







दिनांक एवं हस्ताक्षर SIGN DATE		<b>उत्पाद क्रय विनिर्देश</b>		<b>ST-15002</b>	
		<b>PRODUCT PURCHASE SPECIFICATION</b>		पृष्ठ	का
सामग्री सूची संख्या को अधिकृतिकरण हेतु	SUPERSEDES INVENTORY NO.	3 - PHASE SEQUIRREL CAGE INDUCTION MOTOR (Fractional horse power with brake)			
<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	1. <b>GENERAL:</b>	This specification covers the requirement of fraction horse power three - phase squirrel cage induction motor for driving 'Starting device', 'Speeder Gear' and 'over speed test Device' of hydraulic governing equipment.			
	2. <b>CODES AND STANDARDS:</b>	The design, manufacture, testing etc, of the motor shall conform to the latest revision of the following standards and other latest applicable IS and IEC or any other International standard ensuring equal or better quality. In case of contradiction between this specification and IS, IEC or other standards, the stipulations of this specification shall be treated as applicable.			
स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत की इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रलेख एवं अप्रलेख रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	IS : 325 - Specification for 3 - phase induction motors. IS : 2223 - Dimensions of flange mounted A.C. Induction motors. IS : 4029 - Guide for testing 3 - phase induction motors. IS ; 4691 - Ledger of protection provided by enclosure for rotating electrical machines. IEC - 34	3. <b>MOUNTING LOCATION :</b> Turbine Hall (In door)			
	4. <b>AMBIENT CONDITION :</b> Temp. 50 °C, Relative humidity 95 %.				
हस्ताक्षर एवं दिनांक SIGN & DATE	MEMBER P.S.C.	N. R. DE	16/10/03	अनुवादक	TRANSLATED BY
	QAX	S. K. CHAUHAN	[Signature]	निर्माणकर्ता	WORKED BY V. KUMAR
	TSX	D. L. OBEROI	[Signature]	जांचकर्ता	CHECKED BY V. KUMAR
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	K. B. BATRA	[Signature] 14-10-03
			स्वीकृति APPROVED :	B. K. BHALLA	AGM (STE)
					GR. No 2.83
सामग्री सूची संख्या INVENTORY NO.	REV. NO.		निर्माण PREPARED :	जारी ISSUED :	दिनांक DATE :
P-5239	01		CIE	STE	5.12.80
	Dt. 6-10-03				

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		<b>PRODUCT PURCHASE SPECIFICATION</b>		पृष्ठ का	Page 2 of 6
SUPERSEDES INVENTORY NO.	<p>5. <b>RATING AND PERFORMANCE:</b></p> <p>5.1 The motor rating (name plate rating) shall be 0.12 KW.</p> <p>5.2 Motors shall be capable of giving rated out put with out reduction in the expected life span when operated continuously in the system having the following particulars:</p> <p>I) Rated Voltage : 415 V (3 – phase, Solidly earthed).</p> <p>II) Frequency : 50 HZ</p> <p>III) Variation in Voltage : +/- 10 % of rated value.</p> <p>IV) Variation in Frequency: +/- 5% of rated value</p> <p>V) Combined Voltage and : frequency variation : 10 % (absolute sum)</p> <p>5.3 Direction of Rotation : Both direction (Reversible duty)</p> <p>5.4 Full load Speed: : ≈ 2750 RPM</p> <p>6. <b>TYPE OF DUTY:</b> Short time (duty type S4 – 25 % DC – 600 C / h)</p> <p>7. <b>STARTING REQUIREMENTS:</b></p> <p>7.1 Motor shall be suitable for full voltage direct – on-line starting.</p> <p>7.2 Motor shall be capable of starting and accelerating to the rated speed along with driven equipment with out exceeding the acceptable winding temperature even when the supply voltage droops down to 85 % of rated voltage.</p> <p>7.3 Motor shall be capable of with standing electrodynamic stresses and heating imposed if it is started at voltage of 110 % of rated voltage.</p> <p>7.4 Starting torque shall be min. 210 % of full load torque.</p> <p>7.5 The locked rotor with stand time under hot condition at 110 % of rated voltage shall be at least 2 sec more than the starting time with the driven equipment at min. permissible voltage.</p>				
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हस्ताक्षर एवं दिनांक SIGN & DATE	<p>31.10.03</p>				
सामग्री सूची संख्या P-5239	REV.NO. 01		निर्माणकर्ता WORKED BY V.KUMAR		6-10-03
			जांचकर्ता CHECKED BY K.B.BATRA		14-10-03

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सामग्री सूची संख्या को अधिकृतित करता है SUPERSEDES INVENTORY NO.			पृष्ठ का Page 3 of 6	
<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		<p>8. <b>RUNNING REQUIREMENTS:</b></p> <p>8.1 Permissible temperature rise over the ambient temperature of 50<sup>0</sup> C shall preferably be 70<sup>0</sup> C and 80<sup>0</sup> C for temperature measurement by thermometer method and winding resistance methods respectively.</p> <p>8.2 Motor shall be capable of running at 80 % of rated voltage for a period of 5 minutes.</p> <p>8.3 Motor shall be capable of developing the rated full load torque even when the supply voltage drops to 70 % rated voltage. Such operation is envisaged for a period of one second. The pull out torque of the motor to meet this requirement shall not be less than 205 % of full load torque.</p> <p>9. <b>INSULATION &amp; WINDING:</b></p> <p>Winding conductor shall be of copper. The Insulation shall be of class F. The winding shall be suitable for successful operation in hot, humid tropical climate with ambient temperature of 50<sup>0</sup> C. The insulation shall be given fungicidal and tropical treatment as per IS : 3202. The stator winding shall be suitable for heating and elimination of moisture during idle period of motor by connecting any two terminals to 240 V, 1 ph, 50 Hz power supply, Motor shall be suitable for rewinding.</p> <p>10. <b>ENCLOSURE &amp; VENTILATION ;</b> Totally enclosed fan cooled (TEFC) with degree of protection IP 55.</p> <p>11. <b>BEARING:</b> Greasing (on – load) shall be possible with out dismantling operation. Bearing lubricant shall not find access to motor. Alternatively sealed type bearings shall be provided.</p> <p>12. <b>GROUNDING DEVICE:</b> Suitable arrangement shall be provided for earthing the motor at two separate and distinct connection points. Design of earthing conductor shall be as per IS : 4722.</p> <p>13. <b>TERMINAL Box :</b></p> <p>Weather proof construction designed for out door service. To eliminate dust &amp; water, gaskets of neoprene or approved equivalent shall be provided at cover</p>		
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दिनांक एवं हस्ताक्षर SIGN & DATE 31-10-03			REV.NO. 01	निर्माणकर्ता WORKED BY V.KUMAR  6-10-03
सामग्री सूची संख्या INVENTORY NO. P-5239		जांचकर्ता CHECKED BY K.B.BATRA  14-10-03		

ST-15002

## उत्पाद क्रय विनिर्देश



## PRODUCT PURCHASE SPECIFICATION

पृष्ठ का

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दिनांक एवं हस्ताक्षर  
SIGN & DATESUPERSEDES  
INVENTORY NO.सामग्री सूची संख्या को अधिकृत  
करना है

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स्वत्वाधिकार एवं गोपनीय

इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इस्का प्रयोग एवं प्रसारण के बिना की व्यवस्था नहीं की जा सकती है

हस्ताक्षर

31/10/03

सामग्री सूची संख्या  
INVENTORY NO.

P-5239

REV.NO.

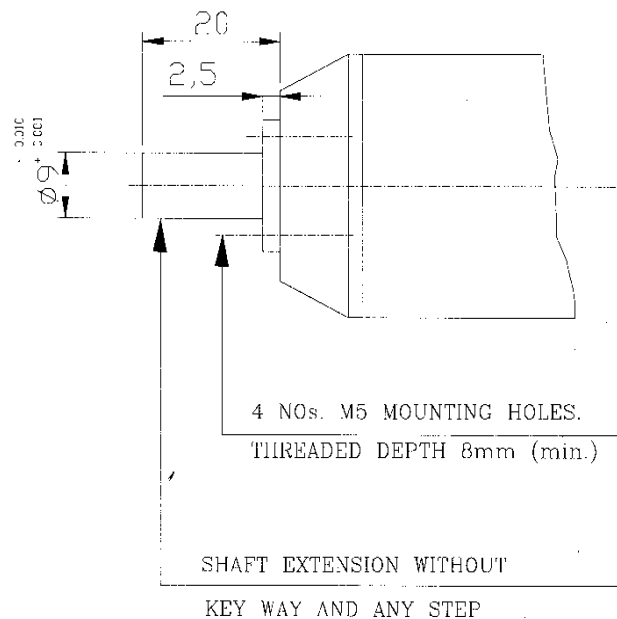
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joints and between Terminal box and motor frame. The terminal box shall be capable of being turned through  $360^{\circ}$  in steps of  $90^{\circ}$ . Terminals shall be of stud type with necessary plain washers, spring washers and check nuts. Suitable cable glands and lugs shall be provided. Size shall be:

Stud size : M6  
Purchaser's :  $3 \times 2.5 \text{ mm}^2$ , 1100V AL conductor PVC cable armoured.  
Cable size

## 14. Dimensions Shaft extension and coupling to driven equipment:

The motor construction shall be suitable for easy disassembly and reassembly. The motor shall be flange mounted type and shall have frame size and dimensions same as for flange designation F 65 C (frame size 56) for C-type flange as per IS : 2223 but with the shaft extension and mounting holes as shown in the following sketch.

निर्माणकर्ता  
WORKED BY




V.KUMAR




6-10-03

जांचकर्ता  
CHECKED BY

K.B.BATRA

14-10-03

SIGN & DATE		<b>उत्पाद क्रय विनिर्देश</b>  <b>PRODUCT PURCHASE SPECIFICATION</b>	<b>ST-15002</b>  पृष्ठ का <b>Page 5 of 6</b>			
INVENTORY NO.	को अधिकारिता द्वारा	<b>15. BRAKE :</b>  (a) The motor shall consists of built in brake which shall remain engaged as long as the motor current remain switched off. The brake shall be released when the motor current is switched on . (b) Power supply for break shall be taken from motor terminals. If rectifier is required for brake supply, the same shall be mounted in motor terminal box. (c) Rectifier shall be suitable for operating at temperature up to 70 <sup>0</sup> C.				
<b>COPYRIGHT AND CONFIDENTIAL</b> The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		<b>16. DATA / DOCUMENTS:</b>  Three copies of the following data / documents shall be submitted by supplier.  <b>16.1 ALONG WITH QUOTATION:</b> <ul style="list-style-type: none"> <li>- Type and frame size.</li> <li>- Mounting, Coupling and overall arrangement and dimensions.</li> <li>- Torque v/s speed curve.</li> <li>- Rated power , current &amp; torque.</li> <li>- Starting current, torque &amp; time.</li> <li>- Safe stall time at 100 % rated voltage under hot condition.</li> <li>- Confirmation to the type &amp; size of cable for which gland is provided in the terminal box.</li> <li>- Braking scheme.</li> </ul>				
<b>व्यवहारक ५९ ११५११५</b>  इस प्रलेख में ची गई सूचना भारत भारी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ।		<b>16.2 With in 30 days after placement of purchase order:</b> <ul style="list-style-type: none"> <li>- The supplier shall furnished the data sheet as per BHEL's format for approval by BHEL.</li> </ul>				
REVISION	3110/03	<b>17. TESTS:</b> (a) Routine test as per IS 325 shall be carried out. (b) Type test on motor of same frame size shall be carried out as per IS 325 . In case the same has been carried out within last five years than type test report of the same shall be furnished. (c) Brake functioning test shall be carried out as per cl. No. 15 (a) above .  Type and Routine test certificates in three copies shall be furnished before despatch of the motors.				
INVENTORY NO.	P-5239	REV.NO. 01	निर्माणकर्ता WORKED BY	V.KUMAR		6-10-03
			जांचकर्ता CHECKED BY	K.B.BATRA		14-10-03

SIGN & DATE		<p style="text-align: center;"><b>उत्पाद क्रय विनिर्देश</b></p> <p style="text-align: center;"><b>PRODUCT PURCHASE SPECIFICATION</b></p>		<p style="text-align: right;"><b>ST-15002</b></p> <p style="text-align: right;">पृष्ठ का Page 6 of 6</p>		
INVENTORY NO.	अधिकारिता कक्षा है	<p><b>18. INSPECTION :</b></p> <p>BHEL reserves the right to carry out inspection at vendor's works</p>				
<p style="text-align: center;"><b>CONFIDENTIAL AND CONFIDENTIAL</b></p> <p style="text-align: center;"><small>The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company</small></p>	<p><b>19. PAINT &amp; FINISH:</b></p> <p>Motor external parts shall be finished and painted to produce a neat and durable surface which would prevent rusting and corrosion. The equipment shall be thoroughly greased, all sharp edges and scales removed and treated with one coat of primer and two coats of epoxy paint.</p> <p>Paint shade shall be as per manufacturer's standard practice unless otherwise informed by BHEL.</p>					
<p style="text-align: center;"><b>संस्थागत ५९ गि५१०१५</b></p> <p style="text-align: center;"><small>इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है कृपया प्रकाश एवं</small></p>	<p><b>20. PACKING:</b></p> <p>The packing shall be capable of withstanding normal transit risk with out any damage / deformation of the equipment. If required the packing shall be seaworthy.</p>					
SIGN & DATE	3-10-03	<p><b>21. CROSS REFERRED STANDARDS:</b></p> <p>IS:325, IS:2223, IS:4029, IS:4691, IS:4722, IS:3202, IEC34.</p>				
INVENTORY NO.	P-5239	REV.NO.	निर्माणकर्ता	WORKED BY	V.KUMAR	 6-10-03
			जांचकर्ता	CHECKED BY	K.B.BATRA	 14-10-03