WD180
WELDER

Safety, Operation and Maintenance Manual

STANLEY

helps you do things right

19518 U.S.A. 10/90

SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing maintenance or repairs.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 4.

GENERAL SAFETY PRECAUTIONS

The WD180 Welder will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the welder before operation. Failure to do so could result in personal injury or equipment damage.

- Establish a training program for all operators to ensure safe operation.
- Do not operate the tool unless thoroughly trained or under the supervision of an instructor.
- Never use tools near energized transmission lines. Know the location of buried or covered services before starting your work.
- Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Always connect hoses to the tool hose couplers before energizing the hydraulic power source. Be sure all hose connections are tight.
- Stay clear of all moving parts.
- System pressure hose must always be connected to the tool "IN" or "P" port and system return hose must be connected to the tool "OUT" or "T" port. Reversing connections or reversing flow to the tool can result in severe personal injury.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

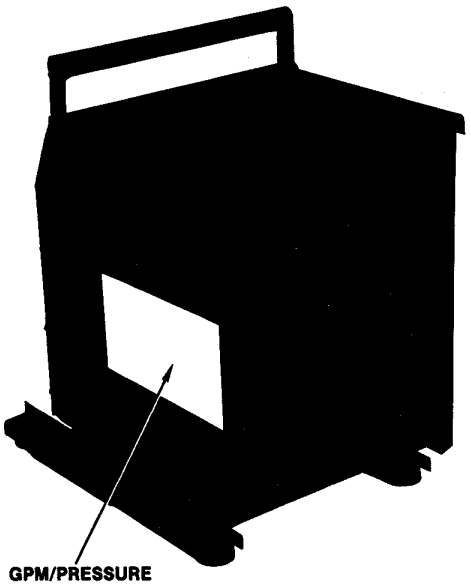
ARC WELDING SAFETY PRECAUTIONS

- Do not operate the welder without proper eye and head protection.
- Make certain all bystanders are wearing proper eye protection or make certain they are clear of the area.
- Always use a welding helmet or shield with a filter plate shaded No. 12 or darker. The filter must be covered with a clear protective plate.
- Do not use a damaged helmet or one with a cracked, loose or broken filter or protective plate.
- Always wear protective clothing suitable to the application of the welder. These include gauntlet style leather gloves, chaps, leggings, jackets, sleeves or fire resistant aprons.
- Always use the welder in an area with adequate ventilation. Breathing welding fumes can cause illness, serious injury or death.
- Properly ventilate the area or wear an air-supplied respirator.
- Remove all coatings from metal to be welded. Many coatings will emit toxic fumes when burned and may cause serious injury or death.
- Use all necessary precautions when working with lead, cadmium, zinc, mercury, or beryllium.
- Never weld in an area containing flammable dust, gas or liquid vapor.
- Always work at least 35 ft/9 m from combustible/flammable material. Sparks and slag can be ejected up to 35 ft/9 m and cause fire or explosions.
- Cover all combustible or flammable material with fire resistant covers or shield if they are within 35 ft/9 m of the welder.
- Other personnel with fire extinguishers should stand by during and after all welding within 35 ft/9 m of combustible or flammable material.
- Do not sit, lie on, stand on, or touch any wet surface when welding. Stay on dry wood or a rubber mat when dampness or perspiration cannot be avoided.
- Do not ground the welder to an electric conduit or a pipe carrying flammable liquids or gas. Always make certain conductors are contacting bare metal.
- Do not use electrode holders with protruding screws. Always use electrode holders that are fully insulated.
- Always join welding cables using fully insulated lock-type connectors.
- Inspect cables frequently for cracks, abrasion damage and split conductors. Replace all damaged conductors, connectors or electrodes immediately. Keep cables clean, dry and away from sparks and hot slag.

TOOL STICKERS AND TAGS

The safety related stickers and tags attached to the welder prior to shipment from the factory are shown below. The pressure and flow rates specified must never be exceeded. All stickers and tags must be read and understood prior to operation of the tool.

The information listed on stickers and tags must be legible at all times. Always replace stickers that have become worn or damaged. Replacements are available from your local Stanley distributor.



GPM/PRESSURE STICKER

MAX FLOW 15 GPM

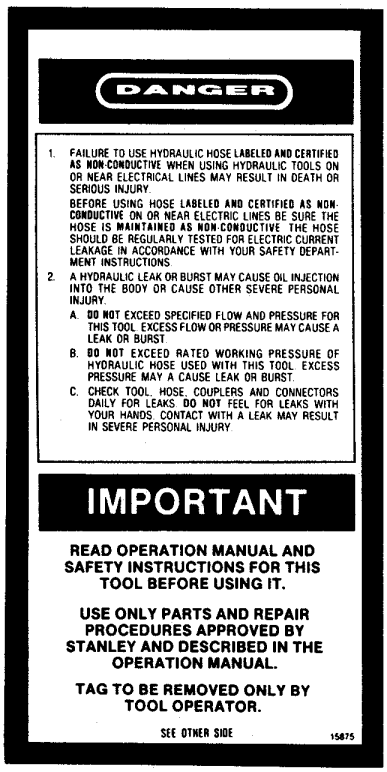
INSTRUCTIONS: Connect the hydraulic lines of the welder to the power supply.
Open flow valve slowly until the voltage indicator needle is in the operating range.
The welder will not operate if the hydraulic lines are reversed.
CAUTION: Do not exceed the maximum flow as overspeeding may occur, damaging the motor.

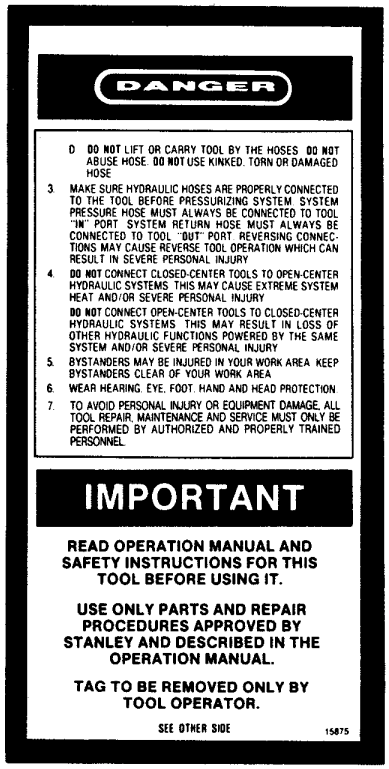
WELDING ROD	CURRENT AMPERAGE
1/16	10-40
5/64	25-60
3/32	30-80
1/8	80-135
5/32	125-180

OPEN CIRCUIT	70V
OUTPUT AMPS	180
DUTY CYCLE	100%
FLOW RATE	11-13 GPM
PRESSURE	1500-2000 PSI
MAX. BACK PRES.	250 PSI

GPM/PRESSURE STICKER

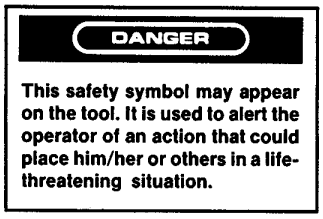
The safety tag at the right is attached to the welder when shipped from the factory. Read and understand the safety instructions listed on this tag before removal. We suggest you retain this tag and attach it to the welder when not in use.

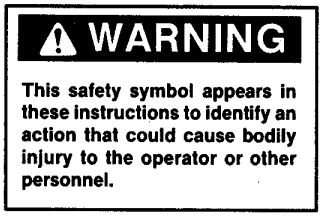


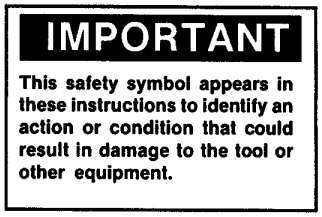


SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions that, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.







Always observe safety symbols,they are included for your safety and for the protection of the tool.

LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

EQUIPMENT PROTECTION AND CARE

IMPORTANT

In addition to the Safety Precautions on pages 1 thru 4 of this manual, observe the following for equipment protection and care.

- Always store the welder in a clean, dry space, safe from damage or pilferage.
- Always keep critical tool markings, such as labels and warning stickers legible.
- Always replace hoses, couplings and other parts with replacement parts recommended by Stanley Hydraulic Tools. Supply hoses must have a minimum working pressure rating of 2500 psi/175 bar. All hoses must have a fluid resistant inner surface and an abrasive resistant outer surface.
- Tool repair should be performed by experienced personnel only.
- Make sure all couplers are wiped clean before connection.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling hydraulic tools. Failure to do so might result in damage to the quick disconnect couplers and cause overheating of the hydraulic system.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

Hydraulic hose types authorized for use with Stanley Hydraulic Tools are as follows:

1. Labeled and certified non-conductive
2. Wire braided (conductive)
3. Fabric braided (not certified and labeled non-conductive)

Hose 1 listed above is the only hose authorized for use near electrical conductors.

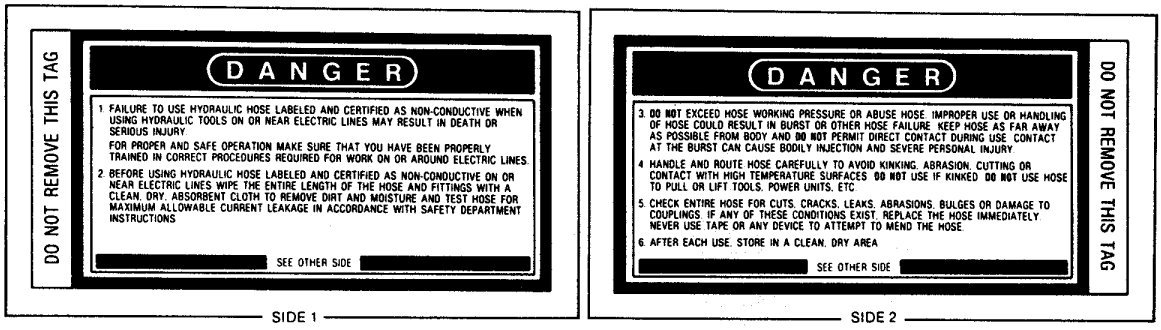
Hoses 2 and 3 listed above are **conductive** and **must never** be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hoses purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag may be obtained at no charge from your Stanley distributor.

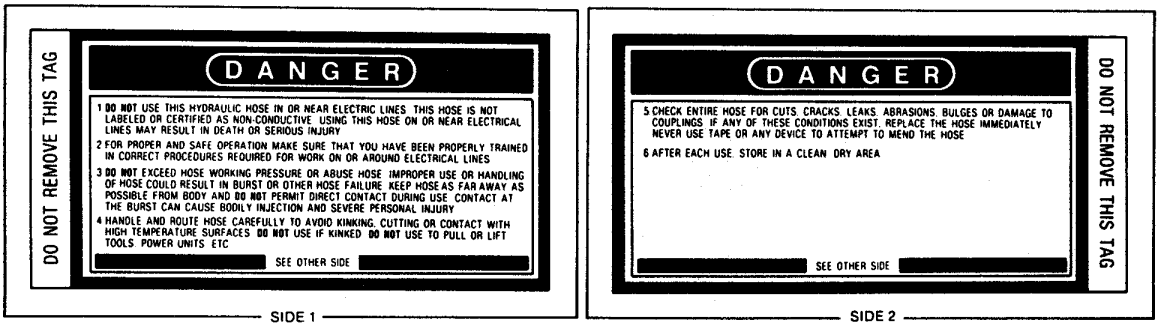
1 CERTIFIED NON-CONDUCTIVE HOSE

This tag is attached to all certified **non-conductive** hose.



2 AND 3 WIRE-BRAIDED AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE HOSE)

This tag is attached to all **conductive** hose.



HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose **must be equal to or higher than** the relief valve setting on the hydraulic system used to power the welder.

HYDRAULIC SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 12 gpm/45 lpm at an operating pressure of 2000 psi/140 bar. Recommended relief valve setting is 2100-2250 psi/145-155 bar.

- The system should have no more than 250 psi/17 bar backpressure, measured at the tool end of the operating hose. The system conditions for measurement are at maximum fluid viscosity of 400 ssu/82 centistokes (minimum operating temperatures).

- The hydraulic system should have sufficient heat rejection capacity to limit the maximum fluid temperature to 140° F/60° C at the maximum expected ambient temperature. The recommended minimum cooling capacity is 7 hp/5.22 kW at a 40° F/22° C difference between ambient temperature and fluid temperature.

- The hydraulic system should have a minimum of 25 micron filtration. It is recommended that filter elements be sized for a flow of at least 30 gpm/114 lpm for cold temperature startup and maximum dirt holding capacity.

- The hydraulic fluid used should have a viscosity between 100 and 400 ssu/20 and 82 centistokes at the maximum and minimum expected operating temperatures. Hydraulic fluids of petroleum base with antiwear and non-conductive properties and viscosity indexes over 140 will meet the recommended requirements over a wide range of operating temperatures.

- The recommended hose size is 0.625 inch/16 mm I.D. up to 50 ft/15 m long and 0.750 inch 20 mm I.D. minimum up to 100 ft/30 m long.

GENERAL INFORMATION

WELDING CABLE LUGS

Two brass welding lugs are included with the WD180. Strip insulation from the cable approximately 1/2 inch/13 mm from the end. Insert the cable into the lug and crimp firmly.

OUTPUT CONTROL

The WD180 provides current control (60-180 AMP) by using the faceplate mounted knob. At the recommended input flow of 12 gpm/45 lpm the nominal output will be as shown on the dial. Lower than indicated current will be produced at lower flow rates.

WELDING ROD SIZES AND AMPERAGE SETTINGS

TYPE	3/32 INCH	1/8 INCH	5/32 INCH
6011	50-70 AMP	85-125 AMP	130-160 AMP
6012	50-90 AMP	75-130 AMP	120-200 AMP
6013	40-85 AMP	70-120 AMP	130-160 AMP
7014	70-90 AMP	120-145 AMP	140-210 AMP
7016	*	80-130 AMP	120-170 AMP
7018	80-110 AMP	90-150 AMP	110-230 AMP

* - Not applicable

TIG WELDING

Tungsten Inert Gas (TIG) welding can be accomplished using the WD180 as the power source. TIG torches are readily available and are excellent for welding stainless steel, carbon and low alloy steel. An important characteristic of TIG welding is its ability to weld very thin sheets of material. Low amperage settings and in some cases an external resistor allow the user to quickly repair tanks, stainless steel containers and other lightweight materials.

OPERATING INSTRUCTIONS

CHECK THE POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, make sure the hydraulic power source develops a flow of 12 gpm/45 lpm at 2000 psi/140 bar.

2. Make certain the hydraulic power source is equipped with a relief valve set to open at 2100-2250 psi/145-155 bar.

CONNECTING HOSES

1. Wipe all hose couplers with a clean lint-free cloth before making connections.

2. Connect the hoses from the hydraulic power source to the tool fittings or quick disconnects. It is a good practice to connect return hoses first and disconnect them last to minimize or avoid trapped pressure within the tool.

3. If hose couplers are used, observe the arrow on the coupler to ensure that the flow is in the proper direction. The female coupler on the tool hose is the inlet (pressure) coupler.

4. Move the hydraulic circuit control valve to the "ON" position to operate the tool.

Note: If uncoupled hoses are left in the sun, pressure increase inside the hoses might make them difficult to connect. When possible, connect the free ends of the operating hoses together.

TOOL OPERATION

1. Observe all safety precautions.

2. Turn the hydraulic power source control lever to "ON".

3. Make certain the ground cable is attached to a good ground.

4. Insert the correct welding rod for the job. Adjust the amperage output to the desired level.

COLD WEATHER OPERATION

If the welder is to be used during cold weather, preheat the hydraulic fluid at low engine speed. When using the normally recommended fluids, fluid temperature should be at or above 50° F 10° C (400 ssu/82 centistokes) before use.

Damage to the hydraulic system or welder can result from use with fluid that is too viscous or thick.

SERVICE INSTRUCTIONS

Good maintenance practices will keep the welder on the job and increase its service life.

A very important maintenance practice is to keep the hydraulic fluid clean at all times. Contaminated fluid causes rapid wear and/or failure of internal parts.

Follow the procedures contained in the HYDRAULIC SYSTEM REQUIREMENTS section of this manual to ensure peak performance from the tool.

Never disassemble the welder unless proper troubleshooting procedures have isolated the problem to an internal part. Then, only disassemble it to the extent necessary to replace the defective part.

ELECTRICAL SYSTEM

Note: If a symptom other than belt tension/-failure, blown fuses, alternator brush wear, internal excitation failure or low output (as a result of inadequate flow or pressure) occurs, repairs should be done by a qualified technician only.

REMOVING SHROUDS AND SCREEN

⚠ WARNING

Replace the screen and shroud before attaching the welder to the power source. Contact with rotating or moving parts could cause serious injury.

1. Remove the four slotted-head screws securing the top shroud. Lift off the shroud.

2. Remove five slotted-head screws (on each side) securing the left and right shrouds to the welder.

Note: The left and right shrouds help support the front control panel. Use caution when handling the welder with the shrouds removed to prevent damage to the front panel and its components.

3. Remove two hex-head capscrews securing the handle/screen assembly.

4. Remove the ten hex-head capscrews securing the handle/screen. Remove the handle/screen assembly.

BELT TENSION CHECK AND ADJUSTMENT

Note: Belt alignment is preset at the factory and cannot be adjusted.

1. Refer to REMOVING SHROUDS AND SCREEN instructions. To adjust belt tension, remove the top shroud and handle/screen assembly only.

2. Check the belts for tightness. The belts should deflect no more than 1/4 inch/6 mm when pressed in the center of the belts (between the pulleys). Make certain the belts are not over-tightened also.

3. Loosen the two hex-head capscrews and nuts securing the alternator to the alternator mounting panel. See exploded view illustration at the back of this manual.

4. To increase belt tension, turn the hex-head capscrew (3) in a clockwise direction. To loosen belt tension, turn the capscrew counter-clockwise.

5. Securely tighten the capscrews and nuts securing the alternator to the alternator mounting panel.

6. Replace the shroud and handle/screen assembly. Securely tighten the slotted-head screws securing the handle/screen assembly and shroud components to the top of the welder mainframe.

BELT REPLACEMENT

Note: Use belts of the same specifications as those originally supplied with the welder.

1. Refer to REMOVING SHROUDS AND SCREEN instructions. Remove only the top shroud and handle/screen assembly.

2. Loosen the two capscrews and nuts securing the altenator to the alternator mounting panel. See exploded view illustration at the back of this manual.

3. To loosen belt tension, turn capscrew (3) in a counterclockwise direction. Remove defective belts.

4. Replace belts and adjust tension as described in BELT TENSION ADJUSTMENT instructions.

5. Install the handle/screen assembly and the top shroud.

6. Tighten all fasteners securely.

WELDER EXCITATION

The WD180 excitation circuit can be activated either internally or externally. Excitation is usually only required after long-term storage of the welder.

INTERNAL EXCITATION

1. Press the red INTERNAL EXCITATION button on the front panel.

EXTERNAL EXCITATION

Note: External excitation will be required if the internal 9 VDC battery has failed. Refer to BATTERY REPLACEMENT instructions.

1. Using a 9-12 VDC battery and two jumper wires, connect the positive (+) terminal of the battery to the EXTERNAL EXCITATION spade connector located on the front panel. Attach the negative (-) terminal of the battery to a good ground on the welder.

BATTERY REPLACEMENT

1. Remove four slotted-head screws securing the top shroud. Lift off the shroud.

2. The battery holder is located behind the front panel, above and to the right of the voltmeter.

3. Remove two slotted head screws securing the battery holder to the front panel.

4. Replace the 9 VDC battery. Check all connections for tightness and remove any corrosion.

5. Replace battery holder and install top shroud.

ALTERNATOR BRUSH REPLACEMENT

1. Remove the top, left- and right-hand shrouds. Refer to REMOVING SHROUDS AND SCREEN instructions.

2. Remove three slotted head screws securing the upper-half of the control panel.

3. Carefully pull the front panel forward. Use wire to support the front panel when removed.

4. Remove two slotted-head screws securing the brush holder assembly to the rear of the alternator housing. Lift out the brush holder assembly.

Note: The brush holder assembly must be replaced as an assembly. Do not replace individual brushes.

5. Disconnect the white wire and orange wire from their respective terminals on circuit board TB1.

6. Install new brush holder assembly and secure using two slotted-head screws.

7. Attach the white and orange wires to circuit board TB1.

8. Install the upper front panel using three slotted-head screws.

9. Install the left, right and top shrouds. Install the screen.

FUSE REPLACEMENT

Note: If fuses blow within a short time after replacement, the welder shoud be inspected by a qualified electrical technician to determine the cause.

The welder uses four fuses for protection of its various circuits. One fuse (MDA 20A) is located on the front panel within a "twist and pull" fuse holder.

Three fuses (AGC 20A) are located on the back side of the front panel, inside the shrouding. For shroud removal, refer to REMOVING SHROUDS AND SCREEN instructions. It is only necessary to remove the top and right hand shrouds (as viewed from the front panel) for access to the internal fuse holder.

TROUBLESHOOTING

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation of the welder, make sure the hydraulic power source is supplying the correct hydraulic flow and pressure to the welder as listed in the table. Use a flowmeter known to be accurate. Check the flow with the hydraulic fluid temperature at least 80°F/27°C.

PROBLEM	CAUSE	REMEDY
Welder does not run.	Power unit not functioning.	Check power unit for proper flow and pressure (12 gpm/45 lpm, 2000 psi/140 bar).
	V-belts loose or broken.	Adjust or replace V-belt.
V-belts melted.	V-belts slipping.	Adjust belt tension.
V-belts broken.	V-belts too tight.	Adjust belt tension.
Low or no electrical output.	Inadequate power source.	Check power source for proper flow and pressure (12 gpm/45 lpm at 2000 psi/140 bar).
	Excitation circuit failure.	Check 9 VDC battery (Refer to BATTERY REPLACEMENT in this manual).
	Control circuit failure.	Refer to SERVICE INSTRUCTIONS.
	Welder circuit failure.	Refer to SERVICE INSTRUCTIONS.
	Accessory circuit failure.	Refer to SERVICE INSTRUCTIONS.
	V-belts slipping.	Tighten V-belts (Refer to BELT TENSION ADJUSTMENT in this manual).
	Excessive alternator brush wear.	Replace brushes (Refer to ALTERNATOR BRUSH REPLACEMENT in this manual).
Arc goes out easily.	Low GPM and/or pressure.	Check to verify that full rated flow is supplied to welder when welding. Adjust input flow and/or relief valve as required.
	No arc stabilizer.	Add arc stabilizer kit to welder. S/N 401188.

SPECIFICATIONS

Output	60-180 AMP 120 VDC x 20 amp
Weight	70 lbs/32 kg
Pressure Range	2000 psi/140 bar
Flow Range	11-13 gpm/42-49 lpm
Connect Size	90° Elbow 1/2 NPTM
Height	19.5 in/49.5 cm
Length	17 in/43.8 cm
Width	13 in/33 cm
System Type	open center
Port Size	-12 SAE/-16 SAE

NOTE

Weights, dimensions and operating specifications listed are subject to change without notice. Where specifications are critical to your application, please consult the factory.

ACCESSORIES

PART NUMBER	DESCRIPTION
11058	Electrode Cable Assembly, 10 ft/3 m
11059	Ground Cable Assembly, 10 ft/3 m
19663	Arc Stabilizer Kit (Prior to S/N 401188)

WARRANTY

Hand held tools and their parts are warranted against defects in materials and workmanship for a period of 12 months from the date of purchase. Exceptions are cutting parts, steels, and other parts not manufactured by Stanley (such as impact mechanisms, alternators, regulators, and hoses), and parts subject to normal wear and tear (such as o-rings, saw blades, and other parts that become worn through normal use of the tool).

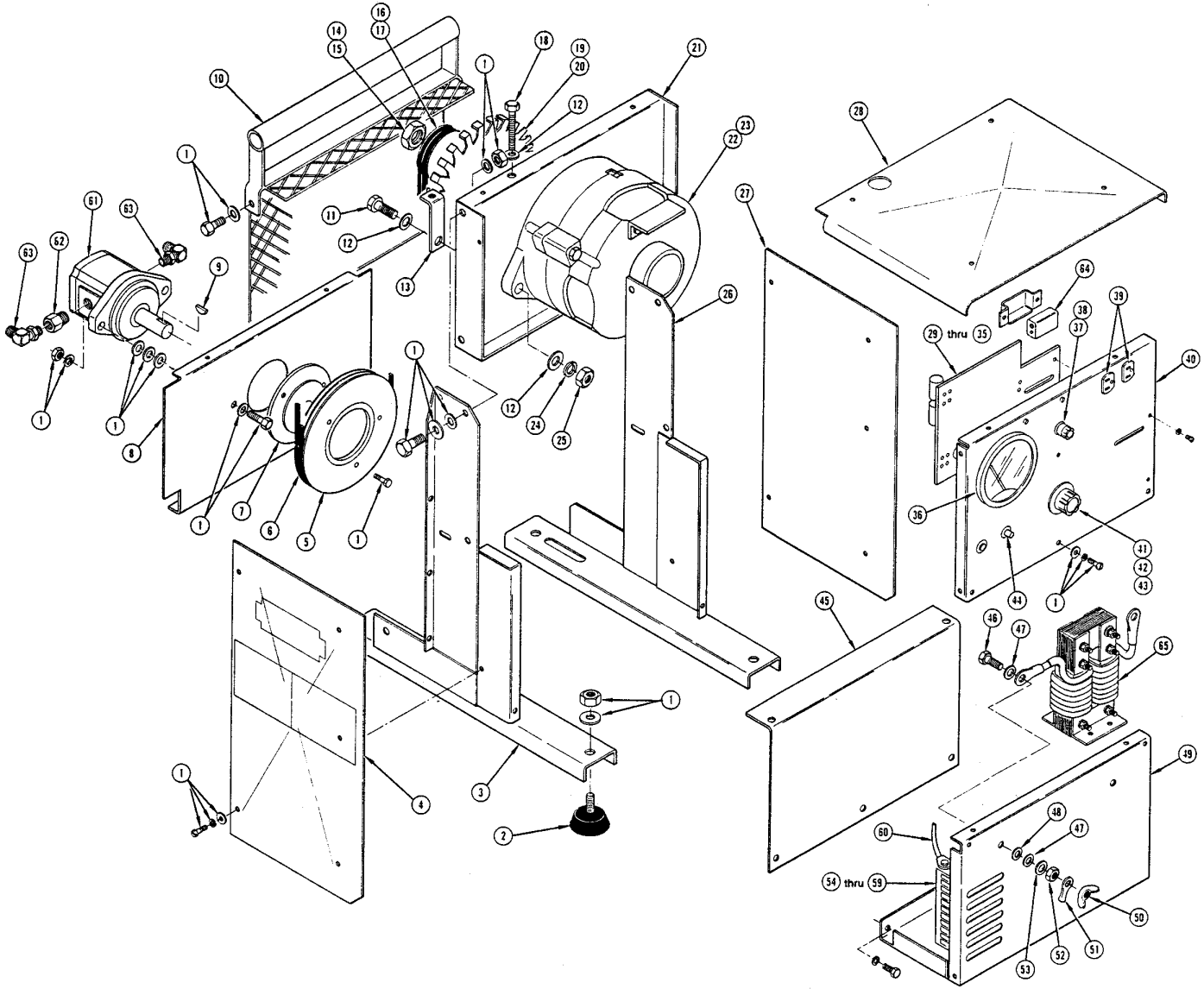
The Warranty Registration Card packed with the tool must be filled out and returned to Stanley upon receipt of the tool.

Stanley reserves the right to replace or repair only those parts which, under our examination, prove to have been defective at the time of purchase.

Shipping charges are prepaid by the customer unless otherwise authorized by Stanley.

The warranty is void if maximum flow and pressure ratings are exceeded.

There is no other warranty expressed or implied.



PARTS LIST

Item No.	Part No.	Qty	Description
1	19336	1	Bolt Kit
2	19330	4	Shockmount Pad
3	19323	1	Mainframe Left
4	19327	1	Shroud Left
5	19331	1	Pulley
6	19335	2	Belt
7	19426	1	Pulley Bushing
8	19428	1	Motor Mount Plate
9	19334	1	Key
10	19317	1	Lift Assembly
11	19346	2	Bolt, M10x35
12	19343	4	Flat Washer
13	19319	1	Belt Adjust Bracket
14	19337	1	Nut, M06x16
15	19338	1	Lockwasher
16	19339	1	Pulley DGM75
17	19340	1	Key M05x16
18	19344	1	BoltM10x75
19	19341	1	Fan
20	19345	1	Lockwasher
21	19320	1	Alternator Mounting Panel
22	19332	1	Alternator
23	19347	1	Spacer
24	19345	2	Lockwasher
25	19342	2	Nut M10
26	19322	1	Mainframe Right
27	19329	1	Shroud Right
28	19328	1	Shroud Top Panel
29	19389	1	**Control Sub Panel Assembly** (Includes Items 30 through 35)
30	19303	1	Acc CB Assembly CB-1
31	19310	1	Resistor
32	19390	1	CB-2 Assembly
33	19300	1	Capacitor 50 Mfd
34	19301	1	Capacitor 150 Mfd
35	19302	1	Control Sub Panel
36	19436	1	Voltmeter
37	19314	1	Fuse MDA20A
38	19315	1	Fuse Holder ASM
39	19316	1	Duplex Receptable
40	19299	1	Control Panel
41	19311	1	Rheostat
42	19312	1	Lock Nut
43	19313	1	Knob
44	19431	1	Exciter Switch
45	19324	1	Pulley Cover
46	19372	2	Bolt
47	19374	4	Insulated Washer
48	19376	2	Insulated Spacer
49	19325	1	Heat Sink Panel
50	19381	2	Wing Nut
51	19380	2	Cable Lug
52	19379	2	Nut
53	19377	2	Flat Washer
54	19373	1	Heat Sink Assembly
55	19371	1	Bolt
56	19375	1	Nut
57	19378	1	Lockwasher
58	19382	2	Machine Screw
59	19383	2	Nut
60	19385	1	Cable Assembly
61	19427	1	Hydraulic Motor
62	19636	1	Reducer - Expander
63	19635	2	90° Elbow
64	Com'l	1	9V Battery
65	19665	1	Arc Stabilizer

STANLEY®

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