



DIGIMIG 2 Roll Drive pictured above.

Input Power Required	115 volts, 50/60 hz, 7 amp., 1 ph.
Wire Feed Speed Range	20-999 in./min. (.5-25.2 m/min.)
Wire Sizes Accommodated:	
Hard/Soft023 thru 1/8-in. (.6 thru 3.2 mm)
Flux Cored035 thru 1/8-in. (0.9 thru 3.2 mm)
Length	18.5-in. (470 mm)
Width	13-in. (330 mm)
Height	16.5-in. (419 mm)
Weight (less wire)	46 lbs. (21 kg)

DIGIMIG WIRE FEEDERS

DIGIMIG 2-ROLL DRIVE, P/N 30784
DIGIMIG 4-ROLL DRIVE, P/N 30785 (See Suppl. 12-821)

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding equipment, we urge you to read our booklet "Precautions and Safe Practices for Arc Welding, Cutting, and Gouging", Form 52-529. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions on page 2 before installing or operating this equipment.

- patented microprocessor controlled closed loop system - provides most accurate means of maintaining wire feed speed (amperage) and welding voltage; the microprocessor compensates for deviations in ambient temperature, primary voltage fluctuation and changes in arc dynamics or wire feed force conditions, to assure that preset parameters are maintained.
- sure start interlock — to assure troublefree starts, the Digimig has an interlock circuit which will not allow wire feed to initiate when the torch trigger is pulled, unless the power supply contractor is closed and voltage is present; the cold wire INCH, however, will be operative at all times.
- individual digital LED meters provide large 1/2-in. readout of voltage and wire feed speed — continuous display of preset and then actual welding voltage and wire feed speed for accurate observation.
- dual schedule capability — enables operator to have two different sets of weld parameters at his fingertips; Digimig's microprocessor allows operator to change schedules with a simple "click-click" squeeze of a standard torch trigger switch.
- "lock-in" key - allows preset welding parameters to be "locked-in" for positive supervisory control of weld quality; with key turned to "set" position, all parameters may be reset to new values at any time.
- automatic "shut down" — assures welding is done at the preset parameter; unit automatically shuts down if, for any reason, either the volts or ipm cannot be maintained for a preprogrammed time period; simultaneously, cause is indicated by flashing digital display.
- arc hours readout — this unique feature provides direct measure of "productivity" by accumulating and displaying, upon command, actual welding arc hours.
- automatic adaptive anti-stick or manual burnback time feature — a patented adaptive anti-stick circuit automatically adjusts the same amount of wire burnback regardless of wire size, speed or voltage; or, you can manually preset a "burnback time" to specifically suit a specialized application; the manual burnback function (programmed up to 30 cycles in the volts window) allows you to override the automatic adaptive anti-stick by setting a specific burnback time.
- adjustable "hot start" characteristic.
- spot weld timer - because the spot weld timer is adjustable up to 999 cycles (16.5 sec.) in the ipm window, it is more than a conventional "spot" feature; it is also a weld timer extending its use for "increment" or "stitch" welding.

INTRODUCTION

The ultimate in semiautomatic mig welding and control is DIGIMIG wire feeders. These microprocessor designed controls are the most technologically advanced and functionally complete wire feeders offered in the welding marketplace.

A. FEATURES/BENEFITS

- microprocessor accuracy — the microprocessor, the controlling "brain" of the Digimig operates exclusively on drift free digital logic, unlike competitive systems. The digital logic delivers extraordinarily precise computer-accurate weld parameter control, and weld consistency.
- microprocessor flexibility — in contrast with competitive digital systems that require additional printed circuit boards and hard wiring whenever a feature or function is to be added, the DIGIMIG incorporates electronically reprogrammable modules; by simply reprogramming this small plug-in module, many existing functions may be extended or new features may be added.
- microprocessor reliability — Digimig Wire Feeders have proven to be rugged and reliable in test after test for absolute minimum downtime.
- presettable wire feed speed (ipm) and voltage (volts) — provides ability to easily and accurately preset the exact welding parameters desired, before the welding sequence begins.

Be sure this information reaches the operator.
You can get extra copies through you supplier.



ESAB Welding & Cutting Products

- gas pre and postflow and cold wire inch capability - gas pre and postflow provides independent adjustment in tenths of a second for highest weld quality and economy; cold wire inch speed can be independently adjusted from welding wire feed speed to reduce down time.
- circuit protection - resettable circuit breaker for input power minimizes downtime and maintenance.
- EH-10A permanent magnet motor - provides the highest torque, fastest response, and best efficiency of any mig p.m. motor on the market.
- patented closed loop "J" governor/optical tachometer - provides most accurate means of maintaining wire feed speed and voltage, regardless of any voltage drop or drift.
- dc straight or reverse polarity capability - because the Digimig is factory-wired for use with either dcrp or dcsp without making control wiring changes, the process flexibility of the Digimig is further extended.
- trigger lock-in - allows the operator to release the torch switch lever during long welding cycles for easier torch manipulation and less operator fatigue.
- "Cold" servo adjustment allows setting controller for optimum Hot start characteristic.

B. DESCRIPTION

The digimig is a microprocessor controlled digital wire feeder designed for mig short arc and spray arc, and flux cored welding applications. Its electronic brain - the microprocessor - not only controls, it also remembers and automatically coordinates the program sequencing (that "you" preset) which results in the most accurate wire feed speed and voltage control possible.

The Digimig offers many features not available in conventional wire feeders. It allows the customer to preset both welding parameters, lock-them-in and be assured that each setting will be precisely held regardless of changes in line voltage, arc or load conditions. If more than one setup is required to complete the welding operation, the Digimig also allows you to preprogram two different sets of welding conditions — two wire speed settings and two arc voltage settings. Alternate switching between (RUN Pos.) schedule I and II is controlled by operating a standard torch switch - press (and hold) the torch lever once and you're in Schedule I; release and repress the torch lever within two-tenths of a second, and you're in Schedule II. For additional

information regarding settings, adjustments and sequencing of the welding modes and controls, refer to Section V, VI and VII of this booklet.

Two digital readout windows continuously display (1/2-in. high) the preset welding parameters (speed and voltage) as determined by the schedule mode switch. After the arc is struck, they automatically display the actual wire speed and arc voltage conditions for the selected schedule. The readouts can also provide selectable displays of other welding parameters such as inching speed, spot time in cycles, manual burnback time in cycles, gas pre-and postflow times.

The Digimig uses a heavy duty EH-10A wire drive motor designed to feed hard or soft wire from .023-in. to 1/8-in. diameter and flux-cored wires from .035-in. to 1/8-in. in diameter. Rate of wire feed (20-999 ipm) is precisely controlled by using a closed-loop "J" governor digital feedback circuit that employs an optical tachometer to monitor the motor speed. Arc Voltage regulation is also controlled by a closed-loop digital feedback circuit that monitors the arc voltage and automatically adjusts the power source output voltage to maintain the preset voltage.

All interconnecting cable, hose and auxiliary equipment connection are quickly detachable to provide easy setup and maximum portability of the wire feeder as shown in Figs. 2 & 3. A water kit may be purchased, as an optional accessory, for use with the water cooled torch operation.

II. REQUIRED EQUIPMENT

A. CONSTANT VOLTAGE POWER SOURCE

The Digimig is specifically designed for use with constant voltage (C.V.) power sources utilizing "electronically controlled voltage regulation". One of the appropriate Power Sources (following) and its slope requirement must be matched to Position 1 (IPM and VOLTS window displays respectively) of the six-position Rotary

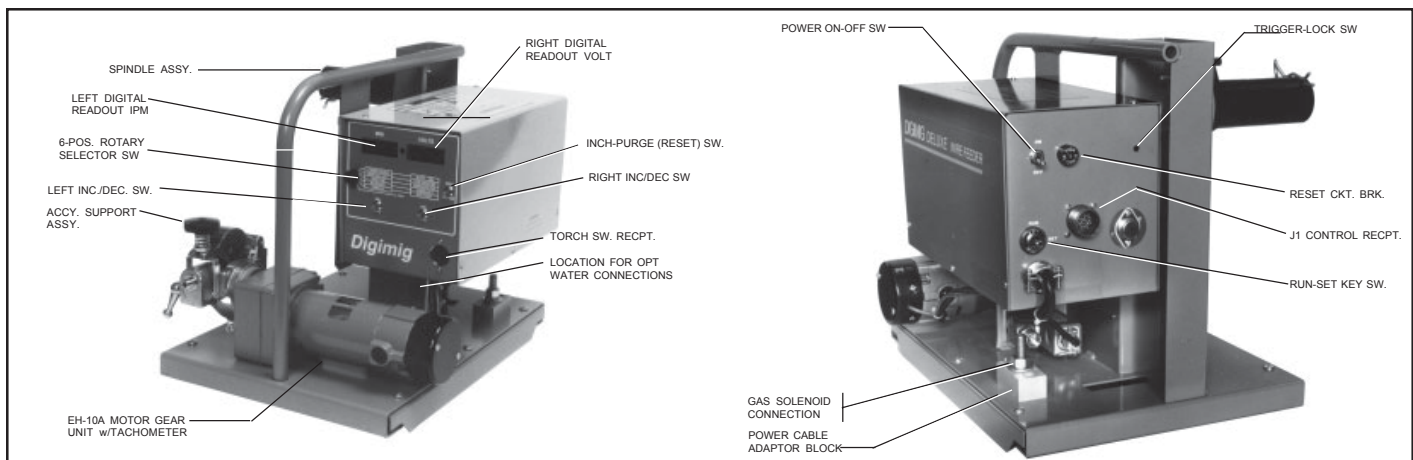


Fig. 1 - DIGIMIG Wire Feeder (front and rear view)

selector switch on the control's front panel (refer to Section V-A-8 for further details on this switch).

One of the following power sources must be used:
 SVI-300i cv/cc, P/N 34835.
 VI-450, P/N 33322.
 SVI-450i, P/N 31950.
 V-650 cv/cc, P/N 33324.

B. CABLE ASSEMBLIES

A multi-conductor control cable assembly is required to connect the Digimig to a power source with electronic voltage control (see Fig. 3).

1. 115 Volt/Contactor/Remote Control J1 Cable, 19-conductor with Amphenol plugs; order one of the following:
 - a. 6-foot, 19-cond., P/N 30686.
 - b. 30-foot, 19-cond., P/N 30780.
 - c. 60-foot, 19-cond., P/N 30781.

C. WELDING TORCH

A mig welding torch, with contact tip, wire conduit and outlet guide for wire size/type to be employed, will be required. A suitable air (MT-400) or water-cooled (MT-450W, ST-16) torch may be used with the Digimig.

When using a water-cooled torch it will be necessary to connect the torch water hose to either a continuous water supply or to the wire feeder base by using an optional water kit (see Section III).

D. GAS REGULATION

Shielding gas regulator/flowmeter and fitted hose to bring gas from flowmeter to wire feeder. Such as:

- R-5007 Argon/Helium/Nitrogen, P/N 998124.
- R-5008 CO₂, P/N 998125.

Gas Hoses:

- Standard Duty, 40V77 (12-1/2-ft.) or P/N 34V38 (25-ft) Heavy Duty, P/N 19416 (12-1/2-ft)* or P/N 19415 (25-ft)*.

* Must be used for CO₂.

E. FEED ROLLS

The Digimig comes equipped with a pressure roll but NOT a feed roll. Select the proper feed roll from Table 1 for the wire size and type to be used.

III. OPTIONAL ACCESSORIES

A. Water Kit (P/N 994466). Permits the convenient connection of a water-cooled torch and continuous water supply or water cooler to the wire feeder.

Table 1

Wire Type-Size in./mm	Two Roll Drive Feed Roll	Four Roll Drive Feed Roll Kit*	Outlet Guide
Soft			
.030 (0.8)	2075304 (U)	999320 (U)	29N13**
.035 (0.9)	2075304 (U)	999321 (U)	29N13**
3/64 (1.2)	2075301 (U)†	999322 (U)	29N13**
1/16 (1.6)	2075298 (U)††	999323 (U)	29N13**
3/32 (2.4)	2075297 (U)	999324 (U)	29N13**
Hard			
.023 (0.6)	17998 (V)	—	999745■
.030 (0.8)	2075300 (V)	999325 (V)	993860(a)
.035 (0.9)	2075303 (V)	999326 (V)	993860(a)
.045 (1.2)	2075302 (V)	999327 (V)	39N15(b)
.052 (1.4)	2075330 (V)	999328 (V)	39N15(b)
1/16 (1.6)	2075299 (V)	999329 (V)	39N15(b)
Cored			
.035 (0.9)	19761 (Serr.)	—	993860(a)
.045 (1.2)	19761 (Serr.)	999330 (Serr.)	39N15(b)
.052 (1.4)	2075261 (Serr.)	999331 (Serr.)	39N15(b)
1/16 (1.6)	2075261 (Serr.)	999332 (Serr.)	39N15(b)
5/64 (2.0)	2075261 (Serr.)	999333 (Serr.)	62N17(c)
3/32 (2.4)	2075257 (Serr.)	999334 (Serr.)	62N17(c)
7/64 (2.8)	2075257 (Serr.)	999335 (Serr.)	39N16
1/8 (3.2)	2075255 (Serr.)	999336 (Serr.)	39N17

- Require guide bushing P/N 17997
- * Includes a center wire guide and 2 upper and 2 lower fed rolls.
- ** Requires outlet guide insert as follows: For .030 wire use 993902, For 3/64 wire use 05N57. For 1/16 wire use 12N75, For 3/32 wire use 05N58.
- † Recommended U-Groove Pressure Roll 2075346 be used.
- †† Recommended U-Groove Pressure Roll 2075348 be used.
- (a) Include replaceable sleeve (995651).
- (b) Includes replaceable sleeve (995692).
- (c) Includes replaceable sleeve (995693).

The kit consists of a coupling, two adaptors and a fitting. A dependable cooling water supply, delivery and return water hoses (P/N 40V76, 2 required) will also be required. Note that Fig. 2 illustrates the use of power cable adaptor P/N 634693, in addition to the kit. If adaptor (634693) is not used, adaptor (45V11 supplied with kit) can be connected to the output terminal of the power source. Install the kit in accordance with Fig. 10 and Sec. IV-F. Connect the water-cooled torch as shown in Fig. 2.

B. Lifting Bracket (P/N 634287). Mounts on the wire feeder spool support between the support and the spindle assembly. Enables you to mount the wire feeder overhead on a boom.

C. Spool Enclosure Kit (P/N 600240). Provides protection of spool of wire against dust and dirt. For installation instructions refer to Form 12-824.

D. Standard Wire Reel Assembly (P/N 995570). Reel slips over spindle to allow use of coiled wire, see Fig. 9.

E. Heavy Duty Wire Reel Assembly (P/N 19V89). Spoke-type wire reel includes a four spoke aluminum alloy casting mounted on a lightweight support shaft of steel tubing. The reel will handle all wire coils from 2 to 4-5/8-in. wide. The finger design permits

quick and easy accommodation of different coil widths by simply rotating from one finger position to the other.

F. Wire Straightener, (P/N 34V74). Reduces wire cast to improve feedability and increase service life of torch liners and contact tips. Mounts to the accessory support inlet guide.

Either of two additional accessories are required to complete the installation of the wire inlet side of the straightener:

- a. Wire Inlet Guide, P/N 11N53, or -
- b. Wire Wiper Holder, P/N 598763.

G. Wire Spool Spacer (P/N 548378). Enables the use of a 8-in. diameter spool of welding wire with spindle assembly on the Digimig wire feeder.

H. Four Roll Drive Accessory Support Assembly (P/N 600216). This assembly (illustrated in booklet F-12-821) utilizes four feed rolls to provide the back-up force necessary for positive nonslip wire feed. It is designed for feeding .030 through 1/8-in. diameter wire(s). Feed rates using the four roll drive assembly are virtually the same as with the two roll assembly. For feed roll/outlet guide accessories refer to F-12-821 or Table 1.

I. WC-9 COOLANT CIRCULATOR, P/N 33540, is used for water cooled torch operation and is designed to be "free standing" in a convenient location near the torch. A four-gallon capacity tank provides 1.0 gal/min @ 50 psi, using 115/230 volts, 50/60 Hertz, 1 phase input. Since the cooler is designed to run continuously during a welding operation, never connect it to a power source or wire feeder that uses a solenoid controlled water supply that opens and closes with each operation of the welding contractor - the cooling efficiency of the unit will be hampered and the starting winding in the pump motor may burn out.

J. WC-8C Coolant Circulator, P/N 33739, is used for water cooled torch operation and is designed to fit in

a cylinder rack of a power supply truck or a trim-power cart. A 1.5 gallon capacity tank provides 1.0 gal/min @ 50 psi, using 115/230 volts, 50/60 Hertz, 1 phase input. Since the cooler is designed to run continuously during a welding operation, never connect it to a power source or wire feeder that uses a solenoid controlled water supply that opens or closes with each operation of the welding contractor - the cooling efficiency of the unit will be hampered and the starting winding in the pump motor may burn out.

K. Wire Feeder Mobile Undercarriage Kit, P/N 680005. This kit includes a mounting plate and caster type wheels to provide a complete mobility of the wire feeder (see F-14-322).

L. Wire Feeder Turntable, P/N 678940, allows rotation of wire feeder as operator changes work positions. This reduces strain and bending of torch cables (see F-12-984).

IV. INSTALLATION



WARNING

To avoid possible lethal shock, make sure that all power to the Digimig is OFF before making any welding/control cable and or accessory connections on this unit. Do this by "locking-open" the input line disconnect switch to the power source.

After checking to be sure you have all required, components and accessories (see Section II), proceed as follows (with reference to Figs. 2 & 3, Interconnection Diagrams):

A. HOSE AND ELECTRICAL CONNECTIONS

Connect shielding gas and water (if used) supply hoses as shown in Fig. 2. Connect the control cable assembly (J1) from the Digimig's rear panel to the power source as shown in Fig. 3.

B. TORCH CONNECTIONS

Attach torch gas hose to gas connection. Plug in torch switch cable and lock by twisting. After inserting

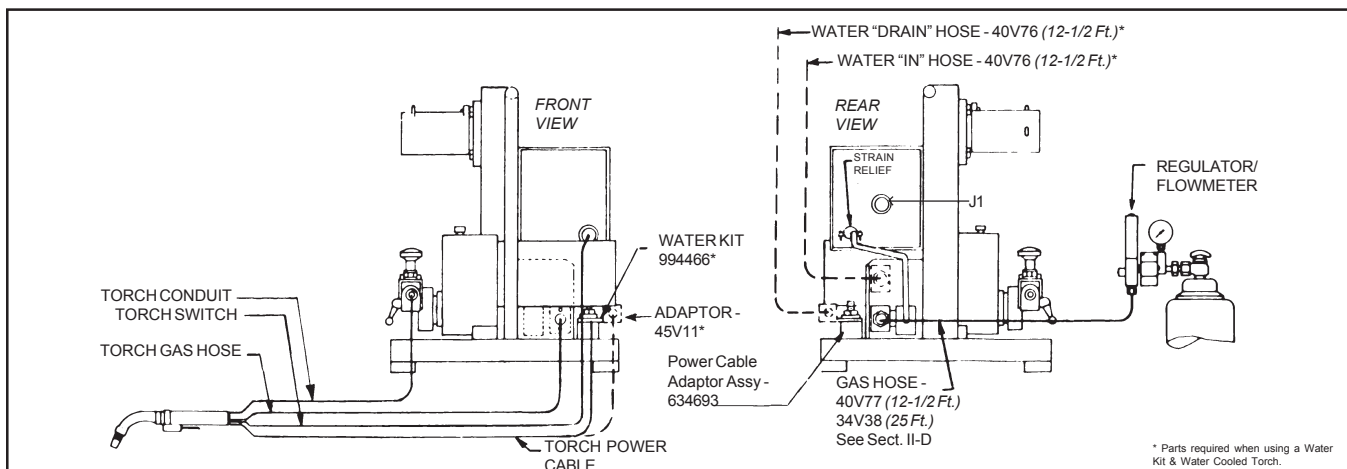
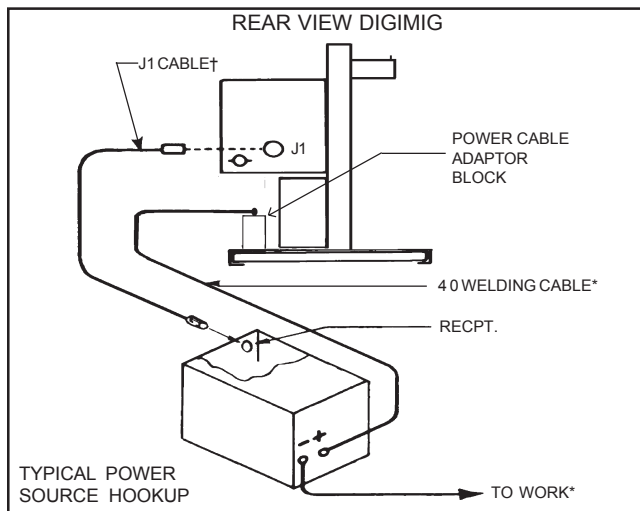


Fig. 2 - Torch and Service Interconnection Diagram



† ESAB will not honor the warranty on Digimigs that are used with non-ESAB manufactured interconnect cables and sustain damage that in ESAB's opinion is caused by these cables. For a listing of the proper J1 cables available, refer to Section II-B.
* 4/0 welding cables (customer supplied) are set-up for DCRP, (NEG. TO WORK) operation.

Fig. 3 - Welding and Control Interconnection Diagram

conduit liner (if used) and attaching wire outlet guide of correct size, connect wire feed conduit to welding head clamp and lock in place. Connect torch power cable to power source, or to power cable adaptor block (with a second cable from that block to the power source).

C. INSTALLING FEED ROLL

1. Release the clapper on the accessory support assembly (Figure 8) by disengaging the retainer from the clapper fork.
2. Remove thumbscrew, bell washer, and flat washer from the feed roll shaft.
3. Slip the feed roll on the shaft, engaging the key. Be sure to observe the "THIS SIDE OUT" marking on the feed roll.
4. Replace flat washer, bell washer, and thumbscrew, tightening screw sufficiently to eliminate all end play from the feed roll.

D. INSTALLING SPOOL OF WIRE

CAUTION: *Make sure safety glasses are worn when clipping wire off at the spool or at the end of the torch — serious eye injury can result due to the springiness of the wire which quickly unravels or a cut wire end which may shoot across the room.*

1. Remove "hairpin" clip from spindle.
2. Position the spool of wire so that when it is placed on the spindle, wire will be drawn to the feed roll from the bottom of the spool. The spool should be held so that the index hole on the back will engage the lug on the spindle.
3. Slide the spool onto the spindle until it engages the lug. Lock in place with the hairpin clip.
4. Loosen the brake screw in the center of the spindle hub, then tighten it just enough to prevent coasting of

the spool when wire is drawn from it. Too much pressure will load the wire feed motor unnecessarily. Too little pressure will permit the spool to over-run, causing the wire to kink and tangle.

5. Thread the wire on to the accessory support assembly as described in Section E.
6. When wire coils are to be used instead of spools, mount wire reel on spindle as though it were a spool (see 1 and 3 above). Remove thumbnuts and cover plate from reel. Remove coil from its package, but do not remove its binding wires. Slide coil onto reel so that wire will be drawn from bottom of coil (starting end for a coil is always the outer end). Replace reel cover plate and thumbnuts. Cut off coil tie wires and any kinked wire. Then adjust brake screw and thread wire to torch as covered in 4 and 5 above.

E. ADJUSTING THE ACCESSORY SUPPORT ASSEMBLY (See Fig. 8)

When a new wire size or type is to be used, set the pressure roll adjustment as follows:

1. Round off the free end of the welding wire with a file.
2. Release the clapper and unscrew the pressure adjusting knob until the pressure spring is free.
3. Thread the wire through the inlet and outlet guides of the accessory support, and 3 or 4 inches into the torch conduit.
4. Engage the clapper making sure the wire is held in the feed roll groove.
5. Tighten the pressure adjusting knob until the wire is firmly against the feed roll — do not overtighten. The spring pressure applied should be the minimum required to provide positive, nonslip wire feed. Too little pressure will result in wire slippage while excessive pressure will scar and deform the wire. Further adjustment can be made after the wire feed is put into operation. Note that a light spring (182W55) is installed on the accessory support for use with soft and small diameter hard wire. For large diameter hard wire, replace this spring with a heavy spring (182W54) supplied with the unit.

F. WATER KIT (Optional see Fig. 10)

Mount bulkhead adaptor (58V75) behind opening provided in vertical base plate, above gas connection, and secure with screws (No. 8 — 32 X 3/8 in.) and lockwashers provided. Attach coupling and adaptor (11N16) behind bulkhead adaptor. Mount torch cable adaptor (45V11) on welding power stud. Connect water drain hose to this adaptor, and water inlet hose to adaptor 11N16.

V. ADJUSTMENTS



Do not allow metal-to-metal contact between the wire feeder chassis and a metal surface connected in any

way to a welding ground. With such contact, a poor welding ground connection may create a difference in potential that sends part of the welding current through the safety ground wiring in the control cable and wire feeder, resulting in burnout of that wiring and/or damage to wire feeder circuitry. If the safety ground burns out, the operator may be exposed to 115V. shock hazard.

A. CONTROL FUNCTIONS

For location of rear panel control features, refer to Fig. 4.

1. **Power Switch** - this two-position toggle switch turns power "on" or "off" to the wire feeder control.
2. **Lock-In Key** - This "key-operated" switch must be in the SET position to preset, vary and weld-test the welding parameters programmed into the control (e.g.: Sched. I (RUN), Sched. II, Spot). After the desired results are achieved, the program(s) can be "locked-in" by turning the key to the RUN position. No parameters can be altered by the operator in the RUN position.
3. **Trigger Lock-In Switch.** This allows the operator to release the torch switch (trigger-lock "on") after starting the welding cycle in Schedule of your choice (I or II). To stop the welding cycle, you simply depress the torch switch again and all welding action ceases. When this function is ON it automatically overrides the ALTERNATE (or second) schedule and/or a Spotweld operation if programmed. An indicator light (LED) on the front panel will indicate that the Trigger Lock-In feature has been engaged. In the OFF position, this feature is not functional, and the LED is off.

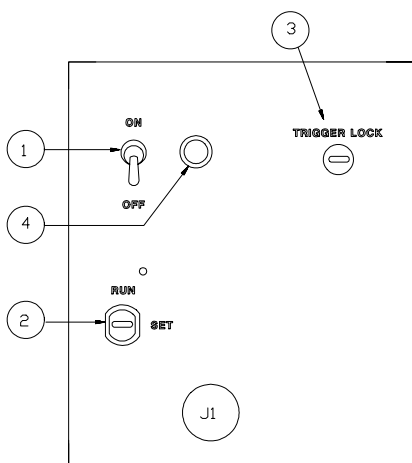


Fig. 4 - Rear Panel Controls

4. **Reset Circuit Breaker.** A seven (7) ampere circuit breaker provides protection to the 115-volt control circuit and the wire feed motor. If an overload occurs, the breaker will trip and suspend all operation. To restore service, depress the breaker button to reset the circuit.

For location of the following front control features, refer to Fig. 4A.

5. **Digital Readout Windows.** Two individual three-digit windows are provided to display preset or actual welding parameters as follows:

- a. **IPM Digital Readout** - This window is primarily used to display wire feed speed in IPM from 20 to 999 inches per minute in one inch increments. However, with the appropriate Rotary switch function actuated, this window can also display the following:
 - Power Source selected and designated by the numerals "300" or "450" (see Rotary Switch, Item 8).
 - A code number indicates a type of MATERIAL programmed for various welding wire applications; #1, #2, or #3 (see Rotary Switch, Item 8).
 - shielding gas PREFLOW from .1 to 99.9 seconds in one tenth of a second increments
 - SPOT welding time from 1 to 999 cycles in one cycle increments.
 - cold wire INCH speed in IPM from 20 to 999 inches per minute in one-inch increments

NOTE: With the power turned "on" but not welding, the IPM window will "continuously" read Preset wire speed if the Rotary switch is in the RUN or SCH. II mode. When the arc is struck, the IPM window will then continuously read Actual welding wire speed.

- b. **Volts Digital Readout.** This window is primarily used to display arc voltage in VOLTS from 12 to 50 vdc in one tenth volt increments. However, with the appropriate Rotary switch function actuated, this window can also display the following:
 - indicates power source SLOPE selected and designated by the numeral 1, 3, or 6 (see Rotary Switch, Item 8).
 - a pair of numbers represent WIRE DIAMETER sizes which are programmed for selection as follows: #23, #30, #35, #45, or #63 (see Rotary Switch, Item 8).
 - shielding gas POSTFLOW from .1 to 99.9 seconds in one tenth of a second increments
 - Manual BURNBACK time. Manually adjustable burnback time period which when preset will override the automatic adaptive anti-stick feature. This time period will be set in one-cycle (60-cycle = 1 sec.) increments. When set to "zero", the Automatic Adaptive Anti-stick feature will be operational.

NOTE: With the power turned "on", but not welding, the VOLTS window will "continuously" read Preset

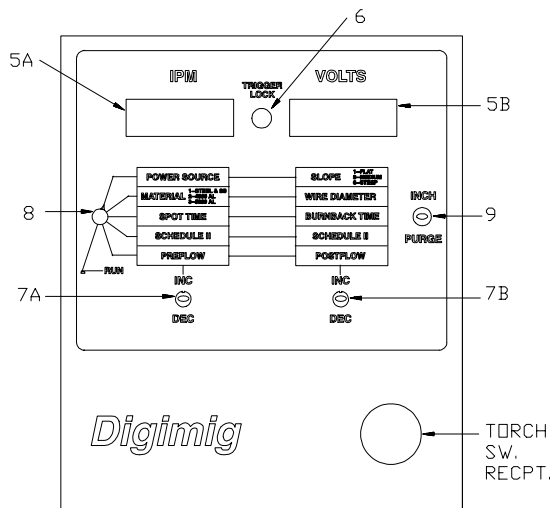


Fig. 4A - Front Panel Controls

voltage if the Rotary switch is in the RUN or SCH. II mode. When the arc is struck, the VOLTS window will then continuously read Actual welding voltage.

6. LED light. This LED lights to indicate that Trigger Lock-In, is engaged.

7. Inc/Dec. Toggle Switches. Two control toggles are provided to preset the individual welding parameters required for the selected welding mode Schedule I (RUN), Alt. Sched. II or Spot/B.Back, as follows:

a. "IPM" Increase/Decrease Control. This toggle switch is primarily used to set and/or vary the wire feed speed (IPM), along with its other functions; Power Source selection, Material selection, Preflow, Spot (cycles) and Inch. With the appropriate function selector actuated, each parameter setting will be displayed in the digital window directly above this toggle.

b. "VOLTS" Increase/Decrease Control. This toggle switch is primarily used to set and/or vary the arc Volts, along with all its other functions: Slope selection, Wire Diameter selection, Postflow and Burnback (Cyc). With the appropriate function selector actuated, each parameter setting (or record) will be displayed in the digital window directly above this toggle.

8. Rotary Parameter Switch. This six (6) position switch allows you to select a "pair" of welding parameters" per position" as follows:

a. Position 1, Power Source/Slope. This position sets the designated Power Source selected for use, and its operating Slope requirements. These selections will be displayed in the IPM and VOLTS windows respectively and are set as follows:

(1) Power Source. Four power sources as available for use with this feeder. The choices are, the SVI-300i cv/cc and this is designated by the numeral "300"; and the VI-450, or the SVI-450i, or the V-650 cv/cc and these are designated by the numeral "450". The Power Source "numeral" designation selection is displayed in the left (IPM) window, and set using the IPM INC/DEC toggle switch.

(2) SLOPE. This feeder is designed to provide the correct output to the selected power source using any of three slope characteristics: 1-volt/100 amperes, designated by numeral "1" for FLAT; 3-volts/100 amperes, designated by numeral "3" for MEDIUM; or 6-volts/100 amperes, designated by numeral "6" for STEEP slope. The slope "numeral" designation selected is displayed in the right (VOLTS) window, and set using the VOLTS INC/DEC toggle switch. **Please note that the feeder slope selection must always match the slope output selected at the power source.** To select the appropriate slope for the available power sources, use the following: SVI-300i cv/cc, use slope 1, 3 or 6; for V-450, use slope 1 or 3; for SVI-450i, use slope 1, 3 or 6; and for V-650 cv/cc, use slope 1.

b. Position 2, Material/Wire Diameter. This position sets the wire Material type and wire Diameter size which are preprogrammed in the feeder for a wide variety of welding combinations. These selections will be displayed in the IPM and VOLTS windows respectively, and are set as follows:

(1) MATERIAL. This parameter is set in the left (IPM) window and displays one of the three available wire Material type "numerals" that can be used, and is set by operating the IPM INC/DEC toggle switch. Material numeral "1" is for Carbon or Stainless Steels, numeral "2" is for the 4000 aluminum series, and numeral "3" if for the 5000 aluminum series of wires.

(2) WIRE DIAMETER. This parameter is displayed in the right (VOLTS) window and offers a choice of five (5) wire Diameter sizes which can be use, and is set by operating the VOLTS INC/DEC toggle switch. The wire size selection designations available are: "23" for .023" dia., "30" for .030" dia., "35" for .035" dia., "45" for .045" dia. and "63" for .063" dia wires.

c. Position 3, SPOT TIME/BURNBACK TIME. This position allows you to preset either or both of these welding features in a weld condition. If programmed, these parameter times will be displayed in the IPM and VOLTS windows respectively, and are set as follows:

(1) **SPOT TIME.** The spotweld time mode is always programmed into the Schedule I (RUN position) welding parameters. These preset “time-arc” periods (up to 999 cycles, in one cycle increments) are programmed in the IPM window using its Inc./Dec. toggle switch. When the Spotwelding feature is programmed into the control, all “continuous” welding programs are temporarily disabled. To resume normal program operation in the first or alternate Schedules you must deactivate the spotweld mode by keying its “timing” parameter back to zero (000).

(2) **BURNBACK TIME.** At the same time, you can also preset a manual Burnback time mode into the VOLT window using its Inc./Dec. toggle switch. The Burnback time is adjustable in one cycle increments (60 cycles/sec.); and when preset, the Burnback time will override the automatic adaptive anti-stick feature in either welding schedule. To resume automatic anti-stick operation, the Burnback time must be set back to “zero” (000).

d. **Position 4, SCHEDULE II/SCHEDULE II.** This position allows you to preset the parameters for a second welding schedule. The wire speed rate is set using the left INC/DEC toggle switch and the setting will appear in the IPM window. The arc voltage requirement is set using the right INC./DEC. toggle switch and the setting will appear in the VOLTS window. Operation of the SCH. I (RUN Pos.) or SCH. II welding mode is controlled by the double-click operation of the torch switch.

e. **Position 5, PREFLOW/POSTFLOW.** In this position, Gas Preflow (.1 to 99.9 sec.) can be set by the left INC/DEC toggle and displayed in the IPM window. Gas Postflow (.1 to 99.9 sec.) is set by operating the right INC/DEC toggle and is displayed in the VOLTS window. These features are adjustable in 0.1 second increments and are shared by both welding schedules.

f. **Position 6, RUN (Schedule I).** This position allows you to preset the welding parameters for Schedule I (RUN position). The wire speed rate is set using the left INC/DEC toggle switch and the setting will appear in the IPM window. The arc voltage requirement is set using the right INC/DEC toggle and the setting appear in the VOLTS window. After all preset parameters have been programmed, the unit is ready to weld. Note that the feeder will only inch wire in the Run position. If two schedules are being used, the operator can choose to start in Schedule II by placing the rotary switch in Position 4 (Schedule II). Schedule I may be switch over to during welding by using the double-click procedure with the torch switch. This same procedure (double-click) is also available if you

remain in the RUN (Sch. I) position.

9. **Inch-Purge (Reset) Selector.** Operating this toggle allows the following operations:

a. **The INCH selection** permits cold-wire inching without energizing the welding circuit through the torch switch. Initially, when toggled or bumped, the INCH selector will feed cold wire at 20 ipm for 2-seconds and will then begin feeding wire at a preset wire inching speed. A “preset” inch speed can be set and independently controlled (while INCHING) by operating its Inc./Dec toggle switch, and this setting (which is independent of “hot” wire feed) will appear in the IPM window.

b. **The PURGE (RESET) position** provides the following when actuated:

(1) **Prior to actual torch triggering**, it permits you to actuate the gas solenoid and PURGE the shielding gas line of the torch. At the same time, it also lets you adjust the gas regulator without energizing the welding circuit.

(2) **After starting the welding sequence**, if an “abort-shutdown” condition occurs (indicated by a flashing digital display), the RESET position can be actuated and the control automatically “resets” for a new start.

(3) **Actuating the Purge (Reset)**, key during a weld, allows you to check the factory-preset numbers that determine the quality of the “arc starts” for each of the two (2) possible welding-condition schedules pre-programmed by the weldor. These factory-preset numbers are displayed in the IPM and VOLTS windows and represent the optimum arc starting (servo) characteristics required for most welding applications. This diagnostic feature is fully explained in a “Note” following.

NOTE: *This is a diagnostic tool available to the experienced operator or serviceman and need not be activated during a normal operation unless you are experiencing weld starting problems, or weld condition (speed and/or voltage) aborting problems. The factory-set “arc starting” condition is represented by numbers that are displayed, on command (by simultaneously actuating the Arc Hrs./Inch Preset and Purge Reset keys during a weld), in the digital IPM and VOLTS windows. Since this welder may have up to two (2) different welding programs scheduled, it may be necessary to check the arc-starting conditions for each program if you have problems. For good welds and starts, these numbers should be in a range from 105 to 115 (with 110 being the norm) in the IPM window, and from 90 to 100 (with 95 being the norm) in the VOLTS window. If your weld starts are not acceptable, please refer to Section VI-*

B-6 for a simple adjustment procedure that will enhance good starting. If you are experiencing frequent speed and/or voltage aborts, please refer to Section VIII-G (Troubleshooting) for checking and resetting condition (servo) functions.

B. GAS/WIRE ADJUSTMENTS

The following Digimig control functions must be set to feed wire through the torch conduit and to adjust the shielding gas flow rate.

1. Place Power switch (on rear panel) to “on” position to energize the control.
2. Place key-operated Run-Set switch in Set position.
3. With torch connection made as shown in Fig. 2, and wire engaged in accessory support (Sect. IV-E), feed wire through torch conduit and into torch as follows:
 - a. Remove nozzle and contact tip from torch.
 - b. Hold (or bump) Inch-Purge toggle in INCH position (Sect. V-A-9) until “cold” wire protrudes from the torch front end.
 - c. Slide the contact tip over the end of the wire and secure it to the torch. Replace the torch nozzle.
 - d. Reoperate Inch-Purge toggle in INCH position and check for wire feed slippage on the accessory support assembly. Tighten (or loosen) the pressure adjusting knob until the wire feeds smoothly.
4. With shielding gas cylinder and torch gas hose connection assembled as shown in Fig. 2, set gas flow rate as follows:
 - a. Hold Inch-Purge toggle in PURGE position and open the gas regulator-flowmeter control valve and set the shielding gas flow rate.
 - b. Continue to hold the Purge position for approx. 15 seconds to insure adequate purging of gas hose and torch.
5. Place control's Power switch to “off” position.

VI. SETTING UP PROGRAM PARAMETERS

- A. Two sets of welding parameters can be preset in your control, one in Schedule I (RUN pos.), and one in the alternate Schedule II (if provided). In the following example, we will use typical parameters for an actual welding condition for Schedule I. Note that the setup procedure for the alternate Schedule II Condition is similar to Schedule I, although the parameter settings will be different.

Typical Welding Conditions:

Cold Wire Inch Speed	75 IPM*
Wire Feed Speed	185 IPM
Arc Voltage	17.9 Volts
Spot Weld Time	45 Cycles
Preflow Time	1.2 Seconds*
Postflow Time	3.1 Seconds*
Burnback Time	7 Cycles*

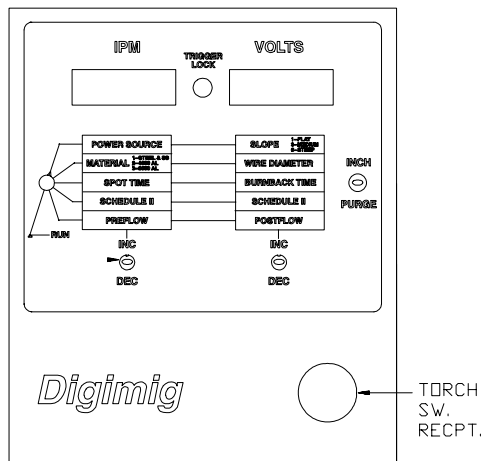
* These parameters are shared between Schedule I and the alternate Schedule II (if provided).

1. Set Power Switch (on the rear panel) to “on” position to energize Digimig Control.
2. Place key switch in SET position to program welding parameters for Schedule I, Alternate or Spot/Burnback welding operation(s). After the desired programs (following) have been preset, the operator or supervisor is free to weld and make any changes while this switch is in the SET position.
3. **To set a Cold Wire Inch parameter of 75 ipm**, raise and hold the toggle of the Inch-Purge (Reset) switch in its “up” position. Simultaneously, raise and hold the toggle of the left Inc./Dec switch in its INCREASE position until 75 appears in the IPM windows. Note that the cold inch setting starts at 20 ipm and rapidly increments (1 ipm at a time) until the 75 ipm setting is reached. If you overshoot the planned setting, simply “bump” the DECREASE position of the Inc/Dec toggle to obtain the exact IPM setting. When preset, this parameter will automatically be programmed or shared with the Alternate Schedule program parameters (if provided).
4. Set the Rotary Switch to Position 1 to select the Power Source and Slope used for your welding application as follows:
 - a. **Power Source:** operate the left Inc/Dec switch until the numeral “300” or “450” appears in the IPM window. One of these numbers should match the power source being used: “300” designates as SVI-300i cv/cc; whereas “450” would designate a VI-450 or SVI-450i or a V-650 cv/cc. (see section V-A-8-a.)
 - b. **Slope:** operate the right Inc/Dec switch to set the appropriate slope characteristic set on your power source. One of three slope designations will appear in the VOLTS window; #1 for Flat, #3 for Medium, or #6 for Steep slope. **Make sure the feeder slope number matches the slope selected at the power source. (see section V-A-8-a)**
5. Set the Rotary Switch to Position 2 to select the Wire Material and Wire Diameter used for your welding application as follows:
 - a. **Material:** operate the left Inc/Dec switch to set the wire material you intend to use. One of three material designations will appear in the IPM window; #1 for carbon or stainless steels, #2 for 4000 series aluminum, or #3 for 5000 series aluminum. **Match the material number to the wire type being used.** (see V-A-8-b)
 - b. **Wire Diameter:** operate the right Inc/Dec switch to select the wire diameter you intend to use. One of five diameters designations will appear in the VOLTS window; #23 for .023" dia., #30 for .030 dia., #35 for .035" dia., #45 for .045" dia., or #63 for

.063" dia. **Match the diameter number to the wire diameter being used.** (see V-A-8-b)

B. PROGRAM SCHEDULE I (RUN pos.) PARAMETERS

- To set a Wire Feed Speed parameter of 185 ipm,** set the Rotary Switch to RUN position and then raise and hold the toggle of the left Inc/Dec switch in its INCREASE position until 185 appears in the IPM window. Notice that this parameter setting will start at zero and immediately jump to 20 and then will rapidly increment (1 imp at a time) until the 185 ipm setting is reached. If you overshoot the planned setting, simply “bump” the DECREASE position of the left Inc/Dec toggle to obtain the exact IPM setting.
- To set an Arc Voltage parameter of 17.9 volts,** set the Rotary Switch to RUN position and then raise and hold the toggle of the right Inc/Dec switch in its INCREASE position until 17.9 appears in the VOLTS window. Notice that this parameter setting will start at zero and immediately jump to 12 and then will rapidly increment (1/10 volt at a time) until the 17.9 volt setting is reached. If you overshoot the planned setting, simply “bump” the DECREASE position of the right Inc/Dec toggle to obtain the exact VOLT setting.



NOTE: The remaining parameters can also be programmed into the Schedule I mode of operation; however, when preset, these parameters will automatically be programmed or shared with an Alternate Schedule set of conditions (if provided).

- To set a Spotweld time (if provided) parameter of 45 cycles,** turn the Rotary Switch to the Spot Time/Burnback Time position and then raise and hold the toggle of the “left” Inc/Dec switch in its INCREASE position until 45 cycles appears in the IPM window.

This parameter setting will start a zero and rapidly increment (1 cycle at a time) until the 45 cycle time is achieved. If you overshoot the planned setting, simply “bump” the DECREASE position of the left Inc/Dec toggle to obtain the desired Spot cycle setting.

- To set shielding gas Prewflow and Postflow time parameters of 1.2 seconds and 3.1 seconds respectively,** turn the Rotary Switch to the Prewflow/Postflow position and then raise and hold the toggle of the “left” Inc/dec switch in its INCREASE position until 1.2 seconds of Prewflow time appears in the IPM window and then; repeat this procedure using the “right” Inc/Dec switch until 3.1 seconds of Postflow time appears in the VOLTS window. Both of these parameter settings will start at zero and rapidly increment (1/10 second at a time) until the desired time is achieved. If you overshoot the planned settings, simply “bump” the DECREASE position of the respective Inc/Dec toggles to obtain the desired Prewflow and Postflow time settings.
- To set a manual Burnback time (if provided) parameter of 7 cycles,** turn the Rotary Switch to the Spot Time/Burnback position and then, raise and hold the toggle of the “right” Inc/Dec switch in its INCREASE position until 7 cycles appears in the VOLTS window. This parameter setting will start at zero and rapidly increment (1 cycle at a time) until planned setting, simply “bump” the DECREASE position of the right Inc/Dec toggle to obtain the desired Burnback cycle setting.

Remember — if a manual Burnback function is programmed, it will override the standard “automatic adaptive anti-stick” feature in either welding schedule.

- Using the torch switch,** the Schedule I parameters can be weld-tested and if necessary readjusted to provide a stable welding condition.

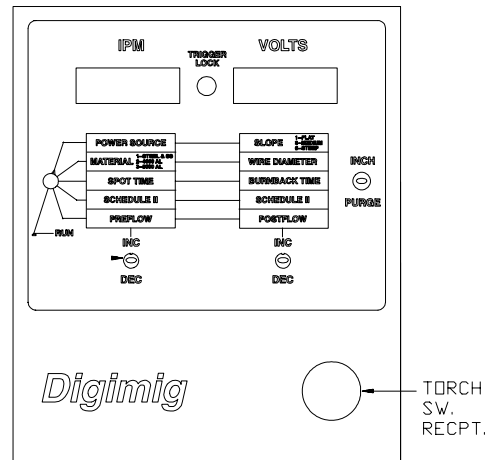
As mentioned earlier in the “NOTE” following Section V-A-9, the control is designed to provide excellent starting characteristics with the latest ESAB inverter power sources. However, arc starting can be affected by many external factors such as cable length, type of torch used (water versus gas cooled), shielding gas, condition of weldment, type of welding wire, etc. To minimize the effect of these variables, a simple adjustment will allow you to increase or decrease the initial arc striking voltage to optimize starting. The following procedure allows you to make this correction.

SETTING CONTROLLER FOR OPTIMUM STARTS.

A. Increase Starting Voltage:

- Prior to striking the arc, depress the Purge key on the right side of the feeder. This can be done in either the RUN (Sch. I) or Sch. II mode of the Rotary switch.

2. Initially, the display in both windows will show the number 100. This number has an adjustment range of 0 to 200, so that 100 is right in the middle of the range.
3. To increase the starting voltage by 1-volt, the number in the right (VOLTS) window must be increased to 105 using its Inc/Dec key.
4. To see if this adjustment is adequate, start a new weld and observe the start. If it is still not "hot" enough, increase the adjusted number until the starts are optimized.
5. The number in the left (IPM) window controls initial motor speed and, in most cases, the number 100 will work well for the whole speed range.



B. Decrease Starting Voltage.

Follow the same procedures outlined above (in A), but instead of increasing the numbers, decrease them until the starts are optimized.

Please note that if either schedule required a voltage adjustment to the present condition, you will more than likely require additional adjustments when a different condition is used.

IMPORTANT: If Trigger Lock-In is selected ("on" position) it allows the operator to release the torch switch after starting or testing the schedule I welding parameters only. In the ON position, it automatically overrides the Alternate (or Second) schedule and/or Spotweld operation if provided and programmed. To stop the Schedule I welding cycle, simply depress the torch switch again and welding action will stop. In the OFF position, the Trigger Lock-In is not functional.

7. If a second schedule of welding parameters are desired, refer to "C" following.

C. PROGRAM SCHEDULE II PARAMETERS (If desired)

To preset a second welding schedule (II) which can alternately be used with Schedule I (RUN pos.), do the following:

1. Set the Rotary Switch to its SCHEDULE II position.
2. Using the left-side Inc/Dec toggle switch, set the wire speed rate (IPM). The desired setting will appear in the IPM digital window.
3. Using the right-side Inc/Dec toggle switch, set the arc voltage requirements (VOLTS). The desired setting will appear in the VOLTS digital window.

NOTE: If a 2nd schedule is not desired, set parameters in steps 2 and 3 to zero.

4. With both Schedule I and II parameters preset, the programs are ready to be weld-tested and, if necessary, readjusted (in SET position). Both schedules are available by simply sequencing the torch switch lever on and off. **Also, see Section VI-B-6 for quality starts adjustment.**

VII. OPERATION

After the desired welding modes have been weld-tested (with control to SET position) and satisfactory results achieved, the program parameters can be "locked-in" by placing the key switch in the RUN (Lock-In) position. In the Lock-In position, and the key removed, none of the preset parameters can be changed.

CAUTION: Power source contactor becomes energized the moment the torch trigger is depressed. Arcing can occur if the wire touches a ground. Keep torch away from metal ground until welding is to begin.

A. WELDING, SCHEDULES I AND II

When the torch switch lever is first activated, the Schedule I (RUN pos.) welding parameters will be utilized. If during the first schedule welding, the torch switch lever is released and reactivated within two tenths of a second (2/10 sec.) the Digimig microprocessor will automatically switch the control to the Schedule II welding parameters. Using this simple "off-on" cycle action, the operator can easily shift back and forth between Sched. I and II as frequently as desired by sequencing the torch lever within the required time frame (2/10 sec.)

Remember, if Trigger Lock-In is actuated, it automatically overrides the alternate Schedule II and/or Spotweld functions if provided and programmed.

To stop welding (w/o trigger lock-in), simply release the torch switch lever and do not reactivate (all services will shutdown except auto-antistick or burnback and post-

flow). The system will also shutdown if the preset wire speed on arc voltage parameters cannot be maintained due to an abnormal condition. If this occurs, the parameter causing the system shutdown will be signaled by a flashing digital display. When welding has been stopped, the Digimig control will always recycle to the Schedule set on the Rotary selector switch.

To stop welding if the Trigger Lock-In feature is actuated, simply repress the torch switch lever again and all welding action will cease.

B. SPOT WELDING

As mentioned earlier, this feature is programmed in the Schedule I welding mode and its operational sequence follows.

Close the torch switch to energize gas flow, weld contractor, wire feed motor and start spot timing cycle. The torch switch must be depressed during the entire weld period. After the spotweld timing cycle is completed; all welding action, except auto-antistick or burn-back and postflow gas will stop when torch lever is released.



Do not allow metal-to-metal contact between the wire feeder chassis and a metal surface connected in any way to a welding ground. With such contact, a poor welding ground connection may create a difference in potential that sends part of the welding current through the safety ground wiring in the control cable and wire feeder, resulting in burnout of that wiring and/or damage to wire feeder circuitry. If the safety ground burns out, the operator may be exposed to 115V. shock hazard.

VIII. TROUBLESHOOTING

Listed below are a number of trouble symptoms, each followed by the checks or action suggested to determine the cause. Listing of checks and/or actions is in "most probable" order, but is not necessarily 100% exhaustive. Always follow this general rule: Do not replace a printed circuit (PC) board until you have made all the preceding checks. Always put the Power switch in "off" position before removing or installing a PC board. Take great care not to grasp or pull on components when removing a PC board. Always place p.c. boards on a "static-free" surface. If a printed circuit (PC) board is determined to be the problem, check with your supplier for a trade-in on a new PC board. Supply the distributor with the part number of the PC board as well as the serial number of the wire feeder. Do not attempt to repair the PC board or any other component yourself. Warranty

on a PC board or control will be null and void if repaired by customer or an unauthorized repair shop.

A. General

1. Check interconnection between digimig control and power source. Make sure that the contractor and voltage control switches are placed in the Remote position.
2. Energize the power source and the control.
3. Immediately after the control is turned "on", a number will appear in the IPM and VOLTS readout window and will only be displayed for 1-second. This number identifies the current program (E-Proms) used in your control. When a Program is changed, the new E-Proms will automatically identify the new program number being used. If a revision is made to an existing program a number .1, .2, .3, etc. indicating the numerical revision will also appear in the VOLTS readout window simultaneously. Then, the Power Source and Slope settings will flash for 3 seconds.
4. After the four (4) second delay; the preset "Weld" parameters will be displayed in the IPM and VOLTS windows.
5. If the control is not functioning properly (or as described above); for example, the number that appear in one or both of the display windows are meaningless (all zones, eights, decimals, etc.) or are completely incorrect in relation to your settings, — the memory must be cleared. This condition might occur after a bad lightning storm, extremely bad power line surges, etc. To clear the memory, do the following:
 - a. Place the Run-Set key switch in its SET position.
 - b. Turn "off" the unit's 110-volt Power switch.
 - c. Using one hand, hold both of the Inc/Dec toggle switches in their INC position while reapplying 110-volt power with the other hand.
 - d. Almost immediately after the Power has been turned "On" release the Inc/Dec toggle switches to the neutral (spring- return center) position and each of the windows should display one zero, indicating a successful reset or clearing has taken place.
6. You can now enter the desired information as described in this booklet.

B. No preset displays appear in windows.

1. Make sure the LED Display board harness/plug is plugged into the P5 receptacle on the MPU board.
2. Check that 110 vac is available across terminals T1-18 and T1-19, if present;
3. Check for plus (+) 5 volts between terminals T1-11 and T1-12; if voltage is present, replace the MPU board. If voltage is not present, check the voltage regulator (VR). The voltage regulator is located on the rear panel of the control box.
4. Check the input and output voltage of the regulator "VR":

- a. The input should be approx. 11 volts between VR-1 and T1-12. If voltage is not present, replace I/O board.
- b. The output should be 5 volts between terminals T1-11 and T1-12. If voltage is not present, replace VR, voltage regulator.

C. Preset display is provided, but cannot be varied.

1. Check normal setup procedures described in Section VI, then;
2. Make sure the key wiring harness plug is properly connected to receptacle P6 on the MPU board, and the lock-in key switch is placed in its SET position.
3. If neither of the above resolve the problem, replace the MPU board.

D. Motor Does not run.

1. Check to make sure all required (and/or optional) accessories are correctly assembled as described in Section IV.
2. Make sure that power source is connected, plug P2 is securely connected to receptacle P2 on the Digimig's I/O Board, and then release clapper arm (pressure roll) on the Accessory Support Assembly.
 - a. Operate the Digimig INCH switch. If motor does not run; replace the "J" governor board, and if it still does not run, replace I/O and MPU boards respectively.
 - b. If the motor inches, but does not run when the torch switch is operated (energized), check the torch switch circuit components —switch, plug, receptacle, etc. If motor still does not run, check if power source is providing open-circuit voltage to the Digimig — if o.c.v. is not being supplied, motor will not run. Check the power source for trouble.
 - c. Also check that the +/- 12 vdc are provided from the power source on T1-10 and T1-8 respectively, T1-9 is common.
 - d. If power source is OK, replace the I/O and MPU boards respectively.

E. Motor runs, but not at right speed.

1. Check tachometer assembly mounted on the end of EH-10 wire feed motor.
2. Make sure the tach disc is securely fastened to the motor shaft and that the strobe markings are not scratched. Check that the disc is properly centered in the strobe pickup on the p.c. board.
3. If all items in step 2 are in order, and motor speed is still incorrect, replace MPU board.

F. Arc VOLTS display reads zero after TS is operated.

1. Check that the 5-pin plug is securely connected to the P3 receptacle on the MPU board.
2. If no reading is displayed, check for arc voltage feedback between terminals TP1 and TP2 test points on the I/O p.c. board (see Fig. 4B). This voltage

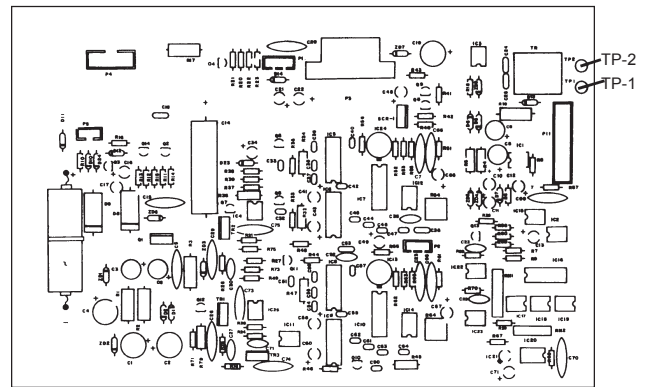


Fig. 4B - Input/Output (I/O) P.C. Board

signal should correspond to that shown on the power source voltmeter.

3. If voltage still reads zero, trace the voltage pickup wiring from the power source to digimig.
4. Remove the J-Gov p.c. board to gain access to the P3 plug (harness) on the MPU p.c. board. Disconnect the P3 plug from its MPU board socket and, using a meter check for +/-12 volt power supply output between plug pins P3-1 and P3-2 (for +12v.), and between plug pins P3-4 and P3-2 (for -12v.) respectively. If voltage is present, replace the MPU board.

G. Control Shut Down—either preset VOLTS or IPM displays will flash. The control will flash the parameter, VOLTS or IPM, that cannot be maintained.

If this condition occurs, the respective speed and voltage conditions (servos) need to be checked for each schedule and, if necessary, readjusted as follows:

1. This symptom can occur as a result of the either or all of the following; the factory-set Speed and Voltage (servo) adjustments are incorrect and the conditions "set" may not be maintainable. To check and, if necessary, readjust the servo—proceed as follows.

NOTE: Prior to checking the servos, make sure the Digimig is connected to a suitable power supply in order to obtain the necessary o.c.v. (open circuit voltage); otherwise, the motor will not run.

2. The factory-set Speed and Voltage (servos) adjustment in this control are simultaneously checked and displayed by actuating and holding the front-panel Purge (Reset) key position **during an actual weld with the wire feed motor running**. The speed servo number is displayed in left (IPM) window and should be about 110, and the right (VOLTS) window will display the voltage servo number. This number will be between 90 and 100* for the actual welding condition. Voltage servo setting below 95 will normally provide hot arc starts; whereas, setting over 100 will not.

3. If a Speed abort had occurred (IPM window flashing), check and/or adjust the speed (servo) as follows:

Open the pressure roll clapper (so as not to feed wire), actuate the Purge (Reset) switch position, and close the torch switch lever. Check the number in the IPM window — it may appear unsteady but readable and should be about 110.

If it is higher or lower, use the Inc./Dec toggle (below the IPM window) to adjust the number to 110—while “holding” the Purge (Reset) key as mentioned above and **while the wire feed motor is running**.

If the speed servo cannot be adjusted at all, the problem may be in the J-Governor, and/or I/O, and/or MPU p.c. boards which must be replaced as required.

4. If a Voltage abort had occurred (VOLTS window flashing), check and/or adjust the voltage (servo) as follows:

This is a two-man operation. Set a welding condition which closely corresponds to your welding application and the proper speed (ipm) for a given wire size and then — **close the torch switch and strike a welding arc**. While welding, actuate the Purge (Reset) switch position and read the number displayed in the VOLTS window, it may appear unsteady but readable and should be 95.

If the number is not in the 90-100 range, use the Inc./Dec toggle (below the VOLTS window) to adjust the number to 95 — while “holding” the toggle positions mentioned above **and while welding**.

5. If the voltage servo cannot be adjusted, check for proper operation of the power supply as follows:
 - a. Set the Digimig voltage display to zero (this setting will override the servo).
 - b. Place the Panel/Remote switch on the power source in PANEL position.
 - c. Make a weld by controlling the arc voltage directly from the power source potentiometer.
 - d. If a weld can be made with good control over power source voltage; a problem exists either in the interconnecting voltage control cable, or in the Digimig control.
 - e. Check the control wires in the interconnecting voltage control cable for continuity between the appropriate terminals in the power source and digimig using the schematic diagrams.
 - f. If continuity is correct, replace the I/O board and/or the MPU board.

IX. MAINTENANCE

If the equipment does not operate properly, stop work immediately and investigate the cause of the malfunction.

Maintenance work must be performed by an experienced person, and electrical work by a trained electrician. Do not permit untrained persons to inspect, clean, or repair this equipment. Use only recommended replacement parts.

A. GENERAL MAINTENANCE

Little maintenance is required to keep the wire feeder in top operating condition. It is important, however, that moving parts such as feed and pressure rolls, wire feed motor, etc., be kept clean and free of dust or dirt. Cleaning is best accomplished by regularly blowing off these parts with dry compressed air. This should be done once for every eight hours of operating time, more often if necessary.

B. LUBRICATION OF DIGITAL MOTOR-GEAR UNIT

The EH-10A motor-gear digital unit is lubricated with a heavy duty grease when assembled at the factory and should not require further lubrication unless disassembled. If disassembled relubricate with Texaco Multifak grease.

C. CHECK OR REPLACEMENT OF MOTOR BRUSHES

Motor brushes should be checked periodically. If a brush is broken, or worn down to less than 3/8-in. length, it must be replaced. Brushes can be inspected by unscrewing the brush-holder plug and withdrawing the brush assembly. Never remove a brush without matchmarking it and its holder, so that it can be replaced in the same holder in its original position.

D. REMOVAL OF EH-10A DIGITAL WELDING HEAD

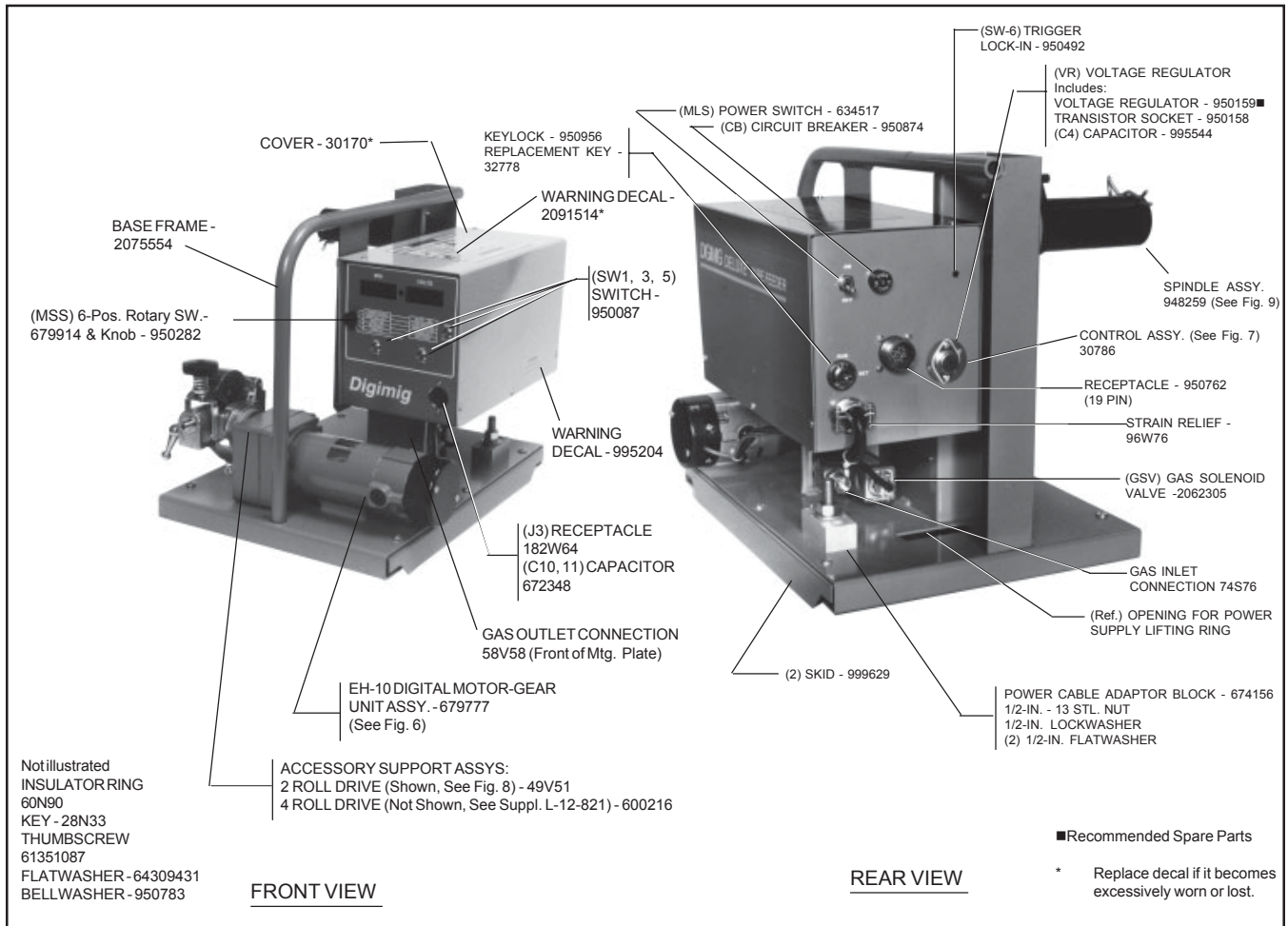
1. Unplug the control cable from the rear panel of the wire feeder control.
2. Remove the accessory support assembly from the motorgear unit by loosening the capscrew at the bottom of the assembly.
3. Disconnect the motor and tachometer cables from terminal board (T1) inside the control assembly as shown on the wiring diagram Fig. 12.
4. Remove the four screws which secure the digital motorgear unit to the base and remove the digital unit.

E. ADDITIONAL DIGIMIG PROGRAM FEATURES

The Digimig's MPU board contains an integral 4-rocker “dip” switch (SW1) that is factory-set to the following positions: Rocker #1, # 2, 3, 4 are all OPEN. The microprocessor technology utilized by the Digimig control is extremely versatile and can be modified for specific purposes by ESAB's engineering services group. To add specific features or programs to your unit, consult your ESAB representative. If additional optional features are provided, the SW1 rocker positions may need to be repositioned — and this information will be conveyed in the appropriate instruction booklets provided with the option kits.

X. REPLACEMENT PARTS DATA

1. All replacement parts are keyed on the illustrations which follow. Order replacement parts by part number and part name, as shown on illustrations. **DO NOT ORDER BY PART NUMBER ALONE.**
2. Always state the series or serial number of the machine on which the parts are to be used. The serial number is stamped on the unit nameplate.



**Fig. 5 - DIGIMIG Wire Feeder w/2-Roll Drive, P/N 30784
DIGIMIG Wire Feeder w/4-Roll Drive (Not illustrated), P/N 30785**

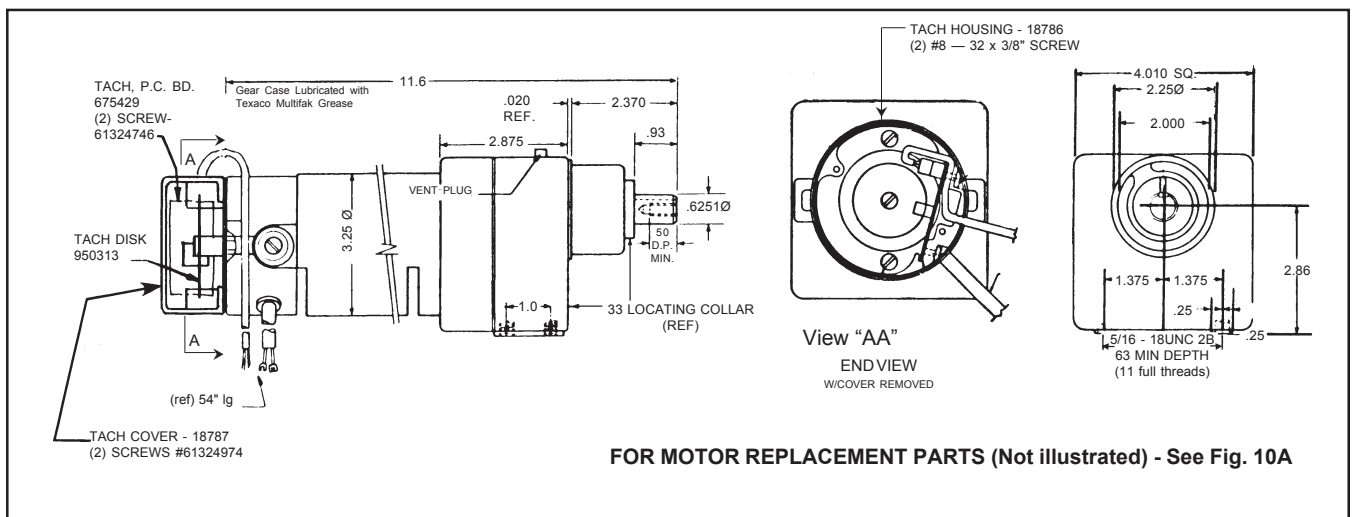


Fig. 6 - Digital Motor-Gear Unit Assembly (40:1), P/N 679777

For 4.5 volt. Type 531 Replacement Battery (on I/O Bd.). Order P/N 951733

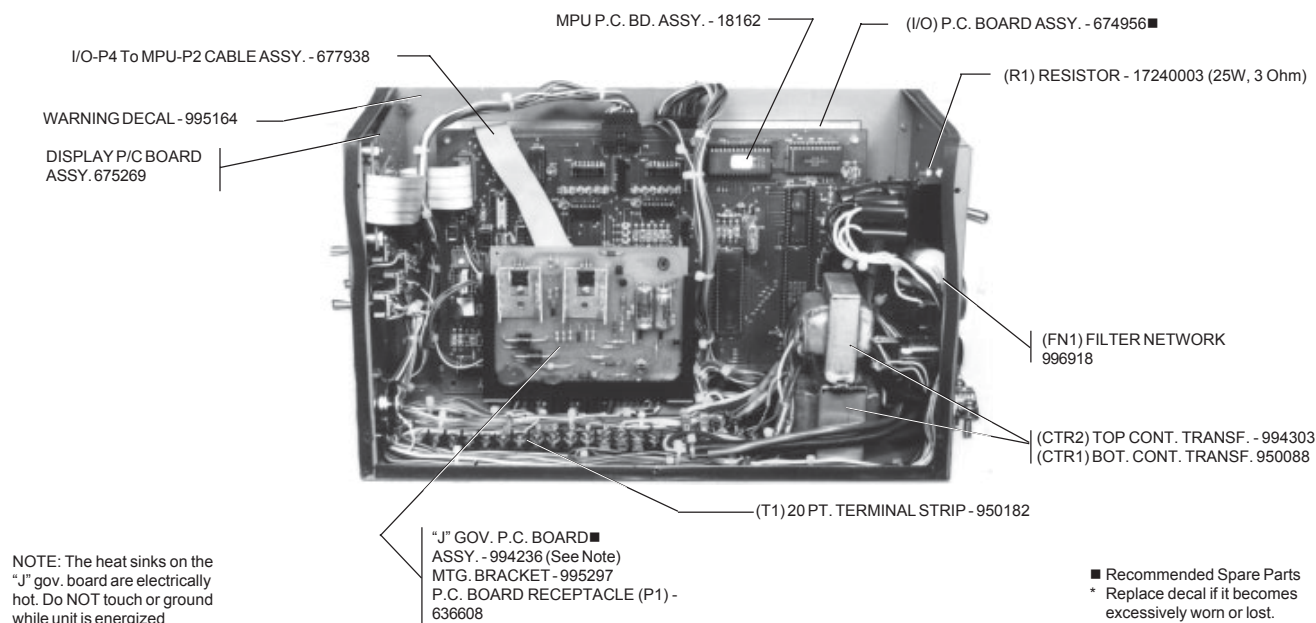


Fig. 7 - DIGIMIG Control Assembly, P/N 30786

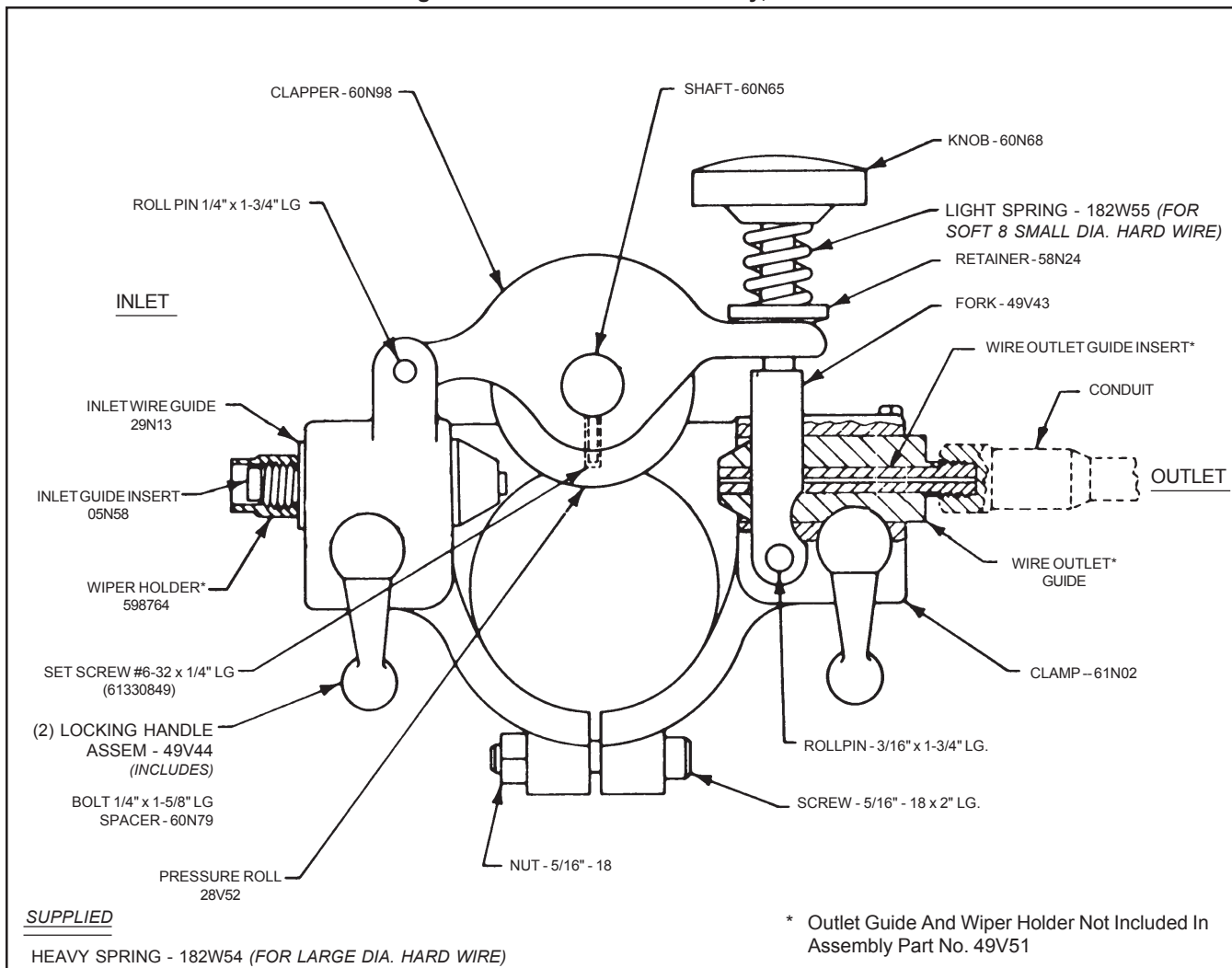
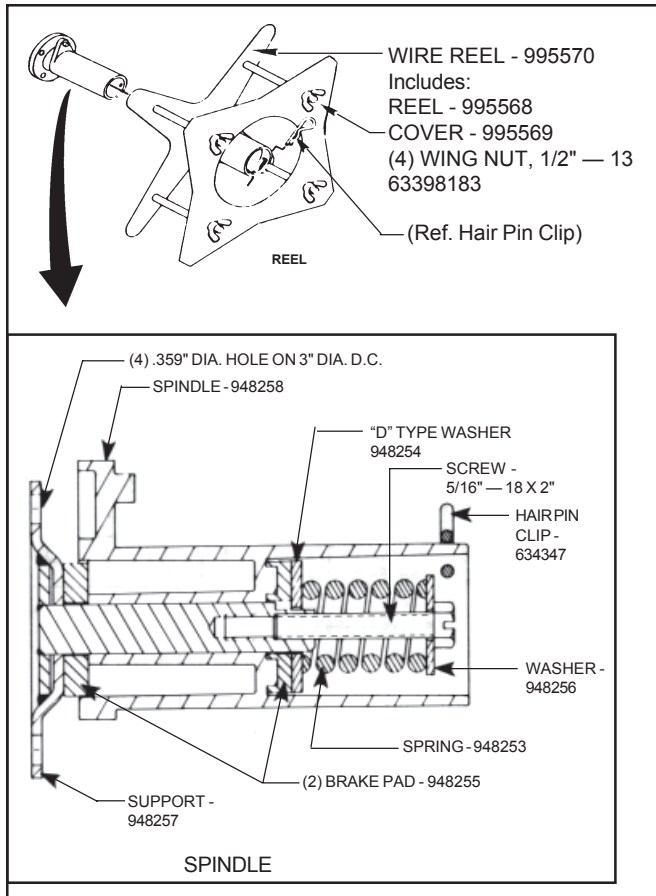


Fig. 8 - Accessory Support Assembly, P/N 49V51



**Fig. 9 - Spindle Assembly, P/N 948259
Optional Wire Reel, P/N 995580**

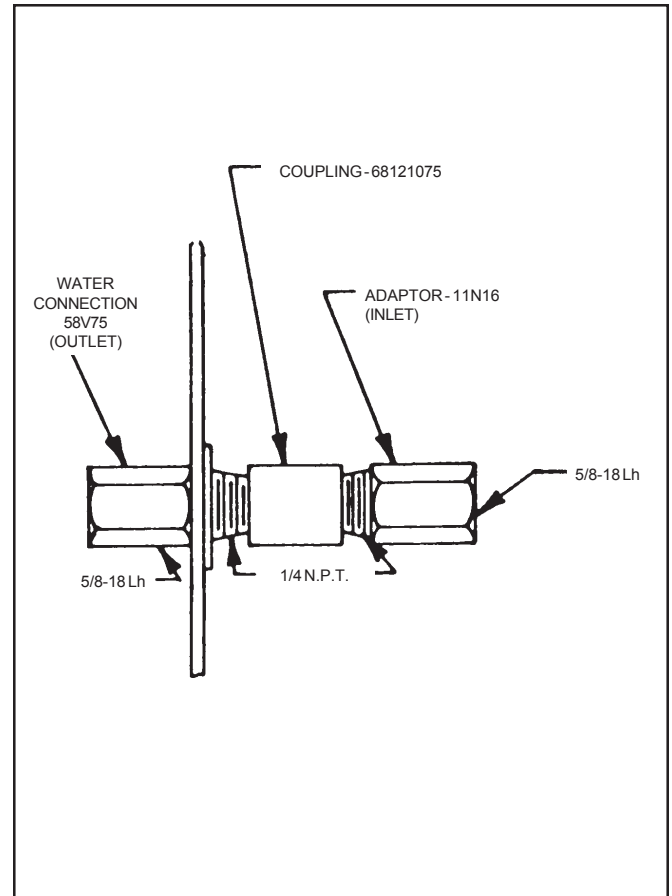


Fig. 10 - Water Kit, P/N 994466

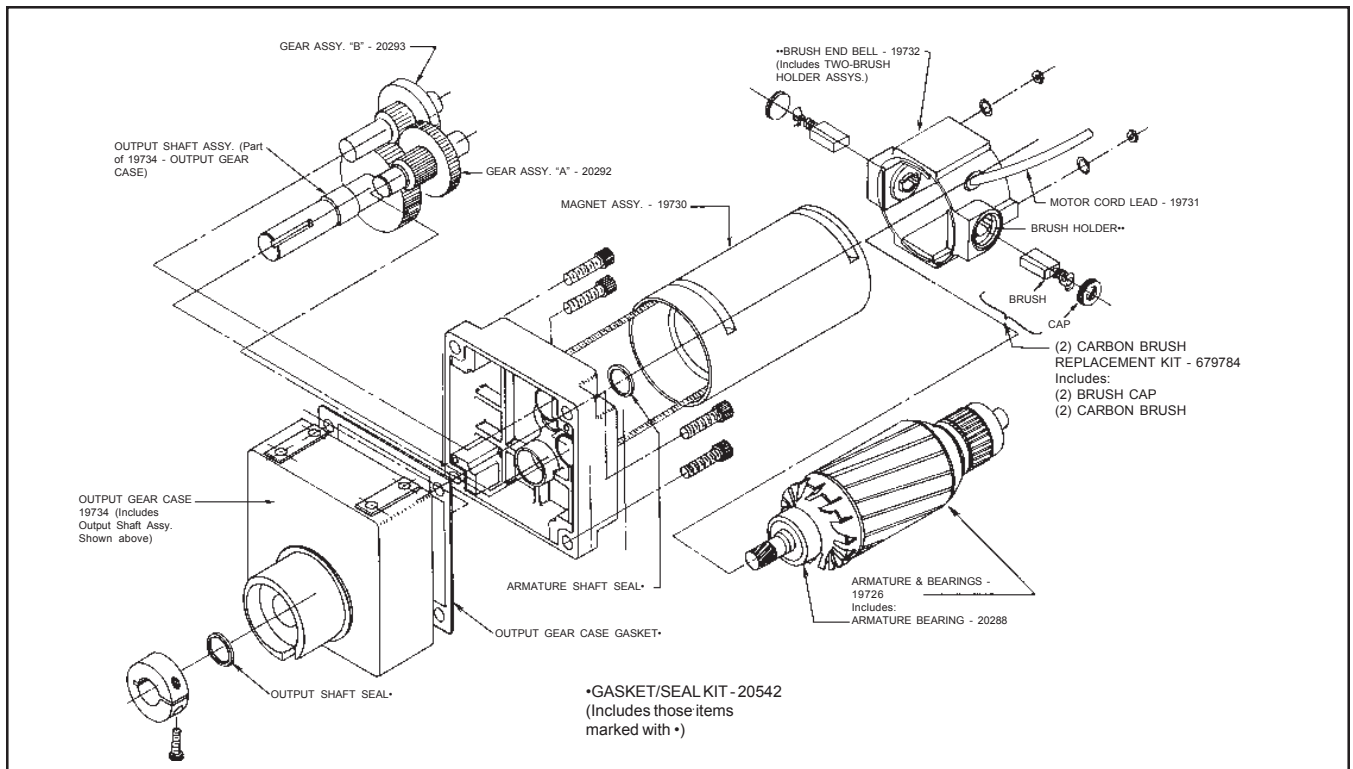


Fig. 10A, EH-10A Motor-Gear Unit Parts Breakdown

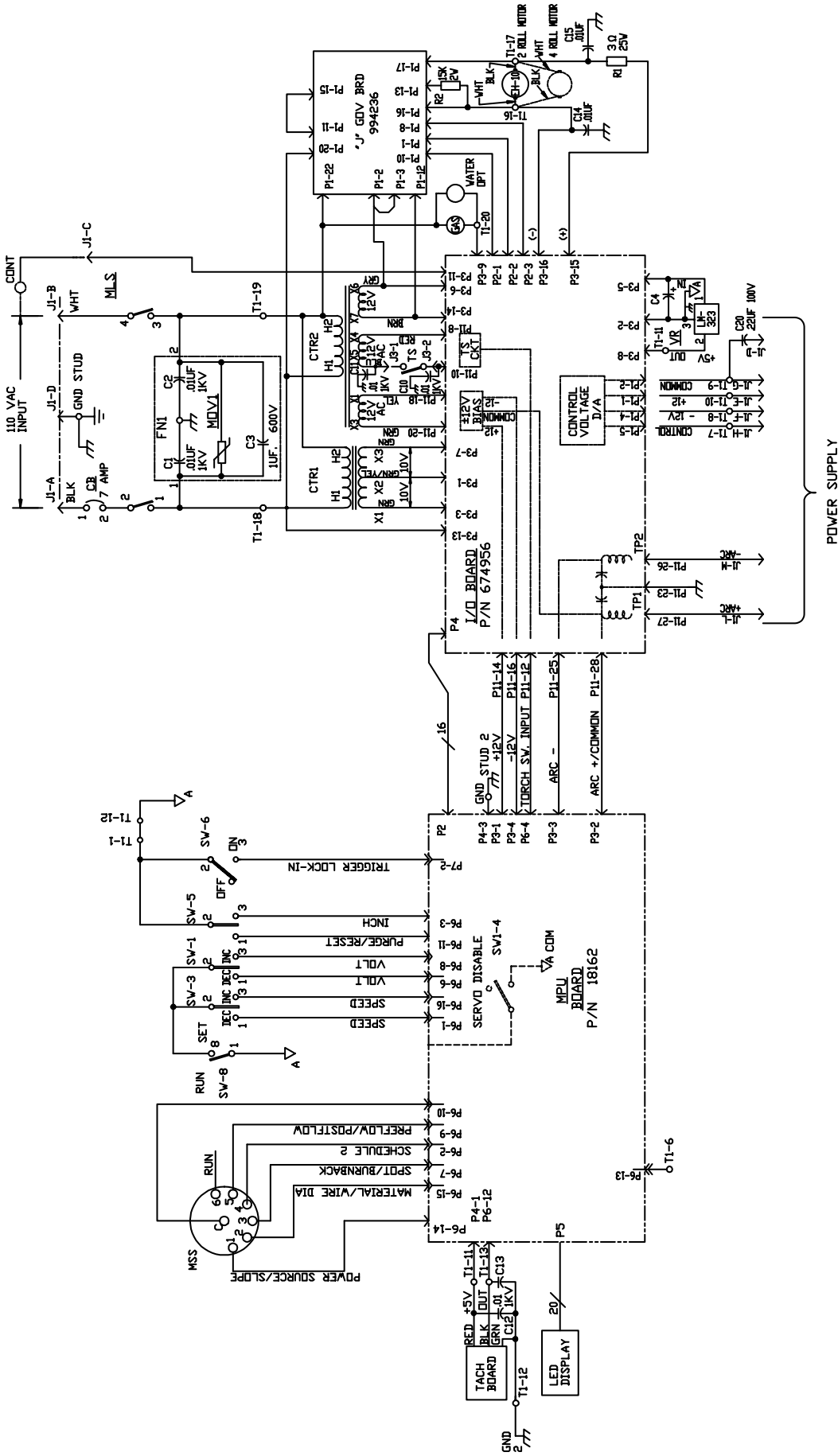


Fig. 11 - Schematic Diagram - DIGIMIG Wire Feeder

