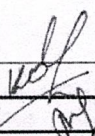
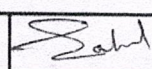
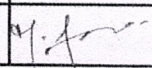
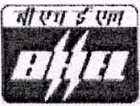
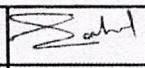
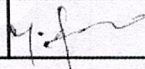


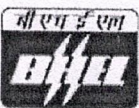
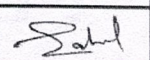
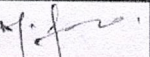
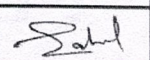
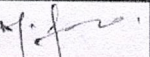
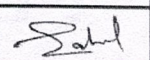
SIGN & DATE SUPERSEDES INVENTORY NO.		संस्थान क्रय विनिर्देश (सी एफ एफ पी) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)	FF07016 Rev 00 पृष्ठ का Page 1 of 4																																				
SPADE DRILL																																							
1. GENERAL This specification governs the requirements of Spade Drill for drilling operation in Alloy steel castings in Machine Shop, CFFP.																																							
2. APPLICATION Spade Drill shall be used for drilling operation in Alloy steel castings having hardened surface, sand inclusion, cracks on Large Conventional Vertical Boring Machines.																																							
3. COMPLIANCE WITH NATIONAL STANDARD There is no national standard available.																																							
4. CHARACTERISTICS The different types of spade drill holders and its consumables of different vendors along with their Grade and make suitable for Machine Shop Requirement are described as below:																																							
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;">CI</th> <th style="width:55%;">Description</th> <th style="width:40%;">Equivalent models of Different Companies</th> </tr> </thead> <tbody> <tr> <td>4.1</td> <td>Spade Drill insert</td> <td>YG-1 MAKE: GRADE HSS M4 Tin AMEC MAKE: GRADE AM200</td> </tr> <tr> <td>4.2</td> <td>Spade Drill holder</td> <td>YG-1 MAKE AMEC MAKE</td> </tr> <tr> <td>4.3</td> <td>Spade Drill insert screw</td> <td>YG-1 MAKE AMEC MAKE</td> </tr> <tr> <td>4.4</td> <td>Rotary coolant adaptor</td> <td>YG-1 MAKE AMEC MAKE</td> </tr> </tbody> </table>				CI	Description	Equivalent models of Different Companies	4.1	Spade Drill insert	YG-1 MAKE: GRADE HSS M4 Tin AMEC MAKE: GRADE AM200	4.2	Spade Drill holder	YG-1 MAKE AMEC MAKE	4.3	Spade Drill insert screw	YG-1 MAKE AMEC MAKE	4.4	Rotary coolant adaptor	YG-1 MAKE AMEC MAKE																					
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निम्नलिखित दिनांक पर SIGN & DATE		संस्थान क्रय विनिर्देश (सी एफ एफ पी) PLANT PURCHASE SPECIFICATION (CFFP - HARDWAR)		FF07016 Rev 00																																																					
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SUPERSEDES INVENTORY NO.	5. PERFORMANCE TEST 5.1 Vendors offering the Grade/make mentioned in Clause 4, need not undergo any performance test. 5.2 For new vendors and/or vendors offering new models in any of the categories, performance test will have to be carried out as per the criteria and methodology mentioned in clause no. 5.2.6. However, any offered item covered under cl 4.1 to 4.4 should be compatible with other corresponding mating items covered under cl 4.1 to 4.4 which are in use in Machine Shop, CFFP. To ensure compatibility of offered item, vendor may visit shop and conform the compatibility of their offered item under cl 4.1 to 4.4 with other corresponding mating items under cl 4.1 to 4.4 in use in Machine Shop, CFFP. 5.2.1 Prior to the shop floor trials, the PQC, if any, and technical criteria as mentioned in technical specification are to be met. 5.2.2 Vendor to submit his offered item sample for trial purpose for assessment of technical suitability. 5.2.3 Representative of vendor may be present during the trial on intimation by BHEL. 5.2.4 Trial shall be conducted on conventional Horizontal Borer Machine having Spindle Dia 200mm on Jobs having chemical composition and mechanical properties as follows:- Chemical Properties :- <table border="1"> <thead> <tr> <th>Elements</th> <th>Ni</th> <th>Cr</th> <th>V</th> <th>Mn</th> <th>Mo</th> <th>Sb</th> <th>Al</th> <th>C</th> <th>Si</th> <th>Ti</th> <th>Sn</th> <th>Cu</th> </tr> </thead> <tbody> <tr> <td>Wt. (%)</td> <td>≤0.7</td> <td>1.2</td> <td>0.2-</td> <td>0.5</td> <td>0.9</td> <td>≤0.01</td> <td>0.04</td> <td>0.15</td> <td>≤0.6</td> <td>≤0.025</td> <td>≤0.025</td> <td>0.3</td> </tr> <tr> <td></td> <td></td> <td>-</td> <td>0.3</td> <td>-</td> <td>-</td> <td></td> <td>Max</td> <td>-0.2</td> <td></td> <td></td> <td></td> <td>Max</td> </tr> <tr> <td></td> <td></td> <td>1.5</td> <td></td> <td>0.9</td> <td>1.1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> P≤0.02; S≤0.015 Mechanical Properties:- 0.2% Yield Strength-440 N/mm²; Tensile Strength-590-780 N/mm²; Elongation(l=5d))%(min)-15; Reduction in area%(min)-40; Impact energy J(min)-27.					Elements	Ni	Cr	V	Mn	Mo	Sb	Al	C	Si	Ti	Sn	Cu	Wt. (%)	≤0.7	1.2	0.2-	0.5	0.9	≤0.01	0.04	0.15	≤0.6	≤0.025	≤0.025	0.3			-	0.3	-	-		Max	-0.2				Max			1.5		0.9	1.1							
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SUPERSEDES INVENTORY NO	समीचीन प्रति रखा को अपडेट किया	5.2.5 Operational Parameters:- Cutting Speed-8-20 Mtr/min, Cutting Feed – 5-8 mm/min (Note:- Vendor may select cutting speed from the specified range as per their own judgement at the time of trial without compromising from feed & insert life, cylindricity & surface finish specified under clause No. 5.2.6) 5.2.6 Following operating result needs to be obtained during shop trial for technical suitability: 5.2.6.1 Insert Life – 3.5 meter (min) – should be obtained while drilling on Jobs achieving Cylindricity within 1mm/meter, Surface Finish within 12.5 micron. The Spade drill insert should be of suitable grade and insert geometry & coating shall be suitable for smooth chip flow, chip breaking & productive machining. Spade Drill insert should be compatible with corresponding mating Spade Drill Holder & Spade Drill Insert screw as mentioned in cl 4.2 and cl 4.3. 5.2.6.2 The Spade drill holders should be hardened & tempered with proper flute depth(Flute area should be at least 40% of cross sectional area of Holder) for smooth chip flow. Coolant flow should be proper, adequate and should not be obstructed by insert seating. The offered drill holders should be complete with external coolant arrangement as only external coolant system is available on the machine. Spade Drill holder should be compatible with corresponding mating Spade Drill Insert, Spade Drill insert Screw and Rotary coolant adaptor as mentioned in cl 4.1, cl 4.3 & cl 4.4. 5.2.6.3 Spade Drill insert screw should be compatible with corresponding mating Spade Drill Insert and Spade Drill Holder as mentioned in cl 4.1 and cl 4.2. 5.2.6.4 Rotary Coolant Adaptor should be compatible with corresponding mating Spade Drill Holder as mentioned in cl 4.2.			
COPYRIGHT AND CONFIDENTIAL The information on this document 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.		6. MISCELLANEOUS 6.1 The supply shall include the following: a) Test and guaranty certificates with minimum Guaranty Period of 12 Months .			
दिनांक एवं समय SIGN & DATE	इस प्रारंभ में दी गयी सुचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है। इसका प्रारंभ एवं उपयोग केवल केवल ही किया जाये				
निरीक्षणकर्ता WORKED BY	जांचकर्ता CHECKED BY	निर्माणकर्ता R.K.KHANDELWAL	MOHD. ASAD	 	

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SUPERSEDES INVENTORY NO समूची सूचित संख्या को अतिरिक्त करी	7. INSPECTION AND REPLACEMENT 7.1 BHEL reserves the right to inspect material at site before dispatch. The supplier shall intimate in advance about readiness of material enclosing a copy of test certificate of the material offered for inspection. However, inspection at BHEL shall be final. The supplier shall offer BHEL representative all reasonable test facilities without charge to satisfy the latter that the material being furnished is in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed tests elsewhere. 7.2 If the tools received at CFFP is not found in accordance with the requirements or it fails during guarantee period, it shall be rejected and the supplier will have to replace it free of cost at the earliest. 8. TEST CERTIFICATES 8.1 Unless otherwise specified, original test certificate from the original manufacturer shall be supplied with each consignment bearing the following information. In order to facilitate quick clearance of material, the supplier shall ensure to send a copy of test certificate along with dispatch document. a. BHEL PO No. with Date b. Specification No. c. Supplier reference / trade mark d. Identification No. / Batch No. e. Characteristics as per Clause 4 f. Any other specific information which the supplier would like to convey. 8.2 Suppliers other than the original manufacturer shall ensure providing original manufacturer's test certificates with linkage to supplier's invoice stating the batch No., lot No., etc of the supply. 9. MARKING & PACKING The supplied inserts should be suitably packed to avoid damage during transit and storage. The packing should be that of the original manufacturer. Each item should have model No, Identification No. (if any) marked on the insert.										
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