IRRIGATION CLOSE-COUPLED PUMP PROTECTION DEVICE

TYPE **DIM-807/00**

INSTRUCTION AND USER MANUAL

THE CLOSE-COUPLED PUMP IS STOPPED
(VIA ELECTROMAGNET OR SOLENOID) IN CASES OF ANOMALY FOR:

- LOW COOLING LIQUID LIVEL
- INEFFICIENT BATTERY CHARGE ALTERNATOR (BELT BREAKAGE)
- LOW OIL PRESSURE
- OVERHEATING
- FUEL RESERVE (WITHOUT STOPPING ENGINE)
- INSUFFICIENT WATER PUMP PRESSURE

OIL AND BATTERY INDICATORS INTEGRATED INTO THE DEVICE

PARMA ELCOS® ITALY
Tel. +39 0521/772021 Fax +39 0521/270218
E-mail: info@elcos.it - HTTP://www.elcos.it

IRRIGATION CLOSE-COUPLED PUMP PROTECTION DEVICE TYPE DIM-807/00

This surveys the functioning of the close-coupled pump and stops it if there are anomalies in the parts controlled by probes.
It has been designed to be installed in cavities in dashboards, electric panels, etc.

NOTICES

Warning:
adhere closely to the following advice

- Always install under other equipment which produces or spreads heat.
- Always follow the Circuit Diagram on pages 6-7 when making connections.
- Check that the line loading and the consumption of the connected equipment are compatible with the technical characteristics on page 12.
- All technical interventions must be performed with the engine stationary and terminal 50 of the starter motor disconnected.
- Never use a battery charger for the emergency start-up, this could damage the equipment.
- To protect the safety of persons and the equipment, before connecting an external battery charger, disconnect the electrical plant terminals from the battery poles.

NOTE: THE HOLE IN THE CASING USED TO INSTALL THE PROTECTION DEVICE COULD INFLUENCE THE LEVEL OF PROTECTION OF BOTH. STEPS MUST BE TAKEN TO MAINTAIN THE ORIGINAL LEVEL OF PROTECTION.

THIS DEVICE IS NOT SUITABLE FOR OPERATING IN THE FOLLOWING CONDITIONS:

- Where the environmental temperature is outside the limits indicated in the Technical Data on page 12.
- Where there are high levels or heat from radiation caused by the sun, ovens or the like.
- Where there is the risk of fire or explosions.
- Where the device can receive strong vibrations or knocks.

ELECTROMAGNETIC COMPATIBILITY

This protection device functions correctly only if inserted in plants which conform with the CE marking standards; it meets the exemption requirements of the standard EN50082-1 but it cannot be excluded that malfunctions could occur in extreme cases due to particular situations.
The installer has the task of checking that the disturbance levels are within the requirements of the standards.

CONDUCTION AND MAINTENANCE

The following maintenance operations should be performed every week:

- check that the indicators function;
- check the batteries;
- check that the conductors are tight, check the condition of the terminals.

UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS PROTECTION DEVICE IS NOT SUITABLE FOR USE AS A CRITICAL COMPONENT IN EQUIPMENT OR PLANTS RESPONSIBLE FOR KEEPING PERSONS OR OTHER LIVING BEINGS ALIVE

YOUR ELECTRICAL TECHNICIAN CAN ASK US ANYTHING ABOUT THIS PROTECTION DEVICE BY TELEPHONING ONE OF OUR TECHNICIANS

FUNCTIONING

IGNITION KEY (MOUNTED EXTERNALLY)

- REST
- MANUAL STOP
- RESET PROTECTION

- DEVICE SUPPLY

- START CLOSE-COUPLED PUMP

TWIN FUNCTIONS INDICATORS


- OIL AND BATTERY INDICATORS

These are on when the key is turned to "AUT". They switch off when the engine is running and the oil pressure and battery recharger are regular.

- ANOMALY INDICATORS

These are enabled after the ENGINE PROTECTIONS ACTIVE ⏻ indicator switches on, and they switch on when the relevant anomaly is detected.

ENGINE PROTECTIONS

The engine protections are enabled when the ENGINE PROTECTIONS ACTIVE ⏻ indicator is on (20 seconds after turning the key to "AUT" or, in any case 20 seconds after the end of the start impulse).
The interventions of the protection probes (mounted on the engine), shown by the relevant visual indicators, stop the engine and can be divided into two groups:

Immediately for:	After a 3-second delay for:
- OIL PRESSURE SWITCH 	- COOLING LIQUID LEVEL PROBE 
- OVERHEATING THERMOSTAT 	- BATTERY CHARGE ALTERNATOR (ALTERNATOR BELT BREAKAGE) 

FUNCTIONING

PUMP PROTECTION

The pump protection is enabled (after 3 minutes (adjustable), the time needed for the water to be pressurized) when the PUMP PROTECTION ACTIVE ⏻ lights up.

When the pressure is regular, the relevant indicator lights up. 

The intervention of the protection (5 seconds after the lowering of the pressure as detected by the water pump pressure switch) stops the engine. This is memorized and is shown by the INSUFFICIENT WATER PUMP PRESSURE visual indicator. 

RESET: This is obtained by turning the ignition key to zero.

ALARM

(FUEL RESERVE) 

Enabled when the key is turned to "AUT", without stopping the engine.

TIMER (TO BE MOUNTED EXTERNALLY)

Connect the timer to the relevant terminal, if the working time of the close-coupled pump is to be set.

Stopping occurs after this time period and the relevant indicator lights up. 

STOPPING THE CLOSE-COUPLED PUMP

This is obtained in three ways:
- by turning the ignition key to zero
- because of protections intervention
- because of timer intervention.

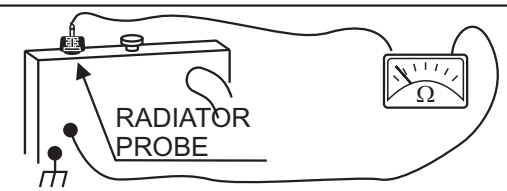
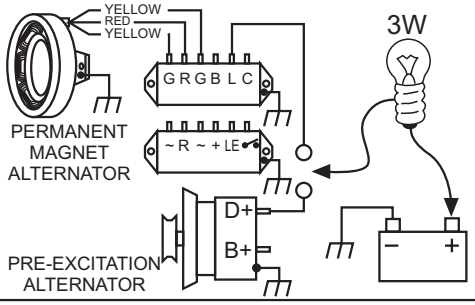
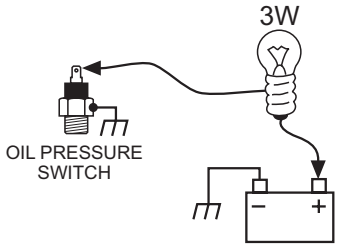
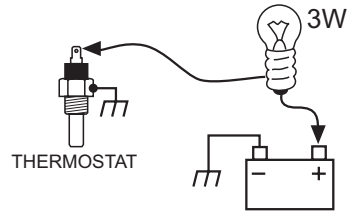
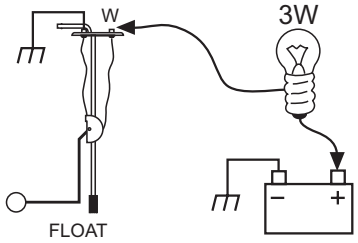
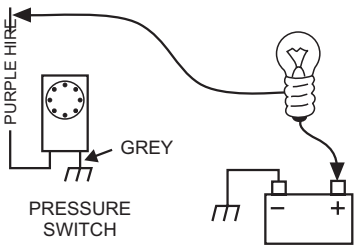
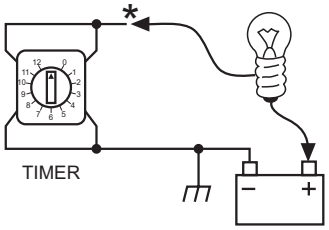
The protection device uses two different types of stoppage:
- activating the ELECTROMAGNET which pulled the STOP lever for 20 seconds
- disconnecting the supply to the SOLENOID which closes the gasoline passage.

MAIN ALARM

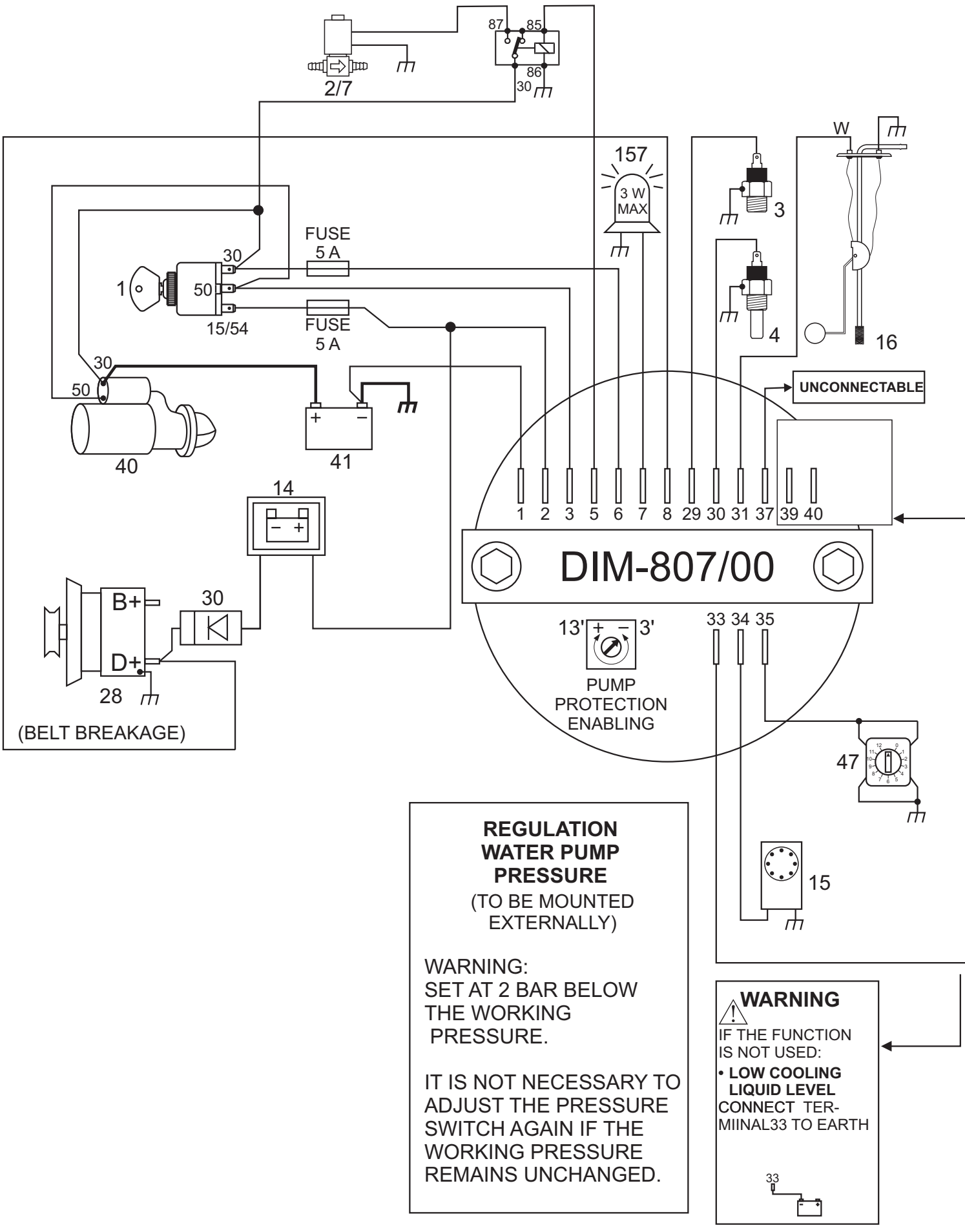
This can be obtained by mounting a visual and/or acoustic indicator externally connected to the relevant output.
This is continuously activated if the protections or fuel reserve alarm intervene.
RESET: This is obtained by turning the ignition key to zero.

ENGINE PROBES TEST

(WITH PROBES DISCONNECTED)

FUNCTION PERFORMED	TEST		
LOW COOLING LIQUID LEVEL			RESISTANCE BETWEEN PROBE AND EARTH: - WITH LIQUID MAX. 6000 Ω - WITHOUT LIQUID, ABOVE 6000 Ω
RECHARGE ALTERNATOR (BELT BREAKAGE)		ENGINE STATIONARY ENGINE RUNNING WITH REGULAR BELT ENGINE RUNNING WITH BROKEN BELT	NORMALLY THE RELEVANT TERMINAL OF THE BATTERY CHARGE ALTERNATOR IS NEGATIVE WITH THE ENGINE STATIONARY
LOW OIL PRESSURE		ENGINE STATIONARY ENGINE RUNNING WITH REGULAR PRESSURE ENGINE RUNNING WITH INSUFFI-CIENT PRESSURE	NORMALLY THE TERMINAL OF THE OIL PRESSURE SWITCH IS NEGATIVE WITH THE ENGINE STATIONARY
OVERHEATING		ENGINE WITH NORMAL TEMPERATURE ENGINE OVERHEATING	NORMALLY THE TERMINAL OF THE THERMOSTAT IS NEGATIVE WHEN THE ENGINE IS TOO HOT
FUEL RESERVE		SUFFICIENT FUEL INSUFFICIENT FUEL	NORMALLY THE W TERMINAL OF THE FLOAT IS NEGATIVE WHEN THE FUEL IS RUNNING OUT
INSUFFICIENT WATER PUMP PRESSURE		CLOSE-COUPLED PUMP STATIONARY CLOSE-COUPLED PUMP RUNNING WITH REGULAR WATER PRESSURE CLOSE-COUPLED PUMP RUNNING WITH SUFFICIENT WATER PRESSURE	NORMALLY THE PURPLE WIRE OF THE WATER PRESSURE SWITCH IS NEGATIVE WHEN THE PUMP IS STATIONARY
TIMED STOP		TIMER AT ZERO HORAS TIMER WITH SET HOURS	NORMALLY THE TIMER TERMINAL * (INDICATED IN THE FIGURE ALONGSIDE) IS NEGATIVE WHEN THE HOURS ARE SET

NOTE: WHEN THE TEST HAS BEEN COMPLETED RECONNECT THE PROBES



REGULATION WATER PUMP PRESSURE
(TO BE MOUNTED EXTERNALLY)

WARNING:
SET AT 2 BAR BELOW THE WORKING PRESSURE.

IT IS NOT NECESSARY TO ADJUST THE PRESSURE SWITCH AGAIN IF THE WORKING PRESSURE REMAINS UNCHANGED.

WARNING

IF THE FUNCTION IS NOT USED:

- **LOW COOLING LIQUID LEVEL**

CONNECT TER-MIINAL33 TO EARTH

ACCESSORIES

AVAILABLE ON REQUEST

(1) IGNITION KEY
(2/7) ELECTROMAGNET OR SOLENOID
(3) OIL PRESSURE SWITCH
(4) THERMOSTAT
(15) WATER PUMP PRESSURE SWITCH
(16) FUEL FLOAT
(30) 3A 200V DIODE
(47) TIMER
(155) RADIATOR LIQUID LEVEL PROBE
(157) INDICATOR (MAIN ALARM)

MOUNTED ON ENGINE

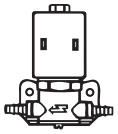
(14) CHARGE CONTROL LAMP
(27) ALTERNATOR REGULATOR
(28) PRE-EXCITATION CHARGE ALTERNATOR
(40) STARTER MOTOR
(41) BATTERY

STOP SYSTEMS SET UP

The system is arranged to command the stopping with SOLENOID.

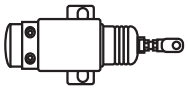
For ELECTROMAGNET stopping, connect terminals 39 and 40.

DRIVE EXCITATION



SOLENOID for closing diesel

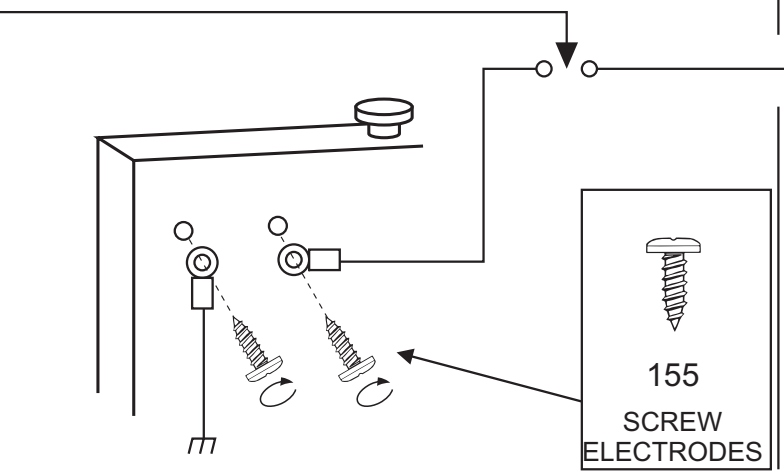
STOP EXCITATION



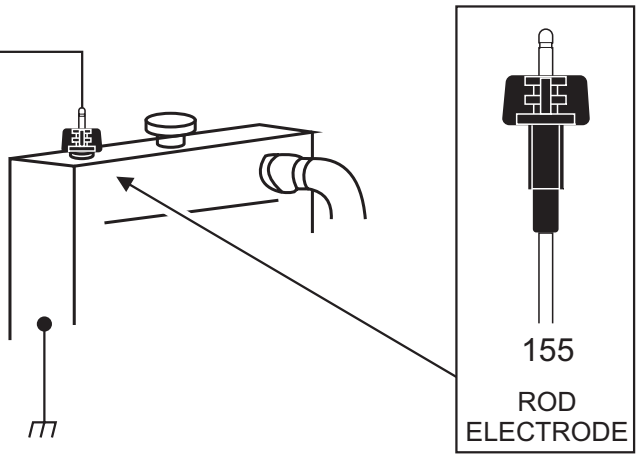
ELECTROMAGNET for pulling STOP lever

COOLING LIQUID LEVEL PROBE

FOR RADIATORS WITH PLASTIC EXPANSION TANKS

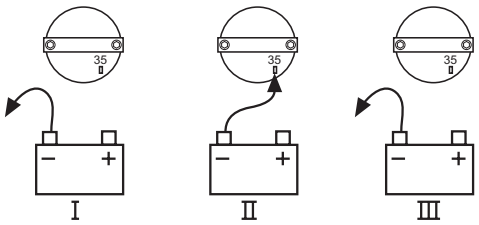


FOR RADIATORS WITH METAL EXPANSION TANKS



DEVICE TEST

(SIMULATION)

FUNCTION PERFORMED	INTERVENTION SIMULATION (WITH INDICATOR ⏻ ON PROTECTIONS ARE ACTIVE)	FUNCTIONS INTERVENTION (STOP, GENERAL ALARM AND VISUAL INDICATOR ON)
LOW COOLING LIQUID LEVEL	DISCONNECT THE TERMINAL FROM THE ROD MOUNTED ON THE RADIATOR	AFTER 3 SECONDS
RECHARGE ALTERNATOR (BELT BREAKAGE)	DISCONNECT THE WIRE FROM TERMINAL [8] OF THE DEVICE AND CONNECT TERMINAL [8] TO EARTH	AFTER 3 SECONDS
LOW OIL PRESSURE	DISCONNECT THE WIRE FROM THE OIL PRESSURE SWITCH TERMINAL AND CONNECT IT TO EARTH	IMMEDIATELY
OVERHEATING	DISCONNECT THE WIRE FROM THE THERMOSTAT TERMINAL AND CONNECT IT TO EARTH	IMMEDIATELY
FUEL RESERVE	DISCONNECT THE WIRE FROM THE W TERMINAL OF THE FLOAT AND CONNECT IT TO EARTH	AFTER 3 SECONDS the relevant indicator will light upe without stopping the engine
TIMED STOP	DISCONNECT THE WIRE FROM TERMINAL [35] OF THE DEVICE AND CONNECT THE TERMINAL [35] TO EARTH, DISCONNECT AND THEN RECONNECT IT 	IMMEDIATELY
INSUFFICIENT WATER PUMP PRESSURE	SIMULATION OF INTERVENTION (WITH PUMP PROTECTION ACTIVE ⏻ INDICATOR ON). DISCONNECT THE PURPLE WIRE FROM THE TERMINAL [34] OF THE DEVICE AND CONNECT THE TERMINAL [34] TO EARTH	AFTER 5 SECONDS

NOTE

WHEN THE SIMULATION HAS BEEN COMPLETED ENSURE THAT ALL OF THE CONNECTIONS ARE RETURNED TO THEIR ORIGINAL POSITIONS

TROUBLE SHOOTINGS

TYPE OF PROBLEM	PROBABLE CAUSES	REMEDIAL INTERVENTIONS
THE STARTER MOTOR FUNCTIONS BUT THE ENGINE DOES NOT START	- Lack of fuel	- Fill the tank
	- Fuel supply circuit defect	- Check that the stop system (solenoid or electromagnet) functions - Consult the engine instruction manual
	- Low temperature	- Check that the preheating functions

TROUBLE SHOOTING

TYPE OF PROBLEM	PROBABLE CAUSES	REMEDIAL INTERVENTIONS
THE STARTER MOTOR DOES NOT FUNCTIONS	- Flat battery	- Recharge the battery and clean the connection terminals
	- Starter motor is defective	- Check that there are +12V or + 24V on terminal 50 of the starter motor during the start phase. Check and, if necessary, replace the starter relay.
	- An anomaly indicator is on	- See ENGINE STOPS FOR ANOMALY
	- Defective ignition key	- Replace the ignition key and check
ENGINE STOPS FOR ANOMALY	- The low cooling liquid level indicator lights up 	- Check the level of the cooling liquid
	- The belt breakage indicator lights up after the PROTECTIONS ACTIVE ⏻ indicator lights up 	- Check the condition of the alternator belt
	- The low oil pressure indicator lights up after the PROTECTIONS ACTIVE ⏻ indicator lights up 	- Check the engine oil level
	- The overheating indicator lights up 	- Check the engine cooling system
	- The insufficient water pump pressure lights up 	- Check that the handle of the water pump pressure switch has been set at 2 bars below the plant pressure
ENGINE DOES NOT STOP UNDER ANY CONDITIONS	- Stop system (electromagnet or solenoid) does not function	- Check the correct mechanical or electrical functioning of the stop system. If the problem persists, check the stop servo-relay.
	- Defective engine probes	- Test the probes (see ENGINE PROBES TEST on page 5) and if necessary replace them.
	- Defective device	- Check that during the stop phase there is voltage on terminal (5) (see STOP on page 4), simulate the function (see DEVICE TEST on page 8 and if necessary replace the device (*)

TROUBLE SHOOTING

TYPE OF PROBLEM	PROBABLE CAUSES	REMEDIAL INTERVENTIONS
CLOSE-COUPLED PUMP STOPS FOR ANOMALY THOUGH ALL APPEARS TO BE REGULAR	- Low cooling liquid level indicator on 	- Test the probe, clean it and, if necessary, replace it
	- The belt breakage indicator lights up after the PROTECTIONS ACTIVE indicator lights up 	- Check the function of the charge alternator
	- The low oil pressure indicator lights up after the PROTECTIONS ACTIVE indicator lights up 	- Test and, if necessary, replace the oil pressure switch
	- The overheating indicator lights up 	- Test and, if necessary, replace the thermostat
	- Insufficient water pump pressure indicator on 	- Test and, if necessary, replace the water pump pressure switch
	- Defective device	- Simulate the functioning of the device for the anomaly indicated (see DEVICE TEST on page 8) and if necessary replace it (*)
CLOSE-COUPLED PUMP STOP ANOMALY WITH INDICATOR ON 	- Defective timer	- Test the timer and, if necessary , replace it
	- Defective device	- Simulate the timed stop function (see DEVICE TEST on page 8) and if necessary replace it (*)

Turn the key to zero to reset the functioning

[*] ASSISTANCE REQUEST

Our assistance service is always at your disposal. When you contact us, you should be ready to provide the following information:

- The type of equipment installed
- The problem encountered
- The state of the dashboard indicators when the problem arose
- Any previous corrective action taken

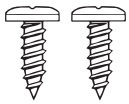
ACCESSORIES AVAILABLE ON REQUEST

RADIATOR LIQUID LEVEL PROBE

ROD ELECTRODE
(COMPLETE WITHI:
RIVET CONNECTION,
BOLT, NUT, WASHER,
GASKET AND FEMALE
CONNECTOR)

type AST-015/00 code 24.10.12

SCREW ELECTRODES
(COMPLETE WITH:
LUGS)



type E 25 code 19.01.15

FOR OHTER ACCESSORIES AVAILABLE ON REQUEST SEE PAGE 7

ACCESSORIES

MOBILE SOCKETS

type PMO-134/00 code 80.42.34

type PMO-136/00 code 80.42.36

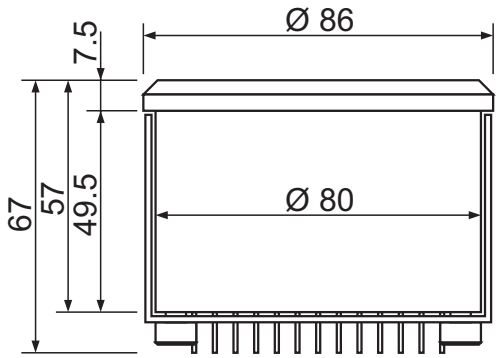
DATA FOR ORDERING

ENGINE PROTECTIONS DEVICE

type **DIM-807/00 12 V** code **03.02.03**

type **DIM-807/00 24 V** code **03.02.04**

DIMENSIONS



TECHNICAL DATA

- BATTERY SUPPLY VOLTAGE	12 VDC (MAX 16 VDC) or 24 VDC (MAX 32 VDC)
- CIRCUIT LOADING WITH KEY TURNED TO ZERO	8 mA
- MAXIMUM LOAD ON OUTPUT [5] (STOP)	3 A
- MAXIMUM LOAD ON OUTPUT [7] (GENERAL ALARM)	3 W
- TEMPERATURE RANGE	-10 ÷ +60 °C
- TERMINAL BOARD	FASTON 6.35 × 0.8
- DEGREE OF PROTECTION FRONT / REAR	IP 65 / IP 00
- WEIGHT	460 g

CONFORMITY DECLARATION

CE

The company Elcos s.r.l. assumes full responsibility for declaring that the equipment:

type: **DIM-807/00**

when used in the ways and for the purposes described in the enclosed documents is in conformity with the following directive:

89/336/CEE concerning electromagnetic compatibility

modified by the directive **93/68/CEE**

being manufactured and functioning in accordance with the harmonized standards:

EN 50081-1, EN 50082-1, EN 60529

ELCOS® S.r.l.
Via Naviglio Alto, 24/a
43100 PARMA ITALIA
Tel. +39 0521/772021 Fax +39 0521/270218
E-mail: info@elcos.it - HTTP://www.elcos.it

Parma, 18/6/1999
President

Walter Consigli