

Supply & Commissioning of New DRO System on Skoda
Make Horizontal Borer (Model No.W250HC) Plan No. 0-332, BI-2 &HMT
Make Horizontal Borer(Model No.AZ-11) Plan No. 1-234, BI-1"

A. SCOPE OF SUPPLY:

A1. SCOPE OF SUPPLY OF DRO SYSTEM FOR H.BORER, PLAN NO. 1-234, BLOCK-1

S. No.	Description of item	Qty.	Vendor to provide details of items (i.e its make, model etc.)	Compliance /Remarks
1.	Linear Magnetic/optical Scale Encoder with Scanning Head of Electronica / Sony/Fagor / Heidenhain /GIVI MISURE make only for X-axis Signal : 5V TTL/1Vpp Measuring length : 1740 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron	1 Nos.		
2.	Linear Magnetic/optical Scale Encoder with Scanning Head of Electronica / Sony/Fagor / Heidenhain /GIVI MISURE make only for Y-axis Signal : 5V TTL/1Vpp Measuring length : 1240 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron	1 Nos.		
3.	Linear Magnetic/optical Scale Encoder with Scanning Head of Electronica / Sony/Fagor / Heidenhain /GIVI MISURE make only for Z-axis Signal : 5V TTL/1Vpp Measuring length : 2040 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron	1 No.		
4.	Linear Magnetic/optical Scale Encoder with Scanning Head of Electronica / Sony /Fagor / Heidenhain /GIVI MISURE make only for W-axis Signal : 5V TTL/1Vpp Measuring length : 720 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron	1 No.		

2/1/2018

A. J. S.

5.	Angle Encoder of Electronica / Sony/Fagor / Heidenhain / GIVI MISURE make, equivalent to Heidenhain ROD 250, 18000 PPR, along with equivalent Heidenhain coupling K03, only for B-axis OR Magnetic/optical Scale of Electronica / Sony /Fagor / Heidenhain /GIVI MISURE of length 3150 mm with double-sided adhesive tape and Transducer/Reader head . Output Signal Level: 5V TTL /1 V pp/11 μ A/HTL, Resolution : 20 microns	1 No.		
6.	Digital Readout 3-axes (2 no. linear & 1 no. rotary) of Electronica /Sony make only compatible to above stated linear scales at para A1/1, A1/2 ,A1/3 & A1/4 and rotary encoder at para A1/5 along with power cable.	2 Nos.		
7.	Preassembled Shielded Signal Cable armoured/sheathed on the outside with wire-mesh / shrouded with metallic conducting sleeve; with connectors compatible for above mentioned scanning head & DRO for X,Y, Z & W-axis (Length = 10 Meters each) of Para A1/1, A1/2, A1/3, A1/4.	4 Nos.		
8.	Preassembled Shielded Signal Cable armoured/sheathed on the outside with wire-mesh / shrouded with metallic conducting sleeve; with connectors compatible for above mentioned rotary encoder & DRO for B-axis (Length = 15 Meters) of Para A1/5	1 No.		
9.	Protection covers for above mentioned Linear scales and scanning heads at Sl. No. A1/1, A1/2, A1/3 and A1/4.	1 Set		
10.	DRO mounting stand, mounting brackets for scanning heads, suitable connectors and other accessories required for mounting, interfacing and commissioning of above DRO system.	1 Set		

A2. SCOPE OF SUPPLY OF DRO SYSTEM FOR RAM BORER, PLAN NO. 0-332, BLOCK-2

S.No.	Description of item	Qty.	Vendor to provide details of items (i.e its make, model etc.)	Compliance/Remarks
1.	Linear Magnetic Scale Encoder with Scanning Head of Electronica / Sony/ GIVI MISURE make only for X-axis	1Nos.		

	Signal : 5V TTL/1Vpp Measuring length : 18000 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron			
2.	Linear Magnetic Scale Encoder with Scanning Head of Electronica / Sony/ GIVI MISURE make only for Y-axis Signal : 5V TTL/1Vpp Measuring length : 5500 mm Accuracy : ± 10 micron per mtr. Resolution : 5 micron	1 No.		
3.	Rotary encoder of Electronica / Sony/Fagor / Heidenhain/ GIVI MISURE make only for spindle feed axis(Z- axis); 2500 PPR: 5V TTL/1Vpp with coupling (fixed part dimension to be given) and pre-assembled cable	1 set.		
4.	Digital Readout 3-axes (2 no. linear & 1 no. rotary) of Electronica /Sony GIVI MISURE make only compatible to above stated linear scales at para A2/1, A2/2 and rotary encoder at para A2/3 along with power cable	1 Nos.		
5.	Preassembled Shielded Signal Cable armored/sheathed on the outside with wire-mesh / shrouded with metallic conducting sleeve; with connectors compatible for above mentioned scanning head & DRO for X ,Y& Z-axis (Length = 50 Meters, 15 Meters & 15 Meters) of para A2	1 Set		
6.	Protection covers for above mentioned Linear scales and scanning heads at Sl. No. A2/1 and A2/2.	1 Set		
7.	DRO mounting stand, mounting brackets for scanning heads, suitable connectors and other accessories required for mounting, interfacing and commissioning of above DRO system	1 Set		

B. SPARES:

<u>Sl. No.</u>	<u>Description of item</u>	<u>Qty.</u>	<u>Compliance/Remarks</u>
1.	Scanning Head as mentioned in Sl. No. A1/1., A1/2.,A1/3 & A1/4.	1 No. of each type	

21/11/2016

9/11-15

2.	Rotary Encoder with coupling / Magnetic/optical Scale with transducer as mentioned in Sl. No. A1/5.	1 Nos.	
3.	Spare Digital Readout 3-axes as mentioned in Sl. No. A1/6.	1 Nos.	
4.	Spare Preassembled Shielded Signal Cable, with connectors (Length = 15 Meters) as mentioned in Sl. No. A1/9.	1 Nos.	
5.	Spare Scanning Head as mentioned in Sl. No. A2/1. & A2/2.	1 No. of each type	
6.	Spare Rotary Encoder with coupling (fixed part dimension to be given) and pre-assembled cable as mentioned in Sl. No. A2/3.	1 Nos.	
7.	Spare Digital Readout 3-axes as mentioned in Sl. No. A2/4.	1 Nos.	
8.	Spare Preassembled Shielded Signal Cable, with connectors (Length = 50 Meters) as mentioned in Sl. No. A2/5	1 Nos.	

C. SCOPE OF WORK

Sl.No.	Work	Compliance/Remarks
1.	(a.) All the linear scales shall be mounted on an existing true surface plate (already fitted on the machines). However, dialing and any adjustments on this surface shall be in the scope of party.	
	(b.) Scanning head shall be installed on all the linear scales.	
	(c.) Protection covers shall be provided by the vendor on the linear scales and scanning heads.	
	(d.) DROs shall be mounted on mounting bracket & stand.	
	(f.) Proper routing, laying and connection of signal cables shall be done	
	(g.) Party shall commission DRO systems and ensure calibration of the display values with required accuracy for each axis. Its calibration shall be ensured with actual measurements taken by micrometer/measuring rod or screw gauge.	

D. QUALIFYING CONDITIONS

1. Vendor must have supplied and commissioned Linear **Magnetic Scale/optical Scale Encoder** with Scanning Head for measuring length not less than 9000mm during last 7 years ending on 31 oct. 2013.

21/11/13

अ. जे. ए.

2. Following information should be furnished by the vendor about the customer for whom work at **Sl. No.D.1** have been executed.
 - (a) Name of the customer
 - (b) Address of the customer
 - (c) Month and year of commissioning
 - (d) Name and designation of the contact person, his telephone no and email idPerformance certificate from the customer/commissioning certificate on completion of the work/letter of successful commissioning
3. BHEL reserves the right to verify the information provided by the vendor. Vendor shall agree to arrange a visit by a BHEL executive to his customer's premises for verification of details provided, if BHEL so desires.

E. WARRANTY:

Party shall stand warranty for the material supplied and work done for 12 months from the date of successful commissioning of the system on the machine or 18 month from the date of dispatch.

F. DOCUMENTATION:

1. Vendor must supply four sets of Operation, Installation and commissioning Manuals of the **DRO & Linear Scale**.
2. Vendor must supply complete bill of material of all the supplied items with details.

G. GENERAL INSTRUCTIONS / CONDITIONS:

1. A compliance statement indicating agreement/deviation with the requirements stated in the scope of supply and scope of work shall be furnished by the vendor.
2. Complete specifications such as part no./Model/Type of Linear Scale & DRO shall be stated in the offer by the party. Ordering brochure/catalogue should be attached in which offered parts are highlighted.
3. Parties are requested to visit the site before making an offer.
4. Any Material not specified in scope of supply but required at the time of commissioning shall be provided by the vendor free of charge.
5. Party shall bring all tools and testing equipment with them required for successful commissioning.
6. Party shall impart training to BHEL staff, for operation & maintenance of the DRO system supplied by them at the works of supplier/manufacturer.