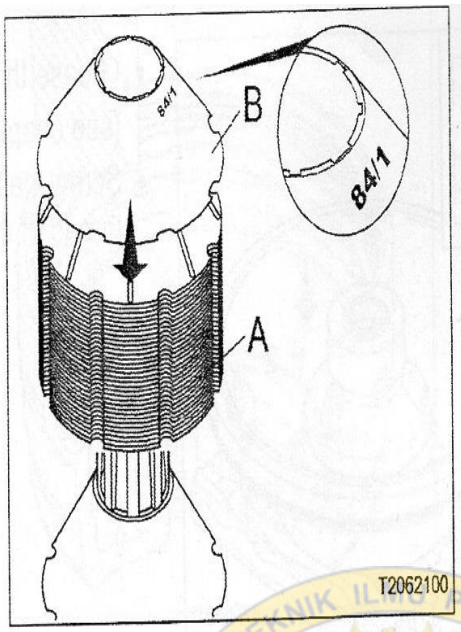


ATTENTION: Pay attention for correct total number of disks!

It is marked on the blind disk, e.g. 84/1:

- Total number of disks A and B = **84** (number of disks with spacers A + number of blind disks B)
- Number of blind disks B = **1**

Fig. 184

Flowmeter – Scale: 0 – 10	
Throughput capacity [l/h] Liter/jam	**Inner diameter of orifice plate [mm]**
1 000 – 1 400	6
1 400 – 2 200	8
2 200 – 3 300	10
3 300 – 4 800	12
4 800 – 7 000	14
7 000 – 13 000	no.orifice plate

Gambar 2.1 disc bowl

4.4 Bowl

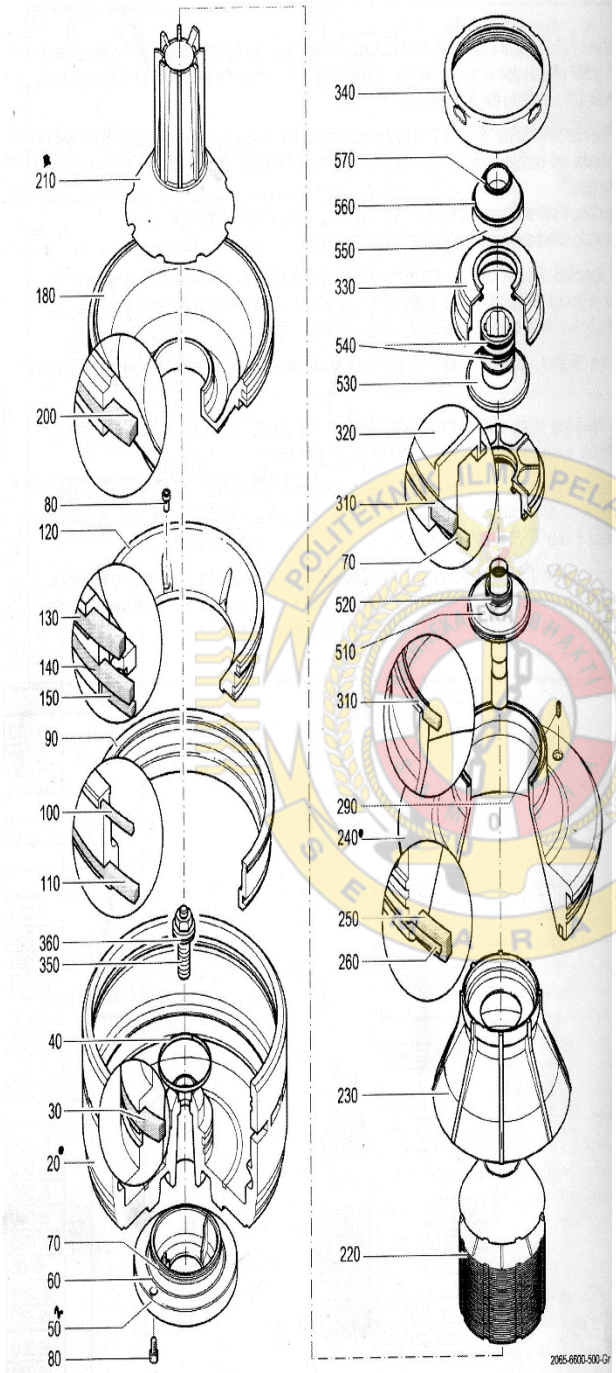


Fig. 115 Exploded view of the bowl and centripetal pump

Pos.		Designation	Dimensions
20	(1)	Bowl bottom, compl.	
30		Gasket	
40		Piston guide ring	
50	(2)	Water chamber bottom	
60		Gasket	
70		Gasket	
80		Allen screw	ISO 4762 – M 8 x 16 – A4-80
90		Annular piston	
100		Gasket	
110		Gasket	
120		Closing chamber bottom	
130		Gasket	
140		Gasket	
150		Gasket	
180		Sliding piston	
200		Gasket	
210	(1)	Distributor	
220		Disk stack, complete	
230		Separating disk	
240	(1)	Bowl top	
250		Gasket	
260		Gasket	
290		Threaded pin	ISO 4026 - M 10 x 10 -1.4571
310		Gasket	
320		Centripetal pump chamber cover	
330		Centripetal pump chamber cover	
340		Lock ring	
350		Spindle screw:	
360		Gasket	
510		Centripetal pump, compl.	
520		Gasket	
530		Sensing liquid pump	
540		Gasket	
550		Spacer ring	
560		Gasket	
570		Gasket	

Gambar 4.6. *Bowl* dan *disc part*

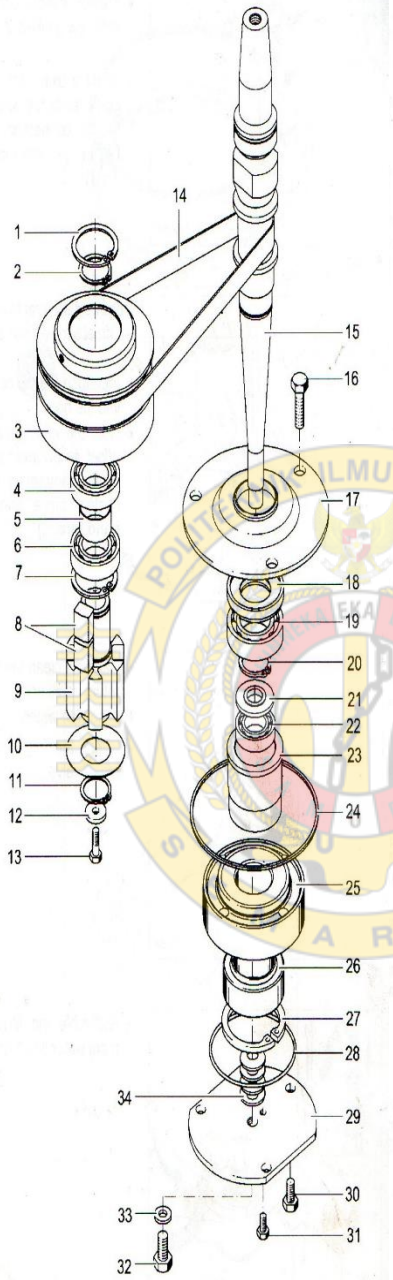
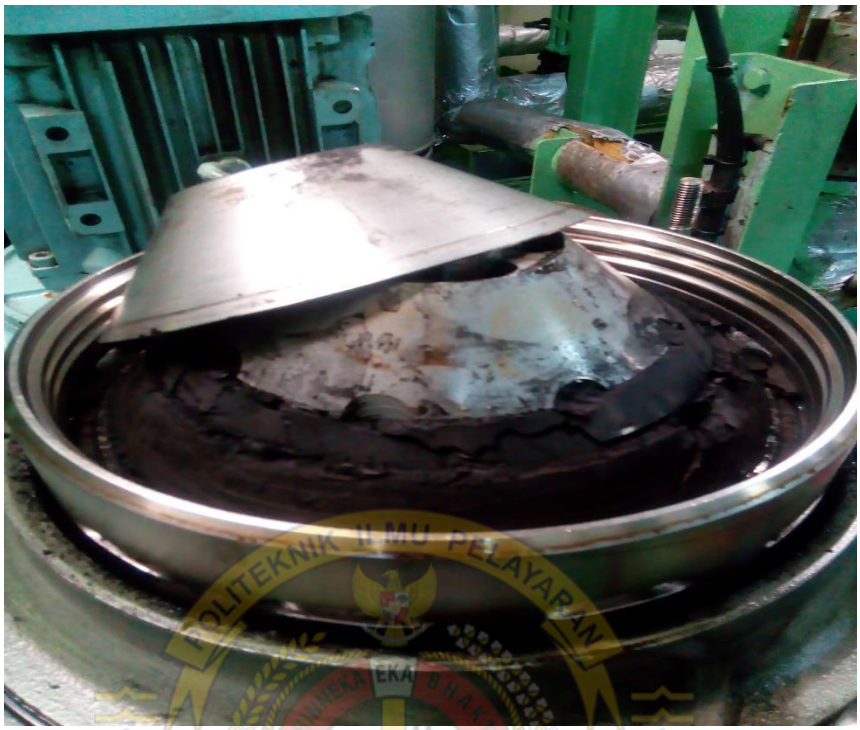


Fig. 246 *Exploded view of the drive*

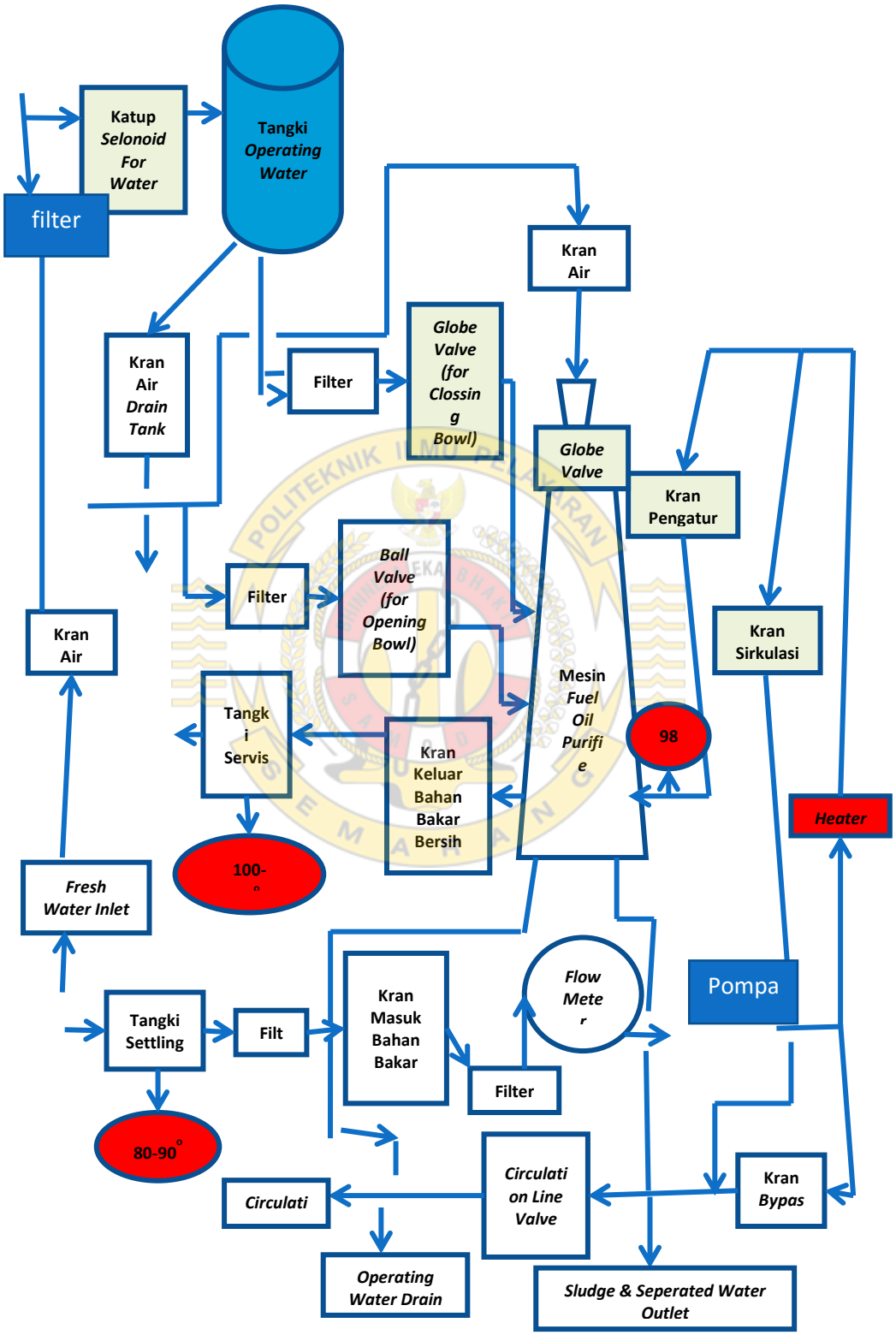
Pos.	Designation	Dimensions
1	Retaining ring	95 x 3
2	Retaining ring	60 x 2
3	Clutch pulley	
4	Grooved ball bearing	
5	Spacer bush	
6	Grooved ball bearing	
7	Retaining ring	95 x 3
8	Clutch driver	
9	Clutch shoe	
10	Washer	11 x 27 x 4
11	Hex head screw	M 10 x 65
12	Washer	
13	Retaining ring	60 x 2
14	Drive belt	
15	Spindle	
16	Hex head screw	M 10 x 20
17	Bearing cover	
18	Bearing cover	
19	Grooved ball bearing	
20	Retaining ring	35 x 1.5
21	Ball bearing protection ring	
22	Angular contact ball bearing	
23	Bearing sleeve	
24	Gasket	
25	Rubber-metal cushion	
26	Pivoting bearing	
27	Retaining ring	90 x 3
28	Gasket	
29	Bearing cover	
30	Hex head screw	M 10 x 20
31	Hex head screw (This hex head screw is glued in with Loctite 275.)	M 6 x 16
32	Hex head screw (This hex head screw is glued in with Loctite 275.)	M 12 x 18
33	Washer	
34	Cup spring	

Gamabar 4.7 *Illustrasion of Vertical Shaft Part*

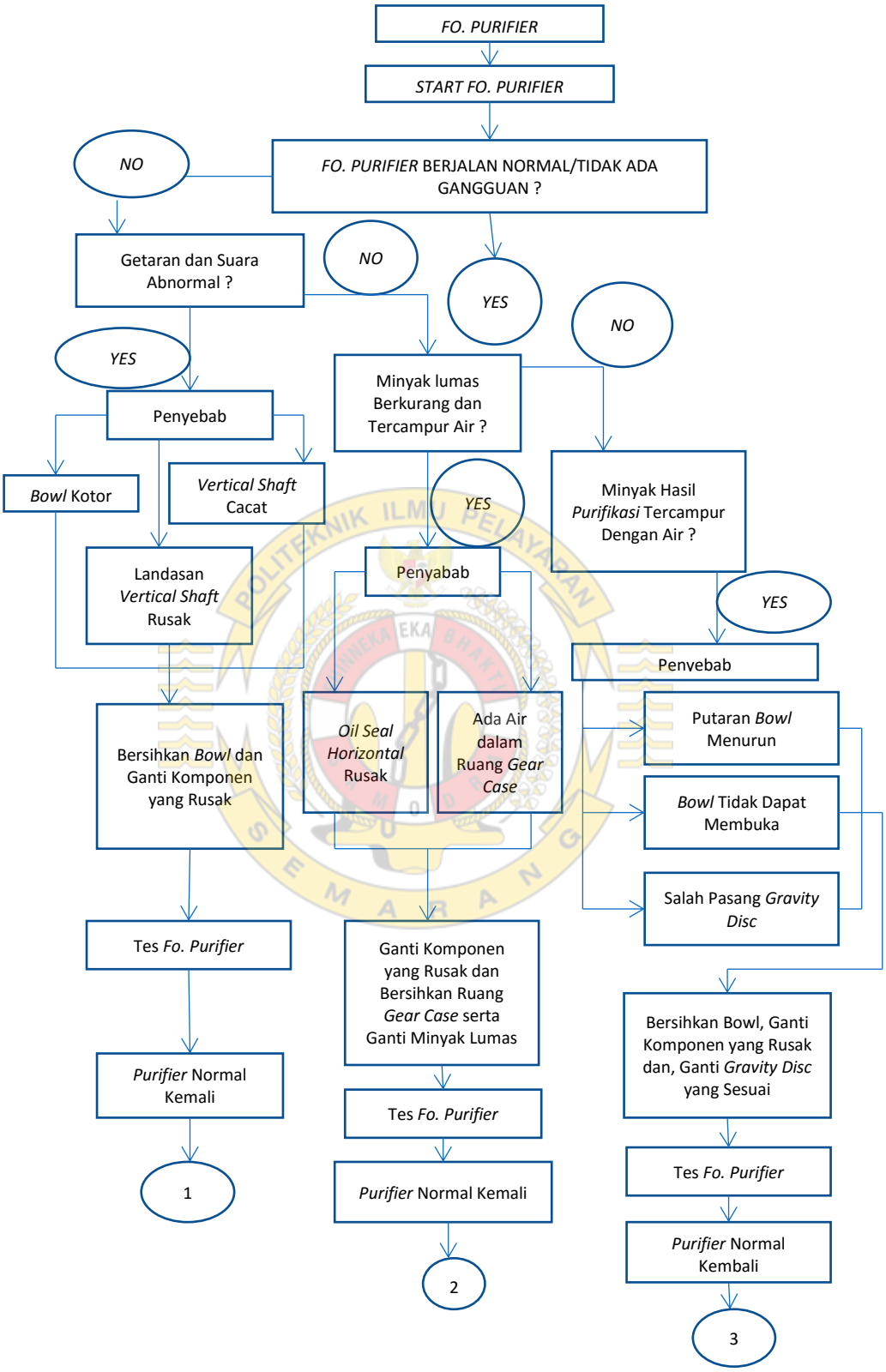


Gambar 4.8 Sumbatan lumpur pada plat

Gambar 4.9 *HFO setting temperature panel*



Gambar 4.10 *Flowchart* Diagram Sistem *Fuel Oil Purifier* 1



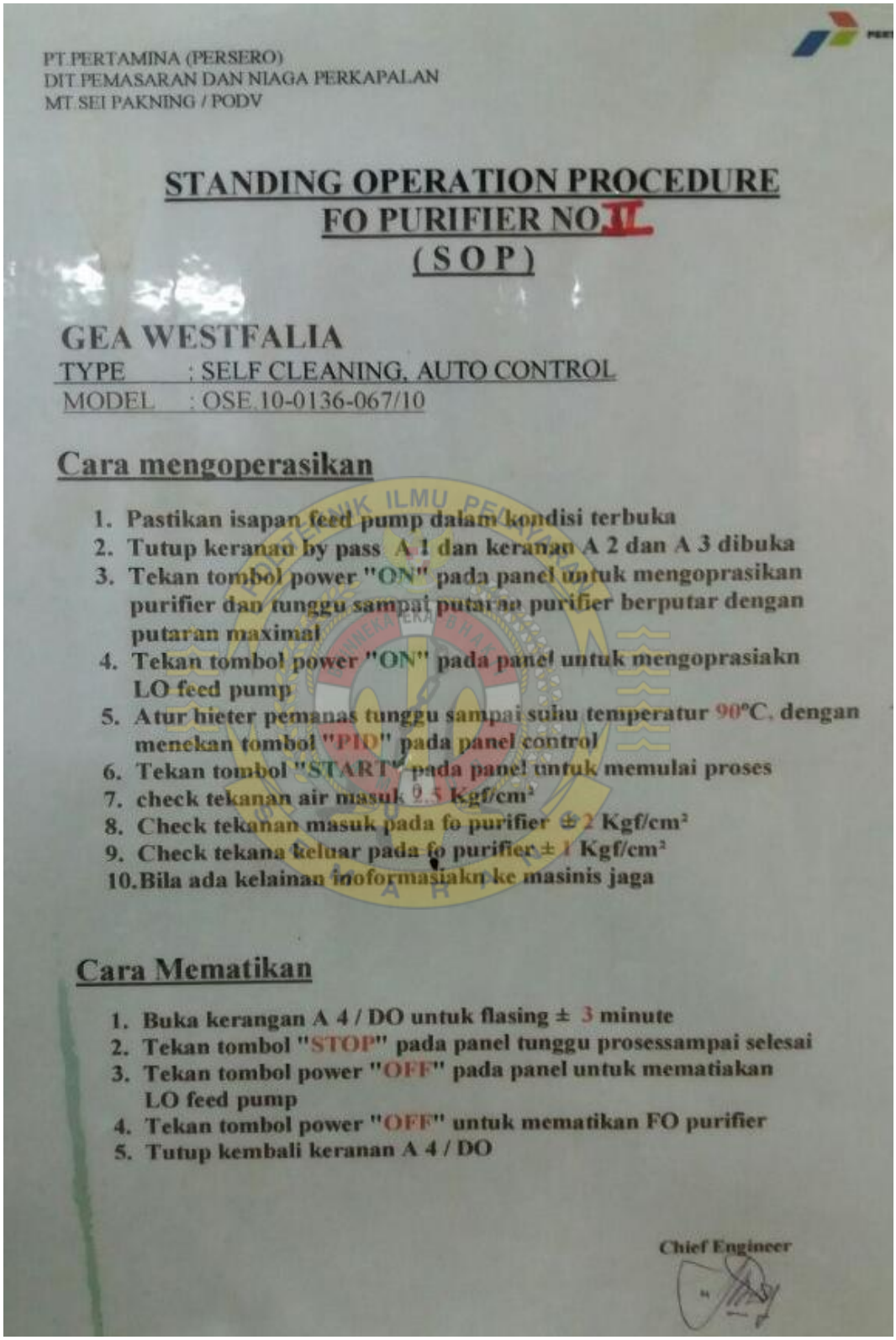
Gambar 4.11 *Flowchart* Diagram Sistem *Fuel Oil Purifier* 2

Maintenance work	Remark
– After 8000 operating hours – after 1 year at the latest **– After 24,000 operating hours – after 3 years at the latest** **– After 40,000 operating hours – after 5 years at the latest**	
Bowl inspection	• Dismantle bowl and centripetal pump. • Clean the bowl and centripetal pump parts and check for corrosion and erosion. • Clean all holes, nozzles and chambers of the hydraulic system. • The cones of bowl and spindle must be clean and dry when fitting.
Replace gaskets and piston guide ring (see adjacent figure).	• Use set of spare parts "bowl/hood" (Operation: 1 year or 8000 hours). See parts list. **Important: Time-consuming installation!** Change the polyamide gasket only when it is damaged (see section 4.4.9).
Clean the inside of the upper section of frame.	• Remove bowl.
Replace gaskets.	• Use set of spare parts "drive" (Operation: 1 year or 8000 hours). See parts list.
Replace the drive belt.	
Replace grooved ball bearings and angular contact ball bearings of spindle.	
Replace vibration absorber.	
Check grooved ball bearings of centrifugal clutch and replace if necessary.	• Use set of spare parts "drive" (Operation: 2 years or 16,000 hours). See parts list.
Check thickness of the clutch shoes **(1)** and replace when  **h** smaller than 18 mm. New condition of clutch shoe h = 26 mm	
Check the motor. Re-lubricate motor bearings (if required)	• See instructions of motor manufacturer
Oil change and thorough cleaning of the drive chamber	When using mineral oil [2]
	When using synthetic oil [2]
Check the bowl height.	• See section 4.7.1.
In case of direct current: Check the spindle speed (bowl).	• Check only after motor or drive replacement. • See section 4.1.5.
Check the starting time.	• See section 4.1.5.
Clean the strainer and pipe in the operating liquid feed system on the self-cleaning separator.	• See section 4.4.4
Carefully clean the holes in the non-return valve in the water feed and rinse with water. Check the functionality of the non-return valve.	• See section 4.5.
Carefully clean the water detector (if provided) with a soft cloth, use diesel oil if necessary.	
Clean the sight glass(es) in the frame for observing the drive belt.	
Check the hoses and hose pipes and replace when necessary.	
Check that vibration absorbers are fully functional (option).	
Clean the filter in the suction line of the product feed pump (option).	

(1) In the case of frequent starting and stopping of the separator, shaft-driven alternator operation and power plants shorter maintenance intervals are required It is not possible to state a definitive time. We recommend checking the clutch shoes after 1,000 operating hours or after 2 months at the latest.

(2) See section 4.3.3 - Oil quality and oil change

Gambar 4.12 *Running hours spare part fuel oil purifier*



PT.PERTAMINA (PERSERO)
DIT.PEMASARAN DAN NIAGA PERKAPALAN
MT.SEI PAKNING / PODV

STANDING OPERATION PROCEDURE
FO PURIFIER NO II
(S O P)

GEA WESTFALIA

TYPE : SELF CLEANING, AUTO CONTROL
MODEL : OSE 10-0136-067/10

Cara mengoperasikan

1. Pastikan isapan feed pump dalam kondisi terbuka
2. Tutup keranan by pass A 1 dan keranan A 2 dan A 3 dibuka
3. Tekan tombol power "ON" pada panel untuk mengoprasikan purifier dan tunggu sampai putaran purifier berputar dengan putaran maximal
4. Tekan tombol power "ON" pada panel untuk mengoprasiakn LO feed pump
5. Atur hieter pemanas tunggu sampai suhu temperatur 90°C. dengan menekan tombol "PID" pada panel control
6. Tekan tombol "START" pada panel untuk memulai proses
7. check tekanan air masuk 2,5 Kgf/cm²
8. Check tekanan masuk pada fo purifier ± 2 Kgf/cm²
9. Check tekana keluar pada fo purifier ± 1 Kgf/cm²
10. Bila ada kelainan inoformasiakn ke masinis jaga

Cara Mematikan

1. Buka kerangan A 4 / DO untuk flasing ± 3 minute
2. Tekan tombol "STOP" pada panel tunggu prosessampai selesai
3. Tekan tombol power "OFF" pada panel untuk mematiakan LO feed pump
4. Tekan tombol power "OFF" untuk mematikan FO purifier
5. Tutup kembali keranan A 4 / DO

Chief Engineer

Gambar 4.13 SOP Fuel Oil Purifier

DAFTAR LAMPIRAN

Gambar 2.1 Disc bowl 17

Gambar 2.2 Contoh penerapan metode FTA..... 28

Gambar 2.3 Diagram alur kerangka pikir 31

Gambar 4.1 Pohon kesalahan rusaknya komponen-komponen *FO Purifier*..... 40

Gambar 4.2 Pohon kesalahan getaran pada *FO Purifier* 41

Gambar 4.3 Pohon kesalahan kondisi *FO Purifier*..... 43

Gambar 4.4 Aplikasi pohon kesalahan pada *FO Purifier*..... 45

Gambar 4.5 Diagram pohon kesalahan 46

Gambar 4.6 *Bowl and disch part* 49

Gambar 4.7 *Ilustration of vertical saft* 51

Gambar 4.8 Sumbatan lumpur pada *bowl disc*..... 55

Gambar 4.9 *Setting temperature panel FO Purifier* 56

Gambar 4.10 *Flow chart* diagram *system FO Purifier 1* 57

Gambar 4.11 *Flow chart* diagram *system FO Purifier 2* 57

Gambar 4.12 *Running hours spare part FO Purifier*..... 62

Gambar 4.13 SOP *Fuel Oil Purifier* *63*