integrate the customer throughout the process, to develop and design marketable products, to present prototypes, to carry out pilot tests and to prepare for and be open to new technology and tasks. We attract and carefully select talented individuals who share our values. Together we will nurture and sustain a work environment with two-way communication, training, mentoring, and rewarding career opportunities.

Innovation and quality

Innovation and quality come from being receptive and willing to learn from others. We encourage our people to be creative and take risks in the pursuit of excellence. Innovative practices are deeply rooted in every one of our employees, a philosophy that leads to continuous product development and industry firsts.

Progress

By remaining confident, focused, and persistent in challenging times, we will discover opportunity. Commitment to quality and the pursuit on innovation ensure that D/F Machine Specialties will remain an industry leader for years to come.

Commitment to excellence

At D/F Machine Specialties we commit to design, build and deliver premium products and superior customer support to quality driven welding professionals. Customers still to this day choose D/F over competitors because of our responsiveness and flexibility. Customers will continue to choose D/F tomorrow for our superior hand-made products and service. To ensure this, we need creative and competent personnel in all business divisions, an intensive exchange of thoughts and ideas with all users, participation in working and study groups within the field of welding technology and intensive cooperation with institutes and universities.

Teamwork

Striving for excellence is a commitment that is an integral component of the D/F Culture. Our team of skilled and dedicated employees takes pride in the excellence products they produce. Each of us willingly accepts personal responsibility for meeting our commitments and we hold each other to a high standard of accountability.

Responsibility

We will continually strive to be environmentally responsible and to support the health and safety of our employees, customers, and neighbors. We continue to support the communities in which we operate and the industries in which we participate.

Thank You for Choosing D/F Machine Specialties



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SAFETY MEASURES - **PLEASE READ!**

Welding is not particularly hazardous when certain safety practices are followed. Anyone using this equipment should be thoroughly trained in safe welding practices. Failure to observe safe practices may cause serious injury. Handling welding torches presents no danger if the appropriate safety regulations are strictly adhered to. For example:

- Starting-up procedures must be reserved for those fully conversant with processes relating to arc welding equipment.
- Arc welding can prove damaging to eyes, skin, and hearing! It is therefore imperative that the Accident Prevention Regulations UVV 26.0 and VGB 15 are fully observed and that all protective clothing, eye and ear protectors specified are worn.
- The load data given are maximum limit figures. Overloading will inevitably damage the torch!
- Before changing wear parts, disconnect for the power supply.
- The operating instructions for the individual welding components - e.g. power source, wire feed and cooling unit must be followed.
- Never pull the cable assembly across sharp edges or set down close to weld spatter or on a hot workpiece.
- Those not involved in the welding process should be protected by curtains or partitions from radiation and the danger of being dazzled.
- When handling gas cylinders, consult the instructions issued by the manufacturers and the suppliers of the pressurized gas.
- Workpieces which have been degreased using chlorinated solvents must be sprayed down with clean water before welding starts to avoid the risk of phosgene forming. For the same reason, no degreasing baths containing chlorine must be placed close to the welding point.
- All vapors given off by metals can cause harm and a special warning is attached to lead, cadmium, copper, zinc, and beryllium. If necessary, take appropriate precautions (by providing adequate ventilation or an extraction system) to ensure that the legal maximum levels of toxic concentrations are not exceeded.

For more information, refer to the following standards in their latest revisions and comply as applicable.

- ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING obtainable from the American Welding Society, 2501 N.W. 7th St., Miami, FL 33125.
- ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY - TOE FOOTWEAR obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
- ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
- OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the U.S. Government Printing Office, Washington, D.C. 20402.
- AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES obtainable from the American Welding Society, 2501 N.W. 7th St., Miami, FL 33125.
- NFPA Standard 70-1978, NATIONAL ELECTRICAL CODE obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
- ANSI Standard Z88.2, "Practice for Respiratory Protection" obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
- ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION obtainable from the American National Standards Institute, 1430 Broadway, New York, NY, 10018.
- NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING obtainable from the Superintendent of Documents, U.S. Printing Office, Washington, D.C. 20402.
- American Welding Society Standard AWSF4.1 "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", obtainable from the American Welding Society, 2501 N.W. 7th St., Miami, FL 33125.

INTRODUCTION

The D/F Utility Stations provide a means to interface the D/F Utility cables with the utilities of a current setup. The front side accepts the standard D/F cable fittings. The back side allows existing cables to be clamped on, and a power cable to be locked in, and the cables will be successfully interfaced.

The D/F Utility cables include various Gas Hoses, Water-In Hoses and Water Out & Power Cables. If one cable breaks, the cables are all independent, so the Utility Station exists to allow that cable to be replaced individually, costing much less in the long run than replacing a unitized cable system.

The Utility Station 45196 is the Standard D/F Utility Station. On the front it accepts a D/F Gas Hose, a D/F Water In Hose, and a D/F Water Out & Power Cable. On the back it accepts a single water in hose, a single water out hose, a single gas hose and a single power cable that is held in by socket set screws. The 45196 can be found on page 6.

The Utility Station 45188 is the Dual Power D/F Utility Station. On the front it accepts a D/F Gas Hose, a D/F Water In Hose, and a D/F Water Out & Power Cable. On the back it accepts a single water in hose, a single water out hose, a single gas hose and a two power cables that are held in by socket set screws. The 45148 can be found on page 7.

The Utility Station 45184 is the D/F Utility Station for Air-Cooled Torches. On the front it accepts a D/F Gas Hose and a D/F 1/0 Power Cable that is held in by socket set screws. On the back it accepts a single gas hose and a single power cable that is held in by socket set screws. The 45148 can be found on page 8.

D/F torches can be mounted in several ways to utilize the Utility Station. Pages 9 & 10 will describe these torch mounting options in detail, and describe the benefits of the Utility Station.

ORDERING INFORMATION

Description	Code No.
Utility Station - Standard	45196
Utility Station - Dual Power	45188
Utility Station - Air-Cooled Barrels	45184

UTILITY STATION - STANDARD

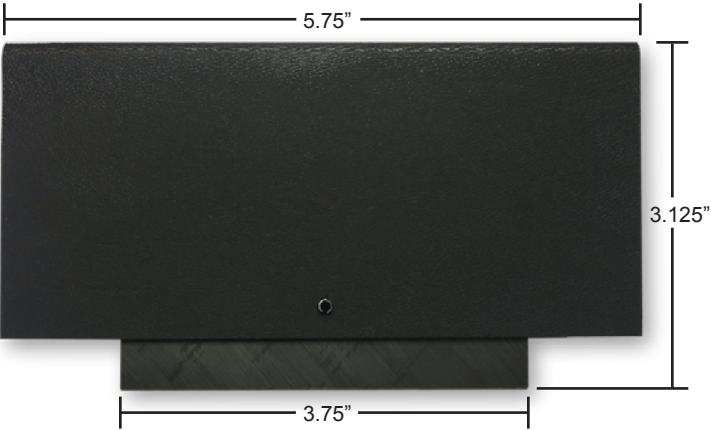
ORDERING INFORMATION

Description	Code No.
Utility Station - Standard	45196

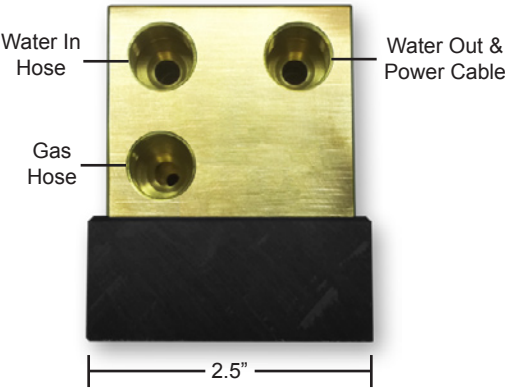
DIMENSION SPECIFICATIONS

Base Length	3.75"
Overall Length	5.75"
Base Width	2.25"
Overall Width	2.5"
Overall Height	3.125"
Mounting Hole Center Distance	2.75"
Overall Weight	3.5 lbs.

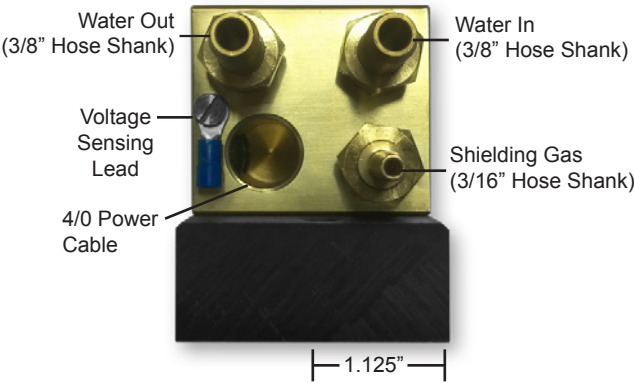
UTILITY STATION SIDE VIEW WITH COVER



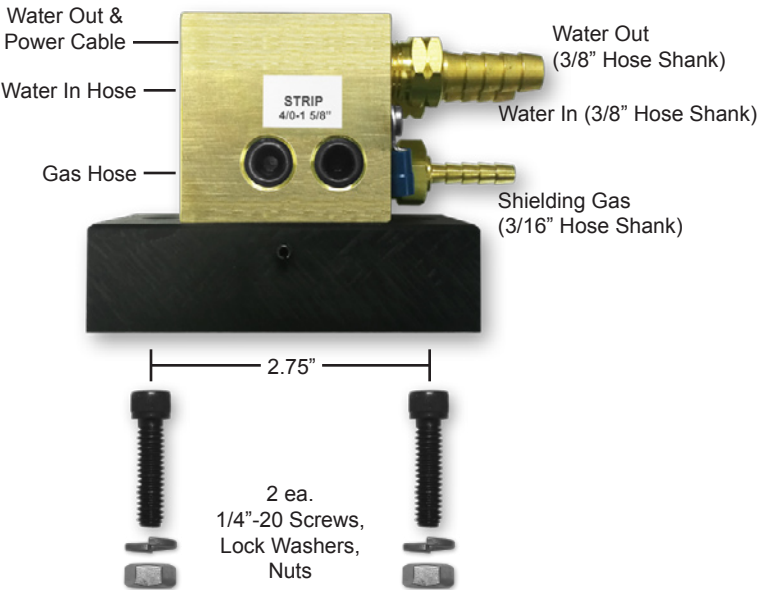
D/F TORCH CONNECTION



CUSTOMER UTILITIES CONNECTION



FROM LEFT: D/F TORCH CONNECTION
FROM RIGHT: CUSTOMER UTILITIES CONNECTION



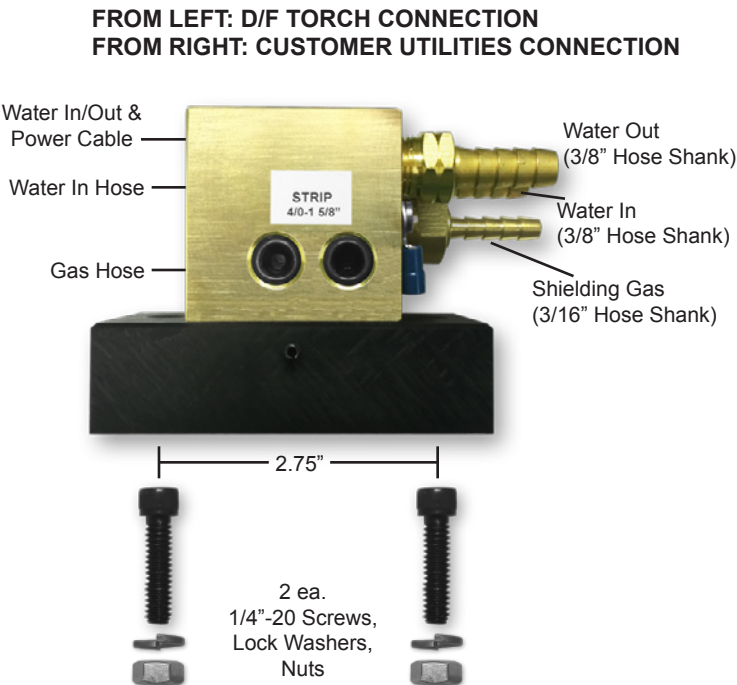
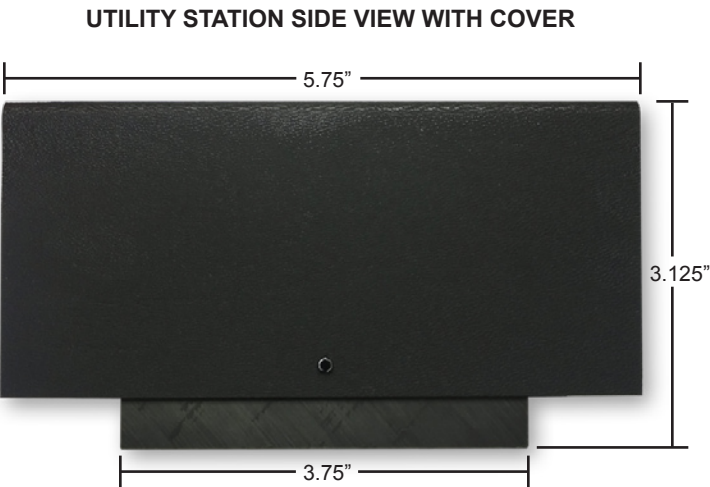
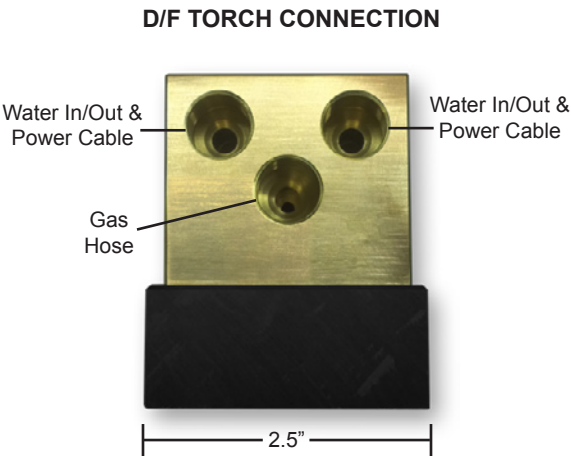
UTILITY STATION 45188 - DUAL POWER

ORDERING INFORMATION

Description	Code No.
Utility Station - Dual Power Cable	45188

DIMENSION SPECIFICATIONS

Base Length	3.75"
Overall Length	5.75"
Base Width	2.25"
Overall Width	2.5"
Overall Height	3.125"
Mounting Hole Center Distance	2.75"
Overall Weight	3.5 lbs.



UTILITY STATION 45184 - AIR-COOLED BARRELS

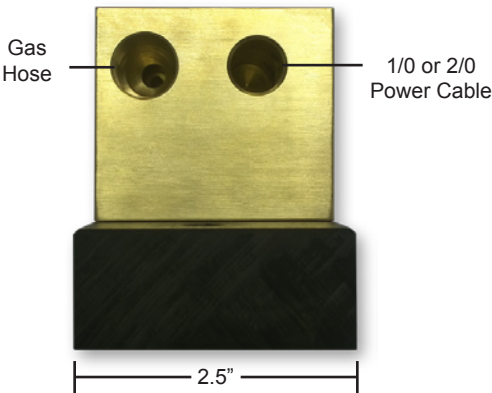
ORDERING INFORMATION

Description	Code No.
Utility Station - Air-Cooled Barrels	45184

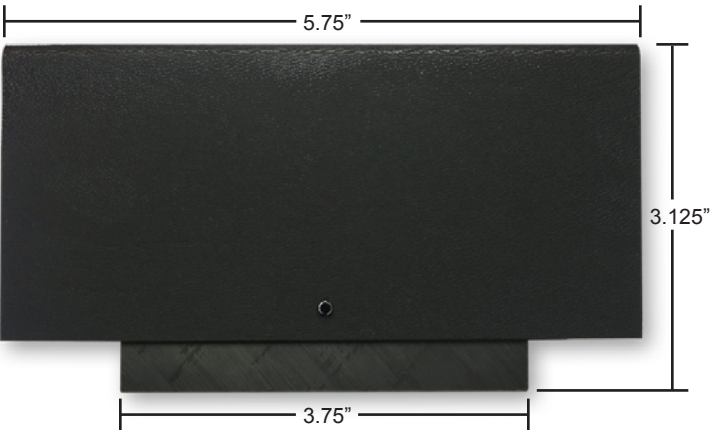
DIMENSION SPECIFICATIONS

Base Length	3.75"
Overall Length	5.75"
Base Width	2.25"
Overall Width	2.5"
Overall Height	3.125"
Mounting Hole Center Distance	2.75"
Overall Weight	3.5 lbs.

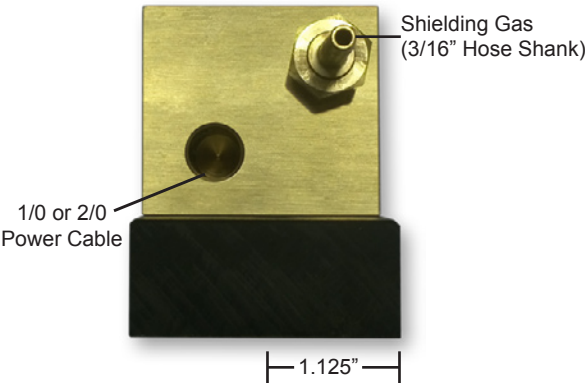
D/F TORCH CONNECTION



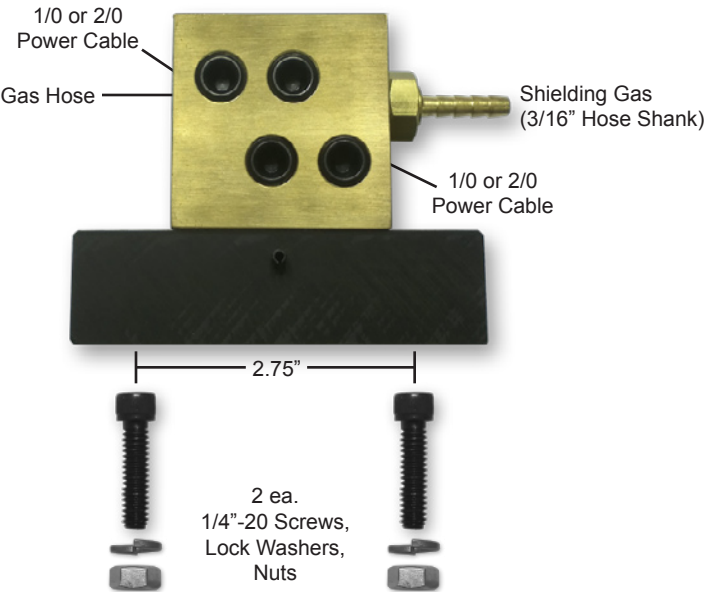
UTILITY STATION SIDE VIEW WITH COVER



CUSTOMER UTILITIES CONNECTION



FROM LEFT: D/F TORCH CONNECTION FROM RIGHT: CUSTOMER UTILITIES CONNECTION



TORCH CONNECTION OPTIONS

Typical modern torch setups utilize a unitized cable assembly with the gas, water, power and conduit are combined into a single replaceable unit. When one cable goes bad, the whole unit is replaced. This can be expensive. Also, this approach does not allow for a large enough inner power cable needed for necessary high amperages, and it is restricted in size by small passages for water, gas and wire. Water-cooling and gas coverage are both limited by the size restrictions.

D/F torches take an alternative approach to the setup. The torches use a separate gas hose, water-in hose, Water Out & Power Cable, and casing/conduit. When one cable goes bad it is simply replaced instead of attaching an entire new unitized cable assembly; a huge cost saver! This is also where the D/F Utility Station comes into play. The gas hose, water-in hose, and Water Out & Power Cable are interfaced with the customer's existing lines via the Utility Station. The D/F torch leads plug into the front of the Utility Station. Into the back of the Utility Station go the customer's utilities. The back includes industry standard 3/8" shanks to allow the customer to connect the water in and water out lines, and a 3/16" shank to connect the gas line. Along with these hoses, the customer must plug the a 4/0 power cable directly from the power source to the back of the Utility Station. This is how the D/F torches are powered, NOT with a power cable to the wire feeder; there can be no jumper cable from the drive roll to the Utility Station. The power must travel through the Utility Station and down to the torch via the Water Out & Power Cable, hence the name. It is most important to remove the 4/0 power cable from the lug of the wire feeder drive roll stand, strip the cable back roughly 2", and insert the 4/0 power cable into the back of the D/F Utility Station. Finally, a short gas hose jumper is needed for control of the gas. Easily remove the small black 3/16" hose that connects from the solenoid to the feeder input inside the wire feeder. The jumper can be attached by removing the 3/16" hose from the solenoid, and attaching the 3/16" gas jumper hose to the solenoid and to the back of the D/F Utility Station's 3/16" shank.

Due to the fact that every welding application is different because of size restrictions, access restrictions, positioning restrictions, etc., D/F manufactures torches in two variations, remote mount or direct mount.

Remote Mount/Robotic (*Figure 1*)

The D/F wire casing/ conduit follows a different route than the water and gas lines. On a remotely mounted torch (Fig. 2), the casing/conduit comes straight out the top of the torch as the other hoses do (180 degrees), but attaches straight to the wire feeder with a feeder adapter. D/F refers to power pins as feeder adapters, for on D/F torch setups there is no power going to the wire feeder. These feeder adapters can hook up to any of the different Miller, Lincoln, Esab, Welding Alloys, Fronius, Tweco, etc. wire feeders. In turn the D/F casing/conduit is not powered. Its only purpose is to support the liner, which protects the casing and supports the wire.

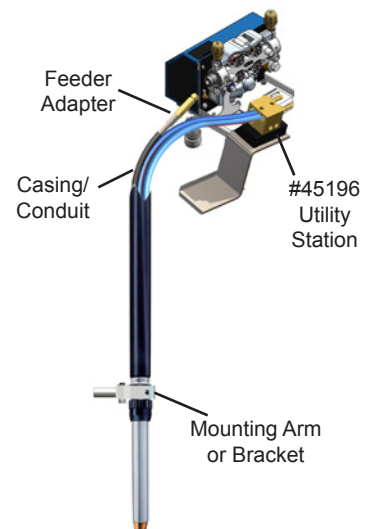


Figure 1

TORCH CONNECTION OPTIONS

Direct Mount/Automatic (Figure 2)

A directly mounted torch plugs directly into the wire feeder. In a direct mount torch the three (3) hoses (Water Out/Power Cable, Water In Hose, & Gas Hose) come out of the torch at a 90 degree angle and go to the utility block, and there is no casing/conduit. The feeder adapter comes out the top of the torch and connects directly to the wire feeder.

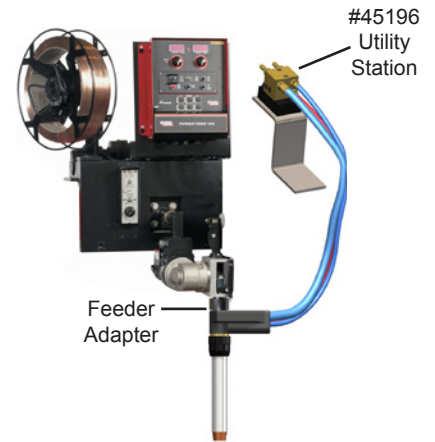


Figure 2

Direct Mount Torch - Remotely Mounted (Figure 3)

A third optional mounting method exists that combines features of direct and remote mounting. A direct mount torch can be remotely mounted with a mounting arm or bracket, and a casing can be attached to the top of the torch to run to the wire feeder as a remotely mounted torch would. This unique solution might work for jobs with very limited space.

These alternative setups utilizing the D/F Utility Station enable the D/F torches to run cooler, work above 1000 degree pre-heat, increase the weld quality (X-ray quality welds), have increased durability, and run the full range of wires thru 1/8". It also allows for many different model options, saves on consumable costs, reduces down-time, and allows for a clean installation and ease in maintenance or replacement. The Utility Station is universal throughout the D/F product line. Every D/F torch will hook up to the same Utility Station.

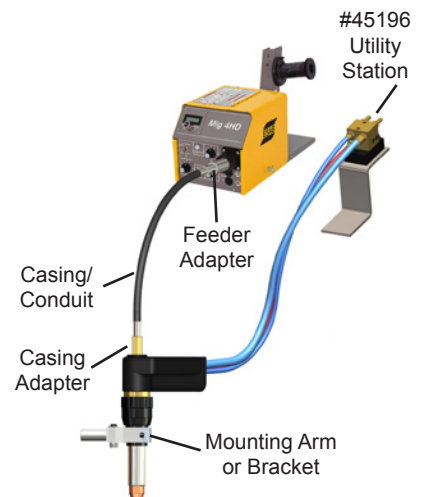


Figure 3

D/F MACHINE SPECIALTIES, INC.

MIG & TIG Welding Products, Consumables & Accessories

WARRANTY

This Equipment is sold by D/F MACHINE SPECIALTIES, Incorporated, under the warranty set forth in the following paragraph. Such warranty is extended only to the buyer who purchases the equipment directly from D/F or its authorized distributor as new merchandise.

The barrel and cable assemblies are warranted by D/F to be free from manufacturing defects for 90 days after delivery by D/F, provided that the equipment is properly operated under conditions of normal use and that regular periodic maintenance and service is performed. Expendable parts are not warranted for any specific time. Expendable parts referred to herein would be the nozzles, current tips, spatter discs, insulators, casing liners, and wire inlets. D/F's sole obligation under this warranty is limited to making replacement at its manufacturing facility for barrel assemblies which are returned to it with transportation charges prepaid, and upon D/F's examination have been found to be so defective.

Genuine D/F MACHINE SPECIALTIES, Inc. Parts, Accessories, and Consumables must be used for safety and performance reasons. The use of anything other than genuine D/F MACHINE SPECIALTIES, Inc. Parts, Accessories, or Consumables will void this Warranty. All units returned for warranty repair are subject to Warranty Inspection. Warranty and repair work shall not apply to goods that have been altered or repaired, have been subject to misuse or used while any parts are loose, broken, or damaged, or used with other than original D/F® parts, consumables, or accessories which may affect performance and safety.



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