

ENGLISH

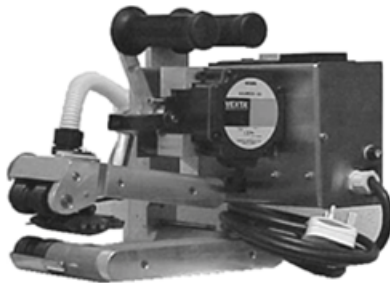
# **WIL-KEY**

## **WEDGE WELDER**

MODEL WK-WD 375



### **Operation and Maintenance Manual**



- Operation Guide
- Maintenance Guide
- Trouble Shooting
- Exploded Diagrams
- Recommended Spare Parts



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## 1. WEDGE WELDER POWER REQUIREMENTS

### 1.1 GENERATOR REQUIREMENTS

220 – 240 Volt Wedge Welders  
Voltage Minimum 220 Volts  
Voltage Maximum 250 Volts  
50 – 60 Hertz  
5 KVA Minimum

Note that generator output ratings are based on output at sea level with normal air temperatures. At high elevations or in extremely high air temperatures, generator output can be reduced significantly.

It is advisable when working in these conditions to use a generator rated at an output 15% - 50% more than would be required normally.

Check the voltage at the end of the extension cord with the machine running to ensure there is not an excessive loss of voltage.

Use the splitter cable to check the voltage at the machine

### 1.2 EXTENSION CABLES

Extension cables must have three conductors of copper wire with a cross sectional area a minimum of 2.5sq.mm.

Extension cables should not exceed 75 meters in length.

Failure to use proper sized extension cables will cause excessive voltage loss during machine operation, resulting in poor performance and machine damage.

## 2. WEDGE WELDER ADJUSTMENT AND SET-UP INSTRUCTIONS

### 2.1 SPEED SETTING

Wedge Welder speed, temperature, and main spring setting requirements.

Select temperature and speed for material type and thickness you are welding. This table is a starting point only, conditions change with ambient air temperature. You can not determine exactly the ideal speed or temperature until you are actually welding in job-site conditions.

<u>MEMBRANE THICKNESS (mm)</u>	<u>TEMPERATURE °C</u>	<u>PRESSURE KNOB (STEPS)</u>	<u>m PER MINUTE</u>
0.75 HDPE	400	3	3.0 m
1.00 HDPE	400	4	2.5 m
1.50 HDPE	420	6	2.0 m
2.00 HDPE	430	8	1.3 m
2.50 HDPE	440	10	0.9 m
3.00 HDPE	450	12	0.6 m
1.50 HDT	430	6	2.0 m
2.00 HDT	450	8	1.3 m
2.50 HDT	450	10	0.9 m
0.75 VLD	380	3	3.5 m
1.00 VLD	420	4	3.0 m
1.50 VLD	430	6	2.0 m

### 2.2 TEMPERATURE SETTING

## Hot Wedge temperature controller instructions

Press controller mode switch to illuminate SP (set point).

Press the increase or decrease switches to achieve the correct temperature setting on the digital display.

After setting the temperature, press the controller mode switch once. The digital display will now show the actual wedge temperature.

### 2.3 PRESSURE SETTING

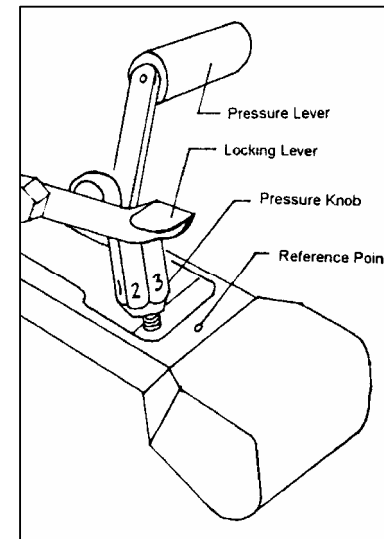
Cut 2 small pieces (10cm x 10cm) of geomembrane to be welded. Put these 2 pieces of geomembrane between the 2 rollers.

Push the pressure level down. Ensure that the 2 rollers are not touching the geomembrane by turning pressure knob anti-clockwise.

Turn the pressure knob clockwise until the 2 rollers just touching the geomembrane.

Note the face of the pressure knob that is facing the reference point. This face represents zero pressure.

Turn clockwise each face every 0.25mm thick geomembrane to be welded.



### 3. TRIAL WELD SAMPLES

A trial weld should be welded each day prior to welding operations to ensure that the wedge welder is functioning properly and the machine correctly set for the ambient conditions and the material to be welded.

Trial weld for the wedge welder should be at least 3 meters in length and should be made of the same material to be welded during welding operations. They should also be welded in the same ambient conditions that will be experienced during welding operations.

Trial welds should be welded according to the methods described in the instructions for basic welding operations.

After welding allow the seam to cool, then cut two (2) test strips 10-15 mm wide from the last meter of weld and hand test in peel. The weld should not peel and there should be a film tearing bond.

If the initial trial weld fails testing, check the machine settings and adjust as necessary. Then produce another trial weld and retest.

**Do Not** begin welding operations until a passing trial weld has been produced.

#### **4. WEDGE WELDER START-UP AND BASIC OPERATION**

Before welding, inspect the seam area to ensure site conditions are acceptable for welding.

The seam must be clean and dry.

The subgrade must also be inspected. Welding should not be attempted if the subgrade does not meet specifications.

When welding on loose soil, sand, or damp subgrade. A strip of liner material approximately 60 cm wide by 6 meters long should be placed under the machine between the liner and subgrade. This will protect the machine and prevent dirt from spoiling the weld. The protective strip can be attached to a rope and pulled along the seam as the welding progresses.

Check the machine for loose bolts, damage parts, frayed wires, etc.

Check for correct voltage before connecting the machine to the power supply. (120v or 220v nominal depending on machine being used)

Connect the machine to the power source and depress the circuit breaker to the on position.

The machine should now be “on” check the temperature controller for a digital display.

Set the temperature controller to the correct temperatures for the material to be welded.

Switch on the drive motor and check that both upper and lower shafts are rotating. Switch motor off.

With the wedge retracted insert the liner overlaps into the machine.

The overlap should be 12.5 cm.

Start the drive motor.

Insert the wedge and immediately push pressure knob level down for locking the rollers together.

While welding guide the machine to ensure that it runs in a line parallel to the seam. Don't allow the machine to run off the seam.

Monitor the temperature controller to ensure there is not an excessive drop in wedge temperature while welding.

To stop welding

Pull the pressure knob level upward to open the nozzles.

Pull the machine approximately 50 cm back from the end of the weld to remove the wedge finger from the air channel.

Retract the wedge.

Turn off the drive motor.

## 5. WEDGE WELDER MAINTENANCE

### DAILY MAINTENANCE

The machine should be cleaned daily, removing any accumulations of dirt and dust.

Check all adjustments as indicated in the start-up and basic operation instructions.

Check the machine for loose bolts and frayed wires or loose connections.

Check for any obvious damage.

Check the surface of the wedge and remove any built-up of carbon with a brass wire brush.

### WEEKLY MAINTENANCE

Check the wedge surface for damage and replace as necessary.

Check the roller shaft bearings for excessive play and replace as necessary.

Apply a thin layer of grease to the roller shafts.

## WEDGE WELDER PART LIST – DIAGRAM “A”

Part #	Description
A-1	Base Complete
A-2	Gear For Base
A-3	Retaining Ring
A-4	Distance Disk
* A-5	Intermediate Gear
A-6	Supporting Sheet
A-7	Washer
A-8	Distance Bolt
A-9	Shaft To Tension Arm
A-10	Woodruff Keys
A-11	Combinated Gear
* A-12	Chain For Motor
A-13	Socket Head Cap Screw
A-15	Bearing Roller Guide
A-17	Roller Guide
A-18	Eccentric Axle
A-19	Socket Head Cap Screw
A-20	Guard Plate For Pressure Roller
A-21	Countersunk Screw
A-22	Distance Bushing
A-23	Bearing Rear Roller
A-25	Rear Roller
A-26	Hexagon Bolt
A-27	Countersunk Screw
A-28	Clamp Disk
A-29	Driving Roller
A-30	Distance Disk
A-31	Retaining Ring
A-32	Bush
A-33	Bottom Gear Shaft
A-34	Woodruff Keys
* A-35	Chain For Base
A-36	Chain Guard For Base
A-37	Countersunk Screw
A-38	Front Shaft
A-39	Front Gear
A-40	Bearing
A-41	Spiral Pin
A-42	Bearing
A-43	Bearing
A-45	Countersunk Screw
A-46	Set Screw
A-47	Hexagon Nut
A-48	Roller

Note: \* Common ware and tear spare part.

**WEDGE WELDER PART LIST – DIAGRAM “B”**

Part #	Description	Part #	Description
B - 1	Tension Arm Complete	B-44	Bolt
B - 2	Set Screw	B-45	Gear For Upper Swivel Head
B - 3	Hexagon Nut	B-46	Shim Ring
B - 4	Straight Pin	B-47	Retaining Ring
B - 5	Bush	B-48	Gear For Lower Swivel Head
B - 6	Gear For Tension Arm	B-49	Distance Disk
B - 8	Retaining Ring	B-50	Shaft For Lower Swivel Head
B - 9	Guide Rail	B-51	Retaining Ring
B-10	Guide Carriage	B-52	Straight Pin
B-11	Cheese Head Screw	B-53	Bearing Bushing
B-12	Buffer	B-54	Set Screw With Hexagon Socket
B-13	Suspension Complete	B-55	Pressure Spring
B-14	Cylinder Liner	B-56	Set Screw With Hexagon Socket
B-15	Retaining Ring	B-57	Flat Head Screw
B-16	Pressure Spring	B-58	Guard Plate For Swivel Head
B-17	Locking Shaft	B-59	Distance Disk
B-18	Handle	B-60	Top Gear Shaft
B-19	Cord Guard Nut	B-61	Woodruff Keys
B-20	Cheese Head Screw	B-62	Driving Roller
B-21	Screwed Cord Guard Holder	B-63	Distance Disk
B-23	Screwed Cord Guard	B-64	Retaining Ring
B-24	Spiral Tube	*B-65	Chain For Tension Arm
B-25	Moving Bar Complete	B-66	Chain Guard For Tension Arm
B-27	Drag Bar	B-67	Countersunk Screw
B-28	Hexagon Nut	B-68	Eye Bolt Left Hand Threaded
B-29	Countersunk Screw	B-69	Set Nut Complete
B-30	Wedge	B-70	Knurlet Nut
*B-32	Heater Cartridge	B-71	Eye Bolt Right Hand Threaded
*B-33	Thermocouple	B-72	Tension Lever Complete
B-34	Supporting Plate	B-73	Handle Tension Arm Complete
B-35	Cheese Head Screw	B-74	Countersunk Screw
B-37	Tension Bar	B-75	Screw For Tension Lever
B-38	Cheese Head Screw	B-76	Spring Washer
B-39	Cheese Head Screw	B-77	Washer
B-40	Washer	B-78	Hexagon Nut
B-41	Roller	B-81	Locking Device
B-42	Axle	B-82	Distance Bushing
B-43	Swivel Head Complete		

Note: \* Common ware and tear spare part.

