



Instruction Manual MTS  
Metallic TIG Pistol Spot Gun  
Revised 03/2011

# **D/F MACHINE SPECIALTIES, INC.**

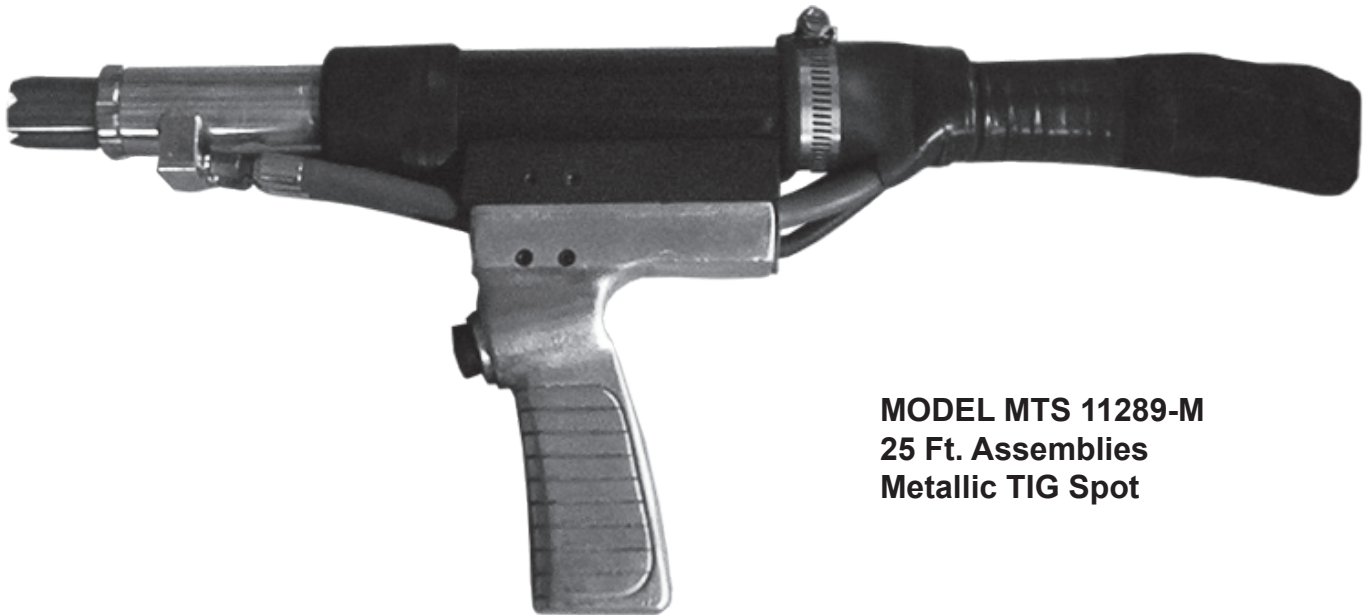
*MIG & TIG Welding Products, Consumables & Accessories*

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## **WATER-COOLED TIG PISTOL SPOT GUN ASSEMBLY**



**MODEL MTS 11289-M**  
**25 Ft. Assemblies**  
**Metallic TIG Spot**

**INSTRUCTIONS, 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.

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### **IMPORTANT**

Make certain the cooling water supply is at least the maximum flow rate of 3 quarts per minute (for each inner body), at 40 psi (80 psi maximum). Gun ratings are affected by shielding gas used, arc time, cooling time and inlet water temperature. Water outlet temperature should not exceed 120 degrees F.

For normal GMAW a water circulator of the radiator cooler type with a 3 gallon capacity will provide ample cooling.

When High-Deposition GMAW or extended periods of arc time are used, it is recommended that a liquid chiller be considered. Precise temperature control maintains the cooling at constant temperature, thus prolonging the life of the welding equipment and more specifically extending the service life of the gas nozzle and current tip.

A refrigerated liquid chiller for GMAW may be obtained from:

Remcor Products Company - A Division of IMI Cornelius, Inc.  
500 Regency Drive Glendale Heights, IL 60139-6850  
Call Toll Free 800-551-4423 - Fax Toll Free 866.394.5140  
International Telephone 630-539-6911 - International Fax 630-539-6960

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## INTRODUCTION

The D/F model TM (Tube Mill) Water-Cooled barrel is for use in semi-automatic or automatic machine applications of the Tungsten Inert Arc Process. A unique feature of this Water-Cooled "TIG" barrel is that the nozzle assembly water chamber and inner body water chamber are serially connected to each other, thus completely eliminating the need for gaskets or "O" rings in the water passage system. Maximum current rating with thoriated tungsten electrodes, is 500 amperes DC, straight polarity; and 300 amperes AC, high frequent may be superimposed over standard current on a continuous or intermittent basis. There are four (4) collets available for use with this machine barrel, the sizes are 1/16", 3/32", 1/8", and 5/32". The singular collet design provides clamping pressure when the collet is securely fastened.

The D/F Machine Specialties Water-Cooled TIG Pistol Spot Guns will spot weld such materials as mild steel, stainless steel, monel, and inconel in thickness of 1/8" (3.2mm) or less from one side only. The TIG spot weld process is not suitable for aluminum, galvanized, or coated materials.

The TIG spot weld process uses a conventional TIG welding machine equipped with a spot timer and high frequency arc starting. The spot gun is connected to the D/F Machine Specialties Utility Station, which is then connected to the welding machine. The spot guns are simple to use and are constructed of heavy duty, durable long lasting materials. Replaceable direct spotting nozzles for 90 degree and flat surfaces are constructed of hard tempered copper and are available for tracking inside or outside corners, and butt and lap joints.

## ORDERING INFORMATION - COMPLETE ASSEMBLIES

Code No.	Description	Model No.
11289-M	Water-Cooled TIG Spot Pistol Gun Assembly (Metallic Nozzle)	Model MTS TIG Spot Pistol Gun - 25 ft. Utilities
11289-C	Water-Cooled TIG Spot Pistol Gun Assembly (Ceramic Nozzle)	Model MTS TIG Spot Pistol Gun - 25 ft. Utilities

## TABLE I - SPECIFICATIONS

Current Capacity	Length w/ 3" Nozzle	Diameter of Body Housing	Weight w/out Services	Recommended Tungsten Diameter Range	Cooling Required
500 amp DC	10.250"	1.625"	2.5 lbs. (3" Nozzle)	1/16", 3/32", 1/8", 5/32"	5 pints/minute

## DISASSEMBLY

- 1) All repairs and adjustments to gun assemblies are made with the power source and feeder turned off.
- 2) Remove the forward gas nozzle, insulated nozzle adapter, and collet.
- 3) Slip off outer Water-Cooled nozzle cover insulating sleeve (10746).
- 4) Unscrew the cone nut which permits the water-cooled nozzle assembly to be pulled forward approximately 3/4". This will expose the water connection fittings.
- 5) Disconnect these fittings and remove the water-cooled nozzle assembly from the gun body.
- 6) Remove plastic inner body screws.
- 7) Remove the boot and clamp at the rear. The inner body and hoses can now be slid out of the rear of the black body housing assembly.
- 8) Remove the smaller blue water in hose from the rearing. Now slightly twist the other hoses and inner body to remove them out from the rear.

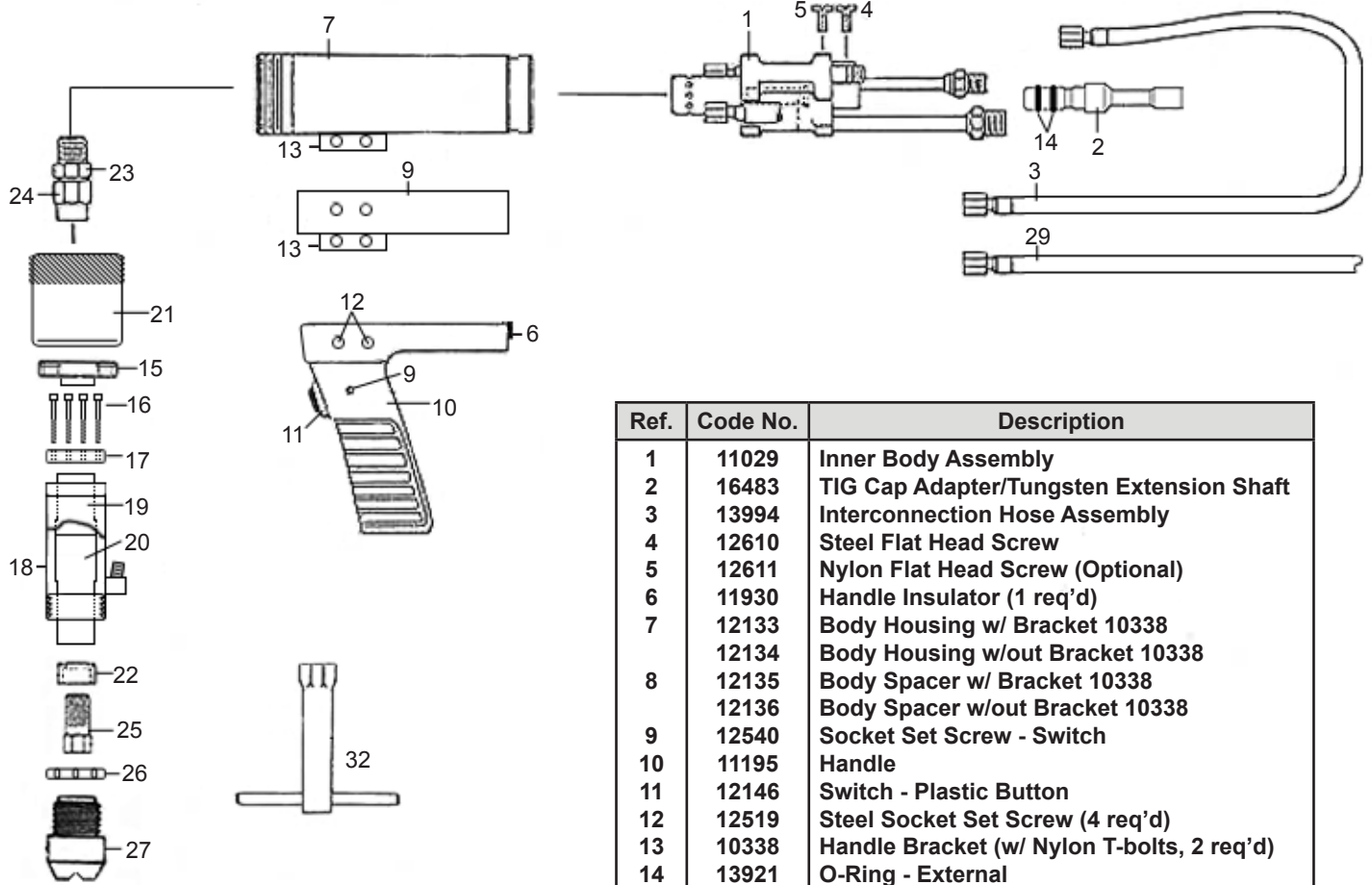
## ASSEMBLY

- 1) Apply adapter to inner body.
- 2) To assemble the water-cooled gun, connect all service lines to the inner body, including the interconnection hose assembly which attaches to the water-cooled nozzle. Before connecting a replacement interconnection hose (13973) note position of spring liner within hose assembly. It is most desirable to connect the end of the hose to the inner body water fitting using the end that indicates the spring liner closest to it. In other words the hose end that indicates the open space within the hose should be the end that is fastened to the Water-Cooled Nozzle. The interconnection hose assembly may be bent into a U-shape manually before applying it to the rear of the inner body. Make sure all insulation is intact, and that no metallic parts are showing.
- 3) The interconnection hose assembly is placed in the upper right hand concave while pushing inner body assembly in from the rear of the body housing until the flat head screw may be started into the body. Place the water-in hose assembly in thru the left hand concave until it extends out the front.
- 4) Insert the two (2) nylon insulating tubes (10723) over the hose fittings.
- 5) The nylon collar should be in place on the rear of the Water-Cooled Nozzle assembly. It is important that the small hole in the nylon collar be on the lower right hand side as Water-Cooled Nozzle is connected to the hose fittings. Place small plastic sleeve (2 ea. - 16488) over spigot before tightening SS fittings. After fastening the hoses the Water-Cooled Nozzle may be pushed back until it contacts the body housing, after which the cone nut may be applied.
- 6) Replace the Water-Cooled Nozzle insulation tube.
- 7) Apply collet nut, insulated gas nozzle adapter, and gas nozzle.
- 8) Apply the insulating sleeve (10746) to the outside of the Water-Cooled Nozzle

**IMPORTANT:** Before welding, always check for water leaks. Never use the TIG Pistol with any leaks! Fix as required or contact D/F for a repair estimate. Make sure all insulation is applied to the gun assembly before returning to operation.



# WATER-COOLED TIG PISTOL SPOT GUN ASSEMBLY

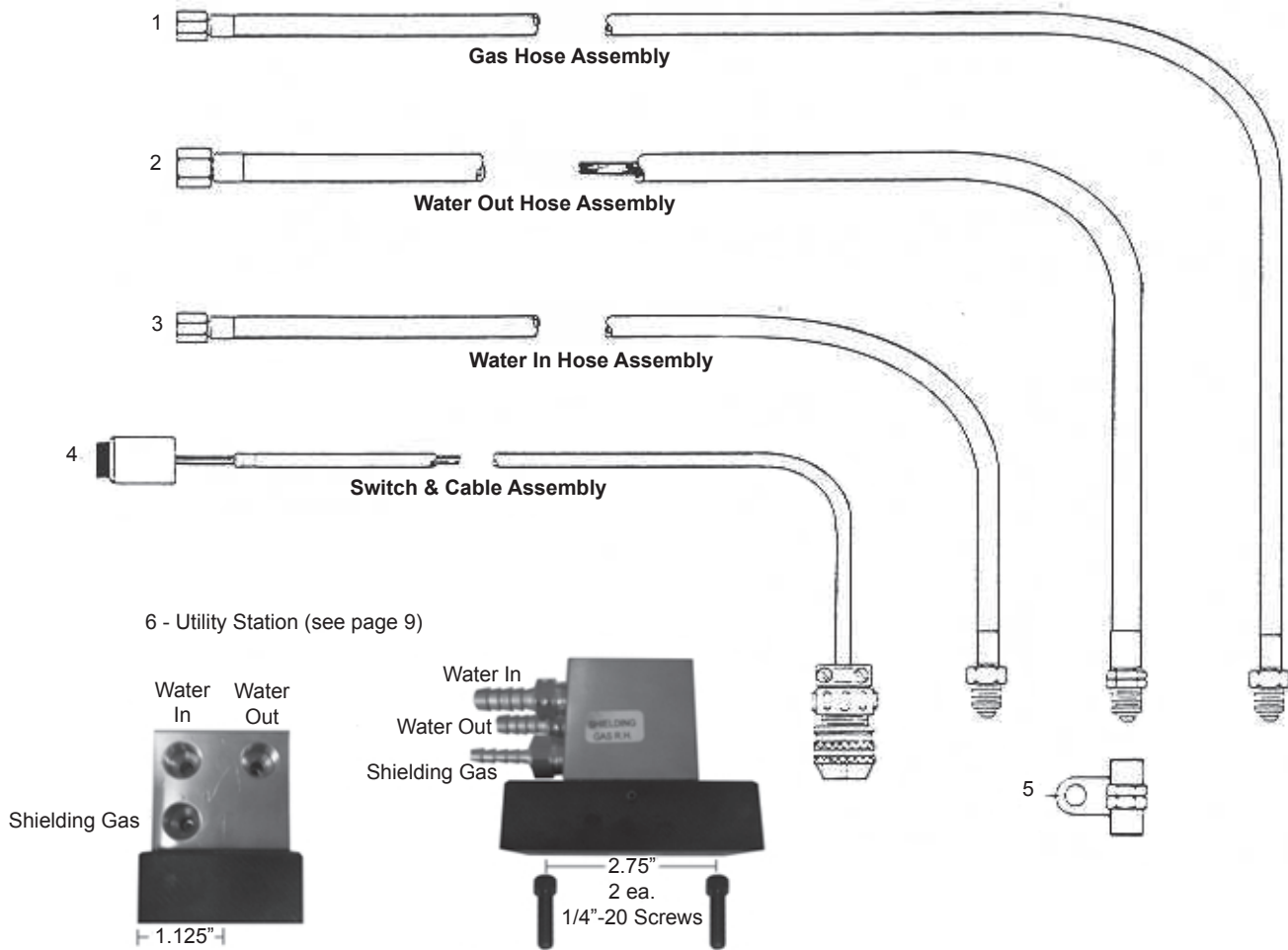


Ref.	Code No.	Description
1	11029	Inner Body Assembly
2	16483	TIG Cap Adapter/Tungsten Extension Shaft
3	13994	Interconnection Hose Assembly
4	12610	Steel Flat Head Screw
5	12611	Nylon Flat Head Screw (Optional)
6	11930	Handle Insulator (1 req'd)
7	12133	Body Housing w/ Bracket 10338
	12134	Body Housing w/out Bracket 10338
8	12135	Body Spacer w/ Bracket 10338
	12136	Body Spacer w/out Bracket 10338
9	12540	Socket Set Screw - Switch
10	11195	Handle
11	12146	Switch - Plastic Button
12	12519	Steel Socket Set Screw (4 req'd)
13	10338	Handle Bracket (w/ Nylon T-bolts, 2 req'd)
14	13921	O-Ring - External (2 req'd, for Tungsten Extension Shaft)
15	40008	Collar
16	41365	Socket Head Cap Screw (4 req'd)
17	10169	Rear Collar
18	11150	Water-Cooled Nozzle Front (Complete)
19	30398	Upper Insulation Tube - W/C Nozzle
20	30399	Lower Insulation Tube - W/C Nozzle
21	15930	Cone Nut
22	10405	Spatter Disc
23	11960	Jam Nut
24	12027	Adapter (w/ 11960 Jam Nut)
25	19273	Collet 1/16"
	19274	Collet 3/32"
	18157	Collet 1/8"
	18158	Collet 5/32"
26	42224	Jam Nut - Tube Mill Nozzle
27	42237	Tulip Gas Nozzle
28	14509	Gas Hose - 25 ft.
29	13699	Water In Hose - 25 ft.
30	11909	Water Out & Power Cable - 25 ft.
31	12173	Cable Assembly - 25 ft. (No Plug)
32	12113	Wrench - Long

# ORDERING INFORMATION - COMPLETE ASSEMBLIES

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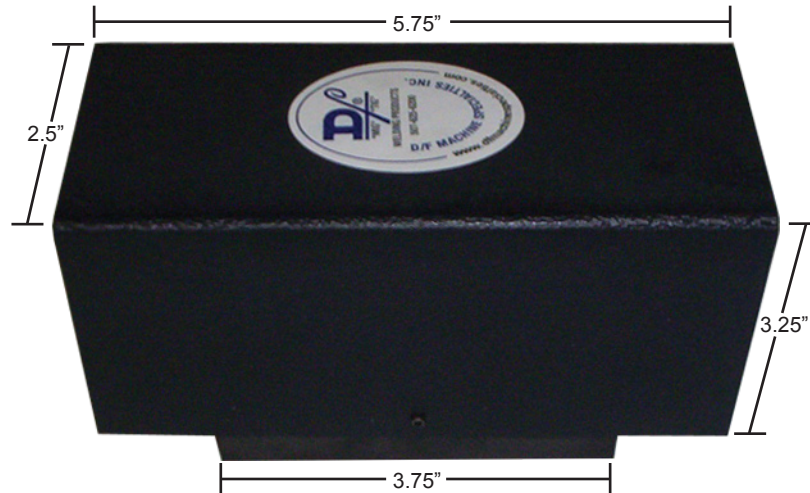
## HOSES & UTILITY STATION



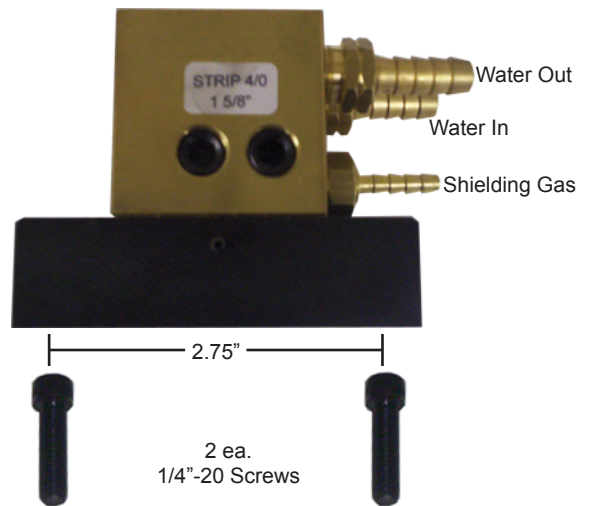
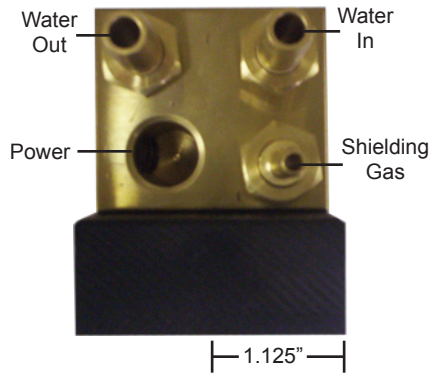
Ref.	Code No.	Description
1	14509	Gas Hose Assembly - 25 Ft.
2	11909	Water-Out & Power Cable Assembly - 25 Ft.
3	13699	Water In Hose - TIG Spot Pistol with 10475 and 10523 - 25 Ft.
4	12173	Switch & Cable Assembly - 25 Ft.
5	14430	Cable/Water Hose Power Coupling
6	45196	Utility Station (See Page 9)



# UTILITY STATION



**Weight:**  
Approximately 3.5 lbs.



## ORDERING INFORMATION

Description	Code No.
Utility Station (Miller)	45196
Utility Station (Lincoln, w/ voltage-sensing lead)	45204

# **D/F MACHINE SPECIALTIES, INC.**

*MIG & TIG Welding Products, Consumables & Accessories*

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## **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.

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