TPC
Duplex Alternating Pump Control

Features

- 5 Float Level Switches LED's indicators.
- Fault Pilot Lights.
- Internal buzzer
- Output to external alarm.
- General fault indication LED(GF).
- LED (MF) fault Alert, one for each motor / pump.
- Overflow LED (E3) and alarm.
- Manual/auto option selective in any situation.
- Optional Zero Float (Ee).
- Choosing to operate the pumps mode in accordance with the need of the user.
- Self testing.
- Convenient electrical connection .
- Pumps refresh operation 30 seconds every seven days automaticaly.
- Three operational modes selecable.

Self-testing Mode

- Designed for checking operation of the pumps when there is no demand for action.
  1. Turn both pump switches to Auto position.

Operation	Indication	Outcome
Connect controller to mains	Self-testing is performed	All LED's lit for 5 sec then shut down. Internal buzzer operates for 1 sec External alarm operates for 1 sec Fault relay is activated for 1 second At the end of operating (Un) stays lit.

Self-test is OK.

Manual test

- Designed for checking operation of the pumps when there is no demand for action.
  Attention: to allow adequate testing, (Ee) indication must be ON.

Testing both Pumps operation

Turn both pump switches to manual position.

Operation	Indication	Outcome
Press the test button and hold	● (Un) LED lit ● (Ee) LED lit ● Test button LED lit	● Pump 1 start working after delay ● Pump 2 start working after delay
Stop pressing test button	● (Un) LED lit ● (Ee) LED lights ● Test button LED lit	● Pump 1 stop operating ● Pump 2 stop operating

Duplex pump controller

Testing each Pump individualy

Operation	Indication	Outcome
Turn Pump 1 selector to manual Press the test button and hold	• (Un) LED lit • (Ee) LED lit • LED (ON) c lit • Test button LED lit	Pump 1 start working after delay
Stop pressing test button	• (Un) LED lit • (Ee) LED lit • Test button LED lit	Pump 1 stop operating

Operation	Indication	Outcome
Turn Pump 2 selector to manual Press the test button and hold	• (Un) LED lit • (Ee) LED lit • LED (ON) Pump 2 lit • Test button LED lit	Pump 2 start working after delay
Stop pressing test button	• (Un) LED lit • (Ee) LED lit • Test button LED lit	Pump 2 stop operating

Auto test

1. Turn the 2 pump switches to Auto mode.
2. Push the test button for 5 sec (push button LED lights).

The TPC will start self-testing as follows:

- Emulate the floats functions.
- Turn on the pumps according to the preset delay.
- Internal buzzer alarm operates for 1 sec.
- External alarm operates for 1 sec.
- Fault relay is activated for 1 second
- Return to its initial operation (Un) indication LED stays lit.

⚠ CAUTION

During automatic mode test, if accurse any fault at the:
1. Pumps
2. Circuit breaker connected to the pumps
3. Circuit overload connected to the pumps
Red LED (MF) pump worning indicator will be lit.

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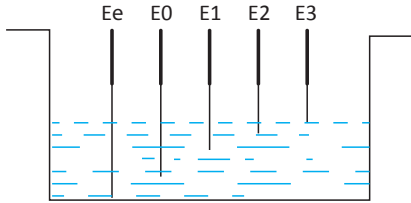
Buoys diagram

Ee   E0   E1   E2   E3

fig 1-1

Note:
1. Float level of "Cut off" is indicated by LED (E0).
2. The level of liquid height will be indicated by LED's (E1) (E2) respectively.
3. (E3) indicate over-flow.
   The TPC receives the operating requirements from the floats complex in the pump-ing pit.

Fault conditions:

- Pumps working will stop immediately during liquid level drops below (E0) float.
- Pumps manually operating are permitted only if (E0) float activated.
- Overloading; overheating engine coil; disconnected pump contactor coil on any of the pumps will cause:
    - The fault pumps cease operation.
    - Red LED (MF) "Fault protection" lit.
    - (GF) "General fault indication" lit.
    - External Alarm activated.
    - Internal buzzer operates.
    - Backup pump start working immediately.
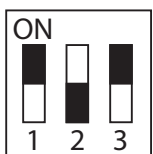
Fault warning indications:

LED (MF) Motor Fault: pump engine problem.
LED (GF) General Fault: Liquid level overflows.
Buzzer mute lit: Liquid level overflows
                    Pump engine problem

Operation Modes

Mode-1 Backup Pump Joins

When the fluid level reaches float level (E3) "overflow state".

The non-working pump (backup pump) joins to prevent liquid Overflow from the reservoir.

ON
1 2 3

← Back panel dipswitch mode selection

- Turn Pump select (1) and (2) to Auto mode

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	Operation	Indication	Outcome
1	All the level indicator are at off position	LED indicator (Un) lit Liquid reservoir is empty	Pumps not working
2	Reservoir fluid level rises to (Ee) float	LED indicator (Un) lit LED indicator (Ee) lit	Pumps not working
3	Reservoir fluid level rises to (E0) float	LED indicator (Un) lit LED indicator (E0) (Ee) lit	Pumps not working
4	Reservoir fluid level rises to (E1) float	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) lit LED "On" pump 1 lit.	Pump 1 starts working
5	Reservoir fluid level rises to (E2) float	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) (E2) lit LED "On" pump 1 lit. LED "On" pump 2 lit.	▪Pump 1 works. ▪Pump 2 starts working. ▪LED (Pending pump activated) blinking ▪Internal buzzer operates. ▪External alarm bell operates. ▪Fault relay is activated. ▪LED (GF) lit.
6	Reservoir fluid level rises to (E3) float	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) (E2) (E3) lit LED "On" pump 1 lit. LED "On" pump 2 lit.	▪Both pumps working. ▪LED (GF) lit. ▪LED (Pending pump activated) blinking. ▪LEDs bell mute button lit. ▪Internal buzzer works alternately. ▪External alarm bell operates. ▪Fault relay is activated.
7	Press the "bell mute button"	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) (E2) (E3) lit LED "On" pump 1 lit. LED "On" pump 2 lit.	▪Both pumps working. ▪LED (GF) lit. ▪LED (Panding pump activated) blinking. ▪LED "bell mute button" lit. ▪Internal buzzer mutes. ▪External alarm bell mutes. ▪Fault relay is de-energies.
8	Fluid level drops below float (E3)	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) (E2) lit LED (E3) off LED "On" pump 1 lit. LED "On" pump 2 lit.	Both pumps working. LED (GF) lit. LED (Pending pump activated) blinking. LEDs button "buzzer muted" is lit.
9	Press the "bell mute button"	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) (E2) lit LED "On" pump 1 lit. LED "On" pump 2 lit.	Both pumps working. LED (GF) lit. LED (Pending pump activated) blinking. LEDs button "buzzer muted" is lit.
10	Fluid level drops below float (E2)	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) lit LED (E2) off LED "On" pump 1 lit. LED "On" pump 2 lit.	Both pumps working. LED (GF) lit. LED (Pending pump activated) blinking. LEDs button "buzzer muted" is lit.
11	Press the "bell mute button"	LED indicator (Un) lit LED indicator (E0) (Ee) (E1) lit LED (E2) off LED "On" pump 1 lit. LED "On" pump 2 lit.	There is no change from the previous situation
12	Fluid level drops below float (E1)	LED indicator (Un) lit LED indicator (E0) (Ee) lit LED (E1) off LED "On" pump 1 lit LED "On" pump 2 lit	Both pumps working. LED (GF) lit. LED (Pending pump activated) blinking. LEDs button "buzzer muted" is lit.
13	Fluid level drops below float (E0)	LED indicator (Un) lit LED indicator (Ee) lit LED indicator (E0) off	Both pumps cease working. LED indicator (GF) lit. LED (Pending pump activated) blinking. LEDs button "buzzer muted" is lit.
14	Press the "bell mute button"	LED indicator (Un) lit LED indicator (Ee) lit LED indicator (E0) off	LED (GF) shut off LED (Pending pump activated) shut off. LEDs button "Buzzer muted" shut off.

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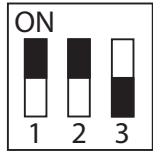
Mode-2 Backup pump alternate operation.

ON [1 2 3] ← Backup pump starts to operate, replacing main pump.

- Turn Pump select (1) and (2) to Auto mode

	Operation	Indication	Result
1	The liquid reservoir is empty	All level indicator are at off position LED indicator (Un) lit	Pumps not working.
2	Reservoir fluid level rises to Ee float	LED indicator (Un) lit LED indicator (Ee) lit	Pumps not working
3	Reservoir fluid level rises to E0 float	LED indicator (Un) lit LED indicator (E0) (Ee) lit	Pumps not working
4	Reservoir fluid level rises to E1 float	LED indicator (Un) lit LED indicator (E1) (E0) (Ee) lit LED "On" pump 1 lit	Pump 1 starts working
5	Reservoir fluid level rises to E2 float	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 1 off LED "On" pump 2 lit	Pump 1 stop working Pump 2 starts working
6	Reservoir fluid level rises to E3 float	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) (E2) (E3) lit LED "On" pump 2 lit	Pump 2 working. LED indicator (GF) lit. LEDs button "buzzer muted" is lit after 30sec. Internal buzzer works alternately after 30sec. Fault relay is activated. External alarm bell operates after 30sec for 5 minutes, then muted (as long as button "buzzer muted" is not pressed)
7	Press button "buzzer muted"	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 2 lit LED indicator (E3) lit	Pump 2 working. LED indicator (GF) lit. LEDs button "buzzer muted" is lit. Internal buzzer muted. External alarm bell muted. Fault relay de-energizes.
8	Fluid level drops below float (E3)	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 2 lit	Pump 2 working. LED indicator (GF) blinking. LEDs button "buzzer muted" is lit.
9	Press button "buzzer muted"	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 2 lit	Pump 2 working. LED indicator (GF) off LEDs button "Buzzer muted" off
10	Fluid level drops below float (E2)	LED indicator (Un) lit LED indicator (Ee) (E0) (E1) lit LED indicator (E2) off LED "On" pump 2 lit	Pump 2 working.
11	Fluid level drops below float (E1)	LED indicator (Un) lit LED indicator (Ee) (E0) lit LED indicator (E1) off LED "On" pump 2 lit	Pump 2 working.
12	Fluid level drops below float (E0)	LED indicator (Un) lit LED indicator (Ee) lit LED indicator (E0) off LED "On" pump 2 off	Pump 2 stop working.
13	Fluid level drops below float (Ee)	LED indicator (Un) lit LED indicator (Ee) off	Controller cease working

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Mode-3 Backup Pump Joins.

When the liquid level reaches float level (E2)
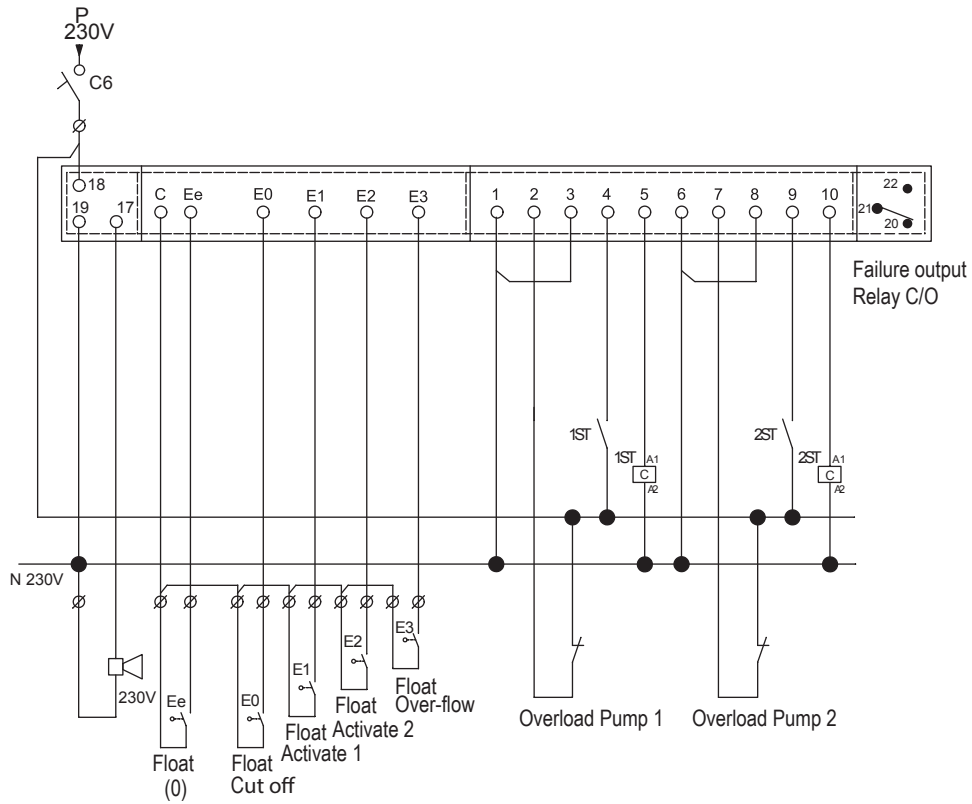The non-working pump (backup pump) joins.
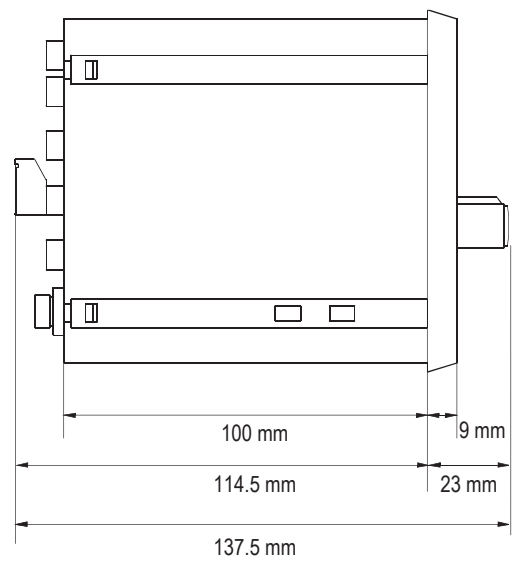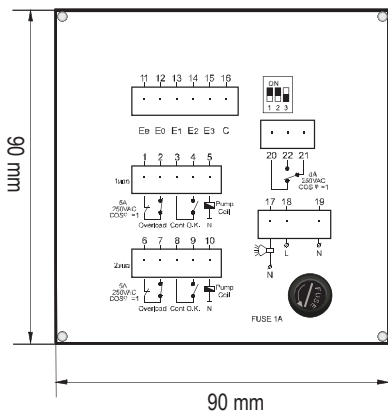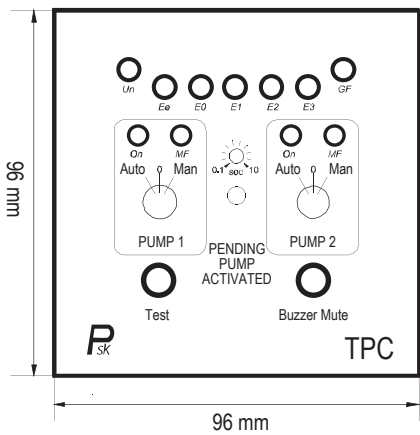
ON
1 2 3 ←— Back panel dipswitch mode selection stat.

• Turn Pump select (1) and (2) to Auto mode

	Operation	Indication	Result
2	The liquid reservoir is empty	All level indicator are at off position	Pumps not working.
3	Reservoir fluid level rises to Ee float	LED indicator (Ee) lit	Pumps not working
4	Reservoir fluid level rises to E0 float	LED indicator (E0) lit	Pumps not working
5	Reservoir fluid level rises to E1 float	LED indicator (Ee) (E0) (E1) lit LED "On" pump 1 lit	Pump 1 starts working
6	Reservoir fluid level rises to E2 float	LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 1 lit LED "On" pump 2 lit	Pump 1 working Pump 2 starts working
7	Reservoir fluid level rises to E3 float	LED indicator (Ee) (E0) (E1) (E2) (E3) lit LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps are working. LED indicator (GF) lit. LEDs button "buzzer muted" lit after 30 sec. Internal buzzer works alternately. External alarm bell operates. Fault relay is activated.
8	Press button "buzzer muted"	LED indicator (Ee) (E0) (E1) (E2) (E3) lit LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps are working. LED indicator (GF) lit. LEDs button "buzzer muted" lit. Internal buzzer off. External alarm bell off. Fault relay de-energizes.
9	Fluid level drops below float (E3)	LED indicator (Ee) (E0) (E1) (E2) lit LED indicator (E3) off LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps are working. LED indicator (GF) blinking. LEDs button "buzzer muted" is lit.
10	Press button "buzzer muted"	LED indicator (Ee) (E0) (E1) (E2) lit LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps working. LED indicator (GF) off LEDs button "buzzer muted" off.
11	Fluid level drops below float (E2)	LED indicator (Ee) (E0) (E1) lit LED indicator (E2) off LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps are working.
12	Fluid level drops below float (E1)	LED indicator (Ee) (E0) lit LED indicator (E1) off LED "On" pump 1 lit LED "On" pump 2 lit	Both Pumps are working.
13	Fluid level drops below float (E0)	LED indicator (Ee) lit LED indicator (E0) off LED "On" pump 1, LED "On" pump 2 off	Both pumps cease working.
14	Fluid level drops below float (Ee)	LED indicator (Ee) off	Controller off

Duplex pump controller

Application

Dimensions

96 mm

96 mm

90 mm

90 mm

Test   Buzzer Mute

PUMP 1   PENDING PUMP ACTIVATED   PUMP 2

TPC

100 mm

114.5 mm

137.5 mm

9 mm

23 mm

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