

→ Sh. Nalin Kumar
RED
EIR-B

<u>DRESSER-RAND</u>		DOCUMENT TITLE	MAIN MOTOR DATA SHEET , GA DRAWING , CURVES, TERMIANL BOX DRAWING			
D-R JOB NO.		PMC	ENGINEERS INDIA LIMITED			
DEL-45410		END USER	Brahmaputra Cracker & Polymer Limited (BCPL)			

P.O. NO.	: # 6907-117-KA-PO-5210/0580/0432	6907/5822
PROJECT	: Brahmaputra Petrochemical Complex Project (BPCP)	
EQUIPMENT	: 6.75" & 6.75" & 6.5" & 4.5" X 9" 4HSE-3 NL2 @ 320 RPM	
EQUIPMENT NO.	: 117-KA-570 A/B	

DRAWING / DOCUMENT CATEGORY	DOCUMENT REVIEW							
(USE TICK MARK)	Approval / Review Code <table border="1" style="display: inline-table; margin-left: 10px;"> <tr> <td style="width: 30px; text-align: center;">1</td> <td style="width: 30px; text-align: center;">2</td> <td style="width: 30px; text-align: center;">3</td> </tr> </table> Information अनुमोदन / समीक्षा कोड <table border="1" style="display: inline-table;"> <tr> <td style="width: 30px; text-align: center;">R</td> <td style="width: 30px; text-align: center;">☒</td> <td style="width: 30px; text-align: center;">I</td> <td style="width: 30px; text-align: center;"></td> </tr> </table> Signature & Name _____ हस्ताक्षर एवं नाम Date / दिनांक _____ V.P.No. 6907 _____ डॉ. पी. न ENGINEERS INDIA LIMITED Date _____ Dept. _____ Signature _____	1	2	3	R	☒	I	
1		2	3					
R		☒	I					
PMC								
ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)								

END USER	BRAHMAPUTRA CRACKER & POLYMER LIMITED
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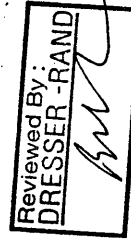
<u>DRESSER-RAND</u> DRESSER RAND INDIA PRIVATE LIMITED, 187 GIDC ESTATE, NARODA, AHMEDABAD 382 330	23/8/11 23/8/11
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REV.	REVISION RECORD	DATE	PREPARED BY	CHECKED	APPROVED BY
2	FOR REVIEW / APPROVAL	19-Aug-11	HSV	PKS	PKS
1	FOR REVIEW / APPROVAL	30-Jun-11	HSV	PKS	PKS
0	FOR REVIEW / APPROVAL	26-Apr-11	KUB	PKS	PKS

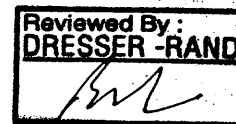
VENDOR REVISION CONTROL		
DOCUMENT TITLE	: MAIN MOTOR DATA SHEET , GA DRAWING , CURVES, TERMIANL BOX DRAWING	NO OF SHEETS (Including this sheet)
		12
DOCUMENT NO.	: D410-ELEC-001	SHEET 1 OF 12

BBL W.O. No:-1471A				S.O. No:-54832/10	
D-R JOB REF.		DEL-45410			
MOTOR TAG NO.		117-KAM-570 A/B			
RESOLUTION SHEET ON REV.0		MAIN MOTOR (125 KW) DATA SHEET, GA DRAWING, TB DRAWING			
REVISION	2	PAGE/DRG. NO.			
SR.NO.		EIL COMMENTS	DR/VENDOR RESPONSE		
DATASHEET & DRAWINGS					
1	1 OF 1	NOTE THAT CABLE LUGS SHALL BE SUPPLIED BY THE DR/VENDOR AS PER SPEC. 6-51-0032, CLAUSE 6.2.4	Note that cable lugs are not in DR/Bharat Bijlee Ltd scope of supply. Normally cable lugs are in contractor's scope of supply		
2	1 OF 1	SPACE HEATER TB SHALL BE LOCATED ON RHS VIEWED FROM DE	Please note that due to design limitations of motor manufacturer we cannot locate the Space heater TB on RHS viewed from DE. Please accept and approve.		
3	1 OF 1	FURNISH THE TYPE TEST CERTIFICATE AND CCOE/PESO APPROVAL FOR OFFERED MOTORS	Refer attached certificates Furnish copy of ERTL certificate.		
4	1 OF 1	DR/VENDOR TO CONFIRM THE SUITABILITY OF THE MOTOR WITH THE DRIVEN MACHINE	We have already confirmed that motor is suitable for given load of the DR compressor model. Also refer attached Motor T-N curve with superimposed load T-N Curve which also confirms the suitability of motor for given load.		
5	1 OF 1	FURNISH THE STARTING TIME AT 75% & 100% OF RATED VOLTAGE	Noted-Refer revised datasheet.		
SPACE HEATER TB DRAWING					
6	1 OF 1	NOTE THE CABLE SIZE SHALL BE 1R X 3C X 2.5 sq.mm	Noted-Refer revised drawing.		

⊗ Supply of cable lugs are in Vendor's scope in line with cl. 6.2.4 of spec. 6-SI-0032



PURCHASER'S DATA					
A. Site conditions					W.O.No:-1471A1
1	Ambient temperature,	minimum:	1	°C	3
		maximum:	39.8	°C	4
		design:	40	°C	5
2	Relative humidity:		93	%	6
B. Technical particulars					
1	Motor tag no.:	117-KAM-570-A/B			
2	Driven equipment name:	NITROGEN GAS COMPRESSOR			
3	Voltage:	415V +/-10 %		16	Hazardous area classification:
4	Phase:	Three		17	Gas group/Temp class:
5	Frequency:	50 Hz +/- 5%		18	Type of explosion protection:
6	Fault level:	50kA for 0.25 sec		19	Type of ingress protection:
7	Method of starting:	D.O.L		20	Color shade:
8	Winding connection:	DELTA		21	Thermistors:
9	No. of terminals:	6		22	RTD:
10	Cable size:	2R X 3CX 185mm² R2		23	BTD:
11	Cable type:	AYFY ARMoured CABLE		24	RTD/BTD monitoring device:
12	Temperature rise:	80°C			
13	Cooling:	TEFC, IC 4A1A1			
14	Insulation class:	Class F with temp rise limited to Class B.		25	Applicable specification:
15	Temp. Class	T3		26	and 69007-117-XZ-DS-5210, I.S-2148(2004), I.S.325(1996) & OTHER
DRIVEN EQUIPMENT MANUFACTURER'S DATA					
1	Suggested motor rating:	125	kW	R1	9
2	Manufacturer:	DR		R1	
3	BkW at full load:	95.11	kW	R1	10
4	kW at end of curve:	91.08	kW	R1	
5	Speed:	320	RPM	R1	11
6	Rotation viewed from coupling end:	CCW FROM DE		R1	
7	Driven equipment:	RECIP.COMP		R1	12
8	Coupling type:	V-BELT		R1	
MOTOR MANUFACTURER'S DATA					
1	Rating:	125	kW		17
2	Manufacturer:	M/s BHARAT BIJLEE LTD.			
3	No. of poles:	4		18	Power factor at,
4	Frame designation:	315M (MJ31M4A3)			
5	Full load speed:	1486		19	Moment of inertia, GD²:
6	Mounting:	B3		20	NDE bearing type & no.:
7	Full load torque (FLT):	81.9		21	DE bearing type & no.:
8	Starting torque:	220 % of FLT		22	Type of lubrication:
9	Break down or pull out torque:	250 %		23	Weight of motor:
10	Full load current (FLC):	207		24	Thermistors,
11	Starting current at 100% voltage:	600 % of FLC			
12	Rotation viewed from coupling end:	Bi-Directional		25	RTD,
13	Starting time at,	75% voltage:		26	BTD,
		100% voltage:			
14	Locked rotor withstand time (cold/hot) at,	75% voltage:		27	Shaft voltage:
		100% voltage:		28	Critical speed, 1 st /2 nd stage:
15	Time (tE) for increased safety motors:	N.A.		29	Canopy (FRP):
16	Space heater - voltage & power:	2 X 90W, 240V, 1-PHASE			
	SPACE HEATER CABLE SIZE:	1R X 3C X 2.5mm² (CYFY) R2			
CERTIFICATION:- PESO-P230001/1 by letter no:- A/P/HQ/MH/104/1801 DT.22/4/2009 R1					



- Recommended list of maintenance spares for two years operation shall include the following as minimum
a) Bearing DE/NDE-ONE SET B) Terminal box cover with screws c) Fan D) Terminal Block
- Starting time calculations shall be based on operating conditions specified on Material Requisition eg. open valve condition/ closed valve condition, at no load/full load, as applicable.

our rotor are stiff rotor as per clause 10.0 of EIL specn. Hence lower than syn. Speed no critical speed is arise.

All performance figures are subject to IS : 325 (1996) tolerances.

CABLE LUGS ARE NOT IN DR/BBL SCOPE OF SUPPLY.

To be supplied by DR/BBL as per PIR requirements.

Prepared & approved by MPS on 4/13/2011

Rev-1(R1) made by MPS dt.4/22/2011

Rev-2(R2) made by MPS dt.8/18/2011

Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by
A	12.01.2011	ISSUED WITH BID PACKAGE	RK	VKJ	AKS

SPEED Vs TORQUE & CURRENT CHARACTERISTICS

CUSTOMER

: M/S DRESSER RAND INDIA PVT LTD.

W.O. NO.: 1471A1

SAP NO: 54832/10

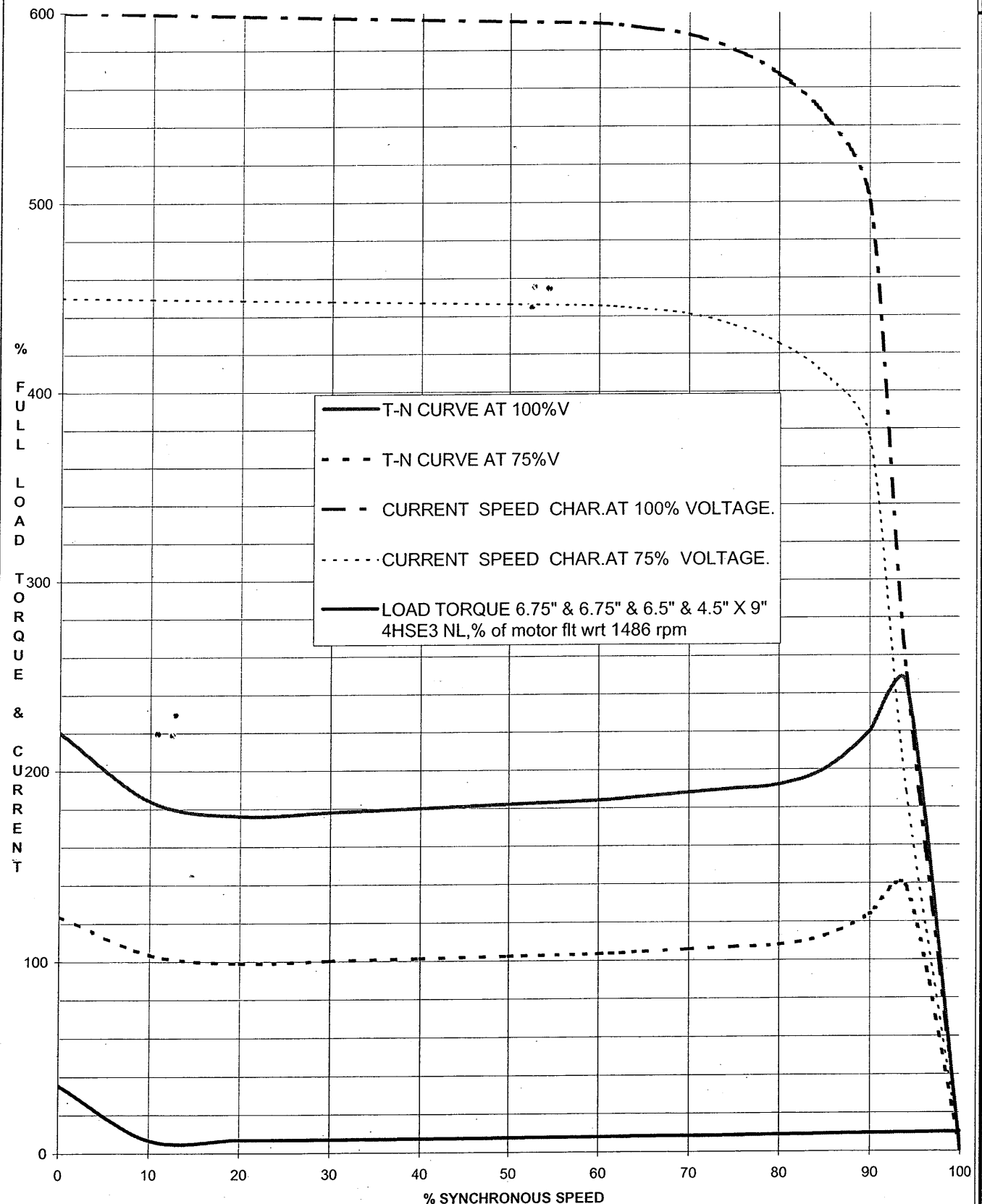
kW : 125

POLE : 4

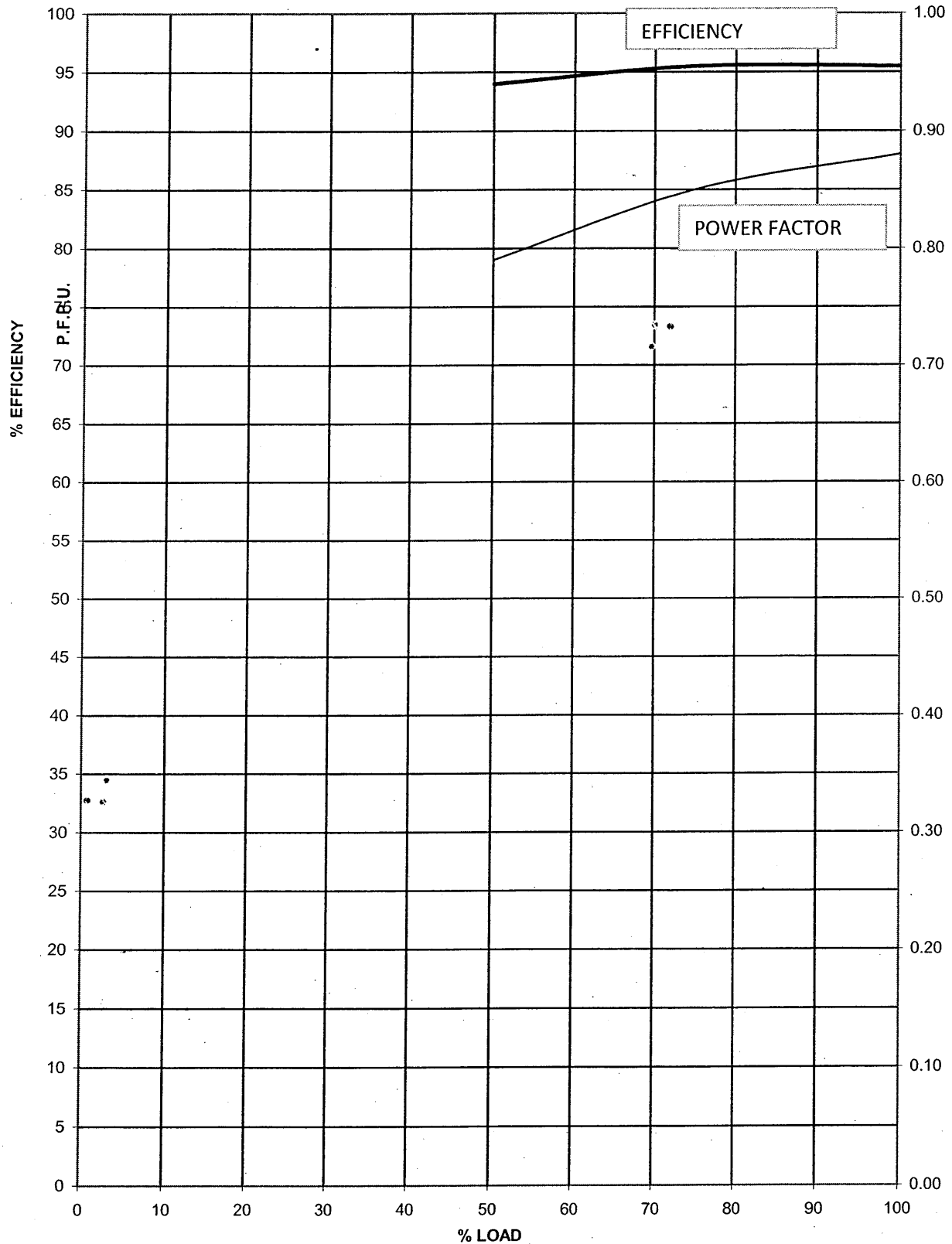
VOLTS : 415

QTY :

2



2			PREP	MPS	4/13/2011
1	Rev-1(R1) made by MPS dt.4/18/2011		APPD	MPS	4/13/2011
NO	REVISION	SIGN		SIGN	DATE

LOAD Vs EFF., P.F.,**CUSTOMER : M/S DRESSER RAND INDIA PVT LTD.****W.O. NO. 1471A1****SAP NO: 54832/10****kW : 125****POLE : 4****VOLTS : 415****QTY : 2**

2			PREP	MPS	4/13/2011
1			APPD	MPS	4/13/2011
NO	REVISION	SIGN			DATE

STARTING CURRENT VS STARTING TIME AND THERMAL WITHSTAND TIME.

CUSTOMER

: M/S DRESSER RAND INDIA PVT LTD.

W.O. NO. : 1471A1

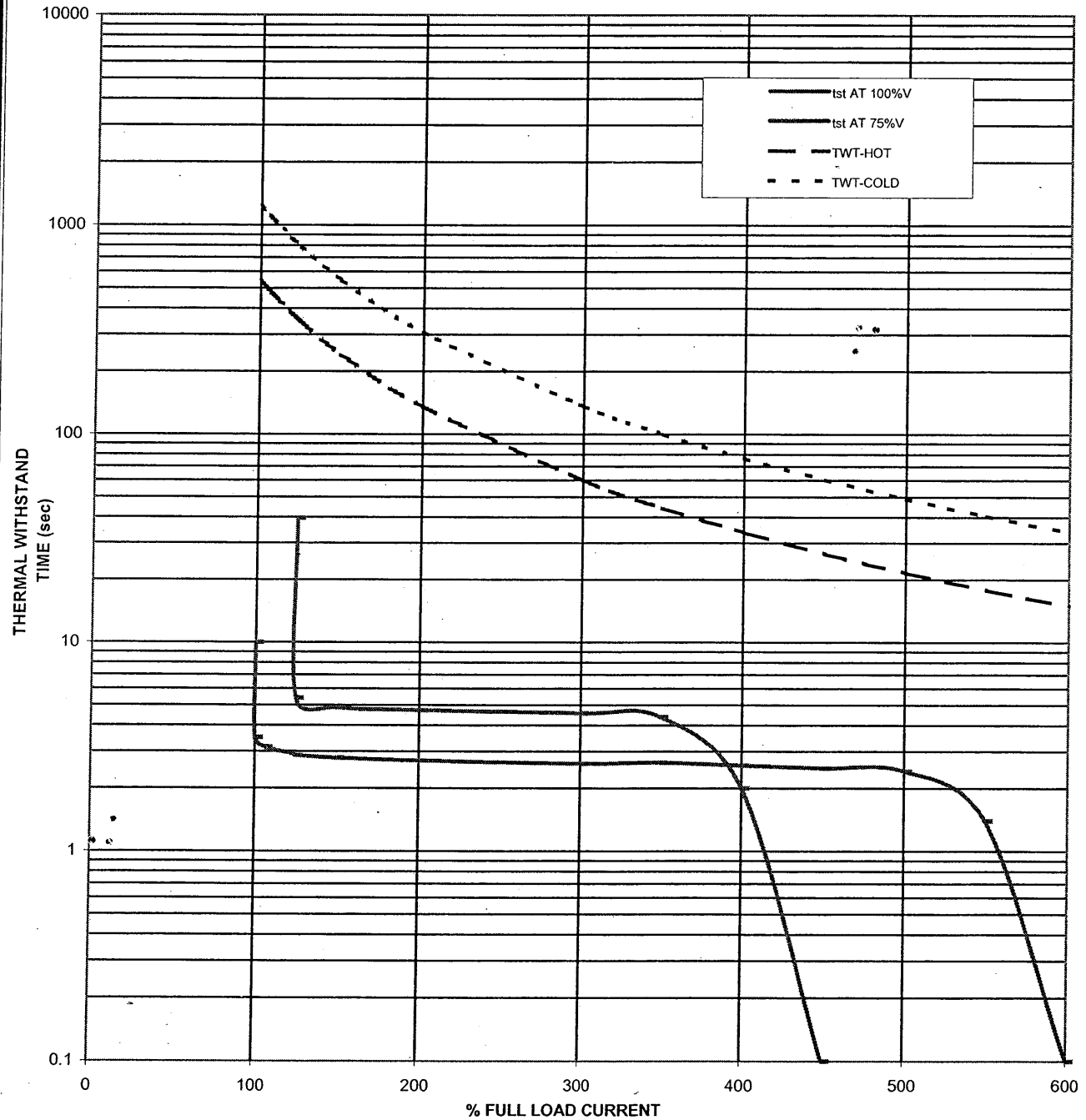
SAP NO: 54832/10

kW : 125

POLE : 4

VOLTS : 415

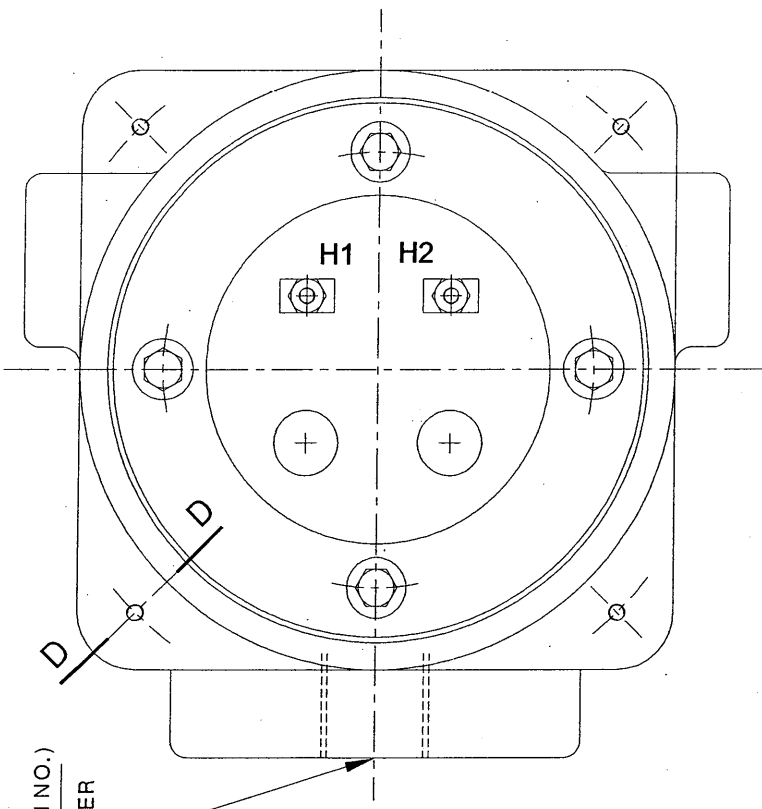
QTY : 2



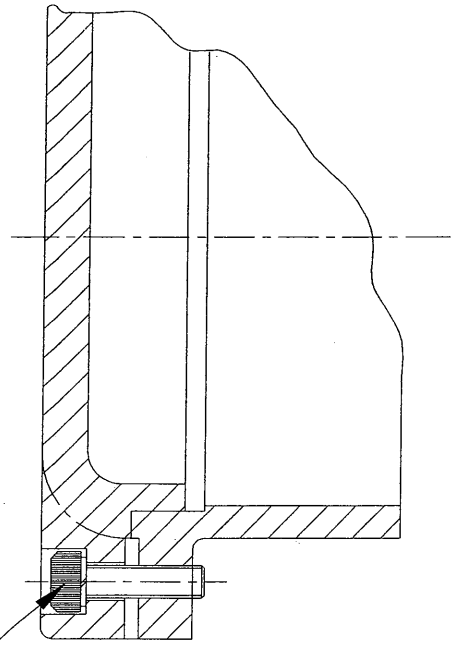
L. R. CURRENT at 100% voltage :	600	% OF FLA	THERMAL WITHSTAND TIME(sec):
Starting time at 100% voltage=	2	sec	AT100% RATED VOLTAGE (HOT) : 15
Starting time at 75% voltage=	3	sec	AT100% RATED VOLTAGE (COLD): 34

2			PREP	MPS	4/13/2011
1			APPD	MPS	4/13/2011
NO	REVISION	SIGN		SIGN	DATE

3/4" B.S.CONDUIT(1NO.)
FOR SPACE HEATER
CBF01S : 1 No.



4- M6X25 MAX HEX SOCKET HEAD CAP SCREWS
SPACED AT 126 PCD.FIXING T.BOX COVER TO T.BOX



SECTION D- D

TYPE REFERENCE : MJ31M4A3
MOTOR RATING : 125KW- 4P

ENLARGEMENT OF SPACE HEATER T.BOX
(T.BOX COVER REMOVED)

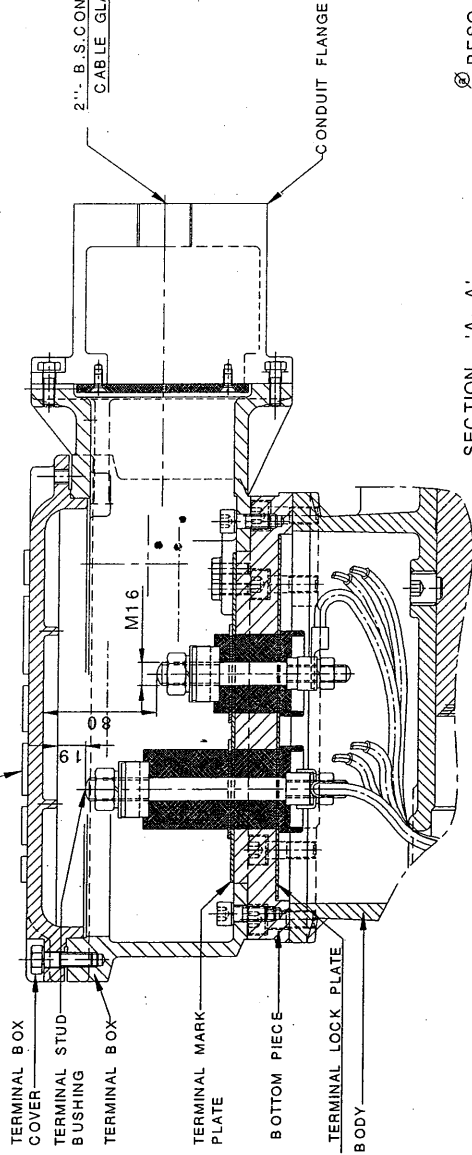
② PESO APPROVAL NO: A/ P/ HQ/ MH/ 104/ 1801(P2300001) DT- 22.4.9
MOTOR TAG No. : 117- KAM- 0570- A, 117- KAM- 0570- B

③ SPACE HEATER CABLE SIZE:- 1Rx3Cx2.5 mms q.
FOR AYFY ARMoured CABLE, 1100V.

NO.	DESCRIPTION	ITEM NO.	CODE NO.	MATL.	DRG.NO.	PATTERN NO. OR SIZE	WT. kg
1	① AMENDED AS PER CLIENTS C.I.NO.12/ 3587 ON 28.4.2011 V.S.K.						
2	② AMENDED AS PER C.I.NO.12/ 5421: DT.09.08.11- VGS- 18.08.11						
DATE		NAME	APRD.	TITLE		W.O.No.	SCALE
DRN:11.04.11		JAG	KMA	FOR SPACE HEATER		54832- 10	1471A1
TCD:11.04.11		PRF		AUXILIARY TERMINAL BOX ASSY.			
CHD:11.04.11				(FLAME PROOF)			
TYPE:		Bharat Bulee LTD.		DRG.No.		FR.SIZE	
		KALWA		③ ⑤		MJ315M	
				REF.			

ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.

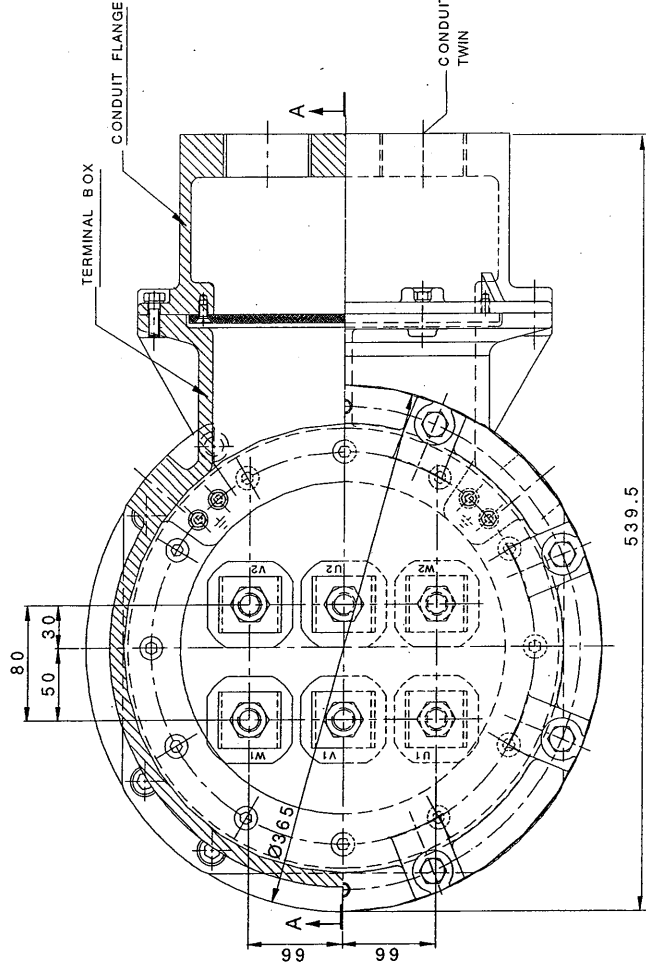
WARNING INSCRIPTION "DO NOT OPEN WITH POWER ON" CAST
INTEGRALLY ON TERMINAL BOX COVER BY RAISED LETTERS



SECTION 'A-A'

② PESO APPROVAL NO: A/P/HQ/MH/104/1801(P230001) DT- 22.4.9
MOTOR TAG No. : 117- KAM- 0570- A, 117- KAM- 0570- B

TYPE REFERENCE : MJ31M4A3
MOTOR RATING : 125KW- 4P

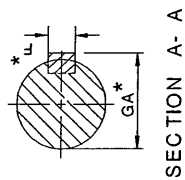
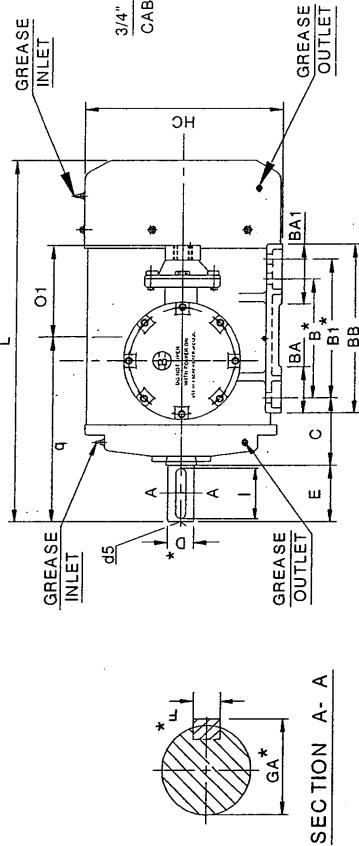
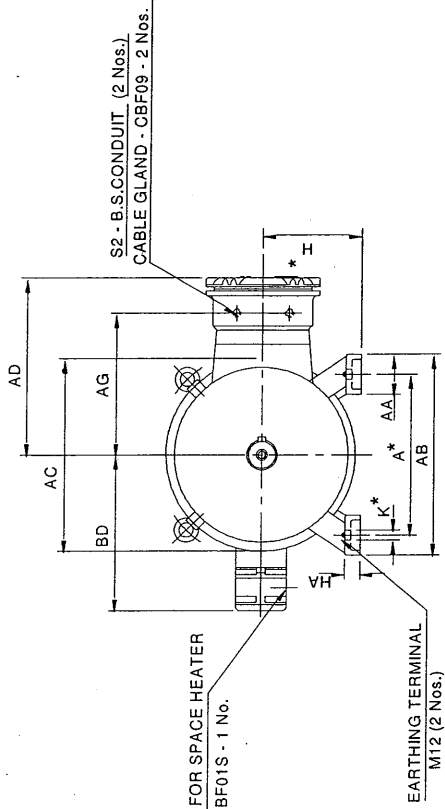


TERMINAL BOX WITHOUT SEALING BOX

③ CABLE SIZE:- 2Rx3Cx185mm sq.
FOR AL, PVC INSL. ARMoured CABLE, 1100V.
④ (OUTER DIA - 45mm. $\pm$ 2mm.)

NO. OF	DESCRIPTION	ITEM NO.	CODE NO.	MATL.	DRG. NO.	PATTERN NO. OR SIZE	WT. kg
1	TERMINAL BOX ARRANGEMENT						
TITLE: TERMINAL BOX ARRANGEMENT (MJ 315) SCALE: 54832-10 NTS DATE: 11.04.11 DRN: 11.04.11 RCD: 11.04.11 CHK: 11.04.11 PRF: 11.04.11 KMA APPROD. KMA DESIGNED AS PER CLIENTS C.D. NO. 17/3587 ON 26.4.2011 V.S.K.A. CHECKED AS PER C.D. NO. 17/4228 -- VCS-7-2036-11							
Bharat Bulee Ltd.		KALWA		TB AD31MC012 ^②		MJ 315M	
TYPE		REF. NO.		GROUP		MACHINE	

ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.



IEC Fr. size	BBL Fr. size	Pole	FIXING										GENERAL										TERMINAL BOX										SHAFT				
			A*	B*	B1*	C*	H*	K*	AB	BB	AA	BA	BA1	HA	HC	AD	L	AC	AG	O1	O	BD	q	S2 B.S.C.	D*	E*	F*	GA*	I	d5							
315M	MJ315M	4	508	406	457	216	315	28	625	540	120	115	155	45	617	535	1163	606	443	225	323	430	614	2"	80	170	22	85	160	M20							

PESO APPROVAL NO: A/ P/ HQ/ MH/ 104/ 1801(P230001) DT- 22.4.9

MOTOR TAG No. : 117- KAM- 0570- A, 117- KAM- 0570- B

SPACE HEATER T.B. ON RHS CAN NOT BE GIVEN

CABLE LUGS NOT IN BBL SCOPE OF SUPPLY

CABLE SIZE:- 2Rx3Cx185mm²sq.

FOR AL. PVC INSL. ARMoured CABLE, 1100V.

(OUTER DIA - 45mm. ±2mm.)

SPACE HEATER CABLE SIZE:- 1Rx3Cx2.5mm²sq.

FOR CYWY ARMoured CABLE, 1100V.

TYPE REFERENCE : MJ31M4A3
MOTOR RATING : 125KW-4P

SPACE HEATER T.B. CAN NOT BE
SHIFTED TO RHS AS REQUIRED
BY CUSTOMER.

Tolerances on Dimensions with	
Dimension	Specification
A,B	±0.75
H	-1.0
K	±0.520
	28Ø
	IS : 1231

Dimension	Tolerance	Specification
D	m6	80Ø
		IS : 1231
GA,F		IS : 2048
d5(centering)		IS : 2540

		AMENDED AS PER C.I.NO.12/3587 ON 28.4.2011 V.S.K.	
AMENDED AS PER C.I.NO.12/ 4328 -- VCS- - 28.08.11		AMENDED AS PER C.I.NO.12/ 5421: DT.09.08.11:- VCS- 18.08.11	
AMENDED FOR NOTE CORRECTED- - VCS- - 18.08.11		AMENDED FOR NOTE CORRECTED- - VCS- - 18.08.11	
DATE	NAME	APPD	W.O.No.
DRN 11.04.11	JAG	KMA	54832- 10
CHD 11.04.11	PRF		1471A1
Bharat Bijlee Ltd.		CONSTRUCTION	SCALE
KALWA		B3	N.T.S.
DRG No.			FR SIZE
D31M43004			MJ315M

All Dimensions are in mm unless otherwise specified.



GOVERNMENT OF INDIA
MINISTRY OF COMMERCE & INDUSTRY
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION (PESO)
 (Formerly Department of Explosives)
CGO COMPLEX SEMINARY HILLS
NAGPUR 440006

SPEED POST

Letter No: A/P/HQ/ME/104/1801
 (P230001)

Email :explosives@explosives.gov.in

Phone/Fax No.2510248/2510577

Dated : 22/4/2009

To
 M/s. Bharat Bijlee Ltd.,
 No. 2, MIDC, Thane Belapur Road,
 Airoli,
 Navi Mumbai-400708
 THANE (District)
 Maharashtra (State)

27 04 09

Sub :Approval of FLP 3PH squirell cage induction Motor in Frame Size MJ315 S/M (IEC Frame 315 S/M).

Dear Sir(s),

Please refer to your letter No Mtd/cce/Mj315S/M/2009 dated 14/03/2009 on the above subject.

The following Flame Proof equipment manufactured by you according to IS 13346:2004 & IS 2148: 2004 standards is approved for use in Zone 1 of Gas, Group IIA/IIB hazardous areas coming under the purview of the Petroleum Rules, 2002 administered by this Organization.

Sr.No	Description	Safety Protection	CCEs Identification Number	Test House	Test Report No.	Drawing Numbers
1	Flameproof 3 PH. Squirell Cage Induction Motor, Model : MJ315S/M - IEC Frame 315S/M	Ex d IIA / IIB T1, T2, T3	P230001/1	ERTL (E), Kolkata	ERTL (E)/TES/B178/0086/09-08 Dt.5/11/2008	As per Test Report

• This Approval is granted subject to observance of the following conditions:-

- 1). The equipment is covered under a valid BIS licence
- 2). The design and construction of the equipment shall be strictly in accordance with description, condition and drawings as mentioned in the CIMFR Test Reports referred to above.
- 3). The equipment shall be used only with approved type of accessories and associated apparatus.
- 4). Each equipment shall be marked either by raised lettering cast integrally or by plate attached to the main structure to indicate conspicuously:-
 - (a) Name of the manufacturer
 - (b) Name and number by which the equipment is identified.
 - (c) Number & date of the test report of the CIMFR applicable to the equipment.
 - (d) CCEs Identification Number of this letter by which use of apparatus is approved.
- 5). A certificate to the effect that the equipment has been manufactured strictly in accordance with the drawing referred to in the CIMFR Test report and is identical with the one tested and certified at CIMFR, Dhanbad shall be furnished with each equipment.
- 6). The customer shall be supplied with a copy of this letter, an extract of the conditions and

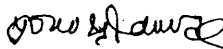
maintenance schedule, if any, recommended by CIMFR in their test reports and copy of instructions booklet detailing operation & maintenance of the equipment so as to maintain its Flame Proof characteristics.

This approval also covers the permissible variations as approved under the CIMFR test reports referred to above. This approval may be deemed to have been revoked with immediate effect at any time, if any of the conditions subject to which approval has been granted is violated or not complied with. The approval may also be amended or withdrawn at any time, if considered necessary in the interest of safety.

The field performance report from actual users/your customers of the subject equipment may please be collected and furnished to this office for verification and record at regular intervals.

The Approval otherwise is valid for a period of five years from the date of issue

Yours faithfully,


(P C Srivastava)

Deputy Chief Controller of Explosives
for Chief Controller of Explosives
Nagpur

Copy to :

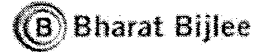
The Jt. Chief Controller of Explosives, West Circle, Mumbai; East Circle, Kolkata; South Circle, Chennai; North Circle, Faridabad; Central Circle, Agra.

for Chief Controller of Explosives

BHARAT BIJLEE LIMITED.

Regd. Office :Electric Mension , 6 th Floor ,Appasaheb Marathe Marg, P.B. No. 19103

Prabhadevi , Mumbai -400 025



CERTIFICATE OF TYPE TESTS ON SQUIRREL CAGE INDUCTION MOTOR

Certificate No.:	MK2/TT/03 125.0kw/4p	W/O No.	1198A1
Customer	DARPAN ELECTRICALS	S.O/M/C NO.-	45768/10 L1102233

NAME PLATE DATA

FRAME	TYPE REFERENCE		ENCLOSURE		PROT.	RATING	KW / HP	INS.
315M	MJ31M4A3		TEFC		IP55	S1	125.0 / 170.0	F
VOLTS		CONN.	FREQ.(Hz)	SYN. RPM	F.L. RPM	F.L.AMPS.	EFFICIENCY	P.F.
415+/- 10%		DELTA	50+/- 5%	1500	1486	207.00	95.5	0.88

WDG RESIS. IN OHMS (per phase) AT ° C	NO LOAD TEST	LOAD TEST
IN COLD 0.026 30	Volts Amps Watts R.P.M	Volts Amps Watts Slip %
IN HOT 0.033 34	415 67.8 5120 1497	415 209.96 131303 0.93

TEMPERATURE RISE (HEAT RUN)TEST

design Ambient Temp. = 40 ° C

Hrs. Run	Volts	Amps	Input Watts	Output Watts	Cooling Air Temp. In Deg. C	Temp. rise in Deg C By Core	By Resistance
4	415	209.96	131303	125000	34.0	58	72

LOCKED ROTOR TEST

HIGH VOLTAGE AND INSULATION RESISTANCE TEST

Volts	Amps	Input Watts	Tstg at rated voltage%FLT	P.O.T at rated voltage%	Volts kV	Duration	Insulation Resistance.m-ohms Before H.V.	After H.V.
35	89.20	1560	210	245	2.0	1 minute	100	100

lstg at rated voltage%FLC

690

OVERSPEED TEST 120% OF RATED SPEED FOR 2 MIN FOUND OK

LOAD	100%	75%	50%
Efficiency	95.2	95.1	93.5
P.F	0.87	0.84	0.78

MOMENTARY OVERLOAD TEST.

for 15 sec. at 160% of F.L.Torque OK

REDUCED VOLTAGE RUNNING-UP TEST

IN BOTH DIRECTION OK AT 240 V

NOISE AS PER I.S.-12065(1987) in 'dB(A) at 1 M distance.

DE SIDE=	84	RHS=	85	TOP=	85
N.DE SIDE=	85	LRS=	85		84

VIBRATION AS PER I.S.-12075(1987) in mm/sec.

DE SIDE:-	AXIAL=	2	RADIAL=	1.9	VERTICAL=	2.2
N.DE SIDE:-	AXIAL=	2.1	RADIAL=	2	VERTICAL=	2.1

Bearings-	OK	Balance--	OK	Noise --	Permissible	Endplay--	Negligible
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TEMPERATURE MEASUREMENT BY RTD METHOD

BY RTD	1	2	3	4	5	6	7	8	9	10	11	12
COLD R	*	*	*	*	*	*	*	*	*	*	*	*
HOT R	*	*	*	*	*	*	*	*	*	*	*	*
TEMP RISE	*	*	*	*	*	*	*	*	*	*	*	*

BTD	1	2
COLD R	*	*
HOT R	*	*
TEMP RISE	*	*

THERMISTEF: -- Ω

SP HEATER RESISTANCE : 310 Ω

SP HEATER HV TEST AT 1.5KV FOR 1 MIN. : OK

REMARKS :

This certificate is issued on the basis of similar motor type tested earlier.

DATE: 18-Aug-11

Certified by

MPS

Database Rev 5 dt :23.7.2006

FOR MOTOR TECH. DEPT.