



PRODUCT STANDARD
ELECTRICAL MACHINES ENGINEERING

पृष्ठ 5 का 2

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दिनांक एवं हस्ताक्षर

SIGN & DATE

SUPERSEDES

INVENTORY NO.

सामग्री सूची संख्या

को अधिकारित करता है।

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स्वत्वाधिकार एवं गोपनीय

इस दस्तावेज में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इतना प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।

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After the pre-cooling, the compressed gas passes through evaporator in which deep cooling taken place on the pressure dew point up to 3-5⁰C. The evaporator is spiral type and has the action of cyclone separator. In this way, water and oil drops are separated. After this, the gas is passed through a separator system. From the separator system, the condensate flows to the drain chamber. The gas again passes through heat exchanger and is heated to about 25-40⁰C.

The cooling machine with complete hermetically sealed non – CFC compressor produces the required cooling power (Refer Fig.1)

3.2

The drier shall consist of the following major components.

- i) Pre-cooler, shell and tube type.
- ii) Evaporator shell and tube type with tubes of copper.
- iii) Drain collector
- iv) Hermetically sealed non-CFC compressor of reputed make.
- v) Fin and tube type air cooled condenser along with suitable fan driven by explosion proof Motor.
- vi) Temperature controllers and pressure switches for controls.
- vii) Thermometers and pressure gauges for hydrogen gas temperature & pressure measurement.
- viii) Rectangular steel cabinet with all the instruments mounted on the front panel.
- ix) All other components necessary for the unit.

3.3 Technical Parameters:

- | | | | |
|-------|---|---|---|
| i) | Compressor rating | : | 3225K.cal/Hr. |
| ii) | Gas Flow rate | : | 40M ³ / Hr. |
| iii) | Inlet temperature | : | 60 ⁰ C Max. |
| iv) | Inlet pressure | : | 5Kg/cm ² (g) |
| v) | Design pressure | : | 10Kg/cm ² (g) |
| vi) | Flange connections | : | NB50 NP10 |
| vii) | Dew point | : | 3-5 ⁰ C |
| viii) | Utility available | : | 415V, 3phase, 50Hz |
| ix) | Dimension of the drier unit (tentative) | : | Height: 1300mm Width: 800mm depth:800mm |
| x) | Max. Ambient temp. | : | 50 ⁰ C |

REV. 09

निर्माणकर्ता
Worked by

JAGDISH

jagdish

07/08/14

जांचकर्ता
Checked by

KUNAL

kunal

07/08/14

सामग्री सूची संख्या
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 आरख्या रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।

स्वत्वाधिकार एवं गोपनीय
 हस्ताक्षर एवं दिनांक
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4.0 TESTING
Following tests shall be carried out.

4.1 Hydraulic test of evaporator unit and Pre-cooler unit (shell & tube type) shall be carried out separately at 15 Kg/cm² for 30 minutes. No leakage allowed.

4.2 Pneumatic test of evaporator unit and Pre-cooler unit (shell & tube type) shall be carried out separately at 10 Kg/cm² for 8 hours. No leakage allowed.

4.3 Hydraulic test of complete H₂ circuit at 10 Kg/cm² for 30 minutes. No leakage allowed.

4.4 Performance test complete H₂ circuit at 10 Kg/cm² 8hours. No leakage allowed.

4.5 Hydraulic test of refrigerant circuit exchanging compressor at 15 Kg/cm² for 30 minutes. No leakage allowed.

4.6 100% radiography of Butt welds and 100% DPT of fillet weld of pre-cooler, evaporator unit and any welding in the H₂ circuit.

4.7 High Voltage & Insulation resistance test of control panel.

4.8 Performance test shall be demonstrated by the supplier at their works covering the following.


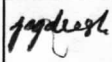
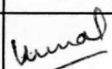
4.8.1 Proper functioning of the Refrigeration system:
 Checking for proper functioning is to be carried by supplying air through the drier. The thermostats of the gas drier should switch off the compressor as soon as 3⁰C temperature achieved in the evaporator and when the temperature again reaches 5-6⁰C, the compressor / cooling should start. During functional test, operation of instrument shall also be checked.

4.9 Test & Inspection - Inspection shall be carried out by BHEL / its customer / authorized inspection agency as per approved quality plan. Minimum of 15 days notice shall be given. No equipment shall be dispatched without inspection and clearance.

5.0 Test certificate – 3 copies of the following test certificates shall be furnished.

- NDT reports
- Hydraulic / Pneumatic test report
- Performance test report
- Manufacture's tests for major items i.e compressor, motor, fan etc.

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		जांचकर्ता Checked by	KUNAL	<i>Kunal</i>	07/08/14

दिनांक एवं हस्ताक्षर SIGN & DATE	सामग्री सूची संख्या INVENTORY NO.		उत्पाद मानक PRODUCT STANDARD ELECTRICAL MACHINES ENGINEERING	TG60327 पृष्ठ 5 का 4 Page 4 of 5															
सामग्री सूची संख्या को अधिकृत किया है। INVENTORY NO.	SUPERSEDES	5.0 GUARANTEE: The drier along with its accessories shall be guaranteed for satisfactory operation for 18 months from the date of commissioning or 24 month from the date of dispatch whichever is earlier. Any defect during the guarantee period shall be rectified by supplier at no obligation.																	
COPYRIGHT AND CONFIDENTIAL 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.	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं प्रकाश रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	6.0 PAINTING: The drier shall be cleaned before painting. Drier shall be painted with two coats of RAL5017 epoxy paint from outside after applying suitable epoxy primer. The total thickness of paint (including primer, intermediate and finish paint) shall be 200 microns. Inside of the drier shall be also be painted suitably.																	
7.0 PACKING AND DESPATCH:		7.1 All the opening shall be blanked during transport. 7.2 All the instruments likely to be damage during transit shall be packed in a separate small packing box and that box shall be kept in the main packing box.																	
8.0 DOCUMENTS TO BE SUPPLIED ALONG WITH OFFER:-		8.1 General view of the gas drier unit along with overall dimensions including cross section & material detail. 8.2 The drawing / catalogues of the bought out components giving complete description. 8.3 Data sheets of all the items / components. 8.4 Description and operation & maintenance manual. 8.5 Quality plan on BHEL format for major items including the tests / checks being carried out during material induction stage, in process, final assembly and testing stage along with reference documents shall be submitted for BHEL review and approval.																	
9.0 DOCUMENTS TO BE SUPPLIED AFTER ORDER PLACEMENT		9.1 20 copies of O & M manual per drier. 9.2 3 copies of the test & guarantee certificate as per clause 4.0.																	
10.0 SPARES INCLUDED IN EVERY SET OF REFRIGHRATION TYPE GAS DRIERS.		<table border="1"> <tr> <td>10.1</td> <td>Gas cylinder filled with refrigerant</td> <td>(1 no. of 15kg.)</td> </tr> <tr> <td>10.2</td> <td>Capillary</td> <td>(1 no.)</td> </tr> <tr> <td>10.3</td> <td>Contactora</td> <td>(1 no.)</td> </tr> <tr> <td>10.4</td> <td>Solenoids Valves</td> <td>(1 set.)</td> </tr> <tr> <td>10.5</td> <td>Refrigeration drier / receiver</td> <td>(1 no.)</td> </tr> </table>			10.1	Gas cylinder filled with refrigerant	(1 no. of 15kg.)	10.2	Capillary	(1 no.)	10.3	Contactora	(1 no.)	10.4	Solenoids Valves	(1 set.)	10.5	Refrigeration drier / receiver	(1 no.)
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हस्ताक्षर एवं दिनांक SIGN & DATE	सामग्री सूची संख्या INVENTORY NO.	REV. 09	निर्माणकर्ता Worked by	JAGDISH  07/08/14															
	P-5734		जांचकर्ता Checked by	KUNAL  07/08/14															

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P-5734

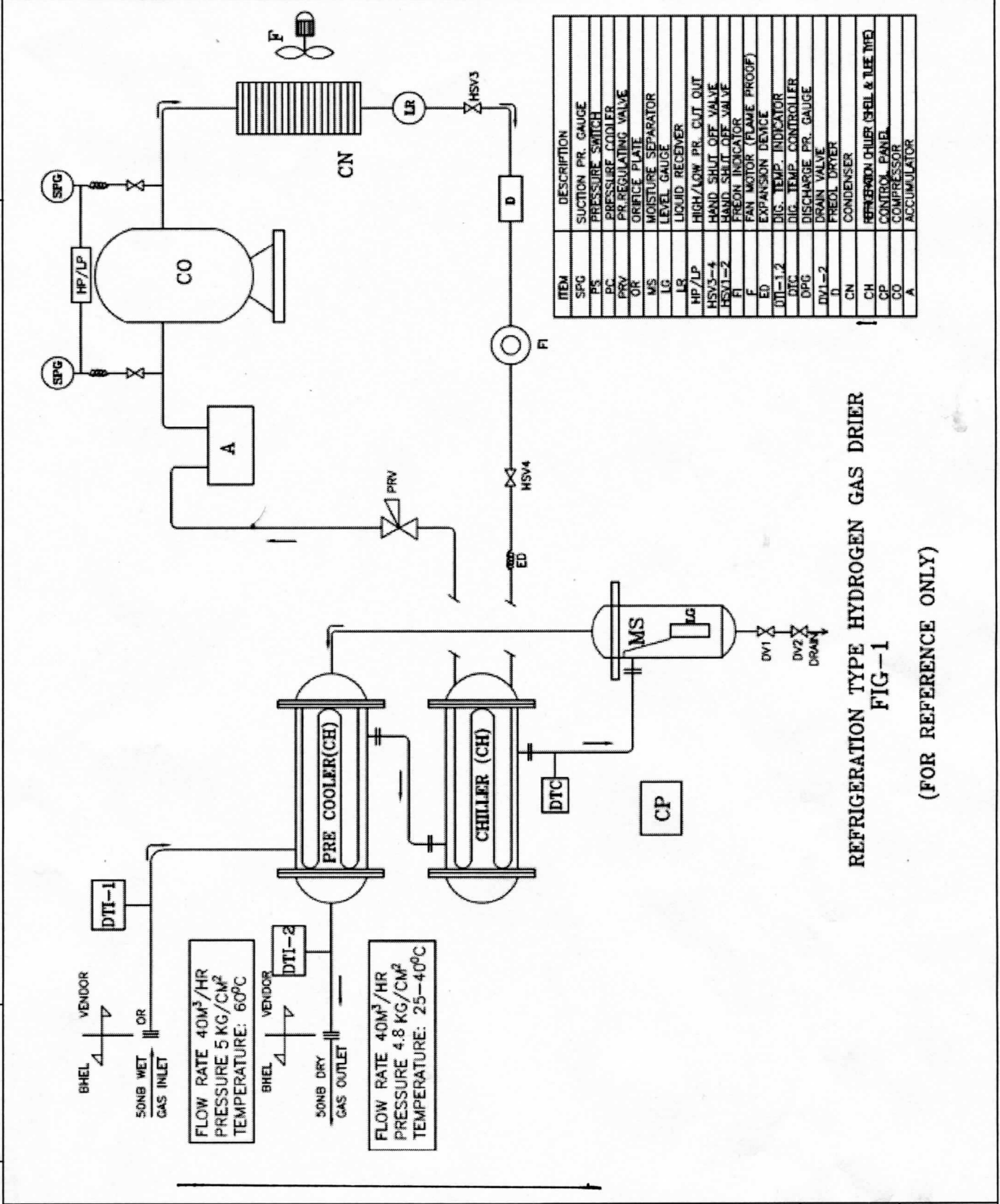
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उत्पाद मानक
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REFRIGERATION TYPE HYDROGEN GAS DRIER
FIG-1
(FOR REFERENCE ONLY)

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