

CONTROL AND PROTECTION PANEL FOR TRACTOR-PUMP

TYPE **CTR-087/0S**



NEVER USE
THE DEVICE WHEN
THE TRACTOR IS IN
MOVEMENT

**THE TRACTOR-PUMP IS STOPPED WHEN THERE ARE ANOMALIES
(VIA SOLENOID) CONCERNING:**

- LOW COOLANT LEVEL
- BATTERY CHARGE ALTERNATOR NOT FUNCTIONING CORRECTLY (BROKEN BELT)
- LOW OIL PRESSURE
- OVER-TEMPERATURE
- INSUFFICIENT PUMP WATER PRESSURE LOW WATER PUMP PRESSURE

OIL AND BATTERY INDICATORS INTEGRATED IN JUNCTION BOX

PARMA



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TRACTOR AND PUMP PROTECTION JUNCTION BOX

TYPE CTR-087/0S

Only for starting and surveillance of the tractor pump while it is running, ordering stopping if there are problems in the parts controlled by the probes.
Designed to be installed also on board the machine.

NOTICES

Warning:
adhere closely to the following advice



- Never use the device when the tractor is in movement: the engine may be stopped to the anomaly detected by the control unit
- Always install below any other equipment that produces or spreads heat
- When making connections always follow the Circuit Diagram on page 6-7
- Check that the absorption and circuit loading of the connected equipment is compatible with the Technical Data on page 11
- All technical interventions must be performed with the engine stationary and with terminal 50 of the starter motor disconnected
- Never disconnect the battery terminals with the engine running.
- Never use the battery charger for emergency start-ups; this could damage the junction box
- To safeguard persons and equipment, before connecting an external battery charger, disconnect the plant electrical terminals from the battery poles.

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 11.
- WHERE THERE IS THE RISK OF FIRE OR EXPLOSIONS.
- WHERE THE DEVICE CAN RECEIVE STRONG VIBRATIONS OR KNOCKS.

ELECTROMAGNETIC COMPATIBILITY

This junction box functions correctly only if inserted in plants which conform with the CE marking standards; it meets the exemption requirements of the standard EN61326-1 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 indicators are tight, check the condition of the terminals.

UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS JUNCTION BOX 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 JUNCTION BOX BY TELEPHONING ONE OF OUR TECHNICIANS

IGNITION KEY (INSTALLED ON TRACTOR)

- 
 - REST
 - MANUAL STOP
 - RESET PROTECTION
- 
 - JUNCTION BOX SUPPLIED
- 
 - START TRACTOR

TWIN FUNCTION INDICATORS




OIL AND BATTERY INDICATORS

On when key is turned to "AUT", off when the engine is running with correct oil pressure and battery charging.

ANOMALY INDICATOR



Enabled after the lighting up of the ENGINE PROTECTIONS ACTIVE  visual indicator, they light up when an anomaly is detected.

ENGINE PROTECTIONS



The engine protections are enabled after the lighting up of the ENGINE PROTECTIONS ACTIVE  visual indicator (20 seconds after turning the key to "AUT" or, in any case, 20 seconds after the start impulse).

The protection probe (mounted on the engine) interventions, shown by the relevant visual indicators, stop the engine. They can be divided into two groups:


Immediately for:


- OIL PRESSURE SWITCH 
- OVER-HEATING THERMOSTAT 


3 second delay for:

- COOLING LIQUID LEVEL PROBE 
- BATTERY CHARGE ALTERNATOR (BROKEN ALTERNATOR BELT) 

PUMP PROTECTION

The pump protection is enabled (after 3 minutes, which can be regulated, this being the time needed for the water to be pressurized) when the PUMP PROTECTION ACTIVE  lights up.

When the pressure is correct the relevant indicator lights up. 

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

RESET: Turn the ignition key to zero.

TRACTOR AND PUMP STOPPAGE



This is achieved in two ways:

- Turning the ignition key to zero.
- When protections intervene.

Stopping occurs:


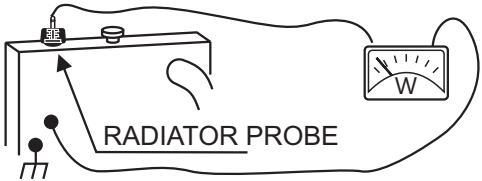

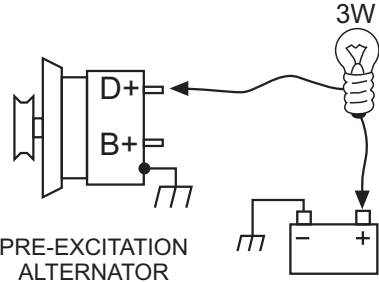










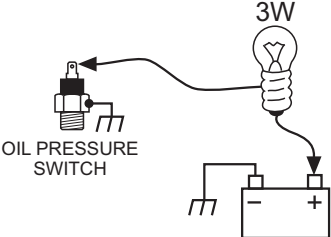










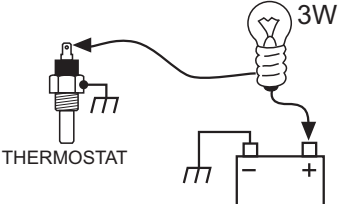







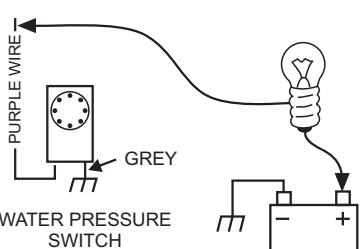









- Disconnecting the supply to the SOLENOID which closes the gasoline passage.

- UNPERFORMED FUNCTIONS -

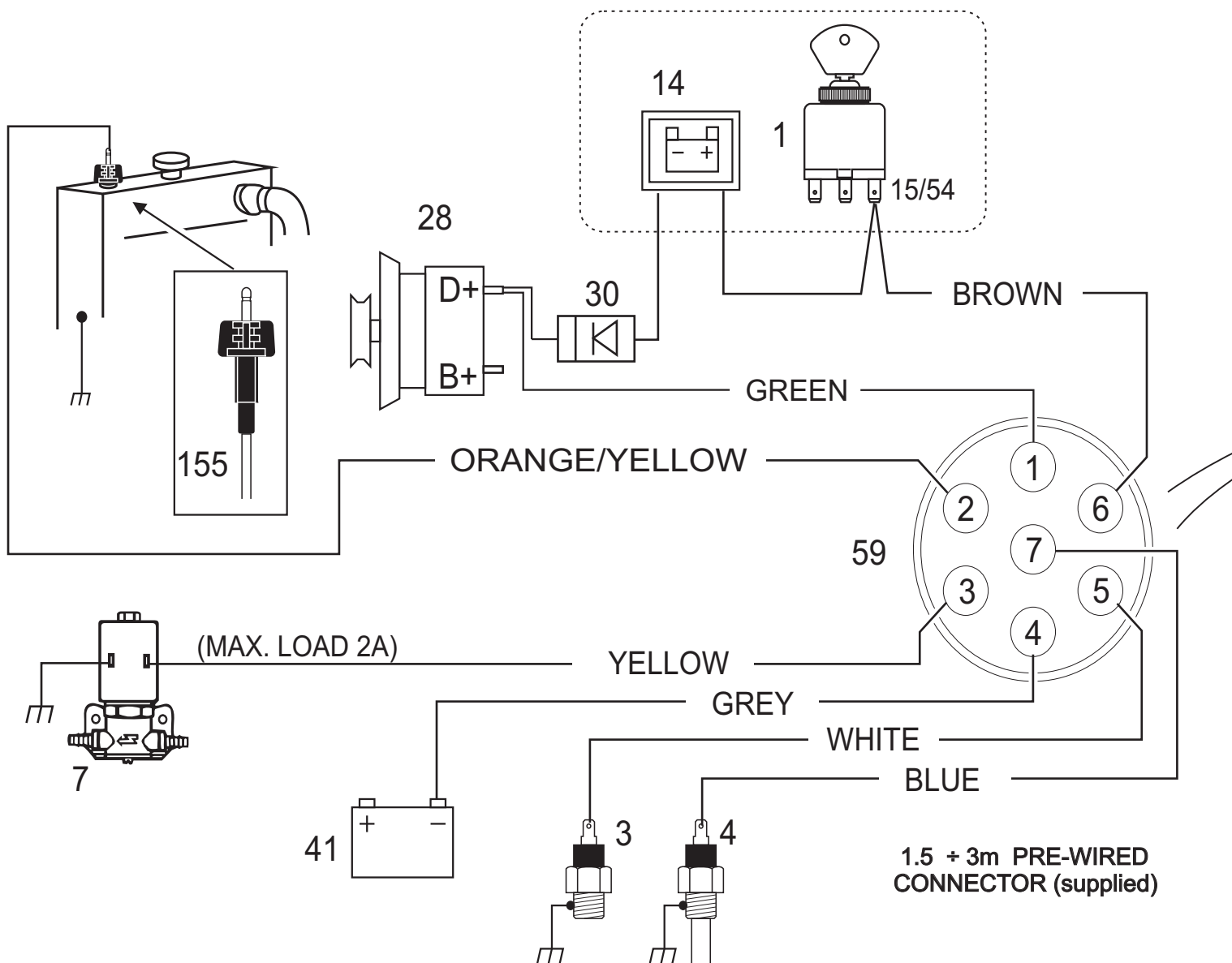
	TIMER	UNCONNECTABLE
	FUEL RESERVE	UNCONNECTABLE

PUMP AND TRACTOR PROBES TEST

(WITH PROBES DISCONNECTED)

FUNCTION PERFORMED	TEST						
 LOW COOLING LIQUID LEVEL	 <p>RADIATOR PROBE</p> <p>RESISTANCE BETWEEN PROBE AND EARTH:</p> <ul style="list-style-type: none"> - WITH LIQUID MAX 6000 Ω - WITHOUT LIQUID, ABOVE 6000 Ω 						
 RECHARGE ALTERNATOR (BROKEN BELT)	 <p>PRE-EXCITATION ALTERNATOR</p> <table border="1"> <tr> <td>ENGINE STATIONARY</td><td></td></tr> <tr> <td>ENGINE RUNNING WITH BELT OK</td><td></td></tr> <tr> <td>ENGINE RUNNING WITH BROKEN BELT</td><td></td></tr> </table> <p>NORMALLY BATTERY CHARGE ALTERNATOR TERMINAL IS NEGATIVE WITH ENGINE STATIONARY</p>	ENGINE STATIONARY		ENGINE RUNNING WITH BELT OK		ENGINE RUNNING WITH BROKEN BELT	
ENGINE STATIONARY							
ENGINE RUNNING WITH BELT OK							
ENGINE RUNNING WITH BROKEN BELT							
 LOW OIL PRESSURE	 <p>OIL PRESSURE SWITCH</p> <table border="1"> <tr> <td>ENGINE STATIONARY</td><td></td></tr> <tr> <td>ENGINE RUNNING WITH PRESSURE OK</td><td></td></tr> <tr> <td>ENGINE RUNNING WITH INSUFFICIENT PRESSURE</td><td></td></tr> </table> <p>NORMALLY OIL PRESSURE SWITCH TERMINAL IS NEGATIVE WITH ENGINE STATIONARY</p>	ENGINE STATIONARY		ENGINE RUNNING WITH PRESSURE OK		ENGINE RUNNING WITH INSUFFICIENT PRESSURE	
ENGINE STATIONARY							
ENGINE RUNNING WITH PRESSURE OK							
ENGINE RUNNING WITH INSUFFICIENT PRESSURE							
 OVER-HEATING	 <p>THERMOSTAT</p> <table border="1"> <tr> <td>ENGINE TEMPERATURE NORMAL</td><td></td></tr> <tr> <td>ENGINE OVER-HEATING</td><td></td></tr> </table> <p>NORMALLY THERMOSTAT TERMINAL IS NEGATIVE WHEN ENGINE IS TOO HOT</p>	ENGINE TEMPERATURE NORMAL		ENGINE OVER-HEATING			
ENGINE TEMPERATURE NORMAL							
ENGINE OVER-HEATING							
 INSUFFICIENT PUMP WATER PRESSURE	 <p>PURPLE WIRE</p> <p>GREY</p> <p>WATER PRESSURE SWITCH</p> <table border="1"> <tr> <td>CLOSE-COUPLED PUMP STATIONARY</td><td></td></tr> <tr> <td>CLOSE-COUPLED PUMP RUNNING WITH NORMAL WATER PRESSURE</td><td></td></tr> <tr> <td>CLOSE-COUPLED PUMP RUNNING WITH INSUFFICIENT PRESSURE SWITCH</td><td></td></tr> </table> <p>NORMALLY WATER PRESSURE SWITCH PURPLE WIRE IS NEGATIVE WITH PUMP STATIONARY</p>	CLOSE-COUPLED PUMP STATIONARY		CLOSE-COUPLED PUMP RUNNING WITH NORMAL WATER PRESSURE		CLOSE-COUPLED PUMP RUNNING WITH INSUFFICIENT PRESSURE SWITCH	
CLOSE-COUPLED PUMP STATIONARY							
CLOSE-COUPLED PUMP RUNNING WITH NORMAL WATER PRESSURE							
CLOSE-COUPLED PUMP RUNNING WITH INSUFFICIENT PRESSURE SWITCH							

NOTE: WHEN THE TEST HAS BEEN COMPLETED RECONNECT THE PROBE



ACCESSORIES

SUPPLIED

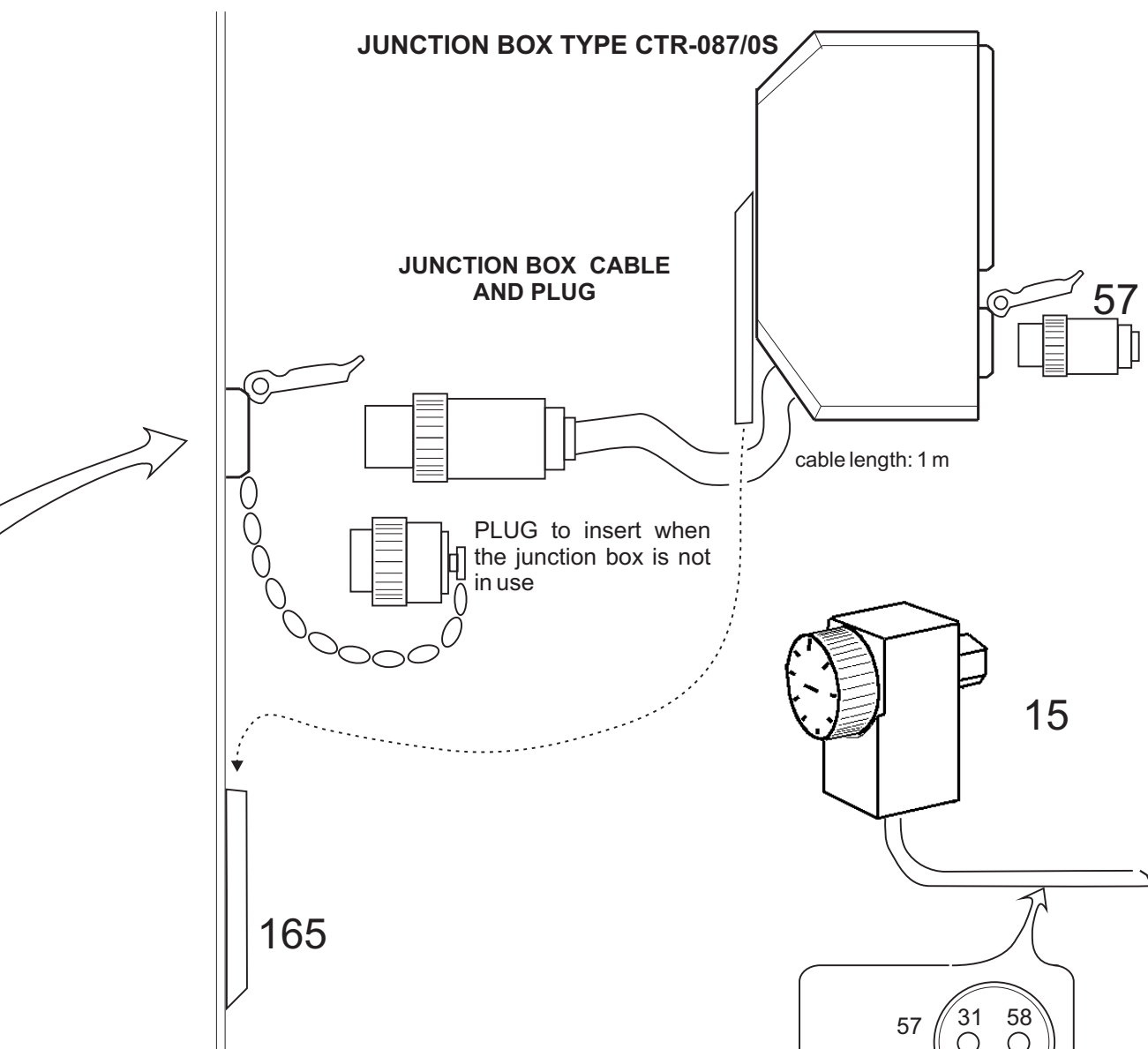
- (30) 3A 200V DIODE
- (57) MOBILE 2 POLE PLUG
- (59) FIXED 7 POLE SOCKET WITH MOBIL PLUG (PRE-WIRED CONNECTOR)
- (165) SUPPORT TYPE CTR-087

ON REQUEST

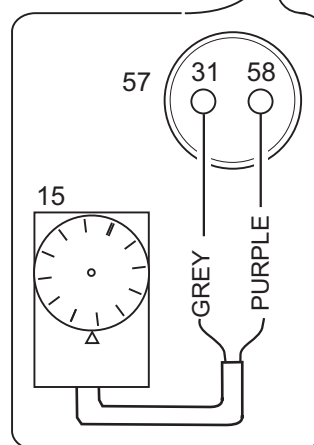
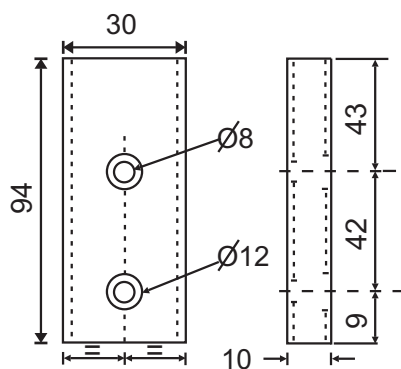
- (4) THERMOSTAT
- (7) STOP SOLENOID (closed when no voltage)
- (15) WATER PRESSURE SWITCH WITH COUVER (closed contact when there is no pressure)
- (155) RADIATOR LIQUID LEVEL PROBE

MOUNTED ON TRACTOR

- (1) IGNITION KEY
- (3) OIL PRESSURE SWITCH
- (14) CHARGE CONTROL LAMP
- (28) CHARGE ALTERNATOR
- (41) BATTERY



SUPPORT DIMENSIONS (165)








If the function - LOW COOLANT LEVEL:
Is not used:

Connect the ORANGE/YELLOW wire to earth



JUNCTION BOX TEST






(SIMULATION)

FUNCTION PERFORMED	INTERVENTION SIMULATION (WITH INDICATOR ① ON ENGINE PROTECTIONS ARE ACTIVE)	FUNCTIONS INTERVENTION (STOP AND VISUAL INDICATOR ON)
 LOW COOLING LIQUID LEVEL	DISCONNECT TERMINAL FROM ROD MOUNTED ON RADIATOR	AFTER 3 SECONDS
 CHARGE ALTERNATOR (BROKEN BELT)	DISCONNECT GREEN WIRE IN JUNCTION BOX CONNECTOR AND CONNECT TO EARTH	AFTER 3 SECONDS
 LOW OIL PRESSURE SWITCH	DISCONNECT WIRE FROM PRESSURE SWITCH TERMINAL AND CONNECT TO EARTH	IMMEDIATELY
 OVER-HEATING	DISCONNECT WIRE FROM THERMOSTAT TERMINAL AND CONNECT TO EARTH	IMMEDIATELY
 INSUFFICIENT PUMP WATER PRESSURE	INTERVENTION SIMULATION (WITH INDICATOR ON PUMP ① PROTECTION IS ACTIVE). DISCONNECT THE TWO POLE MOBILE SOCKET (57) AND SHORT THE TWO POLES OF THE PLUG ON THE JUNCTION BOX	AFTER 5 SECONDS






NOTE

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

TROUBLE SHOOTING

TYPE OF PROBLEM	PROBABLE CAUSES	REMEDIES
STARTER MOTOR DOES NOT FUNCTION	<ul style="list-style-type: none"> - Flat battery - Defective starter motor - An anomaly indicator lights up - Defective ignition key 	<ul style="list-style-type: none"> - Charge battery and clean connection terminals - Check that +12V reach terminal 50 of starting motor during start phase. Check and, if necessary, replace starter relay - See page 10 (ENGINE STOP FOR ANOMALY) - Replace ignition key, check fastons that secure it
STARTER MOTOR FUNCTIONS BUT ENGINE DOES NOT START	<ul style="list-style-type: none"> - Lack of fuel - Fuel supply circuit defect 	<ul style="list-style-type: none"> - Fill tank - Check function of stop system - Consult tractor manual instructions
STOP FOR ENGINE ANOMALY	<ul style="list-style-type: none"> - Low cooling liquid indicator lights up  - Broken belt indicator lights up after ENGINE PROTECTIONS ACTIVE  ⓘ indicator lights up - Low oil pressure indicator lights up after ENGINE PROTECTIONS ACTIVE ⓘ indicator lights up  - Over-heating indicator lights up  - Insufficient pump water pressure indicator lights up  	<ul style="list-style-type: none"> - Check cooling liquid level - Check alternator belt - Check engine oil level - Check engine cooling system - Check that water pressure switch is set at 2 bar less than plant pressure

TROUBLE SHOOTING

TYPE OF PROBLEM	PROBABLE CAUSES	REMEDIES
ENGINE DOES NOT STOP UNDER ANY CONDITIONS	<ul style="list-style-type: none"> - Fuse(s) blown (inside junction box) - Stop system (solenoid) not functioning - Defective engine probe 	<ul style="list-style-type: none"> - Replace with similar fuses - Check electric or mechanical stop system functions correctly. If problem continues check stop servo-relay - Test probe (see ENGINE PROBE TEST on page 5) and, if necessary, replace them
ENGINE STOPS THOUGH ALL APPEARS TO BE OK	<ul style="list-style-type: none"> - Fuse(s) blown (inside junction box) - Low cooling liquid indicator lights up  - Broken belt indicator lights up after ENGINE PROTECTIONS ACTIVE ①  - Low oil pressure indicator lights up after ENGINE PROTECTIONS ACTIVE ①  - Over-heating indicator lights up  - Insufficient pump water pressure indicator lights up  	<ul style="list-style-type: none"> - Replace fuses with similar ones - Check probe, clean and, if necessary, replace it - Check charge alternator function - Test and, if necessary, replace oil pressure switch - Test and, if necessary, replace thermostat - Test and, if necessary, replace pump water pressure switch

To restore functioning turn key to zero

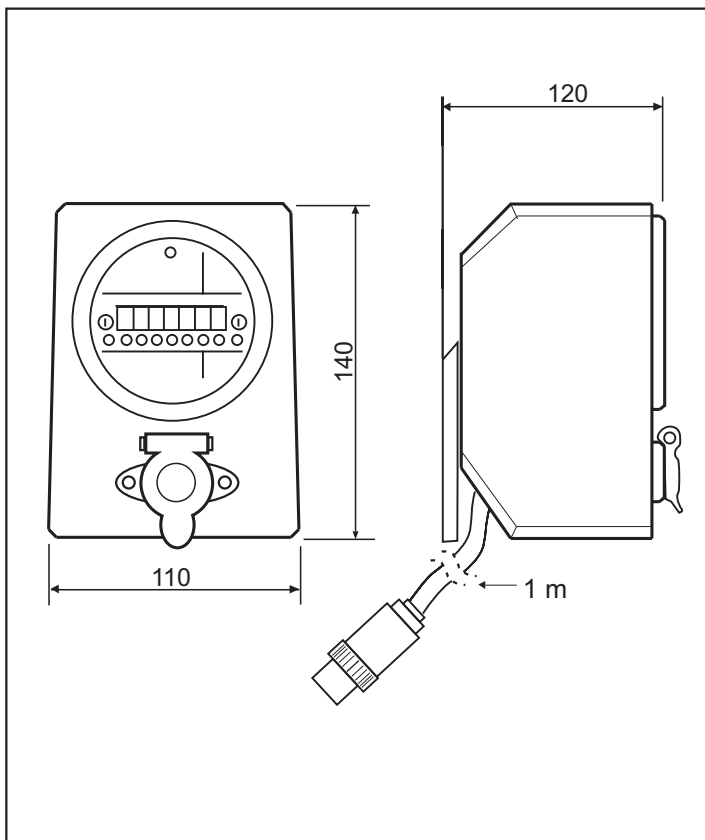


[*] ASSISTANCE REQUEST

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

DIMENSIONS



TECHNICAL DATA

- | | |
|--|---------------------|
| - BATTERY SUPPLY VOLTAGE | 12 VDC (MAX 16 VDC) |
| - MAX. LOAD ON YELLOW OUTPUT (STOP) | 2 A |
| - TEMPERATURE RANGE | -10 ÷ +60 °C |
| - DEGREE OF PROTECTION
BOX
CONNECTOR | IP 31
IP 20 |
| - INSTALLATION
CONDITIONS: | FOR EXTERNAL USE |
| - JUNCTION BOX WEIGHT | 1.360 g |
| - TOTAL WEIGHT (JUNCTION BOX,
ACCESSORIES, PACKING) | 2.300 g |

ACCESSORIES AVAILABLE ON REQUEST

RADIATOR LIQUID LEVEL PROBE

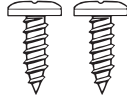
ROD ELECTRODE
(COMPLETE WITH:
RIVET JOINT, BOLT, NUT,
WASHER GASKET AND
FEMALE CONNECTOR)



type AST-015/00

code 40241012

SCREW ELECTRODES
(COMPLETE WITH: LUGS)



type E 25

code 40190115

FOR OTHER ACCESSORIES AVAILABLE ON REQUEST SEE PAGE 6

SUPPLIED ACCESSORIES

Code

- Kit CTR-087 type support **40 910102**
- Pre-wired 7-pole female connector type CTR-087-0150S **70804335**

ORDERING DATA

type **CTR-087/0S 12 V** code **00211027**

CONFORMITY DECLARATION



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

type: **CTR-087/0S**

used in the ways and for the purposes described in this instruction and user manual is in conformity with the following directive:

- 2004/108/CE related to the electromagnetic compatibility and that repeals the directive 89/336/CEE,
- 2011/65/UE on the restriction of the use of certain hazardous substances in electrical and electronic equipment, because it is built and functions in accordance with the harmonized Standards:

EN61326-1, EN61326/A1, EN61000-4-2, EN61000-4-4, EN61000-4-6, EN60529.



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Parma, 19/04/2013
President

Margini Enzo