

## ***ENGINE DRIVEN WELDER GENERATING SET***



## ***MPM 20/600 I-PS (Part Number 636806)***

# GENERAL USE INSTRUCTIONS

**Read the instructions carefully; proceed according to the regulations in use in the country where the machine will operate.**

## **TRANSPORTATION**

- The machine must be fixed securely to the motor vehicle if it has to be moved to the place of use. Raise the machine using the lifting eye if the model provides it; otherwise, lift it using a forklift, taking care that the weight is well balanced on the two forks. Keep well clear during these operations; furthermore, we suggest not to keep the machine suspended for long.
- If the machine is mounted on a wheels trolley or trailer, be sure the machine is stable and secure before use.

## **CAUTION**

- **Note:** The generating set or the welder is furnished WITHOUT lubricating oil. Provide the machine with "**10 W 40**" multi-grade oil indicated for temperatures from - 20°C to 40° C in the quantity indicated in the engine SPECIFICATION section.
- **Note:** If the machine is fitted with a water cooled engine fill the radiator circuit with a solution made up by 50% water and 50% antifreeze liquid in the quantity indicated in the engine SPECIFICATION section.
- **Note:** The generating set is furnished with a flat battery and without acid. Fill it using sulphuric acid in a 30% - 40% concentrated solution to cover the elements. During this operation, we suggest the operator use protective gloves and goggles; accidental skin contact with the sulphuric acid solution must be washed up immediately with cold water and, if necessary, a doctor must be consulted.
- **Note:** Do not disconnect battery cables when the engine runs. This could result in serious damage to the machine.
- **Note:** BEFORE OPERATING THE MACHINE the neutral, or the equivalent winding point, MUST be connected effectively to earth using an earth stake (without any switch or other device that may interrupt the electrical connection) from the earth stud available on the machine, and identified by the symbol:



- **Note:** for normal transportation, follow the instructions as specified in the TRANSPORTATION section.

## ***RUNNING IN***

For the first 50 hours of operation of the machine do not employ more than 70% of the maximum power indicated in the technical specifications.

## ***STARTING AND WORKING***

- 1- Make the earth connection (see the USE INSTRUCTIONS).
- 2- If the machine model IS NOT equipped with a earth leakage circuit breaker the available socket is intended ONLY for connecting the machine to a switchboard equipped with all protection devices imposed by current law regulations.
- 3- Check the state and efficiency of the cables.
- 4- Make sure that all the switches and electric connections are in the right position for starting (see USE INSTRUCTIONS and CONTROL PANEL DESCRIPTIONS).
- 5- Use the machine in well ventilated places, taking care that the exhaust gas and the welding fumes produced (where welders are used) do not stagnate. Keep the machine away from walls or other obstacles in order to avoid air or gas recycling. If the machine is employed in closed places, use forced ventilation in order to ensure proper air recycling.
- 6- While welding, eyes and body must be protected by gloves, mask and appropriate clothes.
- 7- Fuel refill must not be made while smoking or close to flames. This operation must be done when the engine is switched off.
- 8- Do not over fill the tank and clean up any spillage.
- 9- Check daily for loss of fuel or lubricating oil.
- 10- For machines provided with a liftable canopy engage the canopy securing brackets where fitted.

## ***WARNING***

- Do not connect the machine to the commercial electric network.
- Do not work close to flammable materials or where there is explosive gas or vapours.
- Do not work in confined or poorly ventilated places.
- Do not touch the exhaust muffler or adjacent components.
- Do not carry out service operations while the engine is running.
- Any service on the electrical circuit must be done when the engine is stopped and only by qualified technicians.
- Keep clear of moving parts of the engine while it is operating and do not approach the machine with loose fitting clothing.

## ***SERVICE AND CLEANING***

We suggest frequent cleaning of the machine since the presence of dirt can compromise efficiency.

The frequency of this operation depends on the environment in which the machine is used. We advise to pay special care to the service of::

OIL LEVEL, OIL FILTER, AIR FILTER, FUEL FILTER, COOLING LIQUID LEVEL, RADIATOR, VENTILATION DUCTS AND INTAKES, BATTERY ENGINE USE AND SERVICE manual and the SPECIFICATION section to know how and when it is useful to do it. The extraordinary service operations not mentioned herein require the aid of specialised technicians (see the Engine Dealers list).

For service intervals consult the ENGINE USE AND SERVICE manual and the SPECIFICATION.

### ***ADJUSTMENTS AND REGULATIONS***

All necessary controls are located on the main control panel and are properly explained in the section FRONT PANEL DESCRIPTION.

We advise the operator against tampering with the engine or the internal electrical components.

**Note:** Modification of the normal parameters can compromise the reliability of the machine.

### ***PROLONGED STANDING PERIODS***

If the machine has to be stopped for a long period (more than one year), we suggest to leave the motor oil and the fuel in and the water in the radiator in order to avoid oxidising effects.

When the machine is to be used, the liquids must be replaced, the battery must be charged; the belts, pipes and rubber hoses must be checked and a visual inspection of the electrical connections must be done.

### ***SCRAPPING***

In order to preserve the environment, it is advised to dispose of the oil, fuel and battery in an approved manner. For the complete range of materials, see the list below:

#### ***FERROUS and NON-FERROUS MATERIALS:***

steel, cast iron, aluminium, copper, brass are used in the structure of engine, alternator, transformers, etc.

#### ***PLASTIC MATERIALS:***

rubber, bakelite, epovit, lexan are used for the instruments, engine pipes, junction boxes and connectors, fuel tank, fuel cap, wheels, anti-vibration dampers, condenser housings, fans, belts, filters and hoses.

#### ***ELECTRONIC MATERIALS:***

various components, diodes, resistors, electronic panels.

#### ***VARIOUS MATERIALS:***

rock wool, sound proofing materials.

#### ***LIQUIDS:***

fuel, gasoline, cooling liquids, battery acid.

**TECHNICAL SPECIFICATION****POWER PLANT INFORMATION**

Part number	636806
Description	MPM 20/600 I-PS

**WELDING GENERATOR D.C.**

Rated output at 60% duty cycle	600A @ 40V
Rated output at 100% duty cycle	500A @ 40V
Duty cycle period	5 minutes
Range of continuous control	30A to 600A
DC open circuit voltage	70V
Insulation class	F
Mechanical protection	IP 23
CC mode	30A to 600A
CV mode	18V to 40V

**AUXILIARY GENERATOR**

Generator type	Asynchronous
Three phase power	20kVA @ 400V
Single phase power	12kVA @ 230V
Frequency	50 Hz

**RECOMMENDED MANUAL METAL ARC WELDING ELECTRODE**

<b>Electrode Description</b>	<b>Maximum Electrode Diameter</b>
General purpose & low hydrogen	10.0mm
Cellulose	10.0mm
Iron powder	10.0mm

**ENGINE**

Make/Type	Perkins 4.236
Number of cylinders	4
Displacement	3861 cc.
Diesel engine output	64.4 HP
Engine speed	1500 rpm
Cooling	Water
Fuel tank capacity	60 Litres
Oil capacity	9.1 Litres
Starter	Electric
Battery	12V - 92 Ah
Acoustic energy emission	98 dB(A)
Acoustic pressure @ 1 metre	90 dB
Acoustic pressure @ 4 metre	78 dB
Average fuel consumption	220 gram/kW/hour

**DIMENSIONS AND WEIGHT**

Dimensions (Length x Width x Height)	1950mm x 800mm x 1100 mm
Weight	1000 Kg

## ENGINE WARRANTY AND SPARE PARTS

### 1.1 INTRODUCTION

Carefully follow the **PERKINS** engine operation manual for safe operation and long service life of this product.

### 1.2 ENGINE WARRANTY

To secure warranty for the engine you must notify your local authorised **Perkins** service outlet.

New engine warranty does not apply to maintenance items such as filters, hoses, belts, preheaters, injection nozzles, packing and seals, etc.

#### Defects

This warranty covers Engine REPAIRS to correct any failure occurring during the WARRANTY PERIOD due to defect in the workmanship or material thereof.

#### Warranty Period

The engine is warranted for twelve (12) months from date of delivery to the first user providing the Engine is sold to the first user within 12 months from the date of dispatch by the Company. Engines sold after 12 months from the date of dispatch by the Company must have had the self-life warranty reinstated, registered and be current prior to retail sale or the engine is void of warranty.

#### Repairs

To obtain warranty repairs, you must request the needed repairs within the WARRANTY PERIOD from an authorised Perkins service outlet. Only new genuine parts or re-manufactured parts or components supplied or approved by Perkins will be used. Perkins may, at its discretion, replace rather than repair components. A reasonable time must be allowed to perform the warranty repair after taking the engine to the authorised service outlet. Repairs due to accident, misuse, misapplication, storage damage, negligence or modification exceeding Perkins specifications are not covered by this warranty.

#### Maintenance

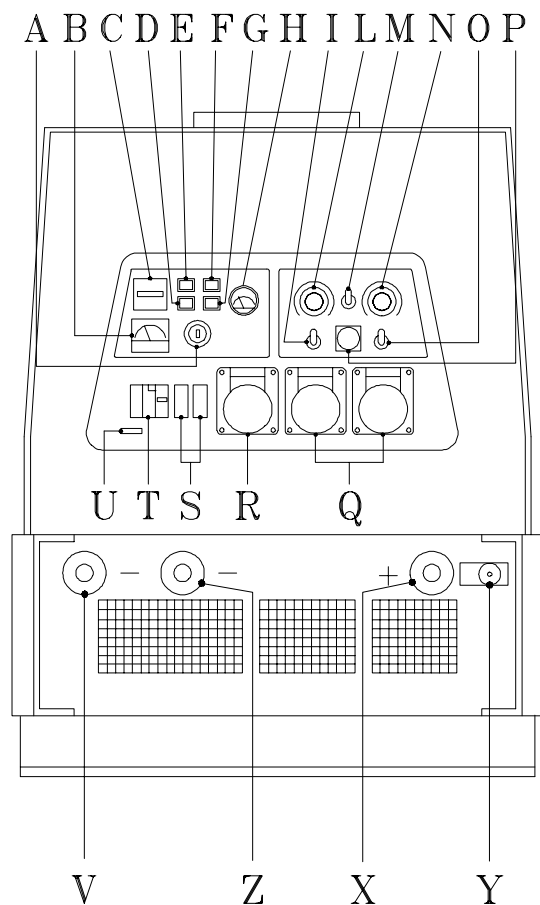
Perkins is not responsible for the cost of maintenance or repairs due to lack of performance of normal maintenance service or the failure to use fuel, oil, lubricants and coolant meeting Perkins recommended specifications. Proof of proper maintenance and use of proper fuel, oil, lubricants and coolant are the responsibility of the owner. See "Perkins Operator's Handbook" for full details.

### 1.3 SPARE PARTS

**PERKINS engine:** Contact authorised Perkins Dealer for spare parts and service assistance. Specify the engine model number, serial number, name of part (with code number), Engine Driven Welder model name (with code number) and manufacturers name when you contact your Perkins Dealer.

**Generator and equipment:** Contact your local CIGWELD Distributor for spare parts. Specify the Engine Driven Welders model number, serial number and name of part (with code number) when ordering spare parts. Refer to the Spare Parts List from page 12.

## FRONT PANEL DESCRIPTIONS



<b>A</b>	Ignition key	<b>O</b>	Basic-Cellulose switch
<b>B</b>	Single phase voltmeter	<b>P</b>	Wire feeder connector 14 pin
<b>C</b>	Hourmeter	<b>Q</b>	230V single phase outlet
<b>D</b>	Water temperature lamp	<b>R</b>	400V three phase outlet
<b>E</b>	Battery charge lamp	<b>S</b>	16A single phase circuit breaker
<b>F</b>	Oil pressure lamp	<b>T</b>	ELCB (25A earth fault protection)
<b>G</b>	Overspeed lamp	<b>U</b>	Serial number
<b>H</b>	Fuel meter	<b>V</b>	Welding socket : negative connection for CV-WORK
<b>I</b>	CC/CV mode select	<b>Z</b>	Welding socket : negative connection for CC-WORK
<b>L</b>	Welding current control	<b>X</b>	Welding socket : positive connection
<b>M</b>	Remote control switch	<b>Y</b>	Earth clamp connection
<b>N</b>	Arc force regulator		



## **OPERATING INSTRUCTIONS**

### ***1.1 EQUIPMENT GROUNDING CONNECTION***

- ◆ This machine has auxiliary power capability and grounding of the frame and case is recommended. Refer to your local Supply Authority or Australian Standard AS3000 for detailed earthing instructions. Connect the earth wire to the Earth connection located on the front of the machine.

### ***2.1 EARTH FAULT PROTECTION***

- ◆ Supply Authorities recommend that protection devices immediately disconnect all power in the event of an earthing fault. This equipment is fitted with a Earth Leakage Circuit Breaker (ELCB) that interrupts the auxiliary power circuit within 0.2 seconds when the earth leakage is greater than 30 mA.
- ◆ If a fault occurs in equipment connected to the auxiliary power supply, the outer casing may become live and result in serious injury. The Engine Driven Welder must be properly earthed. Refer to your local Supply Authority or Australian Standard AS3000 for detailed earthing instructions. The user is responsible for connecting this Engine Driven Welder to earth.

### ***3.1 USE AND TESTING OF EARTH FAULT PROTECTION***

- ◆ Switch the ELCB lever up to setting **I (ON)**. Test by pressing the test button while the engine is running. This will result in the ELCB tripping resulting the lever returning to setting **0 (OFF)**. Reset to setting **I (ON)**.
- ◆ If the ELCB trips repeatedly while operating auxiliary equipment, have the equipment tested by a qualified electrical tradesperson .

## **4.1 STARTING ENGINE**

- ◆ Check that engines fuel tank has been filled with diesel and the sump has been filled with lubricating oil as specified in the Engine Manual.
- ◆ Position the ignition key on the first step for preliminary heating then start the engine by moving key completely clockwise.
- ◆ After starting the engine, allow it to warm up by waiting 5 minutes before loading the Engine Driven Welder.
- ◆ Do not move the throttle control lever.

## **5.1 USE OF ENGINE DRIVEN WELDER AS A WELDER**

- ◆ Insert welding cable plugs into relevant sockets.
- ◆ Set the current/voltage control knob on the front panel to the desired value on the Engine Driven Welder. Take care that the REMOTE CONTROL switch is in **0** (OFF) position.
- ◆ Set the Arc Force control.
- ◆ Remote current control can be achieved by using a remote control device.
- ◆ When operating with remote control switch the remote switch control to position **I** (ON) and connect the cable of the remote control unit to the 14 pin remote control socket.
- ◆ Connected the **Electrode Lead** to the positive terminal and the work lead to the negative terminal.

**Note:** Stick electrodes are generally connected to the positive terminal but if in doubt consult the electrode manufactures literature.

## 6.1 CONSTANT CURRENT (CC) MODE

- ◆ Set the CC/CV mode switch to the mode CC position.
- ◆ If using a remote control pendant, plug remote pendant into the 14 pin remote control socket and set the REMOTE CONTROL switch to the REMOTE position. Set the REMOTE CONTROL switch to the PANEL position if a remote pendant is not used.  
**Note:** When a remote control pendant is fitted (see '**P**' on page 7), the Welding current/voltage control is switched out of the circuit and remote control pendant has full control over the welding current.
- ◆ For MMAW (stick) welding connected the **Electrode Lead** to the positive terminal (see '**X**' on page 7) and the work lead to the negative terminal (see '**Z**' on page 7).  
**Note:** Stick electrodes are generally connected to the positive terminal but if in doubt consult the electrode manufactures literature.
- ◆ For GTAW (TIG) welding connected the **Electrode Lead** to the negative terminal (see '**Z**' on page 7) and the work lead to the positive terminal (see '**X**' on page 7).

## 7.1 CONSTANT VOLTAGE (CV) MODE

- ◆ Set the CC/CV mode switch to the mode CV position.
- ◆ Connect wire feeder cable to 14 pin remote control socket.
- ◆ If a remote control pendant is plugged into the remote control socket of the wirefeeder then set the REMOTE CONTROL switch to the REMOTE position. Set the REMOTE CONTROL switch to the PANEL position if a remote pendant is not used.  
**Note:** When a remote control pendant is fitted (see '**P**' on page 7), the Welding current/voltage control is switched out of the circuit and remote control pendant has full control over the welding voltage.
- ◆ For GMAW (MIG) welding connected the **Electrode Lead** to the positive terminal (see '**Y**' on page 7) and the work lead to the negative terminal (see '**V**' on page 7).

## **8.1 USE OF ENGINE DRIVEN WELDER AS A**

### **GENERATING SET**

- ◆ Start the engine as described in section **4.1**
- ◆ Switch the ELCB lever up to setting **I (ON)**. Switch the single phase 16A CB lever up to setting **I (ON)**.
- ◆ The single phase voltmeter (see '**T**' on page 7) reads approximately 170V when the engine is at idle speed.

### **9.1 STOPPING ENGINE**

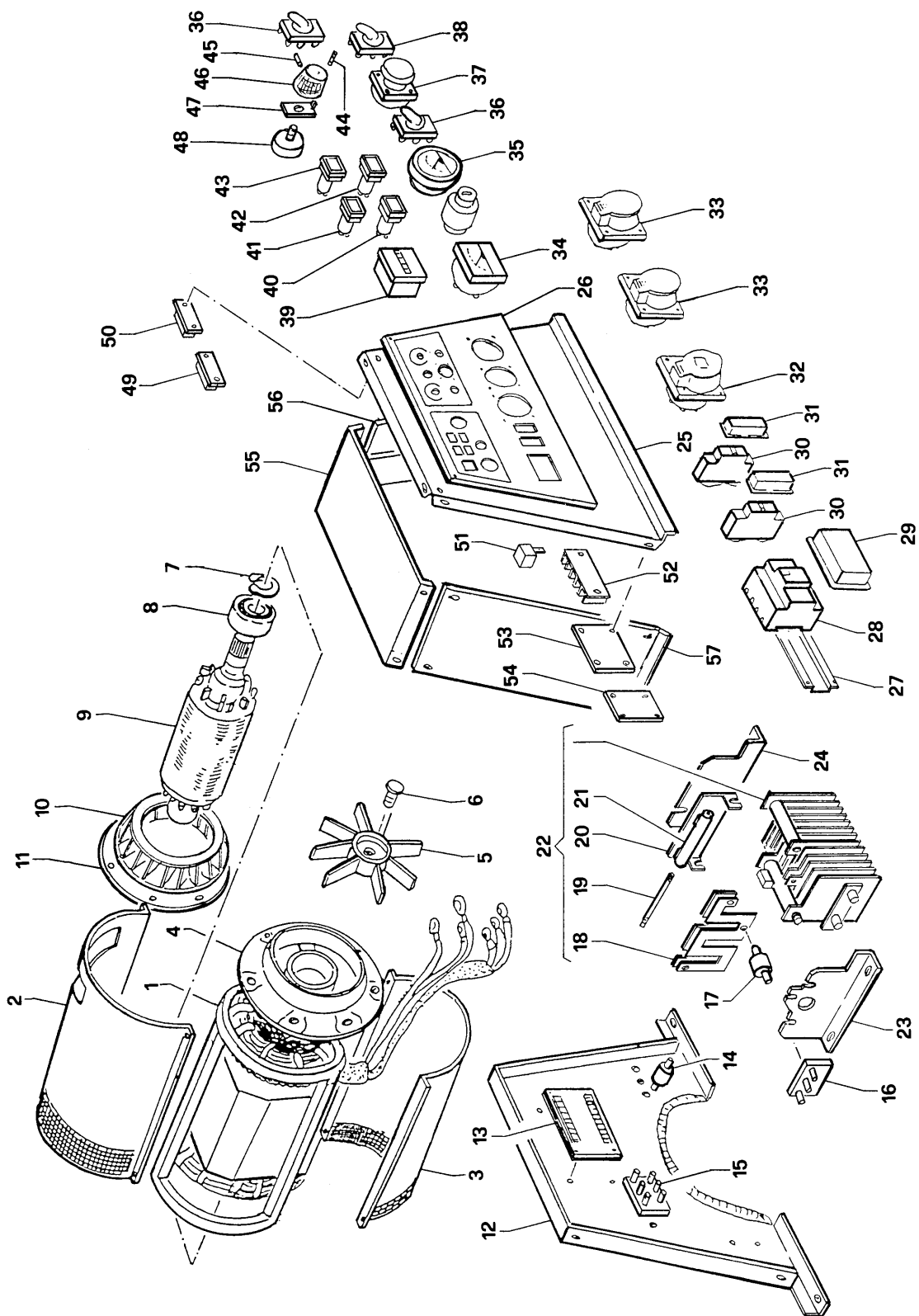
- ◆ Disconnect any load from the auxiliary outlets and the welding terminals of the Engine Driven Welder.
- ◆ Wait approximately 1 minute then turn the ignition key to the **0** position and the motor will stop.

### **10.1 ENGINE PROTECTION**

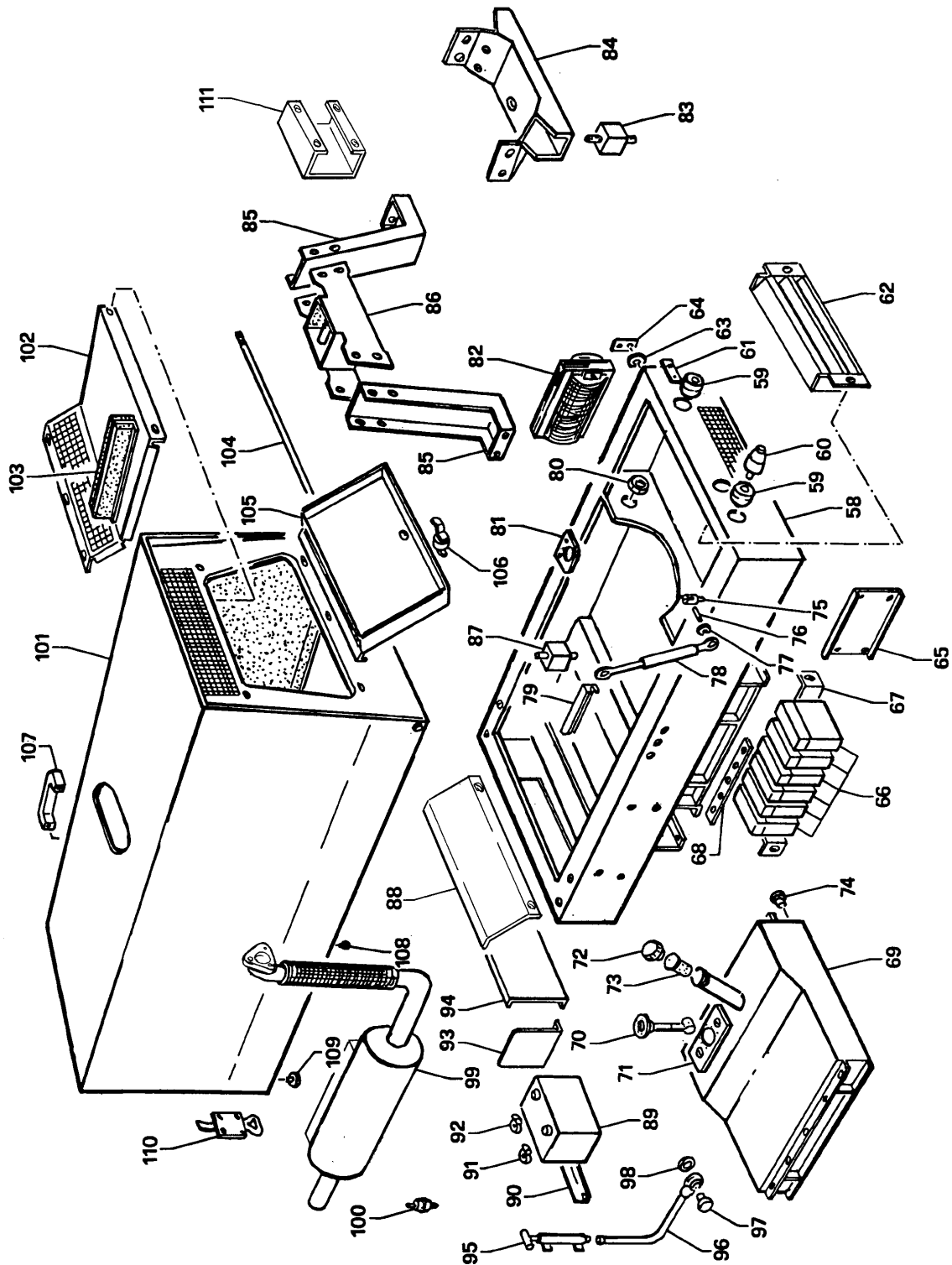
- ◆ The DAS Engine Protection Device checks for *low oil pressure, no battery charge, over speed, high water temperature and low fuel level* conditions when the Engine Driven Welder is in operation.
- ◆ When a *low oil pressure, no battery charge, over speed, high water temperature or low fuel level* condition occurs the DAS stops the engine and illuminates the corresponding lamp on the control (except for the low fuel level condition). When the faulty condition has been removed the engine can be re-started.
- ◆ Note that if the *low oil pressure, no battery charge, over speed, high water temperature or low fuel level* condition is still present when after the engine is re-started then the DAS Engine Protection Device will stop the engine after approximately one minute has elapsed.

### **11.1 WARNING**

- ◆ In order to preserve the engine performance CIGWELD strongly recommends that the maintenance schedule is adhered to as specified in the engine manufacturer "Use and maintenance" user manual. Poor maintenance could result in a shorter operating life, decreased performance and loss of engine warranty.
- ◆ DO NOT disconnect the battery from the Engine Driven Welder when the engine is running as this action will cause the alternator regulator to fail.



**MPM 20/600 I-PS**  
**(Part Number 636806)**



**Spare parts list MPM 20/600 I-PS (Part Number 636806)**

Item no.	Ordering no.	Description
1	OGS19484	Stator
2	OGS19313	Stator protection
3	OGS19314	Stator protection
4	OGS10510	Flange with bearing seat
5	OGS10525	Fan
6	OGS10524	Screw
7	OGSO905	Seeger ring
8	OGS903	Bearing 100/45/25 2RS
9	OGS19310	Shaft with rotor
10	OGS19309	Fan
11	OGS15092	Flex plate
12	OGS18726	Panel
13	OGS18576	Electronic panel GS9603/A
14	OGS11707	Insulator
15	OGS10364	6 poles terminal board
16	OGS614	3 poles terminal board
17	OGS17245	20x20 shock absorber
18	OGS18723	Shunt
19	OGS846	Tie rod
20	OGS18724	Resistor support
21	OGS12776	100Ohm-75W resistor
22	OGS18720	Rectifier assembly
23	OGS18721	Left plate rectifier
24	OGS18722	Right plate rectifier
25	OGS18708	Front and cover
26	OGS19487	Front plate
27	OGS10057	Circuit breaker plate
28	OGS839	25A earth fault protection
29	OGS13933	Protection
30	OGS632	16A circuit breaker
31	OGS13191	Protection

**Spare parts list MPM 20/600 I-PS (Part Number 636806)**

<b>Item no.</b>	<b>Ordering no.</b>	<b>Description</b>
32	OGS19483	400V 20A three phase socket
33	OGS19482	230V 15A single phase socket
34	OGS322	F.S. 300V voltmeter
35	OGS11688	Fuel meter
36	OGS12163	Switch assembly
37	OGS18225	Socket for remote control and wire feeder 14 poles
38	OGS910	Basic/Cellulosic switch assembly
39	OGS912	Hourmeter
40	OGS16959	Water temperature lamp
41	OGS10264	Battery charge lamp
42	OGS10263	Overspeed lamp
43	OGS19458	Oil pressure lamp
44	OGS17519	Pin
45	OGS17521	Grub screw
46	OGS18844	Potentiometer knob
47	OGS18728	Plate
48	OGS909	1K potentiometer
49	OGS14370	115Vac relay
50	OGS14197	24Vac relay
51	OGSO336	12V relay
52	OGS12758	Terminal board
53	OGS15612	DAS : automatic stop for engine protection
54	OGS17435	DAS : automatic stop for engine protection (over speed GS9407)
55	OGS16600	Cover
56	OGS16601	Right and cover
57	OGS16602	Left and cover
58	OGS19135	Frame
59	OGS923	Welding outlet
60	OGS14777	Plug for welding outlet
61	OGS17514	Earth clamp plate
62	OGS19134	Grate protection



**Spare parts list MPM 20/600 I-PS (Part Number 636806)**

<b>Item no.</b>	<b>Ordering no.</b>	<b>Description</b>
63	OGS16988	Washer
64	OGS16989	Plate
65	OGS19192	Cover
66	OGS17347	3x80 $\mu$ F capacitor
67	OGS19486	Plate for capacitors
68	OGS15762	Plate for capacitors
69	OGS18732	Fuel tank
70	OGS15715	Fuel float
71	OGS18329	Cover
72	OGS16621	Fuel filter cap 2" gas
73	OGS16620	Fuel prefilter 2" gas
74	OGSO923	Fuel drain cap
75	OGS11410	Pin
76	OGS12531	Tierod
77	OGS12532	Washer
78	OGSO907	Gas spring filter
79	OGS19138	Plate for gas spring filter
80	OGS10174	Rubber wire holder
81	OGS18865	Plate for fuel tank
82	OGS15286	Reactor
83	OGS18314	Shock absorber
84	OGS19316	Stator bracket
85	OGS18954	Plate
86	OGS18955	Hook
87	OGS18275	Shock absorber
88	OGS19173	Radiator plate
89	OGS10573	92Ah 12V battery
90	OGS10082	Battery clamp
91	OGS14247	Positive battery charging clip
92	OGS14248	Negative battery charging clip
93	OGS19170	Battery plate

