

Annexure-A**SUSTAINER STAGE BEAM
SCOPE OF SUPPLY & QA PLAN****1. SCOPE OF WORK:**

Vendor shall fabricate and supply "Sustainer Stage Beam" (1 no) as per enclosed specifications document 53620080.00.000 along with QA plan mentioned below, using equivalent materials and standards approved by BAPL. Vendor shall also carry out acceptance & fitment trials of the beam at BAPL as per drawing requirements. Item shall be delivered at BAPL on or before 1 month from the date of release of supply order.

2. QA PLAN:

2.1. APPLICABLE DRAWINGS: Applicable BOMs (Bill of Materials) and drawings of stands are enclosed. List of items deliverables, standard items, quantity and suggested equivalent material grades is given in Table-1. Testing & other requirements are in table-2 and list of corrections/modifications to be incorporated in drawings is given in Table-3.

Table-1

S.No.	Part Name	Part Drawing No	Material	Equivalent	Remarks	Qty
53620080.00.000						
1	Pin	53620080.00.001	Steel 45	EN24	HT	2
2	Screw	53620080.00.002	30XГCA	15CDV6	HT & ST	1
3	Bush	53620080.00.003	30XГCA	15CDV6	HT & ST	1
4	Bolt	53620080.00.006	30XГCA	15CDV6	HT & ST	1
5	Sp. Washer	53620080.00.007	30XГCA	15CDV6	HT & ST	1
6	Screw	53620080.00.008	30XГCA	15CDV6	ST	1
7	Sp. Washer	53620080.00.009	30XГCA	15CDV6	HT & ST	1
8	Nut	53620080.00.011	30XГCA	15CDV6	ST	1
9	Block	53620080.00.012	30XГCA	15CDV6	HT & ST	1
10	Plank	53620080.00.013	Steel 3	E250 Gr.B IS2062	ST	1
11	Guide Plate	53620080.00.014	Steel 3	E250 Gr.B IS2062	ST	1
53620080.01.000 (BEAM)						
12	Bush	53620080.01.001	Steel 3	E250 Gr.B IS2062		5
13	Lid	53620080.01.002	Steel 3	E250 Gr.B IS2062		5
14	Board	53620080.01.003	Steel 3	E250 Gr.B IS2062	BH 100x190	2
15	Beam	53620080.01.004	Steel 3	LC200 IS 808 E250 Gr.B IS2062	BH L=3957	2
16	Bush	53620080.01.005	Steel 3	E250 Gr.B IS2062	BH	1
17	Bush	53620080.01.006	Steel 3	E250 Gr.B IS2062	BH	11



S.No.	Part Name	Part Drawing No	Material	Equivalent	Remarks	Qty
18	Bush	53620080.01.007	Steel 3	E250 Gr.B IS2062	BH	2
19	Plate	53620080.01.008	Steel 3	E250 Gr.B IS2062	BH	1
20	Plate	53620080.01.009	Steel 3	E250 Gr.B IS2062	BH 140x150	1
21	Plate	53620080.01.010	Steel 3	E250 Gr.B IS2062	BH 100x140	1
22	Plate	53620080.01.011	Steel 3	E250 Gr.B IS2062	BH 110x140	1
23	Plate	53620080.01.012	Steel 3	E250 Gr.B IS2062	BH 20x140	1
24	Plate	53620080.01.013	Steel 3	E250 Gr.B IS2062	BH 140x150	1
25	Boss	53620080.01.014	Steel 3	E250 Gr.B IS2062		1
53620080.02.000 (LUG)						
26	Lid	53620080.02.001	Steel 3	-	-	2
27	Bush	53620080.02.002	Steel 45	-	HT	2
53620080.02.100 (LUG)						
28	Body	53620080.02.101	30XГCA	15CDV6	BH	2
29	Lug	53620080.02.102	30XГCA	15CDV6	BH	1
30	Pipe	53620080.02.103	30XГCA	15CDV6	BH	1
53620080.30.000 (SET OF PARTS)						
31	Bolt	53620080.30.002	30XГCA	15CDV6	HT	4
32	Bolt	53620080.30.002-01	30XГCA	15CDV6	HT	2
53620080.60.000 (FRONT BANDAGE)						
33	Bracket	53620080.60.001	30XГCA	15CDV6	HT	4
34	Pin	53620080.60.002	Steel 45		HT	2
35	Swing Bolt	53620080.60.003	30XГCA	15CDV6	HT	2
36	Nut	53620080.60.004	30XГCA	15CDV6	HT & ST	2
37	Upper Half	53620080.60.005	30XГCA	15CDV6	BH	1
38	Lower Half	53620080.60.006	30XГCA	15CDV6	BH	1
53620080.40.000 (REAR BANDAGE)						
39	Pin	53620080.60.002	Steel 45		HT	2
40	Swing Bolt	53620080.60.003	30XГCA	15CDV6	HT	2
41	Nut	53620080.60.004	30XГCA	15CDV6	HT & ST	2
42	Sector	53620080.40.001	30XГCA	15CDV6	BH	1
43	Sector	53620080.40.002	30XГCA	15CDV6	BH	1
44	Sector	53620080.40.003	30XГCA	15CDV6	BH	1
45	Sector	53620080.40.004	30XГCA	15CDV6	BH	1
46	Sector	53620080.40.005	30XГCA	15CDV6	BH	1
47	Sector	53620080.40.006	30XГCA	15CDV6	BH	1
48	Sector	53620080.40.007	30XГCA	15CDV6	BH	1



Table-2
(Testing and other requirements as per drawings for special parts of setup)

S.No.	Part Name	Load (Kgf/mm ²)	Testings	Remarks
1.	Pin (53620080.00.001)	-	-	-
2.	Screw (53620080.00.002)	110±10	MPI	Coating Cd10 CR
3.	Bush(53620080.00.003)	110±10	Coaxiality A,b,B relatively to surface G <0.05	Coating Cd10 CR
4.	Bolt(53620080.00.006)	110±10	MPI	Coating Cd10 CR
5.	Sp. Washer (53620080.00.007)	110±10	-	Coating Cd10 CR
6.	Screw(53620080.00.008)	-	-	Coating Cd10 CR
7.	Sp. Washer(53620080.00.009)	-	-	Chem oxi impregnated
8.	Nut(53620080.00.011)	-	Perpendicularity of surface A to holes M64 <0.05	Chem oxi impregnated
9.	Block(53620080.00.012)	110±10	•Coaxiality b ,B <0.05 •Perpendicularity of surface A to holes M64 <0.05	Cd plated
10.	Plank(53620080.00.013)	-	-	Cd plated
11.	Guide Plate(53620080.00.014)	-	-	Cd plated
12.	Beam(53620080.01)	-	-	As per drawing
13.	Bush(53620080.02.002)	-	-	40-45 HRC
14.	LUG (53620080.02.100)	-	-	As per drawing
15.	Bolt (53620080.30.002 and -01)	110±10	-	-
16.	Bracket (53620080.60.001)	110±10	-	-
17.	Pin (53620080.60.002)	-	-	33-38 hrc
18.	Swing bolt (53620080.60.003)	110±10	-	-
19.	Nut (53620080.60.004)	110±10	-	Chem oxi impregnated
20.	53620080.40.000	1400 kgf twice along axis I-III and II-IV.	• To be balanced up to the indifferent state relatively to the	-



			<p>axis I-III and II-IV.</p> <ul style="list-style-type: none"> • Minimum cross connection of holes for balance and with any close surface of bandage, parallel to axis of holes is 10mm. • Weigh with accuracy of 0.1 kg. 	
21.	53620080.60.000		<ul style="list-style-type: none"> • To be balanced up to the indifferent state relatively to the axis I-III and II-IV. • Minimum cross connection of holes for balance and with any close surface of bandage, parallel to axis of holes is 10mm. • Weigh with accuracy of 0.1 kg. 	



Table-3

S.No	REFERENCE	CORRECTION
1	File Name: "T53620080.00.006.tif"	Inside Title Block For "53620080.80.00.006" Read "53620080.00.006"
2	File Name: "T53620080.00.000_L2.tif"	Col "Ποζ." Entries for 53620080.00.012,... 013 & ... 014 are "23, 24 & 25" Respectively
4	File Name: "T53670031.01.000_L2.tif"	Col "Κοπ." Entry for Pivot is "4"
5	File Name: "T53670031.01.000_L1.tif"	For Standard No "8733-34" Read "8733-75"
6	File Name: "T53620080.02.100.tif"	For "53620080.80.02.101, 53620080.80.02.102 & 53620080.80.02.103" Read "53620080.02.101, 53620080.02.102 & 53620080. 02.103" respectively
7	Front & Rear Bandage: T53620080.40.000 and T53620080.60.000	Shall be machined from forged rings of 15CDV6 as opposed to welding as mentioned in drawings



2.2. RAW MATERIALS:

- 2.2.1. It is the responsibility of the vendor to procure all raw materials and standard parts required for fabrication of beam.
- 2.2.2. Materials used for the fabrication of individual parts and standard components shall be in accordance with the GOST standards mentioned in the drawings.
- 2.2.3. Vendor is required to fabricate stands using near equivalent materials having strength properties equal to or higher than materials specified in GOST standards on mutual agreement with BAPL.
- 2.2.4. Vendor shall carry out the chemical analysis and mechanical strength tests of the raw materials and submit the test certificates to BAPL, in case of non-availability of the same from OEM.
- 2.2.5. In case of channels, pipes etc., the sectional size selected should be closest or higher size mentioned in GOST without affecting the basic dimensions specified for the assembly, and seamless tubes/pipes should be used on mutual agreement with BAPL.
- 2.2.6. In the case of sheets, plates, bars etc., the thickness selected should be closest or higher mentioned in GOST without affecting the basic dimensions specified for assembly on mutual agreement with BAPL.
- 2.2.7. In the case standard parts such as fasteners, washers etc., UNBRAKO 10.9 class should be used & test reports from the original manufacturer shall be submitted. Parts shall be checked for any surface defects by Magnaflux method. They shall be cadmium plated (8 microns thickness) as per IS 1572 followed by Hydrogen de-embrittlement.
- 2.2.8. Vendor shall submit raw material certificates of all the components for BAPL approval prior to the commencement of fabrication.

2.3. MANUFACTURING PROCESS:

The fabrication of item consists of the following activities:

- 2.3.1 Manufacturing of any tooling/fixtures required for welding, machining, assembly, inspection etc. shall be the responsibility of the vendor.
- 2.3.2 WELDING: The sub-assemblies of items shall be fabricated by the process of welding as per relevant welding standards applicable for the selected materials. All the weld joints shall be tested by Red Dye penetrant test. All the weld joints shall be free from weld cracks.
 - Welding procedure: All the weld joints shall be carried out as per relevant standards. Weld joints shall be inspected for their uniformity and cleanliness.
 - Test for welder:



Welding of the subassemblies shall be carried out by welders qualified in accordance with

a) BS EN 287-1:1992-00-00 1992 Amd 2: Approval Testing of welders for fusion welding Part 1: Steels AMD9804; Jan 15, 1998.

b) IS 7310: Part I: 1974: Approval tests for welders working to approved welding procedures Part 1: Fusion welding of steel

- Dye penetrant test:

Finished weld joints shall be checked with Red dye penetrant testing for the presence of surface defects like cracks on the weld at every weld joint on the assembly. The test results must be submitted to BAPL for the final acceptance of the assembly.

- Weld defects:

Welding defects, if any, such as porosity, pin holes, incomplete fusion, detected in the above test shall be removed by gouging or chipping (and grinding) followed by re-welding.

- Stress Relieving:

All welded sub-assemblies shall be stress relieved after welding and before final machining. Vendor shall provide stress relieving data card as proof of having carried out the operation.

2.3.3 HEAT TREATMENT: The parts are to be heat treated to obtain specified hardness given in drawings by following relevant heat treatment cycle for selected materials.

2.3.4 MACHINING: Sub-assemblies and components to be machined to achieve dimensions and tolerances as specified in drawings to meet final assembly requirements.

2.3.5 SURFACE COATING:

Individual components of the items shall be surface coated as mentioned in the part drawings after proper cleaning of the surfaces for protection of machined surfaces from corrosion. Suitable surface treatment must be adopted for ferrous components to prevent corrosion even if the same is not mentioned in drawing.

2.4 SERVEILLANCE:

Vendor shall permit BAPL representatives to observe/monitor manufacturing of items at the vendor's works during contract execution.



2.5 INSPECTION AND QUALITY CONTROL:

2.5.1 Vendor shall submit list of near equivalent raw materials to be used for fabrication of components & sub-assemblies of stands and heat treatment cycle to be followed for respective materials.

2.5.2 Vendor shall inspect all assemblies and submit dimensional inspection reports. Also, inspection of critical dimensions will be carried out at firm in the presence of BAPL representatives. The deviations if any, are to be approved/cleared by BAPL and correction of the deviations shall be vendor's responsibility.

This dimensional inspection will include:

Sl. No.	Inspection
1.	Length of beam
2.	Height of beam
3.	Width of beam
4.	Measurement of co-ordinates of 16 nos holes with help of CMM (Coordinate Measuring Machine)
5.	X _{cg} of beam
6.	Y _{cg} of beam
7.	Mass of beam

2.5.3 Load test of the beam shall be in the scope of the vendor. It shall be carried out in the presence of BAPL representative. After load testing DPT (Die penetrant test) should be carried out after load test to validate no damage of beam.

2.5.4 Fitment trial of beam will be carried out in BAPL in presence of the vendor. Acceptance of the beam shall be subjected to successful completion of fitment & functional tests. Final acceptance authority of the beam shall be with BAPL.

2.6 CERTIFICATES:

Vendor shall submit 2 copies of following documents:

- i. Raw Material & mechanical properties test certificates.
- ii. Heat treatment certificate of parts.
- iii. Dimensions report of all components and assemblies.
- iv. Functional test certificates
- v. Load test reports
- vi. Duly filled and signed logbooks
- vii. Waiver proceedings on all deviations and record of repairs, if any.



2.7 REJECTIONS:

BAPL reserves the right to reject any material/ sub-assembly /assembly not conforming to this QA plan or to authorized modifications.



