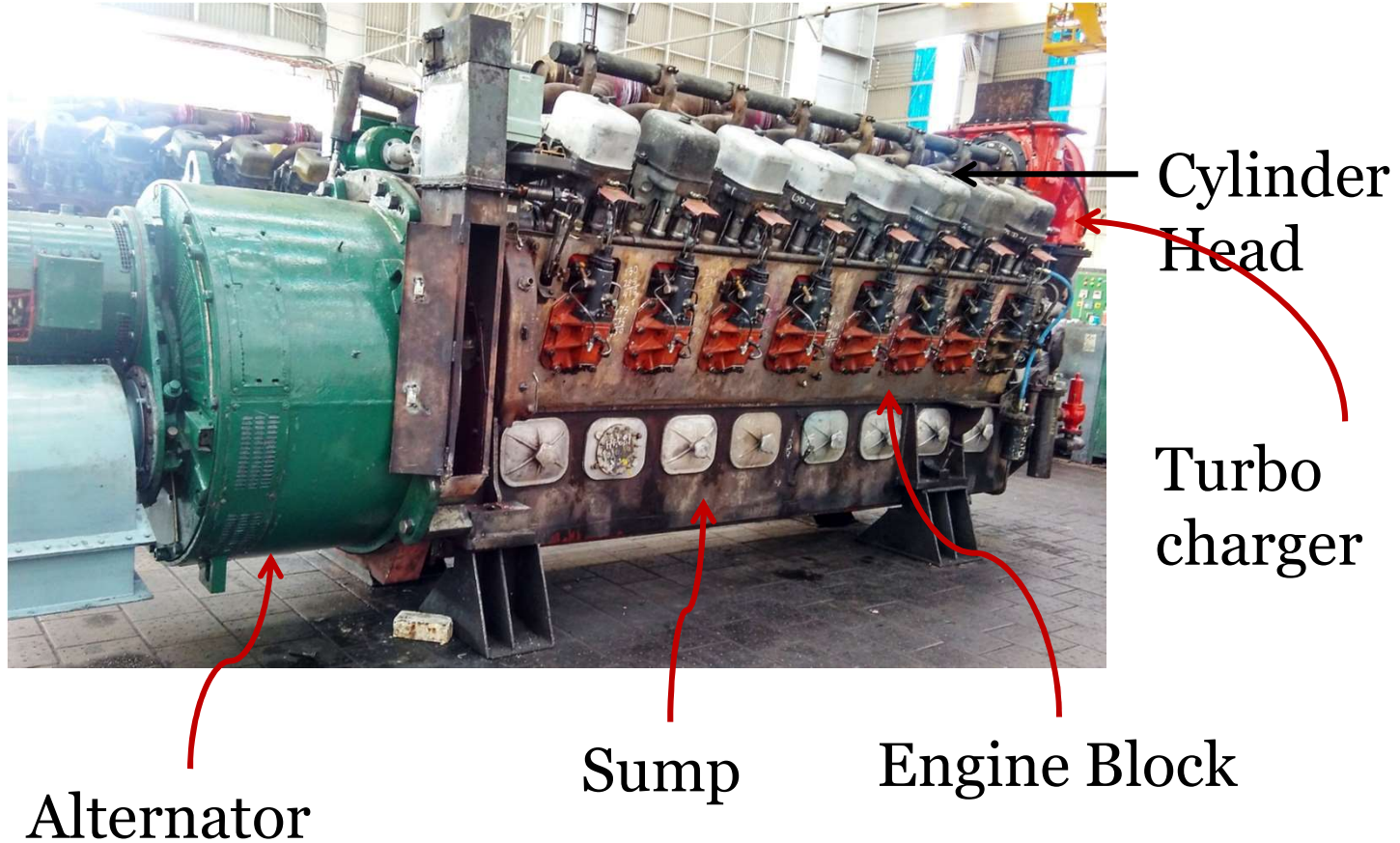


# **Presentation** **on** Engine Block Maintenance Practices

By:

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SSE /Power Pack  
Diesel Shop Ajmer

# POWER PACK ASSEMBLY

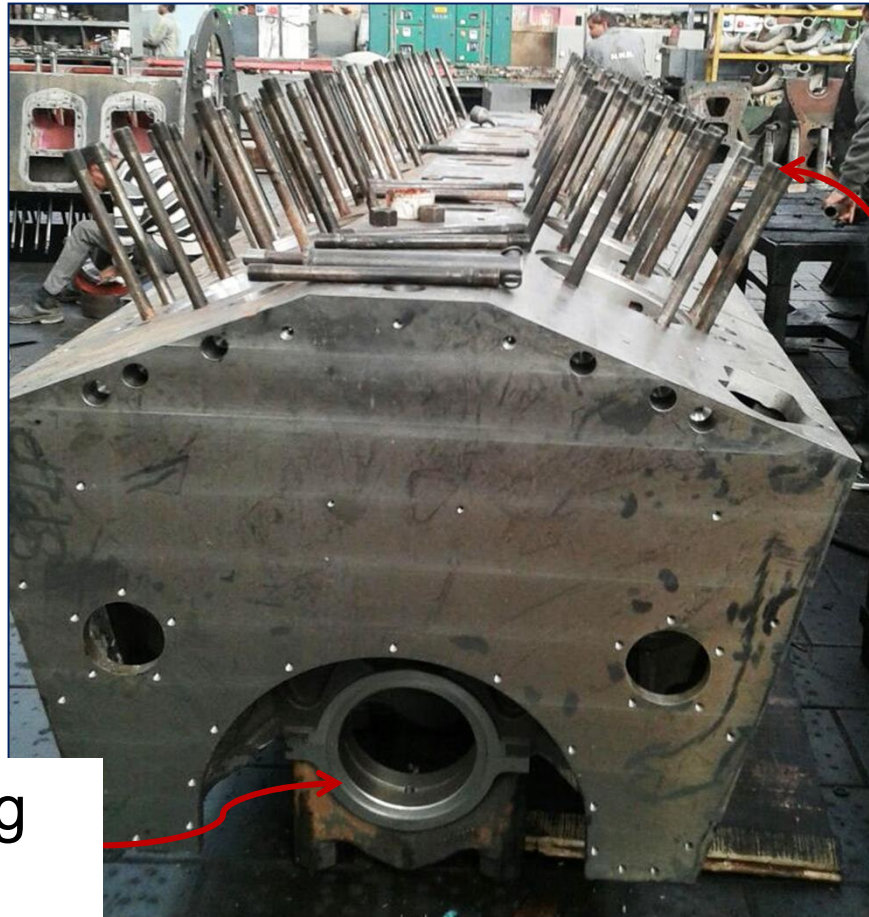


# Engine Block

➤ **Constructed from steel weldment which houses and supports**

- Engine crankshaft & main bearings
- Camshafts
- Piston & connecting rods
- Cylinder liners & cylinder heads
- Governor
- Generator
- Turbo supercharger, exhaust manifold etc
- Fuel pump support & its other parts etc

# ENGINE BLOCK



Stud Cyl.  
Head

Main Bearing  
Cap

# **Inspection of Engine Block during POH**

- DPT of Main Bearing Saddle for cracks
- DPT of CAM eye Bore for Cracks
- DPT of Main Bearing CAP
- DPT of Water Jacket Area and Air Box
- Check CAM eye Bore Size
- Check Main Bearing Bore
- Check misalignment of Main Bearing Bores
- Check Size of lower and Upper Pilots Bores of Block
- Any other damages and defects observed



# Engine Block Datas

BORE CAMSHAFT BUSHING LIMIT	
Diameter-New	4.7500"-4.7515"
Condemning Diameter	4.7525"
BORE, CYLINDER LINER AND SLEEVE	(See Figure 1 & 5)
BORE, MAIN BEARING	
Diameter-New	9.0355"-9.0370"
Diameter-Worn	9.0350"-9.0385"
Out-of-Roundness (Figure 3)	0.0035"
TAPER (FIGURE 3)	
Vertical Plate	0.001"
45B from Vertical	0.003"
HORIZONTAL MISALIGNMENT (FIGURE 4)	
Two Adjacent Bores	0.002" ✓
Two Non-adjacent Bores	0.004" ✓
VERTICAL MISALIGNMENT (FIGURE 4)	
Three Adjacent Bores	0.0015" ✓
Two Non-adjacent Bores	0.003" ✓
TORQUE	
Cylinder Head Studs (Minimum Lubricated Driving Torque at Full Stud Engagement)	100-120 ft. lbs. ✓

# ENGINE BLOCK

Saddle Main  
Bearing





## Checking misalignment of Main Bearing Bores

Mandrel





# ENGINE BLOCK

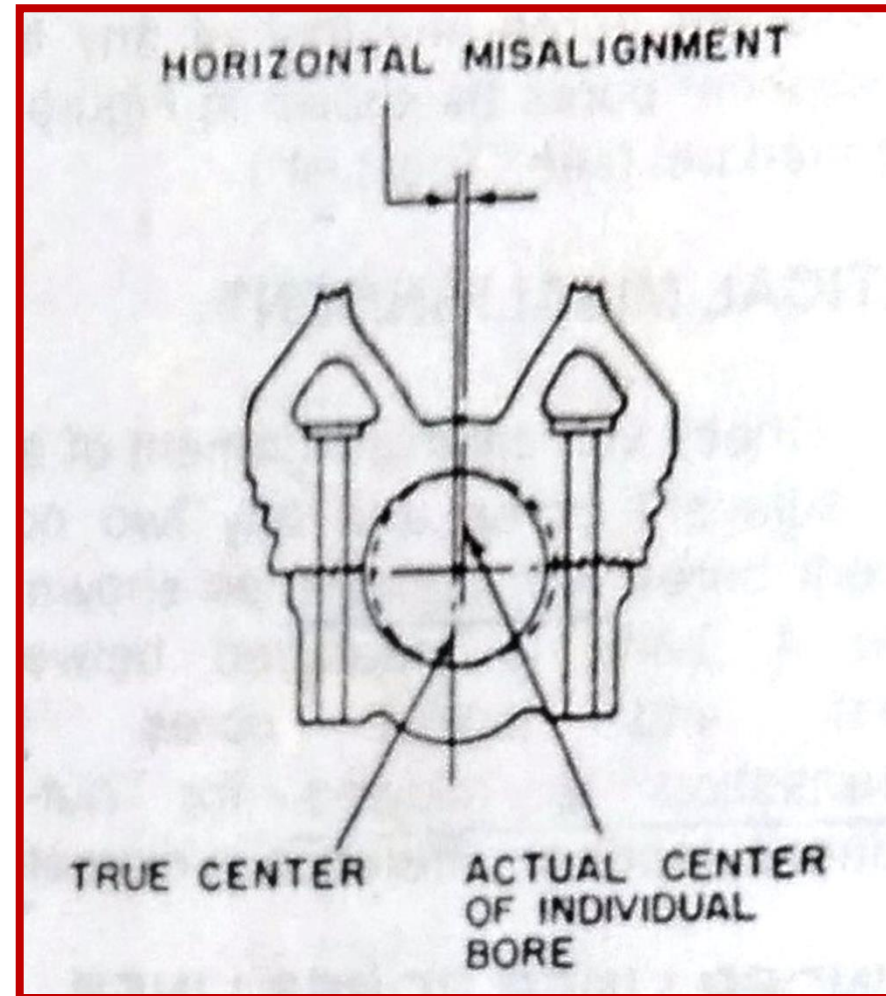
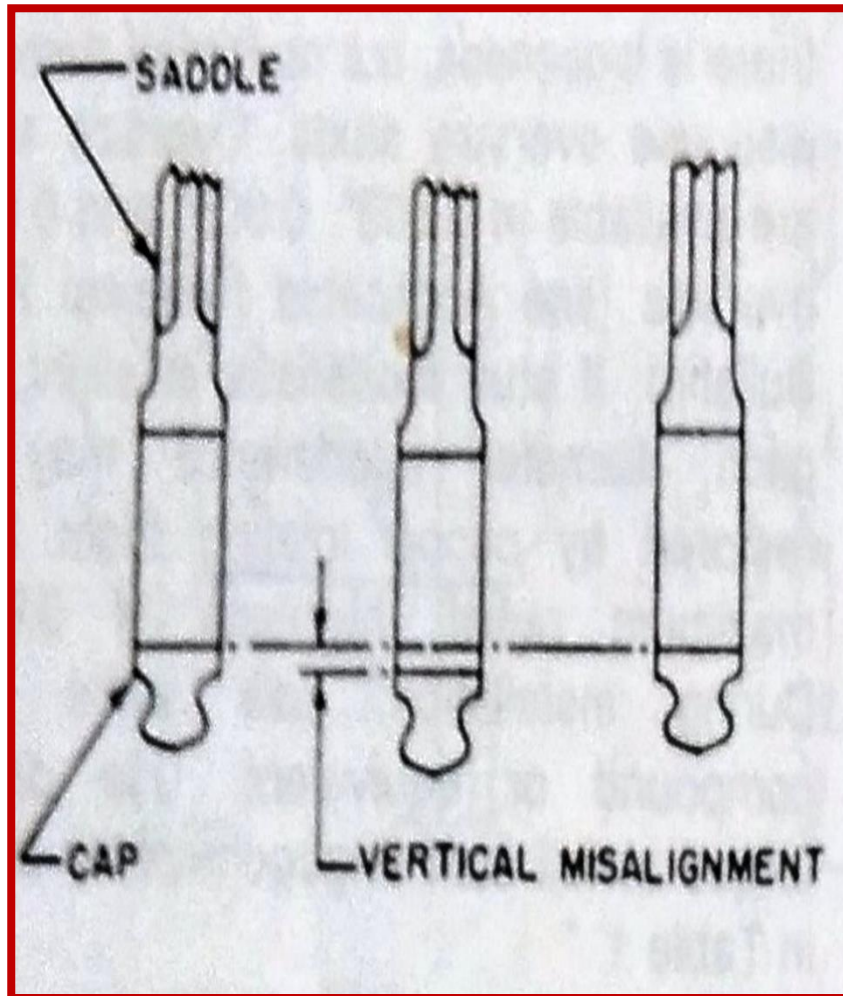
Upper Pilot for Cyl. Liner



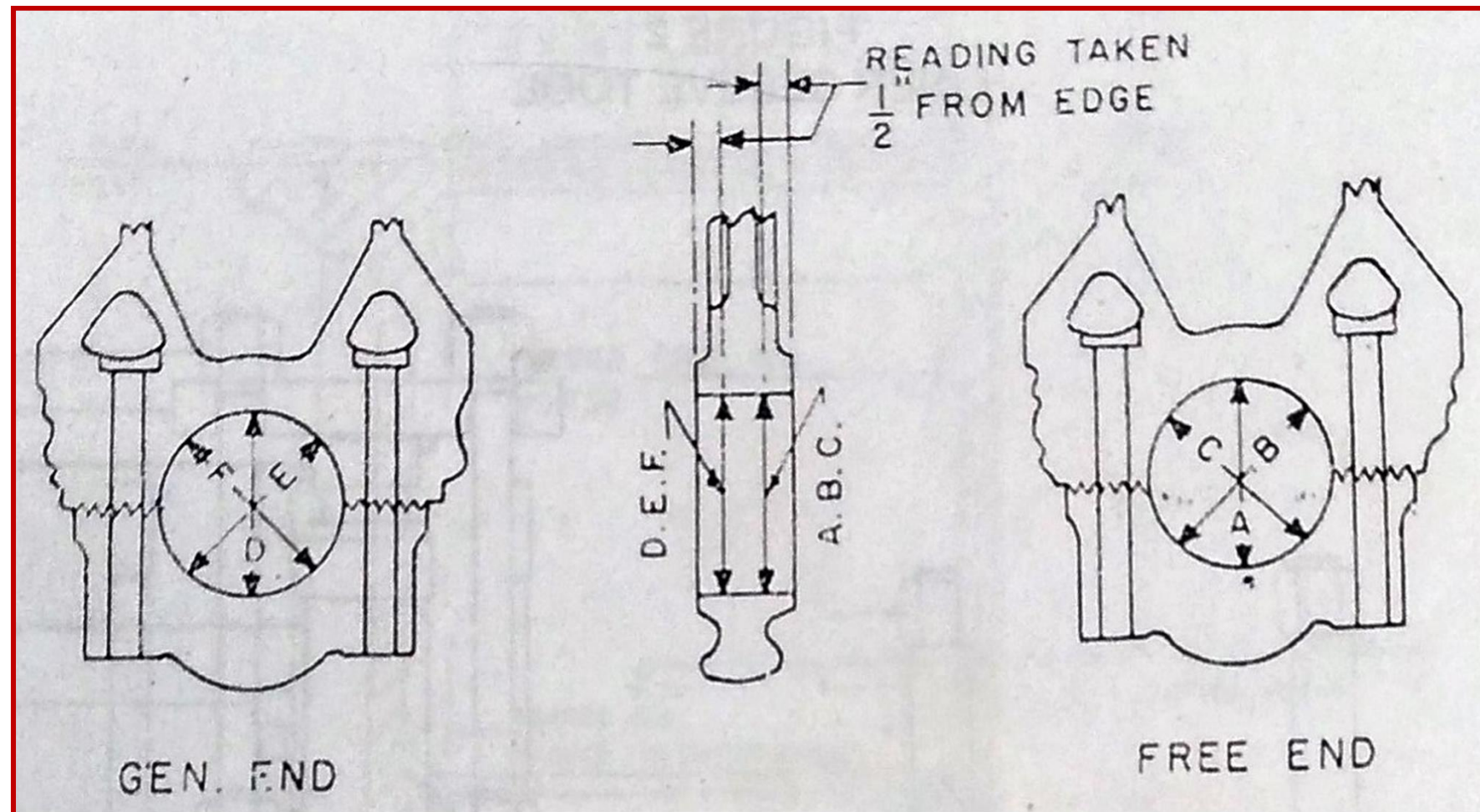
Generator End

Free End

## Checking vertical and horizontal of misalignment of main Bearing Bores



# Checking of main Bearing Bores out of roundness





## **Rejection Criteria of Engine Block**

- Lamination crack in the Plate at any location
- Crack in the crank saddle serration pad beyond 1 ½ inches in length
- Crack in the cam Bearing Joint beyond 1 ½ inches in length
- Cracks in crank Area
- Crack in the fuel pump support Area beyond 1 ½ inches in length
- Welding Cracks in water and Air Galleries
- Shear of Spline beyond repairable Limit (5/16" deep )
- Structural damage requiring addition of patch plate



## **Modification of Engine Block**

- Main Bearing cap Height to increase
- Upgrade Main Bearing Stud Material and to increase pretension in the stud
- Introduction of the chamfer in the serration of the main bearing cap
- Crush height of the Main Bearing to increase
- Strengthen of R9 / L9 cam block Area while using additional curved block

## Rejection of Engine Block

S.No	Year	No of Engine Block rejected
1	2014-15	21
2	2015-16	17
3	2016-17	17 Up to date

**THANK YOU**