

Machinery Overhauling Course Lesson Plan



WEEK	DAY	SESSION CONTENTS
WEEK 1	DAY 1	Basic Theory of Valves. Types of the Valves, Advantages and Disadvantages of Each valve, Difference Between Screw Down Globe Valve and Non Return Valve, Videos of Each Valve, Overhauling of Valves, Lapping and Checking the lapping. Overhauling of Globe Valve, Gate Valve, Butterfly Valve and Swing Check Valve. Understanding principle of operation of Pressure Reducing and Regulating Valve and Overhauling of Pressure Reducing and Regulating Valve.
	DAY 2	Basic Theory of Pumps, Understanding of NPSH, Different Types of Pumps, Advantages and Disadvantages of RotoDynamic and Positive Displacement Pump. Understanding Centrifugal Pump construction, Removal and Assembly of Bearing in the shaft, Correct Fitment of Mechanical Seal, Overhauling of Gear pumps, Measurement of Backlash, Clearance between gear teeth and casing. Overhauling of Relief Valve.
	DAY 3	Understanding principle of operation of Screw Pump, Complete overhauling of Screw Pump, Understanding Principle of Operation of Wilden Pump, Overhauling of Wilden Pump.
	DAY 4	Overhauling of Vane Pump, Understanding principle of operation of Vane Pump, Overhauling of Fixed Displacement Swash Plate Pump.
	DAY 5	Understanding principle of operation of Aux. Engine Bosch Fuel Pump. Complete overhauling of Aux. Engine Fuel Pump. Overhauling of Aux. Engine Fuel Injector and Pressure Testing of Same.

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WEEK 2	DAY 6	Understanding Principle of operation of Main Engine Fuel Pump with VIT. Overhauling of Fuel Pump.
	DAY 7	Overhauling of Main Engine Fuel Injector, Main Engine Air Starting Valve.
	DAY 8	Understanding principle of operation of Centrifugal Purifier. Complete overhauling of Purifier. Dismantling Vertical Shaft. Understanding Manual Desludging Procedure, Bowl operating Procedure.
	DAY 9	Understanding principle of operation of Main Air Compressor, Understanding different safeties, Overhauling of Main Air Compressor, Checkng Bumping clearance by lead ball method. Understanding operation of Unloader, Calibration of Piston Rings.
	DAY 10	Understanding Principle of Operation of Turbocharger, checking K, L, M clearances. Dismantling and Assembly of Turbocharger. Discussion of Turbine Cleaning Methods.

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WEEK 3	DAY 11	Understanding the Pipe line layouts of the Generator, Different mountings on the Generator. Understanding precautions and preparation before starting the Decarb. Removal of necessary pipelines and Dismantling of Cylinder head and Piston Connecting Rod Assembly from Cylinder Liners.
	DAY 12	Overhauling of Cylinder head. Lapping of Valves, Overhauling of Air Starting Valve, Discussing the Valve Guide and Seat Renewal procedure.
	DAY 13	Removal and Inserting Cylinder liner, Inspection of Main and Thrust Bearings, Callibration of Cylinder liner, Piston Rings, and Connecting Rod ovality, Dye Penetration test of Connecting Rod. Overhauling of attached Lubricating Oil Pump.
	DAY 14	Assembly of Piston Connecting Rod Assembly, Cylinder head. Adjusting Tapett clearances and Fuel Pump timings.
	DAY 15	Taking Crankshaft deflection and understanding the plotting of the Graph.

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WEEK	DAY	SESSION CONTENTS
WEEK 4	DAY 16	Overhauling of Main Engine Exhaust Valve.
	DAY 17	Overhauling of Boiler Safety Valve, Boiler Gauge Glass, Boiler Burner.
	DAY 18	Overhauling of Plate type Heat Exchanger and Shell and Tube Type Heat Exchanger.
	DAY 19	Overhauling of Portable Submersible Cargo Oil Pump. (FRAMO Pump)
	DAY 20	Understanding Basic Star Delta Circuit and Overhauling of Electric Motor. Taking Different Readings by Megger and Multimeter.

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WEEK	DAY	SESSION CONTENTS
WEEK 5	DAY 21	Understanding basic symbolic representation of Hydraulic and Pneumatic Direction Control Valves. Overhauling of Hydraulic and Pneumatic Direction Control Valve.
	DAY 22	Overhauling of Pneumatic Gangway Motor and Hydraulic Radial Piston Motor.
	DAY 23	Overhauling of Hydraulic Cylinder Ram Assembly, Renewal of Piston Seals of Hydraulic Piston of Cargo Tank Valve Actuator.
	DAY 24	Basic understanding and Tracing of MAN B & W SMC Maneuvering Circuit
	DAY 25	Overhauling of Refrigeration and AC Circuit. Overhauling of Refrigeration Compressor.