SHRIRAM PISTONS & RINGS LTD.

New Launch

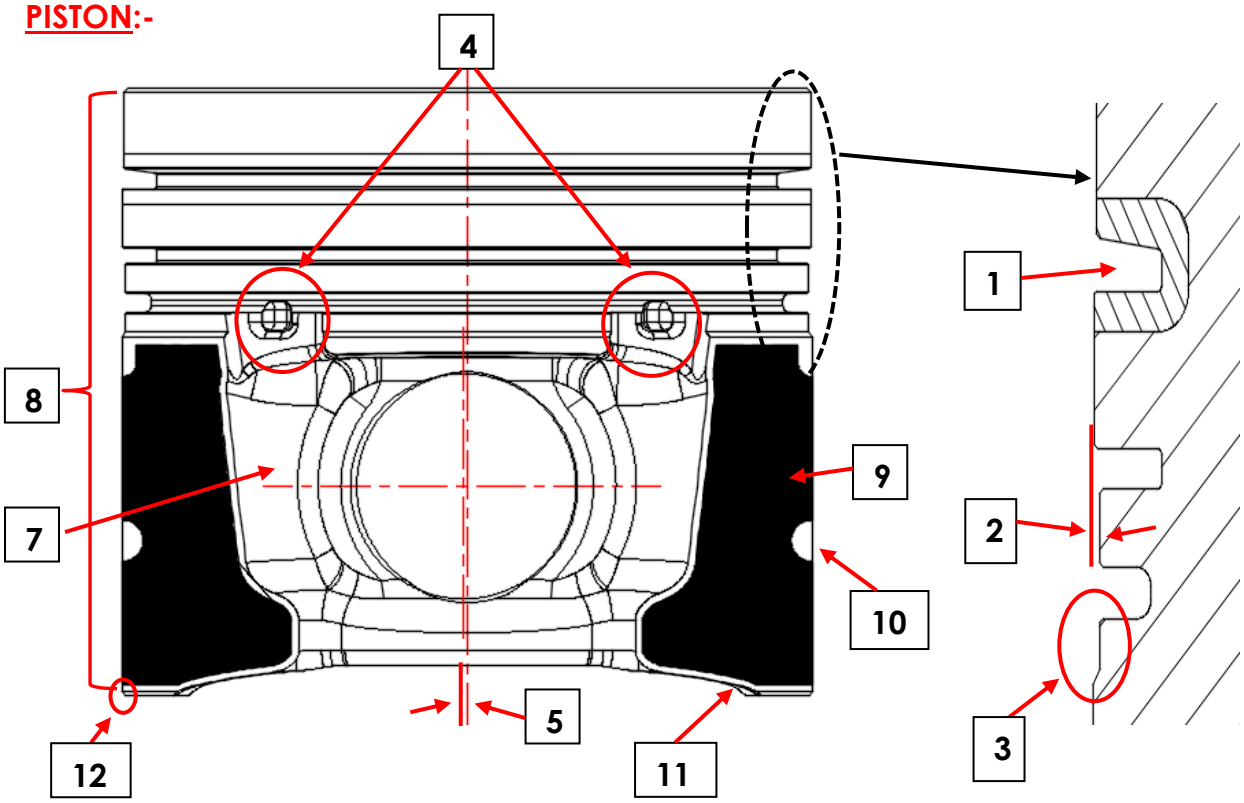
MD: TS: 09/JULY'25 INTRODUCTION CIRCULAR– M&M DHRUV ELS - PISTON ASSEMBLY & RING SET

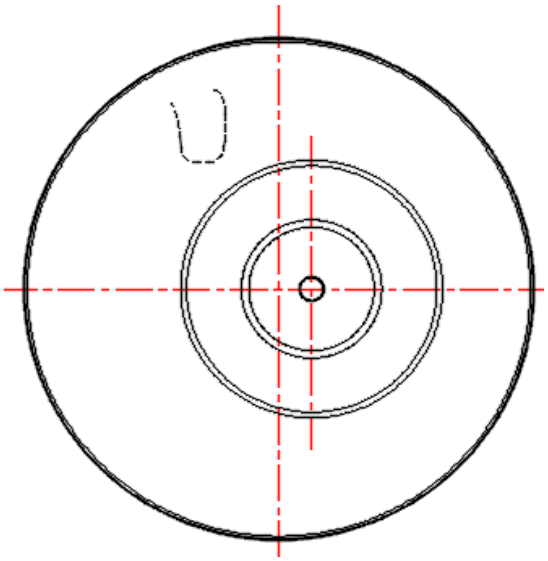
USHA is pleased to launch **'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ'** piston assembly & ring set in its aftermarket Tractor product range.

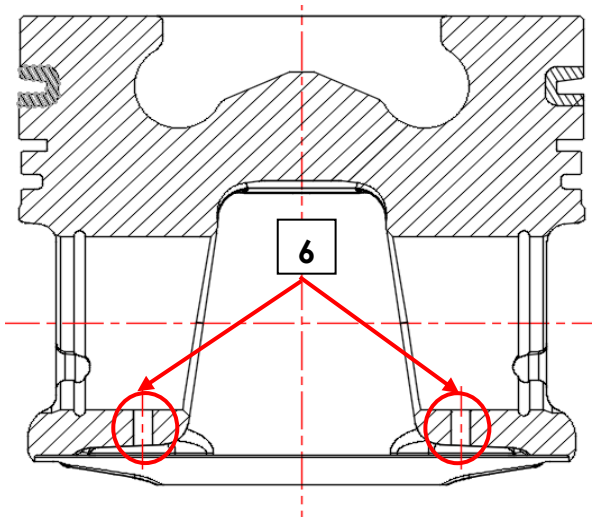
This piston assembly & ring set is common with **M&M DI 265, 275, 295, 415, 475, 575, 585 Bhoomiputra, Yuvo** tractor models.

This piston set has following special features: -

PISTON:-







Unique features of USHA **'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ'** piston are as follows:

SL. NO.	SPECIAL FEATURE	BENEFITS TO CUSTOMER
1)	**HIGH NICKEL WEAR RESISTANT RING CARRIER (RCP):** Top groove of this piston is made of high nickel wear resistant ring carrier insert which is manufactured using latest centrifugal casting technology. **HALF KEYSTONE RING GROOVE GEOMETRY:** Helps in squeezing out excess oil from the groove preventing carbon deposition & sludge formation. Also facilitates better seating of ring at lower groove flank which helps in controlling travel of burnt gases towards sump.	• Longer life of piston due to negligible wear of top groove • Lesser blow-by
2)	**CUT BACK IN 2ND RING LAND:** This piston has a cut back in second ring land for better seating, stability & functioning of intermediate ring.	• Helps in controlling blow-by & reducing oil consumption
3)	**'J' CUT:** Piston has been provided with a unique 'J' cut below the oil ring groove area.	• Provides all time lubrication to piston skirt • No piston seizure in extreme limits of normal working conditions
4)	**QUICK OIL RETURN SLOTS (QORS):** Two nos. of Quick Oil Return Slots (QORS) are provided on either side of piston above the pin bore, half in groove & half in window.	• Faster drainage of excess oil, hence low oil consumption
5)	**PISTON-PIN BORE OFFSET:** The piston is provided with a pin bore offset to avoid piston slap. Piston pin bore offset means that the centre line of piston is slightly offset from the centre line of pin bore. Due to this offset, piston tilts at TDC & BDC smoothly & prevents slapping with liner.	• Reduced engine noise
6)	**OIL HOLES IN PIN BOSS:** A drilled hole is provided on the either side of pin boss.	• Improves pin- pin bore lubrication, hence lesser wear

7)	**AS CAST HYDRODYNAMIC WINDOW:** 'As Cast' hydrodynamic window not only provides more space for oil drainage, but also provides more bearing area to piston skirt which helps in guiding ring's movement.	• Reduces chances of seizure at minor axis, hence longer piston life
8)	**PISTON SURFACE COMPLETELY BONDERISED:**	• Bonderising helps in preventing oxidation of piston • Also provides porous surface for oil retention, thereby reducing wear
9)	**'D-10 COATING' ON PISTON SKIRT:**	• Helps in initial lubrication & seizure free operation • Better wear resistance • Reduces engine noise
10)	**MEASURING POINTS ON PISTON SKIRT:**	• Provided for easy diameter verification
11)	**SLIPPER DESIGN:** Slipper design helps in reducing piston weight.	• Improves fuel efficiency • Low noise during engine working
12)	**SCRAPING CHAMFER:** A smooth chamfer is provided at the bottom end of the piston skirt.	• Helps in regulating oil supply, reduces skirt wear & hence longer life

TECHNICAL DATA- 'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ' PISTON (Ø 88.90 mm)	
USHA CODE→ T45	
Nominal Bore Diameter	88.90
Piston Diameter	88.81
Recommended Piston-Liner Clearance	0.09
Compression Height	51.30
Total Height	78.30
Gudgeon Pin Length X OD	67.90 X 29.00
All dimensions in 'mm'	

PISTON RINGS:-

This ring set has following special features:

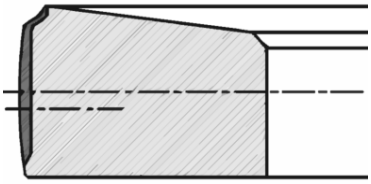
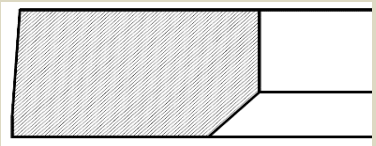
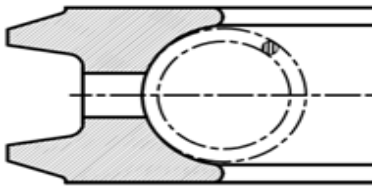
ITEM	CONFIGURATION	FEATURES	BENEFITS TO CUSTOMER
Top Ring	Special Steel Semi Inlaid Composite Plating of Chrome {KHSSCPC(I)}	Special Steel Material	Top ring is manufactured using special steel alloy which has properties similar to steel. This material has good elasticity and excellent resistance to twisting, breakage & wear etc.
		Half Keystone Geometry	Upper side of top ring is having keystone geometry which helps in squeezing out excess oil from the groove preventing carbon deposition & sludge formation. Bottom side is kept flat which enables better seating of ring in groove flank resulting in lesser blow-by.
		Semi Inlaid CPC Coating	A groove is made on the outer periphery of the ring for better bonding of surface coating (semi inlaid) with base material. CPC is a specialized process of first plating the ring OD with chrome, then creating cracks, then filling up hard particles (Al_2O_3) in these cracks. This process is repeated many times building one layer above another. CPC rings have higher wear & scuff resistance under all working conditions.
		Parkerising	Side faces are parkerised to provide porous surface for oil retention resulting in better lubrication, hence lesser wear.
2nd Ring	Reverse Torsion {RT}	Taper face	Ring has a Taper on OD to provide line contact with liner resulting in higher wall pressure, hence better sealing.
		Inside bevel on lower face	Ring has a bevel cut on lower inside face due to which ring twists in anti-clockwise direction during suction stroke which locks the groove to avoid blow-by & upward movement of oil.
		Parkerising	Ring is fully parkerised to provide porous surface for oil retention resulting in better lubrication & lesser wear.
Oil Ring	Diesel Vent 'M' shape (DVM)	Steel Material	Ring is made up of steel for longer life.
		Gas Nitriding (GN)	The ring is gas nitrided to provide wear resistance to all surfaces, hence longer life.
		Highly Conformable	DVM ring has built-in tension and spring beneath makes it highly conformable to the bore wear for better oil scraping.
		Sharp Scraping Ring Lands	The sharp ring lands with high wall pressure ensures better scraping of oil resulting in lower oil consumption.
		Multiple Oil Drainage Slots	Ensure faster drainage of oil.

		Excellent Flatness	Side faces of DVM oil ring remain flat and do not swell as in case of ordinary oil ring, for a free movement in groove.
		Light in Weight	Ring is lighter in weight than ordinary oil ring which reduces fluttering of ring in groove thereby avoids pumping up of oil, hence low oil consumption.

Technical data of **'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ'** ring set is as under:

TECHNICAL DATA- 'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ' 'CPC DVM'
RING SET (ø 88.90 mm)

USHA CODE→ T45

Ring	Ring Config.	Axial Thickness (mm)	Closed Gap		Surface Treatment	Cross Section
			(mm)	(Thou)		
Top	KHSSCPC(I)	2.50	0.20-0.40	08-16	Semi Inlaid Composite Plating of Chrome/ Parkerising	
2nd	RT	2.00	0.40-0.60	16-24	Parkerising	
Oil	DVM	2.50	0.20-0.45	08-18	Gas Nitriding	

Above features make USHA **'MAHINDRA DHRUV ELS- BHOOMIPUTRA/ YUVRAJ'** piston assembly & ring set unique, produced to give better performance & longer life.