Operating instructions

Electronic lubrication control unit

Model 85307; single-line system

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Contents

Description

Lubrication controller 85307 is a universal electronic control unit compatible with dual-line, single-line and progressive lubrication systems. Provides flexibility and control over traditional single-line systems.

Controller digital display quickly identifies system status with easy-to-identify codes. Programming of unit requires simple information allowing operator to focus on specific utilized system.

Features

- Runs progressive, single-line and dual-line lubrication systems.
- Timing intervals from 5 seconds to 24 hours.
- Cycle counting.
- 10 V ⎓ to 30 V ⎓ operation.
- Short circuit/open circuit detection with audible warning.
- External fault lamp drive (flash or steady output).
- Low level reservoir monitoring.
- Two sensor switch inputs.
- Visual and audible fault indication.
- Non-volatile memory.
- Built-in blown fuse indicator.
- 3-digit LED display indicates exact system status.
- Simple setup procedure.
- Test mode allows testing of all circuits connected to controller.
- Practical housing with mounting bracket.

Table 1

Specifications

Voltage	10 V ⎓ to 30 V ⎓
Current drain	150 mA maximum (no load), 70 mA nominal
Pump output	7 A rms. maximum
Lamp output	3 A maximum
Switching	Solid state short circuit protected
Fuse	8 A fast blow 0.79 in *(20 mm)* glass
Connection	14 way MOLEX MINIFIT - JR
Communications	RS232 type
Dimensions	2.8 × 5.7 × 1.5 in *(70 × 145 × 38 mm)* [1]
Weight	0.66 lbs *(300 g)*
Protection	IP54
Temperature range	5 °F to 122 °F *(–15 °C to +50 °C)*

[1] Includes mounting bracket.

Safety

Read and carefully observe operating instructions before unpacking and operating equipment. Equipment must be operated, maintained and repaired exclusively by persons familiar with operating instructions. Local safety regulations regarding installation, operation and maintenance must be followed.

Operate equipment only after safety instructions and this service manual are fully understood.

Operational precautions

User must have total understanding of controller specifications. Never connect any other voltage supply other than specified in manuals contained within.

Operator/owner must ensure installation or inspections are executed by authorized personnel who have thoroughly read operating instruction manual.

Switch machine off before performing any setup or work on controller. Position machine so no harm can be caused to any person should machine be switched on during setup of controller. Operator or personnel working on machine must be advised in the event machine needs to be on for setup of controller.

Never switch machine on without prior knowledge of operator/owner or someone with full knowledge of machines operation.

Explanation of signal words for safety

NOTE

Emphasizes useful hints and recommendations as well as information to prevent property damage and ensure efficient trouble-free operation.

⚠ CAUTION

Indicates a dangerous situation that can lead to light personal injury if precautionary measures are ignored.

⚠ WARNING

Indicates a dangerous situation that could lead to death or serious injury if precautionary measures are ignored.

⚠ DANGER

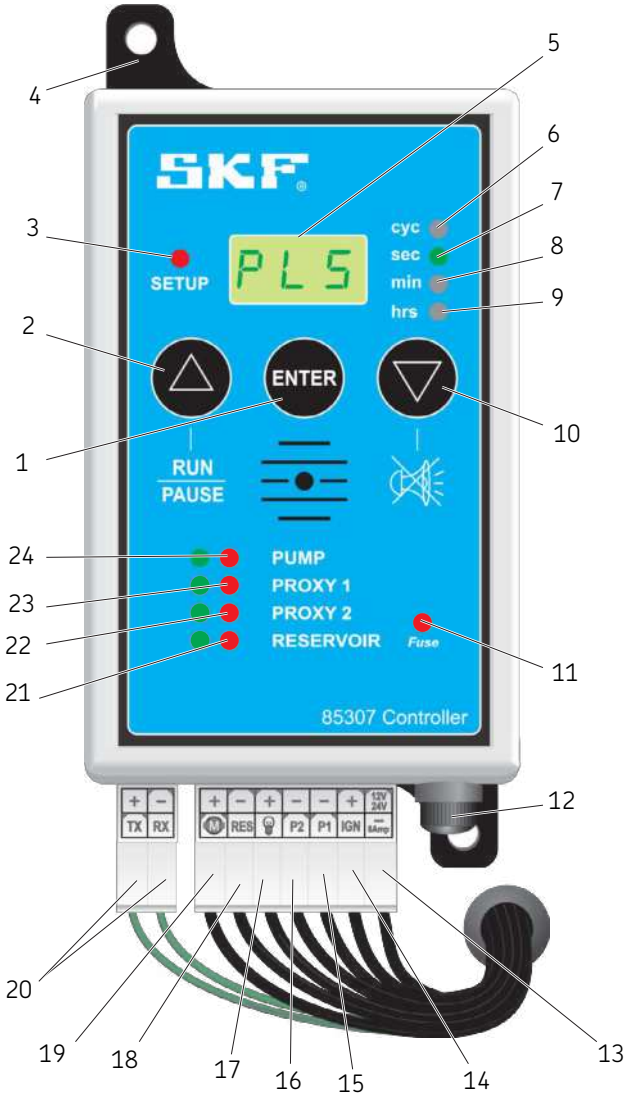
Indicates a dangerous situation that will lead to death or serious injury if precautionary measures are ignored.

⚠ WARNING

- Never weld on machine while main switch of machine is on. Ensure main switch is off and correctly tagged. Welding on machine can cause serious damage to controller.
- Do not alter or modify any part of controller.
- Always mount controller in suitable area.
- Do not mount controller near an area with excessive heat.
- Always use correct specified fuse rating for controller.
- Never exceed voltage rating of controller.
- Never expose controller to direct sunlight.
- Never expose controller to water or other substances.

Fig. 1

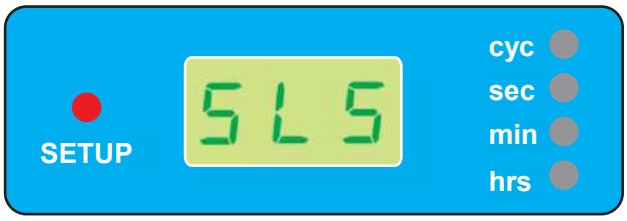
Keypad layout



Item	Description
1	Enter button
2	Run/pause buttton
3	Setup indicator
4	Mounting bracket
5	LED display
6	Cycle indicator
7	Second indicator
8	Minute indicator
9	Hour indicator
10	Select value down or silent buzzer
11	Blown fuse indicator
12	Fuse holder, 8 A
13	Power positive/negative
14	Ignition input/aux power output positive
15	Sensor 1 positive/negative
16	Sensor 2 positive/negative
17	External lamp
18	Reservoir sensor connection
19	Pump motor positive/negative
20	RS 232 connection
21	Reservoir low level status indicator
22	Sensor 2 status indicator
23	Sensor 1 status indicator
24	Pump status indicator

LED code descriptions

Fig. 2

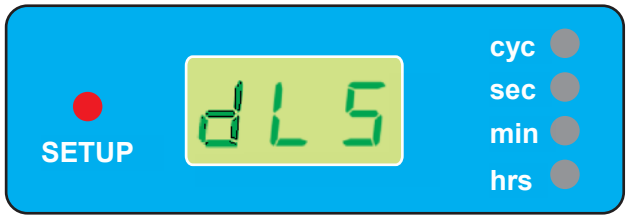


SLS = single-line system

Fig. 3

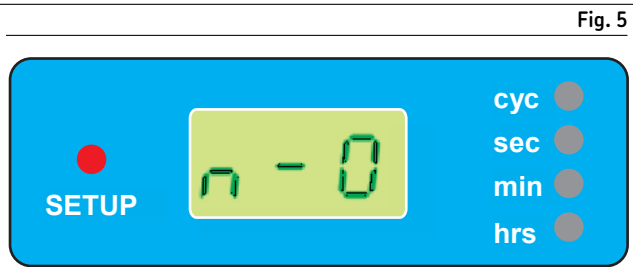
PLS = progressive-line system

Fig. 4



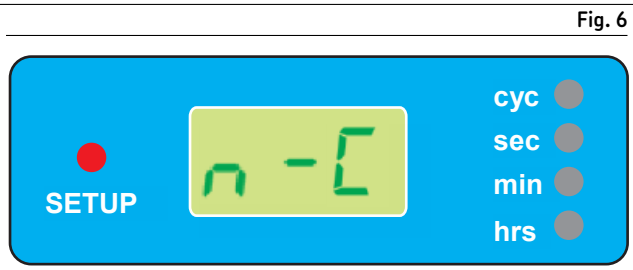
DLS = dual-line system

Fig. 5



n – 0 = normally open (sensors)

Fig. 6

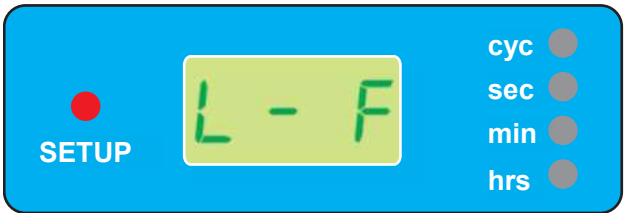


n – C = normally closed (sensors)

Fig. 7

L – S = external lamp steady (continued supply)

Fig. 8

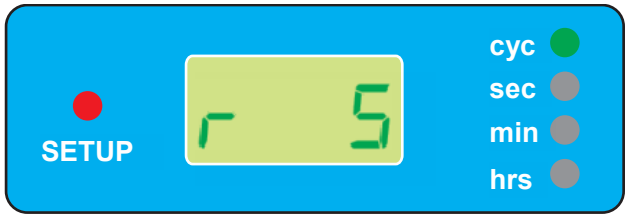


L – F = external lamp flashing (pulsed supply)

Fig. 9

nFE = non-fatal error (pump continues on low level fault)

Fig. 10



r = run time in cycles

Fig. 11

P = pause time in seconds, minutes or hours

LED code descriptions

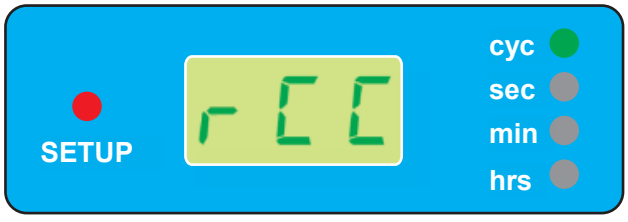
Fig. 12

F = fault time in seconds, minutes or hours

Fig. 13

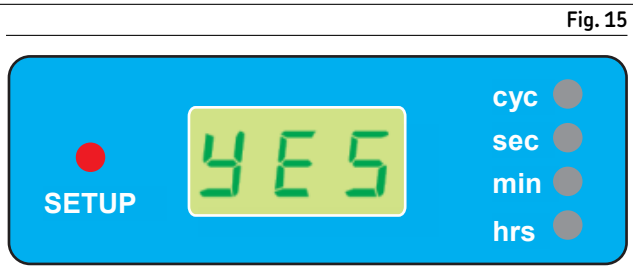
U = vent time in seconds, minutes or hours

Fig. 14



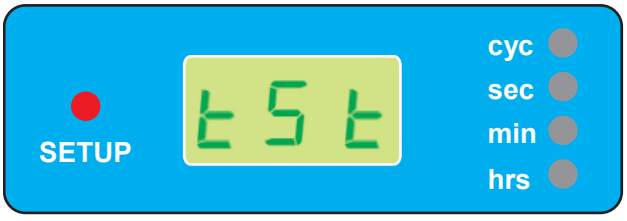
rCC = run cycle counter

Fig. 15



YES = confirms program changes

Fig. 16

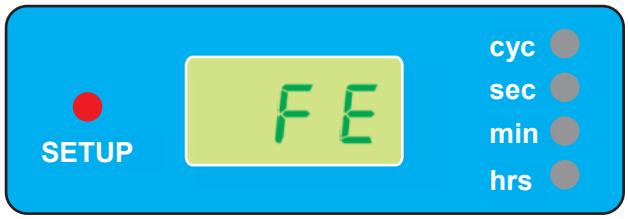


tSt = test mode for checking installed devices

Fig. 17

t = time out or dwell time for sensors

Fig. 18

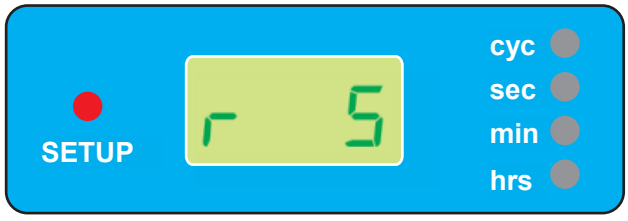


FE = fatal errors (pump stops on Low Level Fault)

Fig. 19

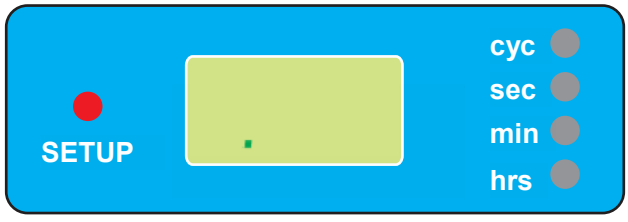
n0 = do not select selection

Fig. 20



r = run time in seconds, minutes or hours

Fig. 21

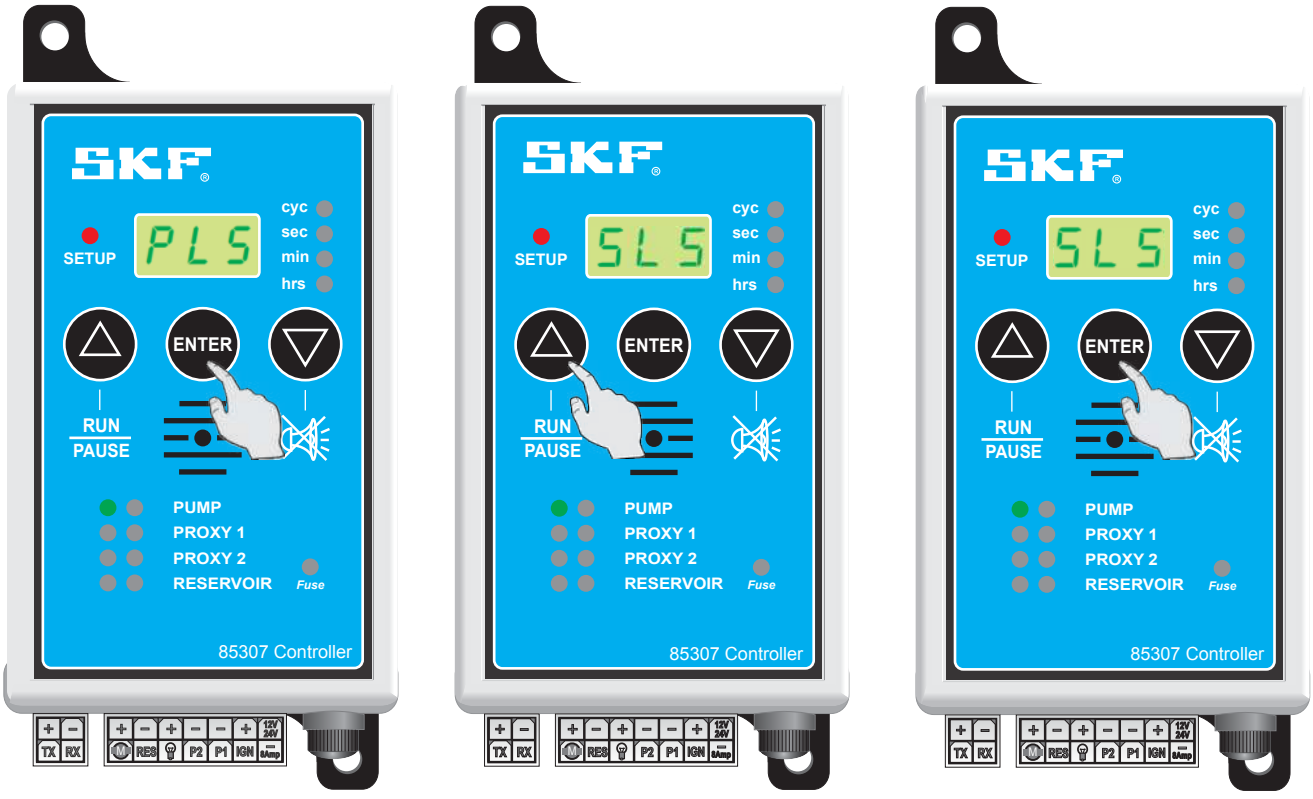


. = standby mode

Setup mode

Single-line system using pressure switch

Fig. 22



A B C

1 To enter setup mode:
Press and hold **ENTER** while switching on controller power source.

2 Release **ENTER** and red LED next to **SETUP** illuminates. Green LED next to **PUMP** flashes. **PLS** (progressive-line system) appears in display (**Fig. 22 A**).

3 Press **Δ** to select system type required:
Continue to press until **SLS** displays (**Fig. 22 B**).

4 Press **ENTER** to confirm use of single-line system (**Fig. 22 C**).

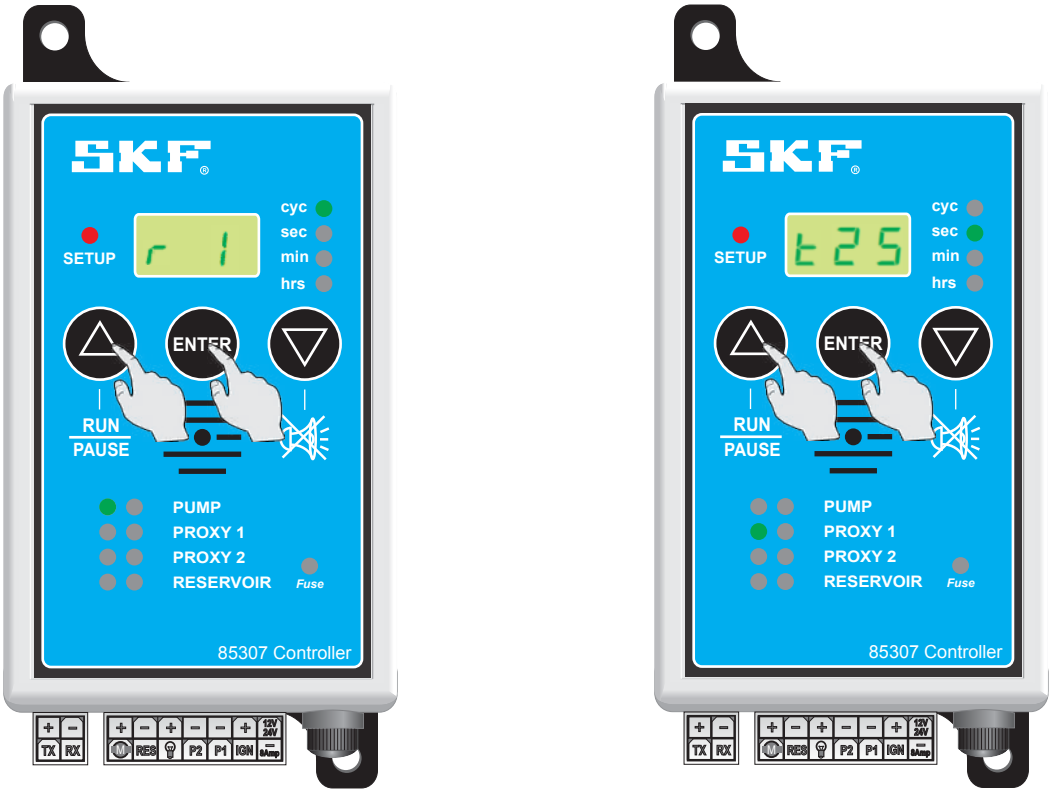
Fig. 23

A B

5 **P** (pause) appears in display. Press **Δ** to change time (**Fig. 23 A**). LED changes from seconds to minutes to hours. Display indicates amount of pause time when function is applied.

6 Press **ENTER** to confirm pause time. In example, pause time of 4 hours is confirmed (**Fig. 23 B**).

Fig. 24



A B

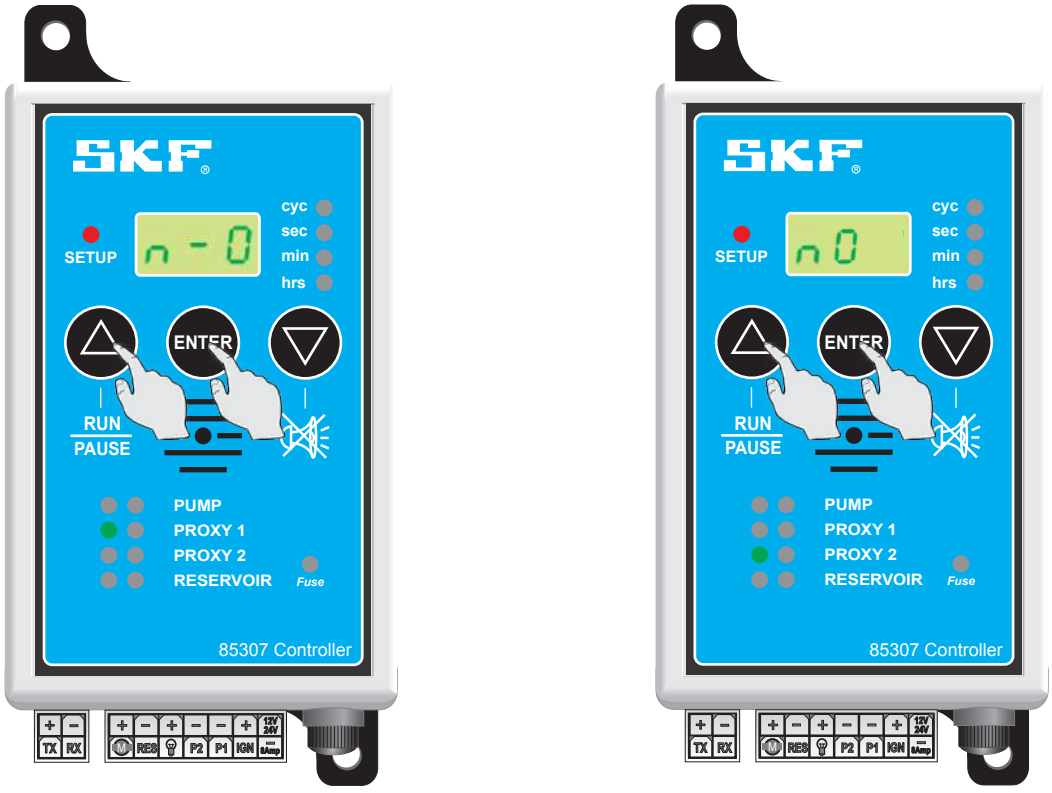
7 Run (**r**) time defaults to cycles. Display shows either 99 cycles or number of cycles previously setup. In this example, one cycle is setup. Unit looks for one signal from pressure switch before going into **VENT** time.

8 Press **ENTER** to accept (**Fig. 24 A**).

9 **t** (time out) displays. For pressure switch. Press **Δ** to increase duration of time out required. Large systems may take longer to pressurize complete system.
NOTE: Test system to establish time out. Add approximately 50% more to actual time out for system to operate effectively without timing out before it has reached pressure status.

10 Press **ENTER** to accept (**Fig. 24 B**).

Fig. 25



A B

11 **n-O** (normally open) displays indicating whether pressure switch is normally open or normally closed. **n-O** switches are used for dual-line systems. Press **Δ** to choose either **n-O** or **n-C**.

12 Press **ENTER** to accept choice (**Fig. 25 A**).

13 **nO** (do not select) displays. Green LED on **PROXY 2** illuminates. Press **Δ** to proceed for **PROXY 2**.

14 Press **ENTER** to accept and proceed with setup as completed for **PROXY 1**.

15 Typically only one pressure switch is used. Press **Δ** until **nO** appears in display.

16 Press **ENTER** to accept settings (**Fig. 25 B**).

Fig. 26

A B

17 **U** (vent) displays time in seconds, minutes or hours. Indicates time needed for system to vent before proceeding into next cycle or pause time.

SLS can be setup with multiple cycles. For example, if two cycles are setup, unit operates for one cycle and then goes into vent time of one minute, as indicated in display. After minute has elapsed, pump restarts and proceeds with next cycle. When second cycle is complete, **U** displays and times itself out for established time. After completing two cycles and vent time, unit proceeds into pause time.

For this example, one cycle is setup and therefore only requires a short vent time as no further cycles are required before reaching pause sequence.

18 Press **ENTER** to accept vent time (**Fig. 26 A**).

19 **nO** displays. Green LED on reservoir illuminates. Option of low level detection displays. If low level detection is not required, push Δ and select **nO**.

20 Press **ENTER** to accept.

21 In this example, low level option is selected. Press **Δ** until **YES** displays.

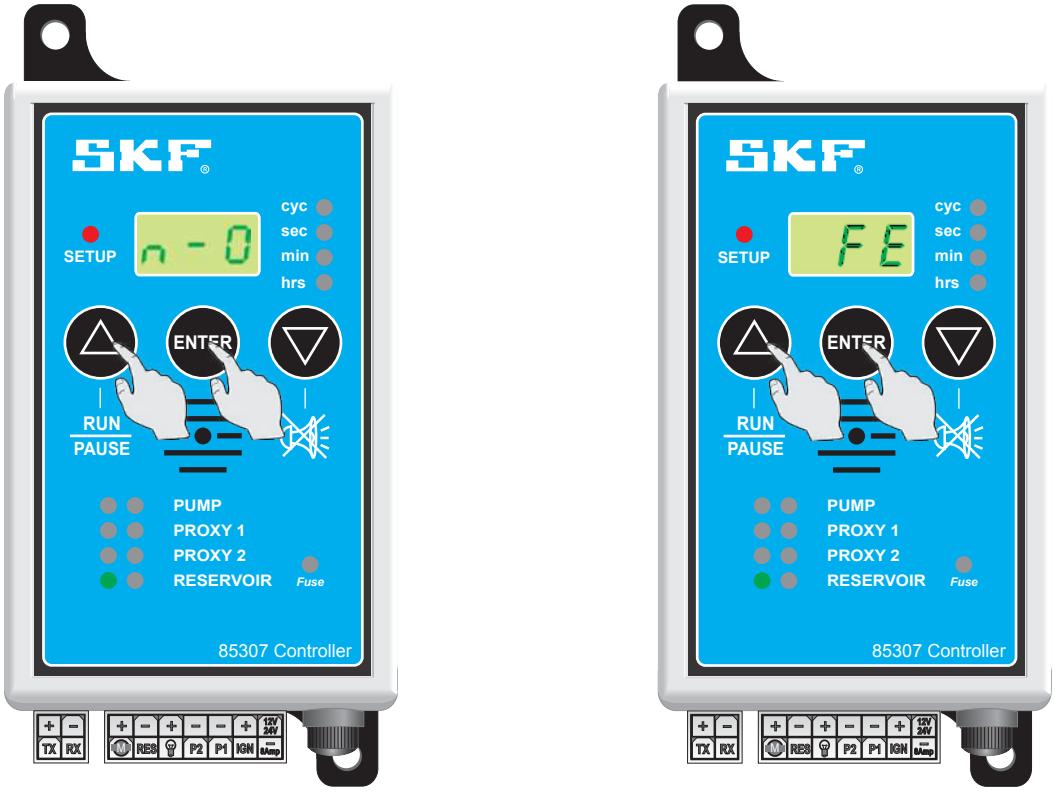
22 Press **ENTER** to accept choice (**Fig. 26 B**).

NOTE

10-second delay occurs on startup when using low level sensor to ensure paddle assembly is in correct position.

Sensor activates on low level after 10 seconds. Low level warning displays when unit reaches pause status.

Fig. 27



A B

23 **n-O** (normally open) displays indicating whether sensor is normally open or normally closed. Press **Δ** to choose either **n-O** or **n-C**.

24 Press **ENTER** to accept choice (**Fig. 27 A**).

25 **FE** (fatal error) or **nFE** (nonfatal error) appears in display. Option **FE** (fatal error) is used to stop pump on low level warning. Typically used on pumps with reservoir capacities from 0.26 to 2.6 gal *(1 to 10 l)*. It is preferred to stop pump at low level to maintain layer of grease above pump element area thereby not allowing air pockets to form around pump element when filling up reservoir. Option **nFE** (nonfatal error) is recommended on larger pump reservoirs with substantial distance from pump tube to bottom of reservoir.

26 Select choice and press **ENTER** (**Fig. 27 B**).

Fig. 28

A B

27 **L - F** (lamp flashing) displays. This option is used with external warning lamp. Typically, if monitoring is installed, this function is used. Press **Δ** and change status from **L - F** (lamp flashing) to **L - S** (lamp static). **L - F** is a pulsed output supply and **L -S** is a constant output supply.

28 Press **ENTER** with either choice selected to proceed to next part of programming (**Fig. 28 A**).

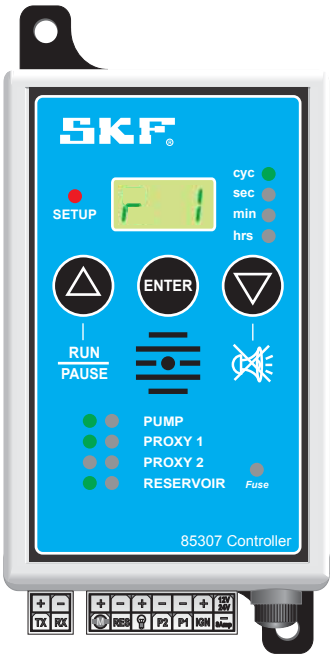
29 **tSt** (test mode) appears in display. Press **Δ** to start turning pump (**Fig. 28 B**). Correct pump from turning in wrong direction by changing polarity of wiring. Check other sensors by energizing them manually and observing if green LED illuminates. If LED does not illuminate, a problem exists with wiring or setup procedure.

30 If all is correct, switch controller power to off and then to on for unit to proceed into normal mode.

NOTE

tSt must appear on display before switching off power to unit. System does not save changes if power to unit is turned off during any part of programming. **tSt** must appear on display for changes to be confirmed.

Fig. 29



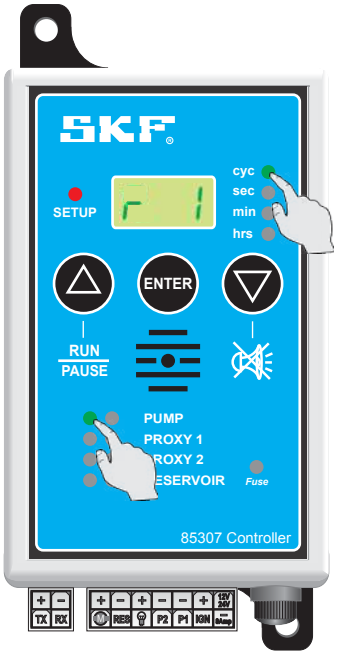
Run mode

Unit proceeds in run (**r**) mode after power is terminated on unit and then switched on again. All devices selected are displayed (**Fig. 29**).

NOTE

After each cycle received, amount decreases by one until all cycles have been received. Unit then proceeds to pause time.

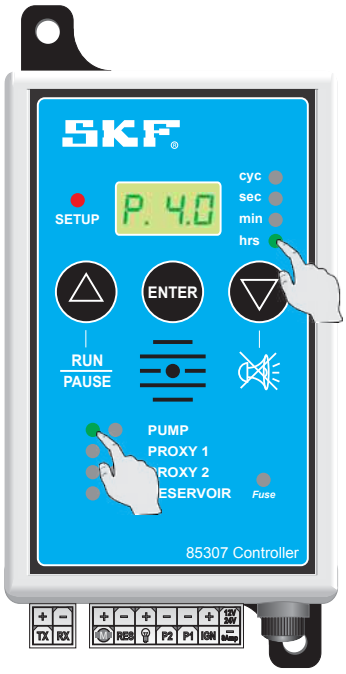
Fig. 30



Running system (pump run)

Run (**r**) time displays when controller is switched on. Time appears from time set and counts down to zero. Green LED indicates minutes (**Fig. 30**). Green LED next to **PUMP** flashes to indicate pump is turning or pumping.

Fig. 31



Running system (pump pause)

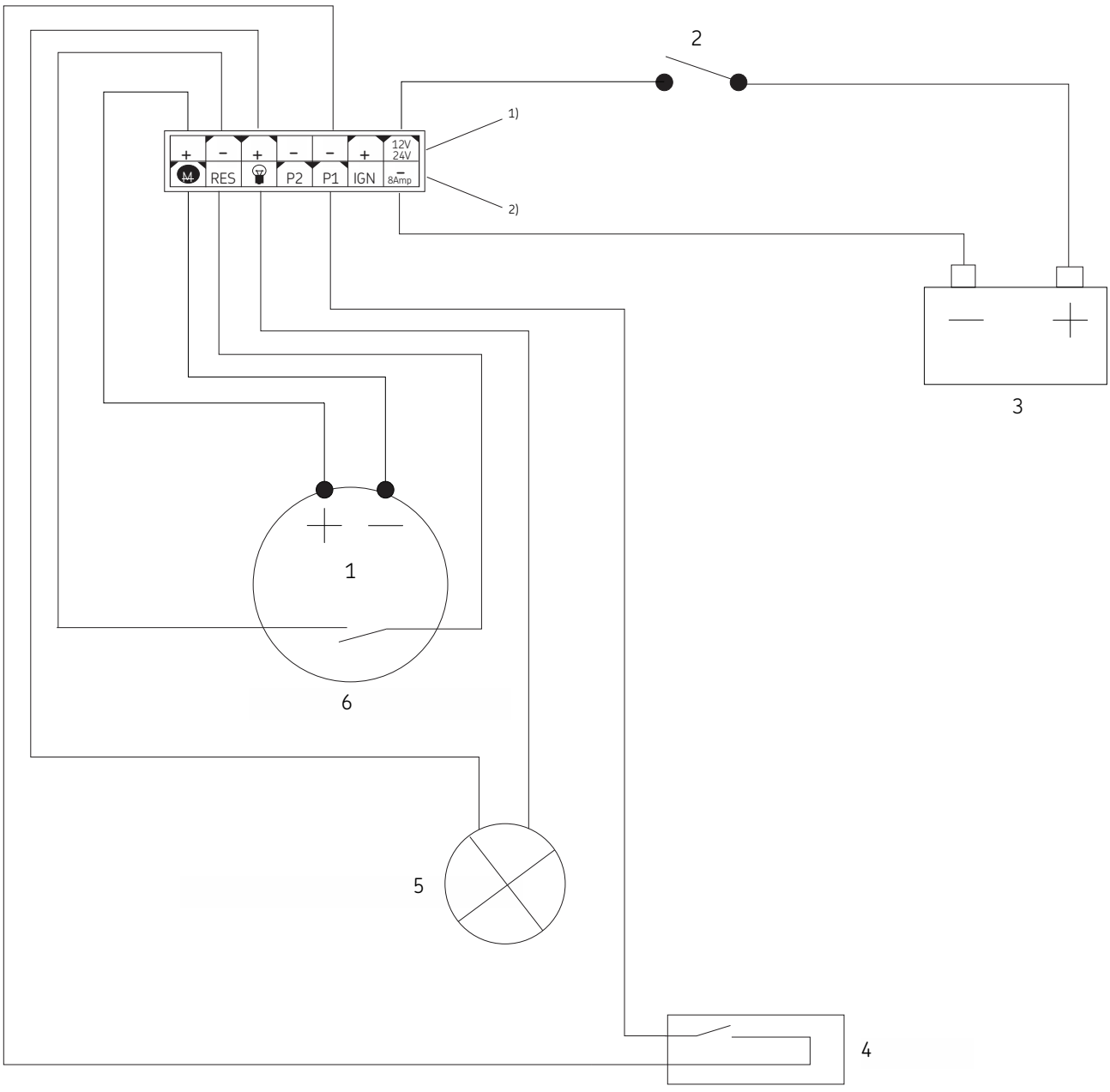
Controller enters pause (**P**) time when required run time is reached. Pause time counts down from original setup time to zero and then resumes run time (**Fig. 31**). Green LED is steady next to **PUMP** indicating pump is on but not turning while in pause mode.

Fig. 32

Running system (vent time)

U (vent) displays in sec/min/hrs until required vent time is reached. Once vent time reaches zero, system proceeds to next cycle (**Fig. 32**).

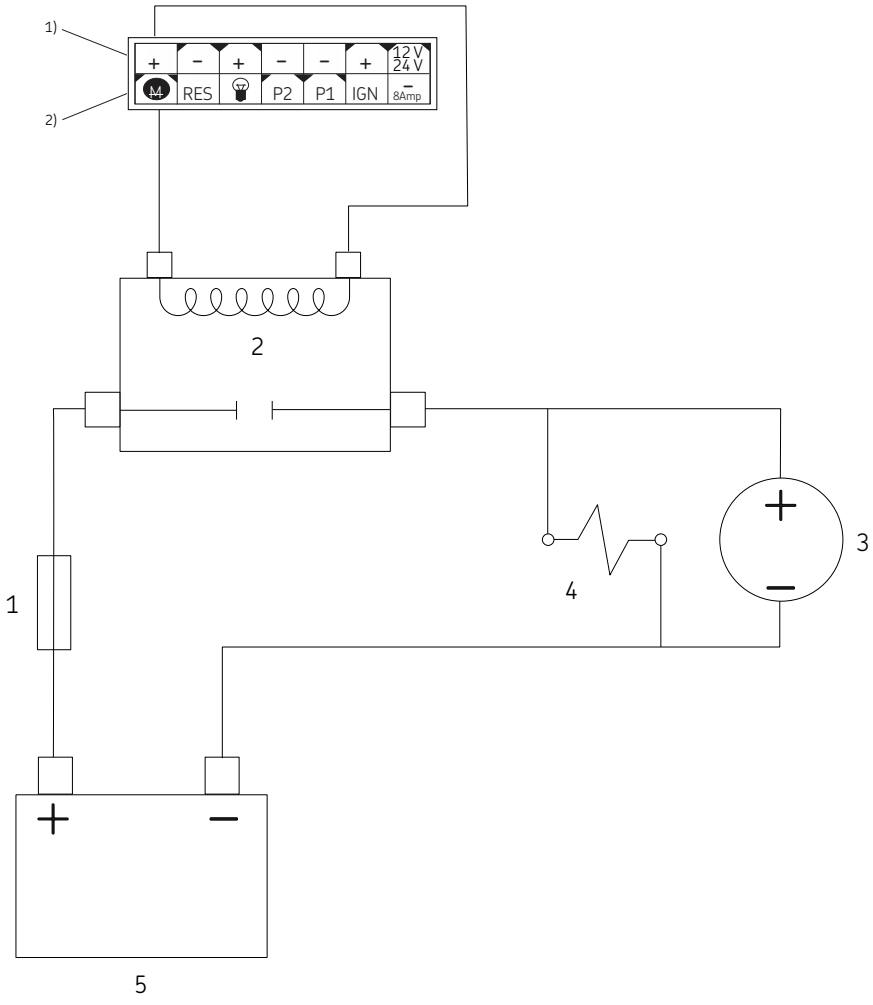
Wiring of pump with single-line system using pressure switch



Item	Description
1	Motor
2	Power switch
3	Power supply
4	Microswitch
5	External warning lamp
6	Low level sensor

1) Top row represents front of controller.
2) Bottom row represents back of controller.
NOTE: If motor amp draw exceeds the maximum specification (**Table 1, page 3**), solenoid relay switch (69897S) must be used. Refer to (→ **Diagram 2, page 20**).

Wiring of pump with solenoid relay switch

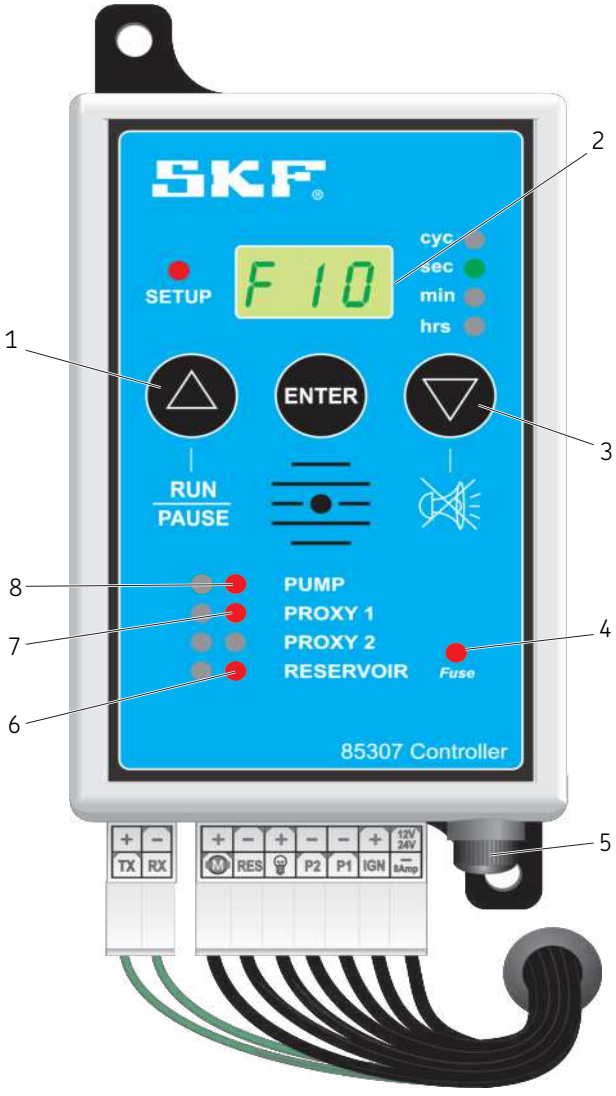


Item	Description
1	Fuse, 7.5 A
2	Solenoid relay switch
3	Motor
4	Vent valve solenoid (NO)
5	Power supply, 12 or 24 V ⎓

1) Top row represents front of controller.
2) Bottom row represents back of controller.

Fig. 33

Fault indications



Item	Description
1	Press **RUN/PAUSE** to reset faults.
2	Fault indication – counts up from seconds to minutes to hours indicating how long fault has been active.
3	Press ∇ button to silence buzzer.
4	Blown fuse indication – replace with 8 A fuse.
5	Fuse holder – use 8 A fuse.
6	Low level fault – possible cause, reservoir empty.
7	**PROXY 1** fault – either faulty pressure switch, no lubricant in reservoir or broken main line.
8	**PUMP** fault – either short circuit or wires are disconnected.

NOTE

Unit must perform one complete cycle of run and pause to cancel existing fault out of memory for fault to reset. Unit is designed to memorize total time of any specific fault. Unit must run one complete cycle to function correctly without same fault occurring.

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Warranty

The instructions do not contain any information on the warranty.
This can be found in the General Conditions of Sales, available at:
www.lincolnindustrial.com/technicalservice or www.skf.com/lubrication.

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