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 BHARAT HEAVY ELECTRICAL LIMITED BHOPAL	PI No/ Enquiry No. :
	Due Date :
	Spec No. : BPL/SCR/SWE/OLTC/PQR/005 Rev 00
	Supplier Qtn. No.:
Date :	

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF LOAD GEAR ASSEMBLY

1	NOTE:-				
a	The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Bidder and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.				
b	The offer and all documents enclosed with offer should be in English language only.				
c	Bidder must not be under category banned/ debarred/ hold from dealing by BHEL on tender due date.				
d	BHEL reserves the right to verify the information and documents furnished by bidder. In case the information is found to be false/ incorrect, the offer shall be rejected.				
e	The vendor meeting pre qualifying criteria as per clause 4 of this specification will be evaluated further.				
2.a	NAME & ADDRESS OF THE SUPPLIER :				
2.b	TELEPHONE NOS.:/ Mobile No.				
2.c	E-MAIL ADDRESS :				
3	SCOPE:				
	<u>SUPPLY OF LOAD GEAR ASSEMBLY</u>				
SNO	Description of requirement	Bidder to specify/ confirm/ furnish	Offered Parameters	Deviations	Remarks
4	<u>Part -A : Pre Qualifying Criteria</u>				
a	Bidder should have supplied assembly of mechanical components having aluminium casting and sheet metals during last 7 years ending 31st March 2020 for industrial applications.	1. Bidder to provide 3 PO copies of value not less than Rs. Nine lakh each or 2 PO copies of value not less than Rs. eleven lakh each or one PO of value not less than Rs. twenty lakh. 2. Bidder has to declare item category of PO attached is similar to that required as per cl 4.a.			
b	Bidder's average annual financial turnover during the last 3 years ending 31st March of 2019-2020 should be greater than Rs.Six Lakh Seventy Five Thousand.	Bidder to provide ITCC Annual report for last 3 financial yrs. OR Balance sheet and profit and loss statement for last 3 financial yrs.			
c	Qualified Man Power having minimum ITI degree required for incoming material inspection, assembly and testing.	Bidder to provide organisation chart having Name, Designation Technical qualification, Experience and Responsibility.			

Signature
12.06.2020

Signature
12/6/2020

S K Prasad
DGM/SWE

S Bhattacharya
DGM/SWM

Signature
D. Katiyar
Sr. DGM / MWX

Signature
12/6/20
P K Upadhyay
AGM-HOD/MWX
SWE

SNO	Description of requirement	Bidder to specify/ confirm/ furnish	Offered Parameters	Deviations	Remarks
5	<u>Part B: General Specification</u>				
a	Bidder should have aluminium gravity die casting facility for components up to 10 kg. In case of casting being outsourced, the sub Vendor's name and complete address, contact detail, manufacturing facility & testing facility details shall be furnished with the offer. The sub-vendor must have valid ISO9001 certificate for manufacturing of Aluminium castings. The sub-vendor will be duly assessed with respect to Aluminium Gravity Die Casting facility and process before price bid opening. Bidder can outsource items from the sub-vendor after approval of BHEL.	Bidder to Specify and furnish supporting documents.			
b	Bidder should have CNC lathe, CNC milling, CNC drilling and boring machine. In case of out sourcing for these facility, sub vendor's name and complete address, contact detail, manufacturing facility & testing facility details must be provided. The sub-vendor must have valid ISO9001 certificate for machining works. The sub-vendor will be duly assessed before price bid opening. Bidder can outsource items from the sub-Bidder after approval of BHEL	Bidder to Specify and furnish supporting documents.			
c	Confirmation for BHEL visit to supplier's works and sub vendor's works before accepting their offer to verify capability of bidder and sub-vendor (if any).	Bidder to confirm			
6	<u>SPECIFICATION OF LOAD GEAR ASSEMBLY</u>				
a	The Load Gear Assembly must be manufactured strictly as per drawing and specifications provided by BHEL. The drawings and relevant specifications will be provided to successful bidder only. For estimation purpose brief information of Load Gear Assembly is enclosed as part -C and BOM as per annexure-D. For estimation, prospective Bidder could visit BHEL Bhopal.	Bidder to confirm			
7	<u>ACCEPTANCE CRITERIA OF ASSEMBLY</u>				
a	Bidder shall submit quality plans to BHEL for approval before delivery of bulk lot. However, it is sole responsibility of supplier to supply material as per our purchase order, specification and drawing within time agreed.	Bidder to confirm			

S K Prasad
DGM/SWE

S Bhattacharya
DGM/SWM

D. Katiyar
Sr. DGM / MWX

P K Upadhyay
AGM-HOD/ MWX

SWE

SNO	Description of requirement	Bidder to specify/ confirm/ furnish	Offered Parameters	Deviations	Remarks
b	Dimensions, Process, Material, assembly and wiring strictly as per drawing and specification.	Bidder to confirm			
c	Assembly trial of 2 samples from each lot and smooth and noise free operation at actual load at BHEL.	Bidder to confirm			
8	INSPECTION				
a	Inspection of 1st lot will be carried out at Supplier's works by BHEL. Dimension of major components shall be measured on CMM only.				
b	Inspection of subsequent lot at BHEL.				
9	WARRANTY TERMS				
a	The Load Gear Assembly shall have a warranty for a period of at least 24 month from date of delivery at BHEL Bhopal works.	Bidder to Confirm			
b	For repair of Load Gear Assembly at BHEL, service person has to be deputed within 7 days.	Bidder to Confirm			
10	<u>PACKING INSTRUCTIONS</u>				
a	Each Load Gear Assembly must be placed in a separate wooden cartoon with sufficient shock absorbing materials before dispatch. Packing drawings shall be submitted to BHEL for approval before despatch.	Bidder to confirm			

12/06/2020

S K Prasad
DGM/SWE

S Bhattacharya
DGM/SWM

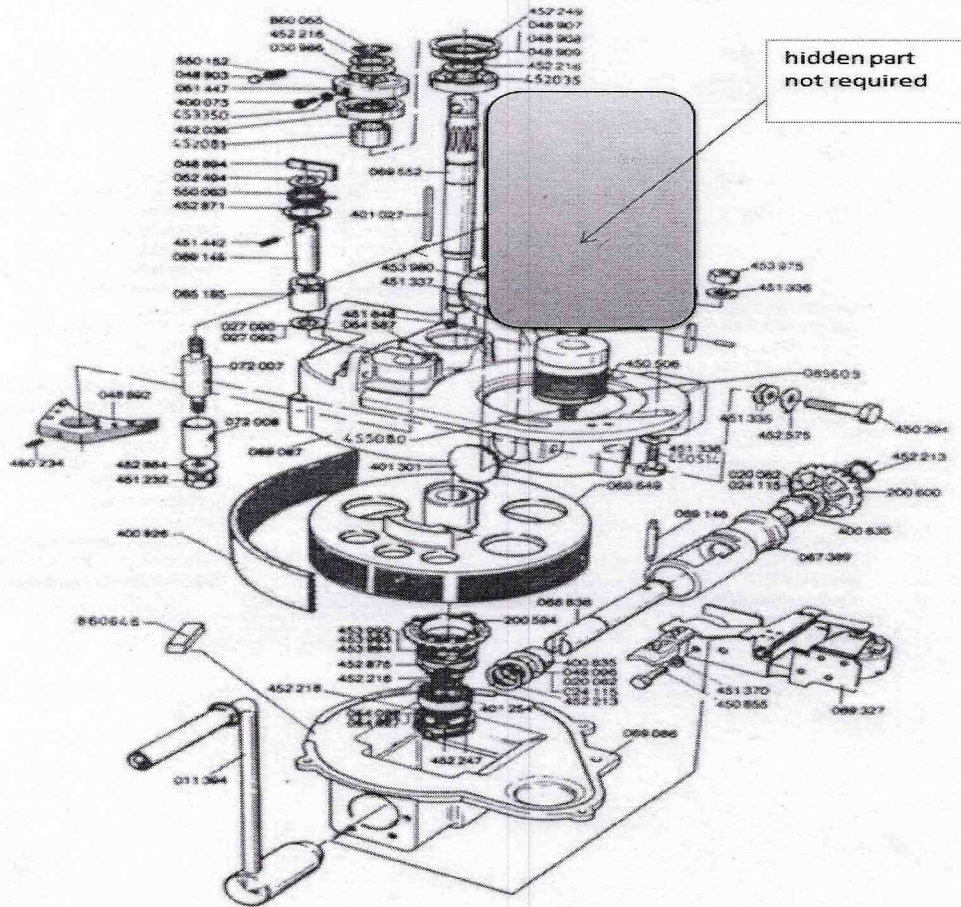
D. Katiyar
Sr. DGM / MWX

P K Upadhyay
AGM-HOD/ MWX
SWE

PART -C

Brief Information of Load Gear assembly

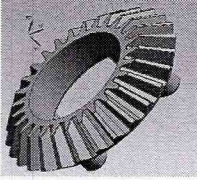
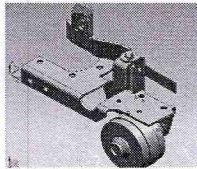
Load Gear Assembly is a belt driven transmission system to operate OLTC by both manual and motorised operation. Exploded view of Load Gear Assembly is shown.



Load Gear Assembly consist of following items :

Raw material/ process	Dimensional detail	Isometric view
Aluminium alloy gravity die casting Components	Housing Upper Part, weight 5 kg	
	Housing lower Part, weight 2.5 Kg	
	Drive Gear, Weight 1.8 Kg	
	Bush for hand shaft	
	Hand shaft of dia 22 mm X 140 mm Length	

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Stainless steel bar	Pawl shaft dia 16 mm X 60 mm Length coupling pin dia 10 mm X 50 Length	18 numbers of teeth
	Driving Shaft dia 27 mm X 290 mm length: ZPP (0.15 TK)	
Precision Steel casting	Pawl Plate, weight 200gm	
Nylon Moulding	Bevel gear for hand drive part no. 5200600, PCD 74.2, no. of Teeth 28	
	Bevel gear for hand drive part no 5200594, PCD 74.2, no. of Teeth 28	
	Flat head Plug: 12.5 TK , 28 ID, 42 OD	
Stainless steel strip	release lever 2TKX 15.5 X 40 mm length	
Nitrile rubber moulding	O- ring	
CR spring steel strip Heat treated to hardness 475 to 540 HV	Shim 0.3 tkX 22 ID, 32 OD Shim 0.2 tk X 15 ID, 19.8 OD Shim 0.1 tk 15 IDX 19.8 OD Shim 1 tk X 25 ID, 33.6 OD Washer 1 tk 15 ID, 28 OD Shim 0.1 tk X 36 ID, 41.8 OD washer 0.1 tk X 38 ID , 46.8 OD washer 0.2 tk X 38 ID , 46.8 OD washer 0.5 tk 38 ID, 46 OD Shim 0.1 Tk X 36 ID, 41.8 OD shim 0.2 tk X 36 ID, 41.8 OD Leaf 1 tk 12.5X 58 Length Switching See saw 2.5 TK 96.5X 98.5 Support plate 2.5 TKX 63 X 63	
CR steel bar	Inner Ring 32 Dia X 20.5 L	
CRC steel sheet	Assembly Plate, Weight 200 gm: 2.5 Tk X 108 X 151.5 L	
Bright steel bar, zinc plating 0.15 TK	See saw bolt 60 dia X 73 Length washer 1 tk ID 20 X OD 32 Brake Disc 12 TK, 50 OD Ring 12 TK, 63 Dia Stopper 6 TK X 25 X 10 Grooved Pin dia 6 X 21.5 L	
Brass strip	washer 1 tk ID 12X OD17	
Phosphor bronze rod	Bush 25 Dia X 40 L	
DIN 1494	BB2022 DU Bush	
Bearing		


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Jurid 844	brake block
Hardwares	Hexagonal screw, M6X 12
	Circlips B47 St
C D spring steel wire	Compression Springs 0.9 dia X 122 L
	leg spring 1.8 dia 103 L
Ribbed Belt	
Lubrication	OKS 410 & OKS 1110

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PART -D**BILL OF MATERIAL (BOM) FOR LOAD GEAR ASSEMBLY.**

Sl. No.	PART NO.	DESCRIPTION	SIZE	SPECIFICATION	CATEGORY	QUANTITY
C- Casting H- Hardware X- As required						
1	5090130	LOAD GEAR (BELT DRIVE)			REFERENCE	X
2	5091118	LD GR BELT DR MA7 DIM CHK			REFERENCE	X
3	5200600	BEVEL GR FOR HAND DRIVE		SG10017	C	1
4	5069146	BOLT		AA10202		1
5	5069649	DRIVE GEAR 10 GAPS		BP19990		1
6	5200594	BEVEL GR FOR HAND DRIVE		SG10017	C	1
7	5453992	SHIM 988	42X52X0.1	ST2K50		X
8	5453993	SHIM 988	42X52X0.3	ST2K50		X
9	5453994	SHIM 988	42X52X0.5	ST2K50		X
10	5452875	CIRCLIP LIGHT 471	A42-ST	DIN 471	H	1
11	5069087	HOUSING UPPER PART		AA19953		1
12	5200599	HOUSING UPPER PART		AA19953	C	1
13	5401301	DRAIN PLUG				1
14	5069086	HOUSING BOTTOM PART(504211)		AA19953		1
15	5200598	HOUSING-BOTTOM PART		AA19953	C	1
16	5067389	BUSH FOR HAND SHAFT		AA19953		1
17	5401758	SCRU SET SOC CP	AM8X25-45H	AA7125110		1
18	5400835	DU-BUSH MAKE: GGB BEARING TECHNOLOGY	20X20X21.5	BB2022DU		2
19	5068838	HAND SHAFT		AA1070221112		1
20	5049096	WASHER	1TKX31.9 DIA	AA1011715074	H	X
21	5056671	ASSY PLATE	2.5X106X151	AA1011715120		1
22	5450490	SCREW HEX ZPP 933	M5X20-8.8	DIN 933	H	2
23	5049094	SWITCHING SEE SAW	151227	AA10115		1
24	5261661	SLIDING PIECE		SG10015	C	1
25	5420714	WASHER MCD BRASS 1440	3.2-BR	AA71610	H	2
26	5410630	RIVET SNAP HEAD 660	3X8-CU	AA7174002	C	2

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27	5410122	RIVET SNAP HEAD 660	4X6-CU	AA7174002	H	2
28	5452601	CIRCLIP 6799	C4-ST	DIN6799		2
29	5049095	SEE SAW BOLT		BP10102		1
30	5048888	LEAF SPRING	1TKX31.9 DIA	AA10117		1
31	5031822	WASHER	120291-1791	AA12102		2
32	5450855	SCR CAP HEX SOC ZPP 912	AM6X16-12.9	AA71231	H	3
33	5451370	WASHER LOCK MT ZPP 6798	A6.4-ST	AA71690		5
34	5069552	DRIVE SHFT F RGD THRU DRIVE				1
35	5054026	WASHER			H	X
36	5040090	SHIM				1
37	5054027	WASHER		AA10304		X
38	5040091	SHIM		AA10304		1
39	5453373	WASHER SPRG 127	B6-ST	AA716400	H	4
40	5860055 (5L28002)	O-RING 5L28002	19-3-NB	AA59807		1
41	5401027	PARALLEL KEY 6885	A8X7X70-	AA7181001		1
42	5452247	CIRCLIP LIGHT 472	B42-ST	DIN472	H	1
43	5401254	DEEP GROV BALL BEARG 6004RS1	20X42X12	AA7210108050		1
44	5452035	DEEP GRV BALL BRNG 6005 RS	25X47X12			1
45	5048907	WASHER	0.1X38X46.8	AA10304		X
46	5048908	WASHER	02X38X46.8	C.SPR.STL		X
47	5048909	WASHER	0.5X38X46.8	AA10304		X
48	5452249	CIRCLIP LIGHT 472	B47-ST	AA7167003	H	1
49	5452216	CIRCLIP LIGHT 471	A25-ST	AA7167001040	H	3
50	5030986	WASHER		AA10304		1
51	5452081	INNER RING	32DX20.5L	AA1080222146		1
52	5052149	RING	151617	AA10446		1
53	5051447	BRAKING DISC		XA1020209240		1
54	5048903	BRAKE BLOCK				8
55	5550152	COMPRESSION SPRING 2095		GR.3 IS4454		8

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56	5453350	WASHR SPG SC SQ ZPP 7980	5-ST	AA7164010	H	1
57	5400073	SCREW SLTD CHS ZPP 84	AM5X6-4.8	AA7124102162	H	1
58	5089907	BLOCKING PAWL				1
59	5069145	PAWL SHAFT		AA1020209089		1
60	5048892	PAWL PLATEOUT SIDE		XA1031604130		4
61	5451707	RIVET SNAP HEAD 660	4X20-STL	AA7174014		4
62	5453970	CYL. GROVD PIN 1473	4X16-6.8	DIN1473	H	1
63	5065185	BUSH	140130	BP1210241978		1
64	5452871	CIRCLIP LIGHT 471	A24-ST	AA7167001031	H	1
65	5550063	LEG SPRING 2088	DM27.2/1.25	GR.3 IS4454		1
66	5054567	GROOVED PIN		BP1010272020	M	1
67	5451788	GROVD PIN 1474	5X20-6.8	DIN1474		1
68	5048894	RELEASING LEVER		AA10739		2
69	5451442	GROVD PIN 1474	5X20-6.8	DIN1474		1
70	5452444	SPRING PIN 7346	8X16	DIN7346		2
71	5400272	SCREW SLTD HEX ZPP 933	PM6X30-8.8	DIN933	H	2
72	5053914	STOPPER (907-8)		BP1010372165		2
73	5450471	SCREW HEX ZPP 933	M6X12SK-8.8	AA7121123029		2
74	5451648	PIN CYLINDRICAL 7	5M6X20-STL	AA7171001		1
75	5052494	WASHER		AA1011715074		1
76	5027090	SHIM		AA10304		X
77	5027092	SHIM		XA1031604090		X
78	5452213	CIRCLIP LIGHT 471	A20-ST	AA7167001023	H	3
79	5069194 (5L00487)	SPACER 5L00487		AA10304		X
80	5069195 (5L00487)	SPACER 5L00487		AA10304		X
81	5020082	SHIM		AA10304		X
82	5024115	SHIM		AA10304		X
83	5450515	SCREW HEX SLTD 933	PM6X25-8.8	DIN933	H	2
84	5055985	SUPPORT PLATE		5056671	-	1
85	5400756	SHIM 988	5X10X0.2			X
86	5026572	WASHER		CK75 H+A		X
87	5052866	WASHER		AA12102		X
88	5400227	WASHER MCD 125	5.3	A2		1
89	5450321	HEX SCR STL P8.8ZPP	M5X25	IS2389		1

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90	5400927	RIBBED BELT	5J711			1
91	5072008	SPACER TUBE		AA10446		1
92	5072007	SETTING BOLT		BP1010272063		1
93	5453980	LOCKNUT PRVLG TORQ	M12-8BL GEWA	DIN980		1
94	5401744	SCRU HEX	AM8X80-8.8	AA7121123	H	1
95	5451337	WASHER MCD ZPP 125	13-ST	AA7161001072	H	1
96	5056669	WASHER		CK75H+A		1
97	5452575	WASHER WITH LUG ZPP 93	8.4-ST	UST 1304		1
98	5450514	SCREW HEX ZPP 933	AM10X35-8.8	AA7121123	H	1
99	5451336	WASHER MCD ZPP 125	10.5-ST	AA7161001064	-	3
100	5401291	BOLT HEX ZPP 931	AM10X110- 8.8	AA7111122151	H	1
101	5452654	WASHR SPG WITH SFTY RNG	ZPP B10-ST	DIN6913		3
102	5451232	NUT HEX ZPP 934	AM10-8	AA7151115032	H	2
103	5453979	LOCKNUT PRVLG TORQ 980	M10-8BL GEWA	DIN980		1

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