



# RESHINE MARINE ENGINEERING

## TECHNICAL SOLUTION

Spare parts & Technical Service

SERVICE WITH PASSION

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- Qualified certification & Authorization

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- Main Components
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- Cartridge replacement/overhaul
- VTA Nozzle ring overhaul/commissioning

## 05 ▶ Genuine spare sales

- Genuine parts provide by maker & local licensee
- Swift response and action
- Competitive price and factory warranty
- Adequate stock at Pacific Asia and Europe sector

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# WORKSHOP SERVICE



## Our Workshop Service offers:

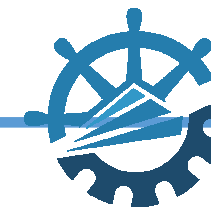
- ◆ Pit-stop overhaul for 4-stroke engine
- ◆ Recondition for cylinder heads/piston crown/skirt, exhaust and valve spindle/seat/housing
- ◆ FIVA valve calibration/HPS pump overhauling
- ◆ 4-stroke crank shaft grinding
- ◆ All types fuel parts overhauling
- ◆ All types cylinder liner honing
- ◆ Cylinder liner wave cut for 500mm bore and above (2-stroke Engine)
- ◆ Certain kind of steel parts fabrication for emergency use
- ◆ Piston rod grinding/induction hardening
- ◆ Turbocharger overhauling/reblading/balancing
- ◆ 2-stroke Cam Shaft changing cams/Chain Wheel changing bushes



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# FIVA RECONDITION



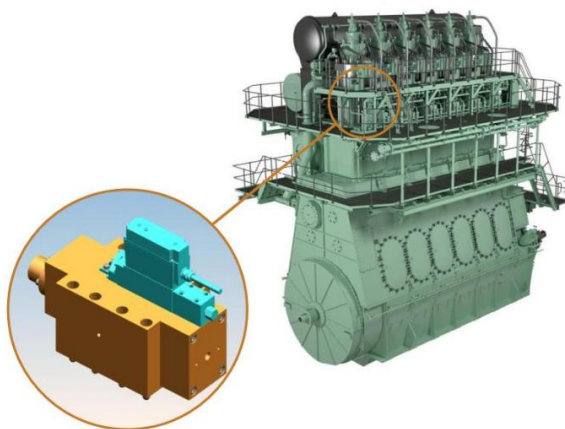
## ◆ FIVA RECON. & TEST

### FIVA valve test bench

- For all MAN ME engine

### Key point:

- Second to None knowledge on FIVA valve
- Comprehensive saving cost for a fleet with same engines.
- Well packing with antirust prevention and brand new boxes.
- **Parker** guarantee!





# TROUBLESHOOTING



## ◆ Trouble shooting

- Starting difficulties
- Cylinder liner and piston ring abnormal wear
- Bearings damage
- Alarms
- Poor performance of main engine

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# UPGRADES AND RETROFITS



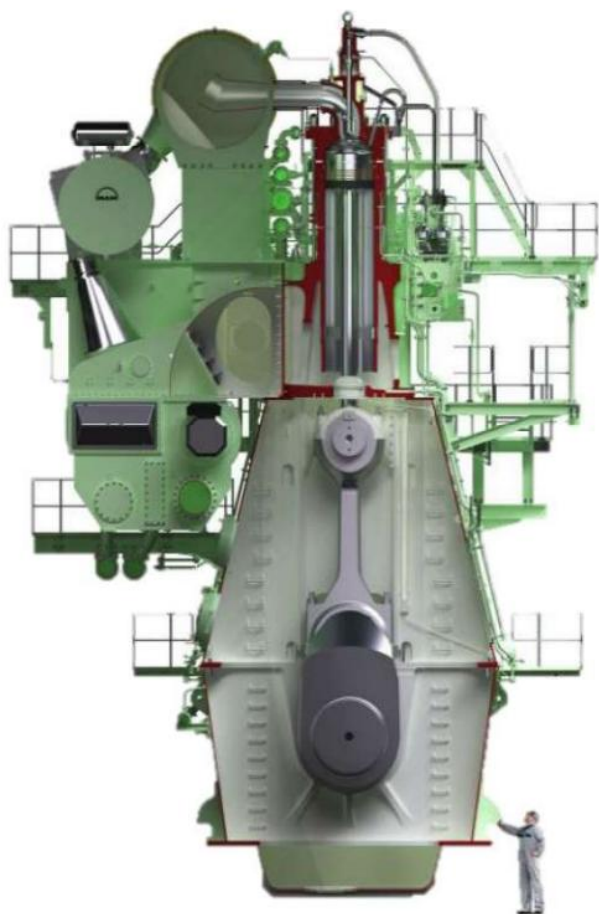
## ◆ Upgrades and Retrofits

- Alpha Lubricator system installation
- Slide fuel valve modification
- Diesel Switch installation
- COL modification
- Eco Cam modification
- PMI Auto-tuning
- ME software Upgrade
- HPS Upgrade
- Alpha lubricator system Upgrade
- EPL (Engine Power Limitation)

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# MAIN COMPONENTS

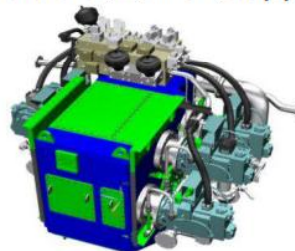


## ME Components

### • Hydraulic Cylinder Unit



### • Hydraulic Power Supply



### • Multi Purpose Controller



## Component details

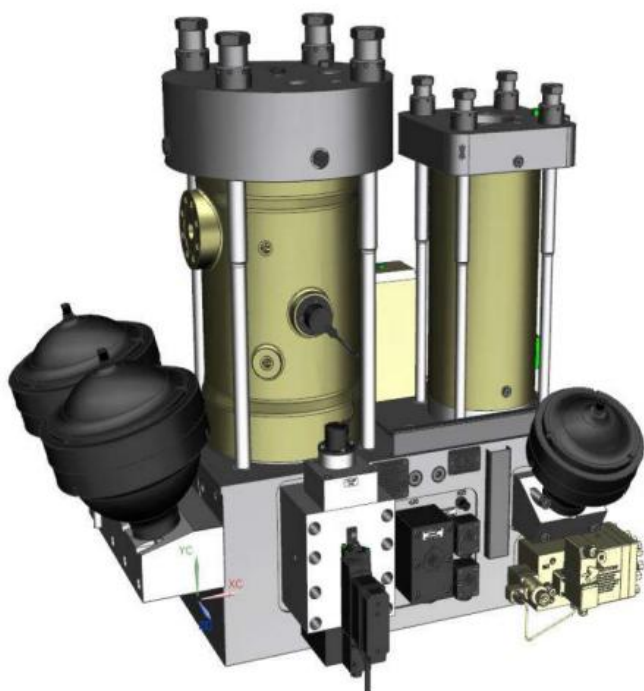
- **Deliver the hydraulic oil** to each cylinder so as to actuate the fuel and Exh. valve
- Consists of;
  - Fuel oil booster unit
  - Exh. valve actuator
  - FIVA valve and etc...
- **Supply the necessary high-pressure hydraulic oil** through driven pumps
- Consists of;
  - Elec. start-up & driven pumps
  - Safety accumulator block
  - High pressure pipe and etc...
- **Precised timing control** for fuel valve injection, exhaust valve opening and etc.
- MPC function;
  - EICU(Engine Interface Control Unit)
  - ECU(Engine Control Unit)
  - CCU(Cylinder Control Unit) and etc.



# OVERHAUL & INSECTION TO HCU PARTS



## Overview of HCU component



## Detailed maintenance parts

**1. Fuel booster**

**32,000 R/H**



**2. exh.valve actuator**

**32,000 R/H**



**3. Accumulator**

**32,000 R/H**



**4. FIVA valve**

**32,000 R/H**



**5. Cylinder lubricator**

**32,000 R/H**



**6. Distributor block**

**32,000 R/H**

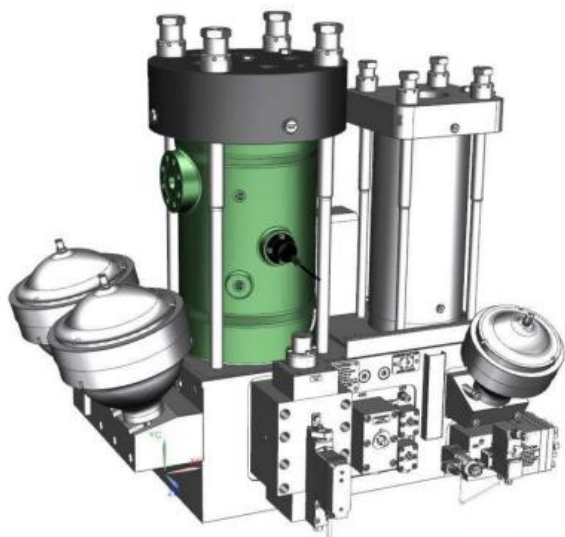




# OVERHAUL & INSECTION TO HCU PARTS



## 1. Fuel booster unit



Maintenance items	Interval
Overhaul of suction valve	8,000 R/H
Overhaul of Fuel booster unit	32,000 R/H
Replacement of suction valve	32,000 R/H
Expected life time of Fuel booster	64,000 R/H

Before



After



Suction valve



Hydraulic plunger

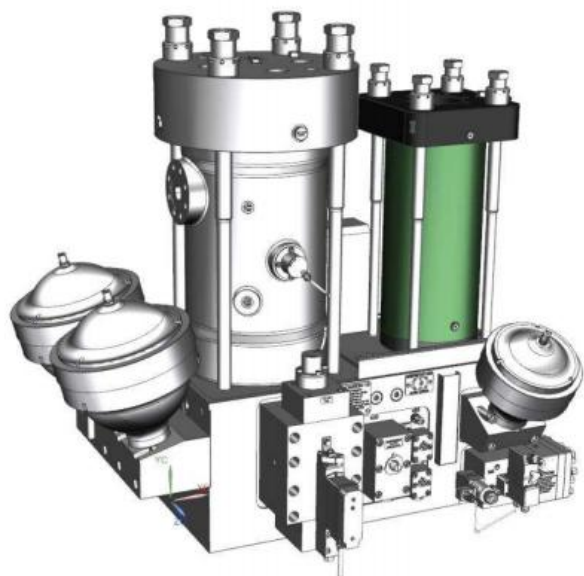


Fuel plunger

# OVERHAUL & INSECTION TO HCU PARTS



## 2. Exhaust actuator



Maintenance items	Interval
Overhaul exhaust actuator	32,000 R/H
Replacement of non-return v/v	32,000 R/H
Expected life time of actuator	64,000 R/H

Before



After



Non-return valve



Step1 Piston



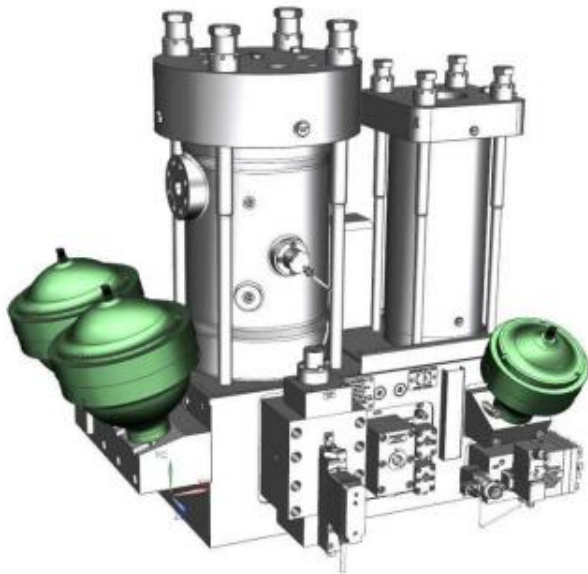
Step 2 Piston



# OVERHAUL & INSECTION TO HCU PARTS



## 3. Accumulator



Maintenance items	Interval
Recharging of the accumulator	2,000 R/H
Replacement repair kit	32,000 R/H

Before



After



Repair kit (10L)



Repair kit (4L)

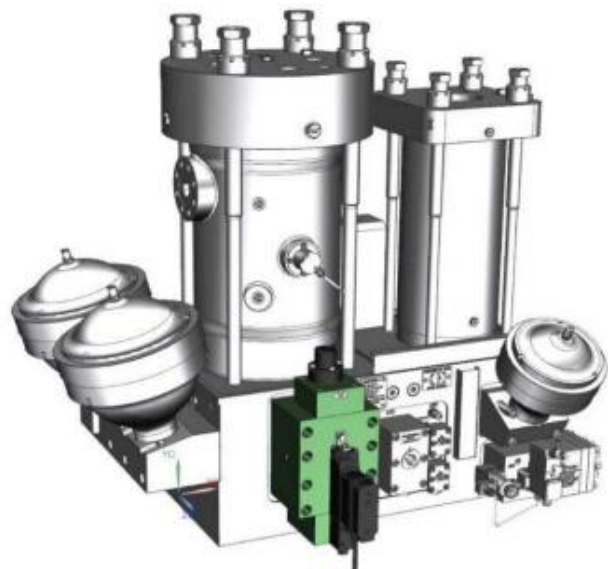


Measuring

# OVERHAUL & INSECTION TO HCU PARTS



## 4.FIVA valve

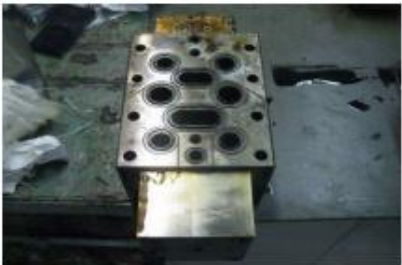


Maintenance items	Interval
Overhaul complete FIVA valve	32,000 R/H
Replacement proportional valve	20,000 R/H
Expected life time of FIVA valve	64,000 R/H

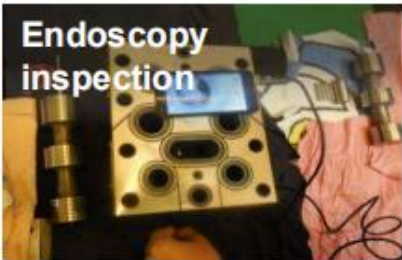
Before



After



FIVA body



FIVA valve OVHL.



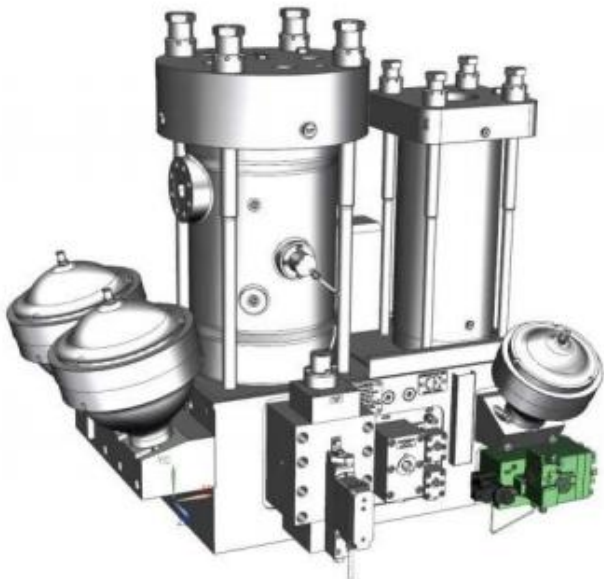
Proportional valve



# OVERHAUL & INSECTION TO HCU PARTS



## 5.Cylinder Lubricator



Maintenance items	Interval
Overhaul Cylinder lubricator	32,000 R/H
Expected life time of lubricator	96,000 R/H

Before



After



Lubricator OVHL.



Plunger & Piston

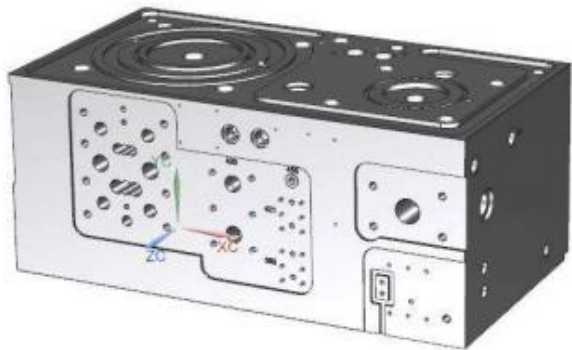


Solenoid valve

# OVERHAUL & INSECTION TO HCU PARTS



## 6.Distributor Block

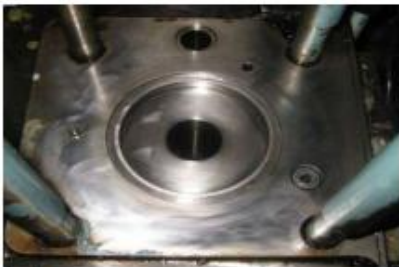


Maintenance items	Interval
Cleaning distributor Block	32,000 R/H
Inspection on block	32,000 R/H

Before



After



HCU block



Exh. actuator seat



Fuel booster seat

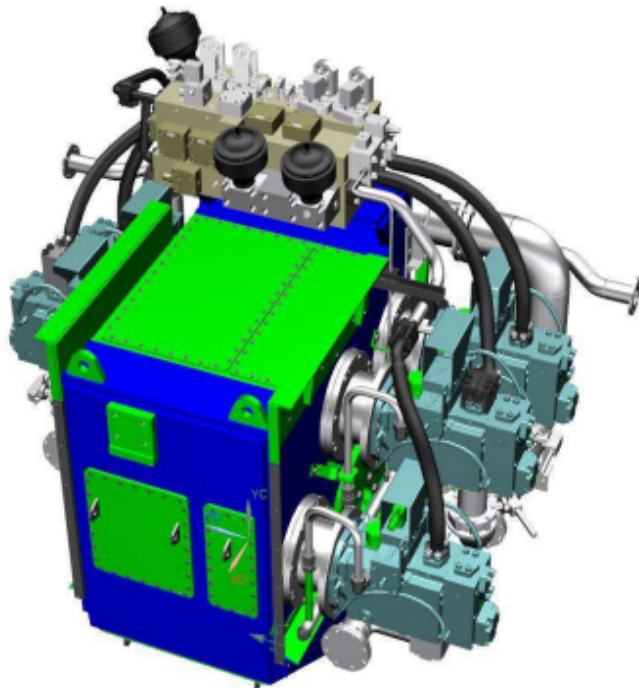


# OVERHAUL & INSECTION TO HPS PARTS



## Detailed maintenance parts

### Overview of HPS component



#### **1. Accumulator block**

**32,000 R/H**



#### **2. Hydraulic hose**

**32,000 R/H**



#### **3. Accumulator**

**32,000 R/H**



#### **4. Compensator**

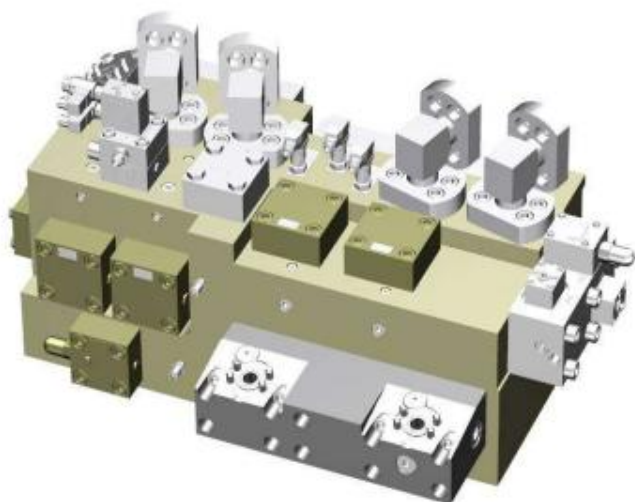
**32,000 R/H**



# OVERHAUL & INSECTION TO HPS PARTS



## 1. Accumulator Block



Maintenance items	Interval
Replacement of safety valve	32,000 R/H
Replacement of cartridge valve	32,000 R/H
Safety valve pressure setting	32,000 R/H

Before



After



Safety valve(#310 / #311)



Cartridge valve (#304 / #309)



Pressure setting



# OVERHAUL & INSECTION TO HPS PARTS



## 2. Hose & Compensator



Maintenance items	Interval
Replacement of hydraulic hoses	32,000 R/H
Replacement of compensator	32,000 R/H

Before



After



Leakage hose



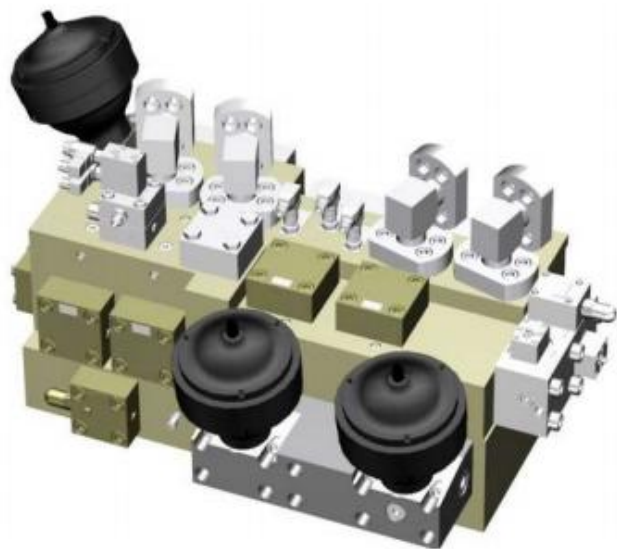
Hydraulic hose



# OVERHAUL & INSECTION TO HPS PARTS



## 3. Accumulator



Maintenance items	Interval
Recharging of accumulator	2,000 R/H
Replacement of membrane kit	32,000 R/H

Before



After



Repair kit (4L)



Measuring Temp



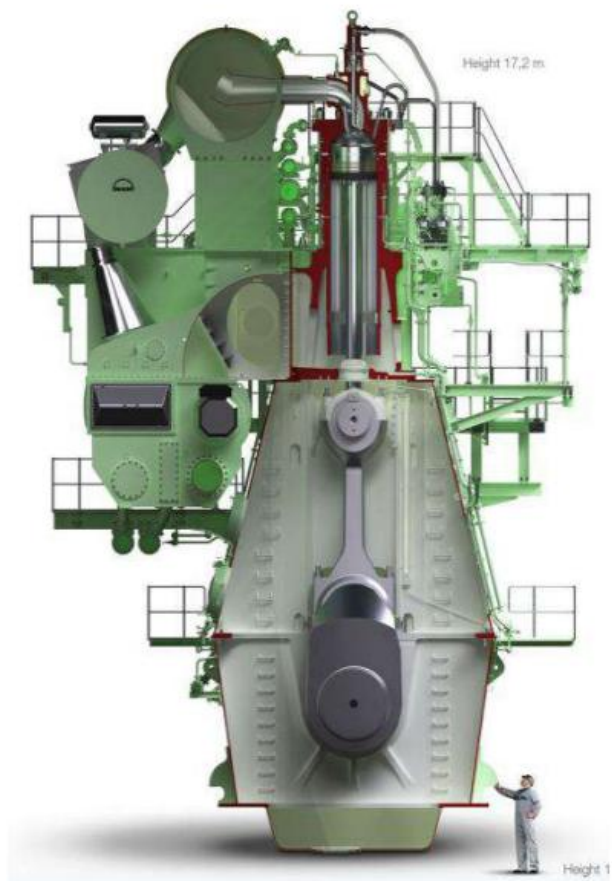
N2 Gas filling



# ELECTRIC COMPONENT

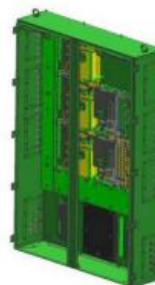


## Detailed maintenance parts



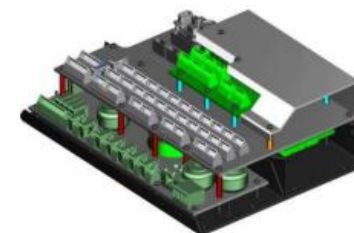
***Electric control panel***

**32,000 R/H**



***MPC***

**32,000 R/H**



***Level switch***

**32,000 R/H**

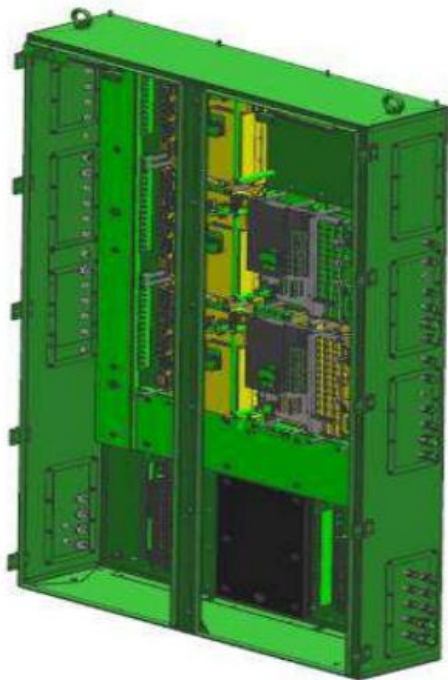


***ETC.,***

**32,000 R/H**



# INSPECTION TO PSU & LOW INSULATION



Maintenance items	Interval
Inspection control panel	32,000 R/H

Before



After



Cable Inspection



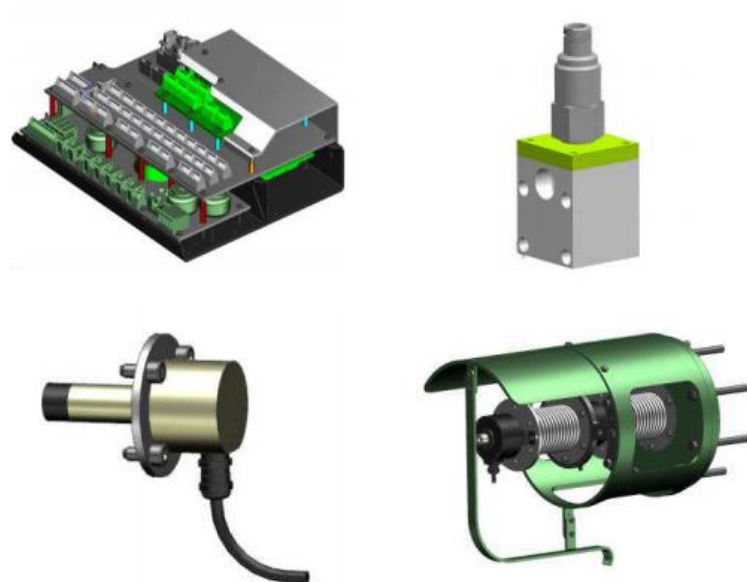
Replacement battery



Cleaning components



# INSPECTION & MAINTENANCE ELECTRIC COMPONENT



Maintenance items	Interval
Inspection cabling condition	32,000 R/H
Replacement of level switch	32,000 R/H

Before



After



Check MPC with serial cable

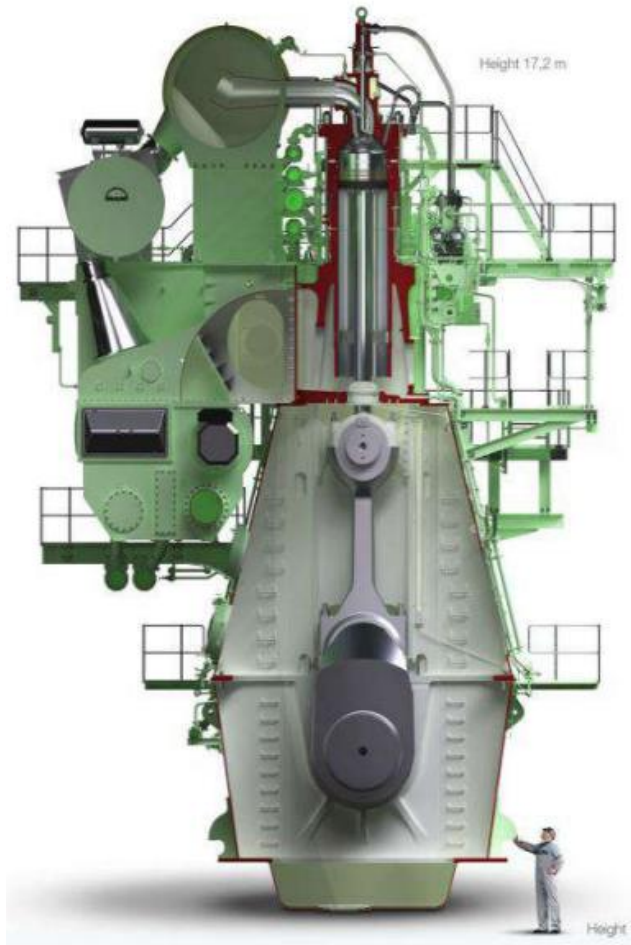


Level switch



Tacho pick up Sensor

# INSPECTION & MAINTENANCE TO MISC. SUBJECTS



## Detailed maintenance parts

*Pneumatic system*

**32,000 R/H**



*Chain tightener*

**4,000 R/H**



*Chain re-tighten*

**4,000 R/H**



*Guide bar*

**4,000 R/H**





# INSPECTION & MAINTENANCE TO PNEUMATIC



Maintenance items	Interval
Pneumatic control system	32,000 R/H

## Detailed maintenance parts



Starting air pilot valve

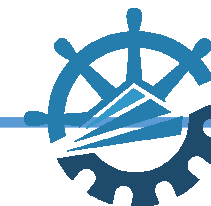


Slow turning valve



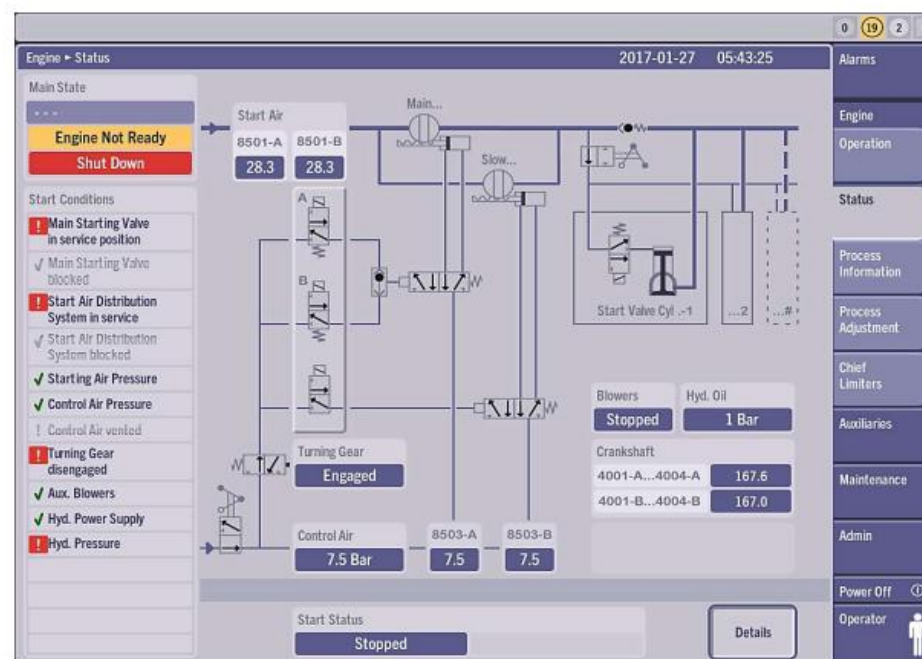
Starting air valve

# CALIBRATION FOR SAFETY DEVICE



## <Start Blocked, Not ready, Standby function test>

- Slow down and Shut down
- Main starting air valve function test
- Starting air distributor valve function test
- Starting air pilot valve function test
- Control air pressure low (5.5bar)
- Cylinder lubricator function test
- Turning gear engage
- Aux.blower not running
- Hydraulic pressure low (below 170 bar)



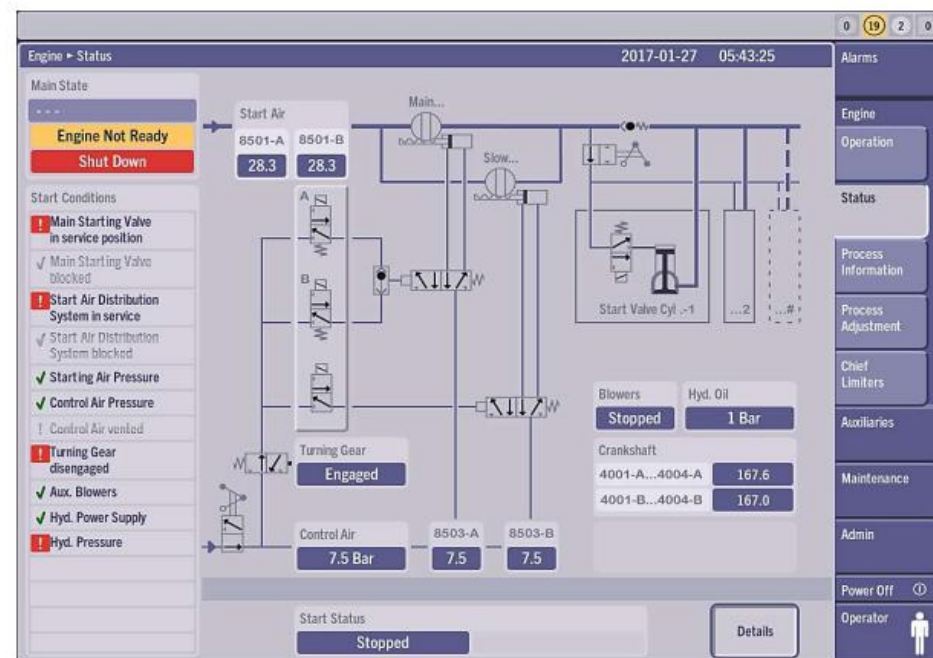


# CONFIRM TRIAL

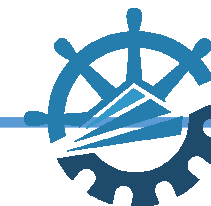


<Check the engine condition prior to start>

- Adjust fuel quality offset
- Find adjust tachometer offset
- Slow down and Shut down
- Main starting air valve function test
- Starting air distributor valve function test
- Starting air pilot valve function test
- Control air pressure low (5.5bar)
- Cylinder lubricator function test
- Turning gear engage
- Aux. blower not running
- Hydraulic pressure low (below 170 bar)

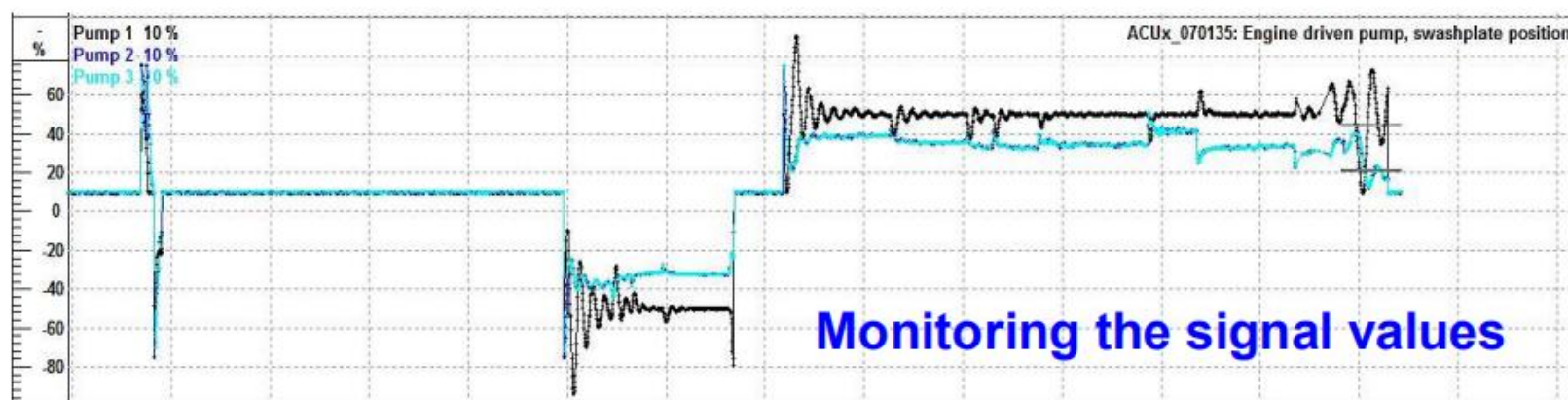
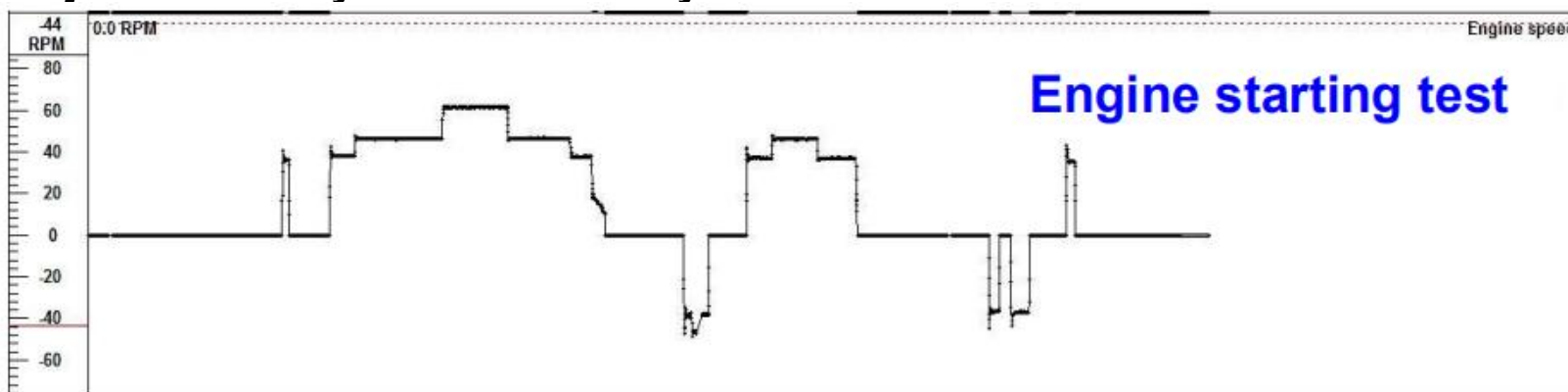


# CONFIRM TRIAL



<Check the engine condition during engine operation>

- Starting test at local ECR / Bridge including slow turn function
- Monitoring the all signal values in CoCoS-EDS program
- Adjust the PMI system if necessary





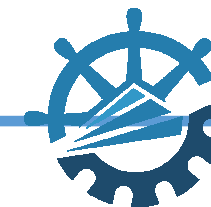


# RESHINE MARINE ENGINEERING Turbocharger Technical Service

March 2022 Spare parts & Technical Service

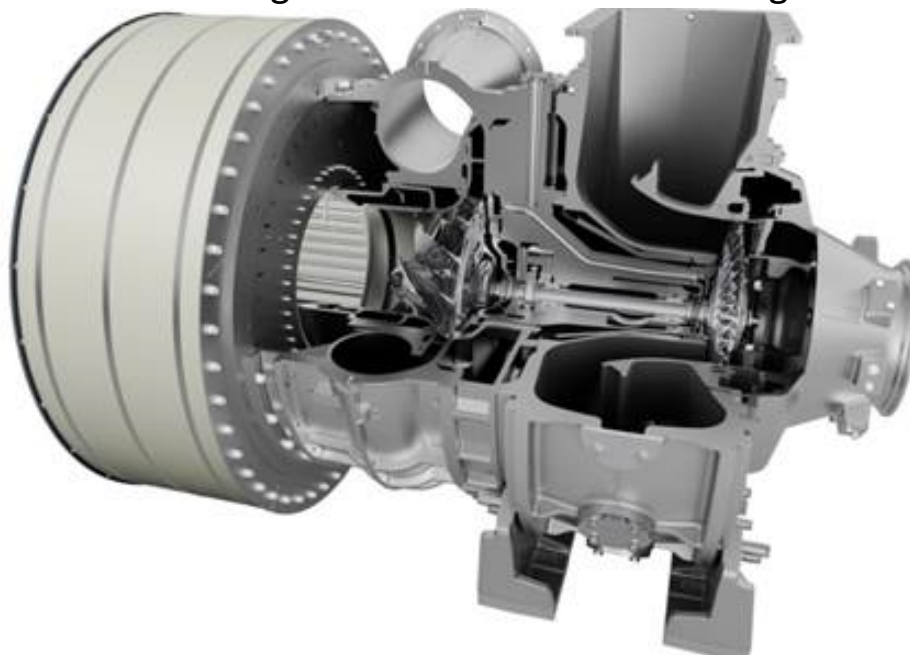
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# SERVICE RANGE



## RANGE OF SERVICES

- ◆ MAN/ABB/MET/KBB Turrger maintenance- All type
- ◆ Scheduled inspection/overhaul: 6K,12K,24K
- ◆ Rotor replacement/overhaul/balancing
- ◆ Cartridge replacement/overhaul
- ◆ VTA Nozzle ring overhaul and commissioning





**RESHINE MARINE ENGINEERING**



**Thank you for your attention!**

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