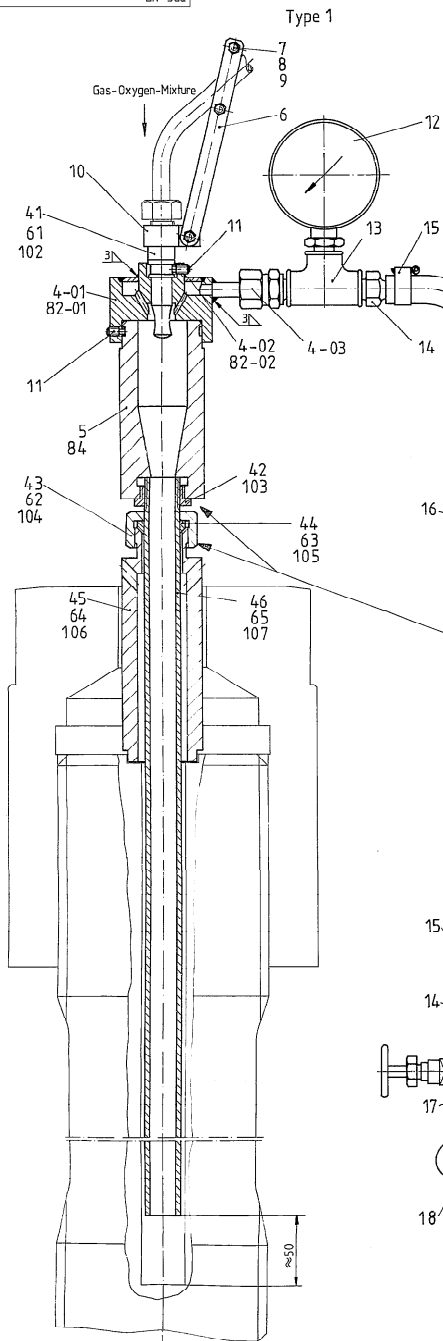
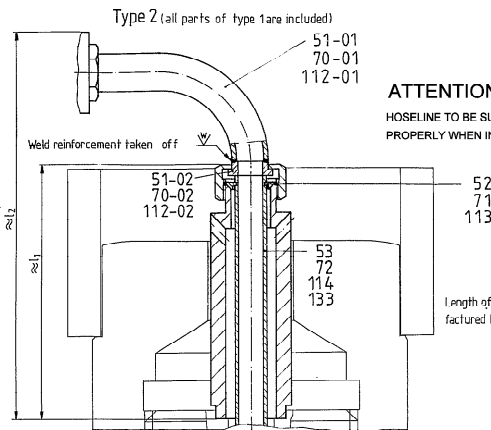


PQR (Turbine Spares)

	PQR Ref No: PQR/24-25/ Turbine Spares	Date: 23.08.2024
	Rev No: 00	Review Date:
	PQR Revision Date:	23.08.2024
Sl. No.	BHEL Terms	Supplier's Compliance YES/NO
	1 Offers are accepted from:	
	1 Only Manufacturer's Offers shall be considered for the Tender Enquiry.	
	2 Supplier shall give list of In-House Facilities:	
2.a	Vendor shall have in-House necessary Manufacturing facilities required for manufacturing and supply of the item/s as per drng/spec..	
2.b	BHEL reserves right to visit the Works of the Manufacturer for Physical verification of the Manufacturing facilities (as declared by them) and assessment of their Quality systems during Technical Evaluation of the Offers.	
	3 Experience:	
3.a	Bidders shall submit the necessary documents proving their Experience in Supplying same or similar nature items to any Power Plant equipment Manufacturer (OEM- Original Equipment Manufacturer) (worldwide or within India) in last three years from the date of Enquiry. Documentary evidences to be submitted in the form of Customer's Purchase Order copies / Matl.Acceptance Report and item drawings/specs.. Documentary evidences submitted shall strictly meet all the technical requirement of the NIT.	
3.b	BHEL reserves right to verify the details from the Bidder's customers based on Documents submitted as a part of past experience.BHEL may ask for other relevant documents in line with above to review the capacity and capability of vendor with respect to enquired items.	
	4 Manufacturing Process Plan:	
4.a	Bidders shall submit detailed Manufacturing process Plan along with the Technical Offer.	
	5 Financial Capability:	
5.a	Turn Over:- Turn over of Non-MSe vendors should be minimum 100% of tender value. Relaxation for MSe vendors/ Notified Start-UPS on turn over will be as per MSME guidelines. UDYAM certificate will be required for MSe status.	
5.b	Applicable only for Non-Mse vendors: Audited balance Sheet and Profit and Loss account Statement of last three consecutive year (with UDIN) required along with part-1 bid. Or A CA Certified Consolidated summary (with UDIN) for last 3 consecutive years having annual turn over and Profit and Loss to be enclosed along with Part-1 bid . For Vendors having Turn over less than 1 crore in any of the financial year, CA certified Financial Turn over and Profit Loss (with UDIN) may be accepted for that year only.	
6	After placement of Purchase Order, Vendor shall submit Material Test Certificate before dispatching the Material to BHEL, for review and Dispatch clearance.	
Note-1: Non Submission of the above requested documents/non compliance to the above points will result in rejection of the Offers without further Notice/Intimation to the Bidder and no correspondence will be entertained at later date.		
Note-2: "Similar items" means items having same/similar manufacturing process,similar nature of use of item as that of enquired items etc.		

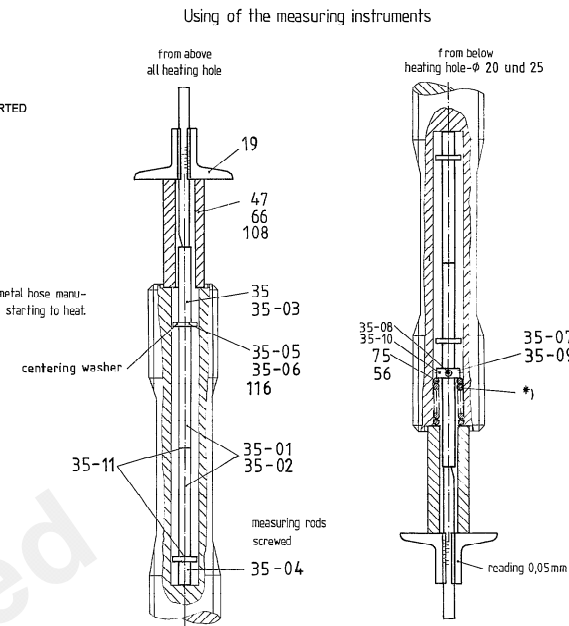


heating hole diameter	l_1	l_2
20	105	186
25	142	220
32	142	245
35	184	295



ATTENTION!

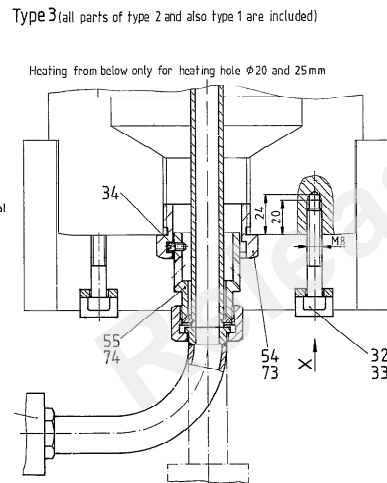
HOSELINE TO BE SUPPORTED
PROPERLY WHEN IN USE



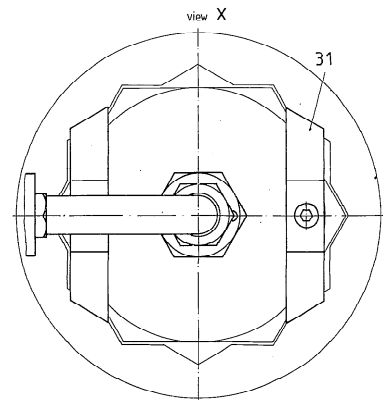
*) The spring is to prestressed such that the gauge rod is pressed to the bottom of the hole the sleeve is resting on.

Parts 3, 81 and 101 are boxes for the parts packing.

Description part 28 and tables of contents part 29 are inserted in the boxes.



Part36 magnet lifter for the
measuring rods is not shown



NOTE:

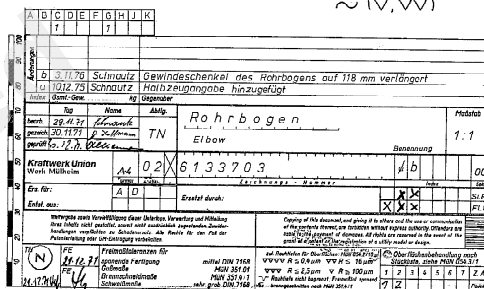
- 1) This drawing covers the broad guideline on design, manufacture & supply of stud heating and measuring device . Scope of supply covers associated compressed air piping including fine regulating valve, pressure gauge and pipe fittings. A measuring device for measuring the extension of stud/bolt is also included in the scope of supply. Scope of supply shall be as per Type-3 which shall include all the parts specified in Type-2 & Type-1 along with items specified in Type-3 as shown in this drawing.
(For detail scope of supply and part item details refer sheet no. 2 to 13 of this drawing)
- 2) Design should ensure that vent holes for release of hot gases in outer tube remain open to atmosphere in all operating condition.
- 3) This heating device is a portable unit. Heating should be possible in any of the stud in assembled condition.
- 4) The arrangement shown in this drawing is for reference purpose. The sole responsibility of mechanical design rests with supplier.
- 5) Certificate of compliance to be provided by supplier

BHEL MATERIAL CODE: W90312015020

C.B.O.M. No.				STATUS OF DRS		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STEAM TURBINE			
JANUARY 2017		NAME	SIGN	DATE							
GRADE OF UNTOLD DIM											
M/CG- AA0230208											
WELDING-AA0521104											
GAS CUTTING-T3AA0521104											
REV	DATE	ALTERED CHECKED	REV	DATE	ALTERED CHECKED						
DEPTH		STE		SCALE		WEIGHT (KG)		REF. TO ASSY. DRG.		ITEM NO.	
CODE 4011				N.T.S		70.0				7	
TITLE						CARD CODE		DRAWING NO.			
STUD HEATING AND MEASURING DEVICE								1-12015-56600			
								22.83 BA			
								SHEET No. 01 No. OF SHEETS '13			
								AI SIZE			

00095 S0021 DN 9ad

HEIZEINRICHTUNG - 20'25 - (abgeleitet von TUN 01440.2)				
BOLT HEATING DEVICE - 20'25 - (deduced of TUN 01440.2)				
Pos.	A	E	Unit	Material
Benennung	Name	Abmessung	Zeichnungs-nr.	
Dimension		Dimension	Drawing number	
GEMEINSAME TEILE FÜR HEIZBOHRUNG 20, 25 und 32				
COMMON PARTS FOR HEATING BORE (HOLE) 20, 25 & 32				
3-00	1	ST	KASTEN	(47117-0055) ALUMINIUM
4-00	2	ST	MISCHKOPF	20'25
4-01	2	ST	MISCHKOPF	TUN01440.214
4-02	2	ST	MISCHKOPF	4-84845GRÖSSE:20,25 4-84845GRÖSSE:25,32
4-03	2	ST	MISCHKOPF	47601.01 15M03
4-04	2	ST	MISCHKOPF	A20-54.25
4-05	2	ST	MISCHKOPF	MUN607.21 15M03
4-06	2	ST	MISCHKOPF	KLINKEH.03 C22 B
4-07	2	ST	MISCHKOPF	3580705 10CIRM910
4-08	2	ST	MISCHKOPF	44711104
4-09	2	ST	MISCHKOPF	ST50K
4-10	2	ST	MISCHKOPF	47601.01 15M03
4-11	2	ST	MISCHKOPF	47601.01 15M03
4-12	2	ST	MISCHKOPF	47601.01 15M03
4-13	2	ST	MISCHKOPF	47601.01 15M03
4-14	2	ST	MISCHKOPF	47601.01 15M03
4-15	2	ST	MISCHKOPF	47601.01 15M03
4-16	2	ST	MISCHKOPF	47601.01 15M03
4-17	2	ST	MISCHKOPF	47601.01 15M03
4-18	2	ST	MISCHKOPF	47601.01 15M03
4-19	2	ST	MISCHKOPF	47601.01 15M03
4-20	2	ST	MISCHKOPF	47601.01 15M03
4-21	2	ST	MISCHKOPF	47601.01 15M03
4-22	2	ST	MISCHKOPF	47601.01 15M03
4-23	2	ST	MISCHKOPF	47601.01 15M03
4-24	2	ST	MISCHKOPF	47601.01 15M03
4-25	2	ST	MISCHKOPF	47601.01 15M03
4-26	2	ST	MISCHKOPF	47601.01 15M03
4-27	2	ST	MISCHKOPF	47601.01 15M03
4-28	2	ST	MISCHKOPF	47601.01 15M03
4-29	2	ST	MISCHKOPF	47601.01 15M03
4-30	2	ST	MISCHKOPF	47601.01 15M03
4-31	2	ST	MISCHKOPF	47601.01 15M03
4-32	2	ST	MISCHKOPF	47601.01 15M03
4-33	2	ST	MISCHKOPF	47601.01 15M03
4-34	2	ST	MISCHKOPF	47601.01 15M03
4-35	2	ST	MISCHKOPF	47601.01 15M03
4-36	2	ST	MISCHKOPF	47601.01 15M03
4-37	2	ST	MISCHKOPF	47601.01 15M03
4-38	2	ST	MISCHKOPF	47601.01 15M03
4-39	2	ST	MISCHKOPF	47601.01 15M03
4-40	2	ST	MISCHKOPF	47601.01 15M03
4-41	2	ST	MISCHKOPF	47601.01 15M03
4-42	2	ST	MISCHKOPF	47601.01 15M03
4-43	2	ST	MISCHKOPF	47601.01 15M03
4-44	2	ST	MISCHKOPF	47601.01 15M03
4-45	2	ST	MISCHKOPF	47601.01 15M03
4-46	2	ST	MISCHKOPF	47601.01 15M03
4-47	2	ST	MISCHKOPF	47601.01 15M03
4-48	2	ST	MISCHKOPF	47601.01 15M03
4-49	2	ST	MISCHKOPF	47601.01 15M03
4-50	2	ST	MISCHKOPF	47601.01 15M03
4-51	2	ST	MISCHKOPF	47601.01 15M03
4-52	2	ST	MISCHKOPF	47601.01 15M03
4-53	2	ST	MISCHKOPF	47601.01 15M03
4-54	2	ST	MISCHKOPF	47601.01 15M03
4-55	2	ST	MISCHKOPF	47601.01 15M03
4-56	2	ST	MISCHKOPF	47601.01 15M03
4-57	2	ST	MISCHKOPF	47601.01 15M03
4-58	2	ST	MISCHKOPF	47601.01 15M03
4-59	2	ST	MISCHKOPF	47601.01 15M03
4-60	2	ST	MISCHKOPF	47601.01 15M03
4-61	2	ST	MISCHKOPF	47601.01 15M03
4-62	2	ST	MISCHKOPF	47601.01 15M03
4-63	2	ST	MISCHKOPF	47601.01 15M03
4-64	2	ST	MISCHKOPF	47601.01 15M03
4-65	2	ST	MISCHKOPF	47601.01 15M03
4-66	2	ST	MISCHKOPF	47601.01 15M03
4-67	2	ST	MISCHKOPF	47601.01 15M03
4-68	2	ST	MISCHKOPF	47601.01 15M03
4-69	2	ST	MISCHKOPF	47601.01 15M03
4-70	2	ST	MISCHKOPF	47601.01 15M03
4-71	2	ST	MISCHKOPF	47601.01 15M03
4-72	2	ST	MISCHKOPF	47601.01 15M03
4-73	2	ST	MISCHKOPF	47601.01 15M03
4-74	2	ST	MISCHKOPF	47601.01 15M03
4-75	2	ST	MISCHKOPF	47601.01 15M03
4-76	2	ST	MISCHKOPF	47601.01 15M03
4-77	2	ST	MISCHKOPF	47601.01 15M03
4-78	2	ST	MISCHKOPF	47601.01 15M03
4-79	2	ST	MISCHKOPF	47601.01 15M03
4-80	2	ST	MISCHKOPF	47601.01 15M03
4-81	2	ST	MISCHKOPF	47601.01 15M03
4-82	2	ST	MISCHKOPF	47601.01 15M03
4-83	2	ST	MISCHKOPF	47601.01 15M03
4-84	2	ST	MISCHKOPF	47601.01 15M03
4-85	2	ST	MISCHKOPF	47601.01 15M03
4-86	2	ST	MISCHKOPF	47601.01 15M03
4-87	2	ST	MISCHKOPF	47601.01 15M03
4-88	2	ST	MISCHKOPF	47601.01 15M03
4-89	2	ST	MISCHKOPF	47601.01 15M03
4-90	2	ST	MISCHKOPF	47601.01 15M03
4-91	2	ST	MISCHKOPF	47601.01 15M03
4-92	2	ST	MISCHKOPF	47601.01 15M03
4-93	2	ST	MISCHKOPF	47601.01 15M03
4-94	2	ST	MISCHKOPF	47601.01 15M03
4-95	2	ST	MISCHKOPF	47601.01 15M03
4-96	2	ST	MISCHKOPF	47601.01 15M03
4-97	2	ST	MISCHKOPF	47601.01 15M03
4-98	2	ST	MISCHKOPF	47601.01 15M03
4-99	2	ST	MISCHKOPF	47601.01 15M03
4-100	2	ST	MISCHKOPF	47601.01 15M03
4-101	2	ST	MISCHKOPF	47601.01 15M03
4-102	2	ST	MISCHKOPF	47601.01 15M03
4-103	2	ST	MISCHKOPF	47601.01 15M03
4-104	2	ST	MISCHKOPF	47601.01 15M03
4-105	2	ST	MISCHKOPF	47601.01 15M03
4-106	2	ST	MISCHKOPF	47601.01 15M03
4-107	2	ST	MISCHKOPF	47601.01 15M03
4-108	2	ST	MISCHKOPF	47601.01 15M03
4-109	2	ST	MISCHKOPF	47601.01 15M03
4-110	2	ST	MISCHKOPF	47601.01 15M03
4-111	2	ST	MISCHKOPF	47601.01 15M03
4-112	2	ST	MISCHKOPF	47601.01 15M03
4-113	2	ST	MISCHKOPF	47601.01 15M03
4-114	2	ST	MISCHKOPF	47601.01 15M03
4-115	2	ST	MISCHKOPF	47601.01 15M03
4-116	2	ST	MISCHKOPF	47601.01 15M03
4-117	2	ST	MISCHKOPF	47601.01 15M03
4-118	2	ST	MISCHKOPF	47601.01 15M03
4-119	2	ST	MISCHKOPF	47601.01 15M03
4-120	2	ST	MISCHKOPF	47601.01 15M03
4-121	2	ST	MISCHKOPF	47601.01 15M03
4-122	2	ST	MISCHKOPF	47601.01 15M03
4-123	2	ST	MISCHKOPF	47601.01 15M03
4-124	2	ST	MISCHKOPF	47601.01 15M03
4-125	2	ST	MISCHKOPF	47601.01 15M03
4-126	2	ST	MISCHKOPF	47601.01 15M03
4-127	2	ST	MISCHKOPF	47601.01 15M03
4-128	2	ST	MISCHKOPF	47601.01 15M03
4-129	2	ST	MISCHKOPF	47601.01 15M03
4-130	2	ST	MISCHKOPF	47601.01 15M03
4-131	2	ST	MISCHKOPF	47601.01 15M03
4-132	2	ST	MISCHKOPF	47601.01 15M03
4-133	2	ST	MISCHKOPF	47601.01 15M03
4-134	2	ST	MISCHKOPF	47601.01 15M03
4-135	2	ST	MISCHKOPF	47601.01 15M03
4-136	2	ST	MISCHKOPF	47601.01 15M03
4-137	2	ST	MISCHKOPF	47601.01 15M03
4-138	2	ST	MISCHKOPF	47601.01 15M03
4-139	2	ST	MISCHKOPF	47601.01 15M03
4-140	2	ST	MISCHKOPF	47601.01 15M03
4-141	2	ST	MISCHKOPF	47601.01 15M03
4-142	2	ST	MISCHKOPF	47601.01 15M03
4-143	2	ST	MISCHKOPF	47601.01 15M03
4-144	2	ST	MISCHKOPF	47601.01 15M03
4-145	2	ST	MISCHKOPF	47601.01 15M03
4-146	2	ST	MISCHKOPF	47601.01 15M03
4-147	2	ST	MISCHKOPF	47601.01 15M03
4-148	2	ST	MISCHKOPF	47601.01 15M03
4-149	2	ST	MISCHKOPF	47601.01 15M03
4-150	2	ST	MISCHKOPF	47601.01 15M03
4-151	2	ST	MISCHKOPF	47601.01 15M03
4-152	2	ST	MISCHKOPF	47601.01 15M03
4-153	2	ST	MISCHKOPF	47601.01 15M03
4-154	2	ST	MISCHKOPF	47601.01 15M03
4-155	2	ST	MISCHKOPF	47601.01 15M03
4-156	2	ST	MISCHKOPF	47601.01 15M03
4-157	2	ST	MISCHKOPF	47601.01 15M03
4-158	2	ST	MISCHKOPF	47601.01 15M03
4-159	2	ST	MISCHKOPF	47601.01 15M03
4-160	2	ST	MISCHKOPF	47601.01 15M03
4-161	2	ST	MISCHKOPF	47601.01 15M03
4-162	2	ST	MISCHKOPF	47601.01 15M03
4-163	2	ST	MISCHKOPF	47601.01 15M03
4-164	2	ST	MISCHKOPF	47601.01 15M03
4-165	2	ST	MISCHKOPF	47601.01 15M03
4-166	2	ST	MISCHKOPF	47601.01 15M03
4-167	2	ST	MISCHKOPF	47601.01 15M03
4-168	2	ST	MISCHKOPF	47601.01 15M03
4-169	2	ST	MISCHKOPF	47601.01 15M03
4-170	2	ST	MISCHKOPF	47601.01 15M03
4-171	2	ST	MISCHKOPF	47601.01 15M03
4-172	2	ST	MISCHKOPF	47601.01 15M03
4-173	2	ST	MISCHKOPF	47601.01 15M03
4-174	2	ST	MISCHKOPF	47601.01 15M03
4-175	2	ST	MISCHKOPF	47601.01 15M03
4-176	2	ST	MISCHKOPF	47601.01 15M03
4-177	2	ST	MISCHKOPF	47601.01 15M03
4-178	2	ST	MISCHKOPF	47601.01 15M03
4-179	2	ST	MISCHKOPF	47601.01 15M03
4-180	2	ST	MISCHKOPF	47601.01 15M03
4-181	2	ST	MISCHKOPF	47601.01 15M03
4-182	2	ST	MISCHKOPF	47601.01 15M03
4-183	2	ST	MISCHKOPF	47601.01 15M03
4-184	2	ST	MISCHKOPF	47601.01 15M03
4-185	2	ST	MISCHKOPF	47601.01 15M03
4-186	2	ST	MISCHKOPF	47601.01 15M03
4-187	2	ST	MISCHKOPF	47601.01 15M03
4-188	2	ST	MISCHKOPF	47601.01 15M03
4-189	2	ST	MISCHKOPF	47601.01 15M03
4-190	2	ST	MISCHKOPF	47601.01 15M03
4-191	2	ST	MISCHKOPF	47601.01 15M03
4-192	2	ST	MISCHKOPF	47601.01 15M03
4-193	2	ST	MISCHKOPF	47601.01 15M03
4-194	2	ST	MISCHKOPF	47601.01 15M03
4-195	2	ST	MISCHKOPF	47601.01 15M03
4-196	2	ST	MISCHKOPF	47601.01 15M03
4-197	2	ST	MISCHKOPF	47601.01 15M03
4-198	2	ST	MISCHKOPF	47601.01 15M03
4-199	2	ST	MISCHKOPF	47601.01 15M03
4-200	2	ST	MISCHKOPF	47601.01 15M03
4-201	2	ST	MISCHKOPF	47601.01 15M03
4-202	2	ST	MISCHKOPF	47601.01 15M03
4-203	2	ST	MISCHKOPF	47601.01 15M03
4-204	2	ST	MISCHKOPF	47601.01 15M03
4-205	2	ST	MISCHKOPF	47601.01 15M03
4-206	2	ST	MISCHKOPF	47601.01 15M03
4-207	2	ST	MISCHKOPF	47601.01 15M03
4-208	2	ST	MISCHKOPF	47601.01 15M03
4-209	2	ST	MISCHKOPF	47601.01 15M03
4-210	2	ST	MISCHKOPF	47601.01 15M03
4-211	2	ST	MISCHKOPF	47601.01 15M03
4-212	2	ST	MISCHKOPF	47601.01 15M03
4-213	2	ST	MISCHKOPF	47601.01 15M03
4-214	2	ST	MISCHKOPF	47601.01 15M03
4-215	2	ST	MISCHKOPF	47601.01 15M03
4-216	2	ST	MISCHKOPF	47601.01 15M03
4-217	2	ST	MISCHKOPF	47601.01 15M03
4-218	2	ST	MISCHKOPF	47601.01 15M03
4-219	2	ST	MISCHKOPF	47601.01 15M03
4-220	2	ST	MISCHKOPF	47601.01 15M03
4-221	2	ST	MISCHKOPF	47601.01 15M03
4-222	2	ST	MISCHKOPF	47601.01 15M03
4-223	2	ST		



$\nabla \nabla (\nabla$

Technical drawing of a hexagonal nut. The top view shows a hexagonal shape with a central circular hole. Dimensions include a total height of 8, a hole diameter of $M26 \times 15$, and a thread section height of 2×1 . The bottom view shows the hexagonal base with a diameter of $M33 \times 15$. A callout points to the thread with the text "thread am Gewinde".

$$\nabla(\nabla \nabla)$$

▽▽

Technical drawing of a 90-degree elbow. The drawing shows the side and top views. Key dimensions and features include:

- Overall length: 120
- Overall width: 158
- Radius of the elbow: 60
- Flange thickness: 12
- Flange outer diameter: 142
- Flange inner diameter: 118
- Flange hole diameter: 100
- Flange hole spacing: 158
- Flange hole offset: 24
- Flange hole diameter: 100
- Flange hole spacing: 158
- Flange hole offset: 24
- Flange hole diameter: 100
- Flange hole spacing: 158
- Flange hole offset: 24

 $\sim (\nabla, \nabla \nabla)$

REV	DATE	ALTERED
		CHECKED

-GMS No./ C.B.O.M.- NO.

TUB ORG	TYPE OF PRODUCT	STEAM TURBINE
E	OR	
	NAME OF CUSTOMER/PROJECT	

NAME	SIGN	DATE	NO. OF VAR
DRN ASHOK	SDI-	21.03.2017	
CHD DINESH	SDI-	21.03.2017	

DEPT STE		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
CODE 1011		N.T.S.	70.0			

CODE 4011					DRAWING NO.	76 77
TITLE:	STUD HEATING AND MEASURING DEVICE				CARD CODE	1-12015-56600 22 23 24

A1 SIZE

DRG, NO. 1-12015-56600

Gas Heating Device for prestressing Bolted Joints

To prestress a bolted joint, the bolts are first heated with the gas heating device, which causes them to expand. The nuts are then screwed down by hand to a predetermined position. As the bolts cool they contract, and by measuring the actual extension under load the prestressing of the joint can be accurately determined.

Basically, the gas heating device consists of a heating tube, a clamping device, and a mixing chamber complete with supply pipes. It uses a flammable mixture of gas and oxygen (e.g. acetylene and oxygen) and compressed air.

The heating tube is inserted into the hole bored through the bolt, where it is held in a central position by the clamping device. The flame of the burning gas/oxygen mixture in the mixing chamber is surrounded by compressed air. This high temperature mixture flows through the heating tube, is reversed by the bottom of the blind hole in the bolt and flows back up between the outside of the heating tube and the sides of the hole in the bolt to emerge at the end of the bolt. Assuming that the instructions given in paragraphs 4.4 and 4.5 are correctly carried out, this arrangement prevents any local overheating of the material.

The gas heating device can be used on any bolt having a bore of 20, 25, 32 or 35 mm. Two bolts may be heated simultaneously.

4.1 In order that the extension of the bolt may be determined after prestressing has been carried out, the measurement described in para. 6 must be taken before heating commences.

4.2 Depending on the case in hand, the heating device is to be assembled as shown in Figs. 1 to 3. When inserting the rigid tube of the heating device in the heating bore as per Fig. 1, hold the tube so that its end is 50 to 80 mm from the base of the bore by means of the clamping device (split clamp ring and union nut). If the heating bore is so deep that the tube is not long enough establish this gap by welding on a suitable length of extension tube, machining the weld bulge down until flush with the outer circumference of the tube.

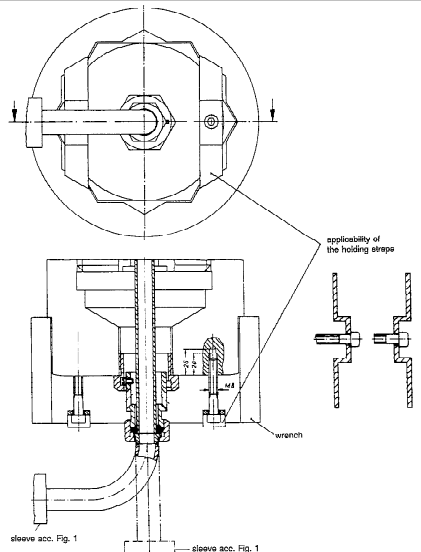
Where flexible heating tubes are used as shown in Fig. 2, establish the gap between the end of the tube and the base of the bore by shortening the tubes.

4.3 The diffuser tips are then screwed to welding blowtorches. The following are the various sizes of nozzles for the various sizes of heating tubes and both heating holes:

Tips mm	Acc. heating tube mm	Bolt heating hole mm
Size 0 to 0	16 dia. \pm 2.5	20 dia
Size 0 to 14	20 dia \pm 2.5	26 dia
Size 14 to 30	26 dia \pm 2.5	32 dia
Size 20 to 30	26.9 dia \pm 2.9	36 dia

Continued on Page 2 to 6

E-M-TN 03370 Page 1
08.93



Clamping device, when the heating device is used from below or from the side (for heating hole $\varnothing 20$ and 25 mm only)

E-M-TN 03370 Page
035,373

E-M-TN 03370 Page 2
08.03

from above
at heating holes

depth gauge

measuring sleeve

contouring washer

adjusting ring to press the spring

measuring rod elements screwed

from below
heating holes 20 and 26

E-M-TN 03370 Page 0000

- 4.4 After the flame has been ignited it should be adjusted to produce a fairly weak appearance about midway between a welding flame and a pure heating flame.
- 4.5 Insert the welding torch prepared as specified in Sections 4.3 and 4.4 in the mixer nozzle (see Fig. 1). Then turn on the compressed air, regulating it so that the heating tube burns dark cherry red but no lighter by observing it through the ports in the sleeve (below the union nut).

If a hole is made of the air pressure used during the heating of the first bolt it can be taken as a guide for the heating of other bolts having the same diameter hole and similar depth. The air pressure must be reduced, if the flame is blown out and great care must be taken to scavenge the hole thoroughly with compressed air to remove any remaining gas before the flame is reignited.

5.1 Access from above

6.1.1 If the bolt is accessible from above and there is sufficient clearance to insert the device with the ngin heating tube already screwed into position, then the standard arrangement shown in Fig. 1 can be used.

6.1.2 If the bolt is accessible from above but there is insufficient clearance to permit the introduction of the device in its standard form as shown in Fig. 1, then the arrangement shown in Fig. 2, which uses a flexible tube, and tube bend must be employed.

5.2 Access from below or from the side

If the bolt is accessible from below or from the side, the heating device must be used with the clamping device as shown in Fig. 3. The ring spanner is fixed by means of two clamps and two socket head cap screws, which are screwed into the head of the nut. The clamping device can only be used on 20 and 21 mm dia bolt heating holes.

The measuring device comprises a measuring rod, a sleeve and a depth gauge. The measuring rod is composed of measuring elements, in order to measure the extension of screws by restricted assembly space above the nut.

The measuring rod is centered by washers, which are positioned between the screwed measuring rod elements. Using the fitting washer appropriate for the various diameters of the heating hole. To measure, the measuring rod is inserted into the hole of the screw by a magnet. A 5 mm deep recess is turned into the end of the screw to locate the measuring sleeve.

With the depth gauge, the distance between the top of the measuring rod and the top of the sleeve is measured. To determine the actual antenna, this measurement is to carry out before heating and is to be repeated after heating, when the screw has cooled down. The difference between the two measurements is equal to the actual linear extension of the screw (see Fig. 4).

If relaxation measurements will be necessary, they must always be performed with one and the same measuring device.

Gas-oxygen mixture

This holding device is not provided for all types

split clamp ring

sleeve

This part is inappropriate for some types (see bill of material)

union nut

heating tube

Fig. 1

Clamping device by entering the heating device from above when assembly space is sufficient.

E-M-TN 03370 Page 3
09/83

Fig. 2

Clamping device by entering the heating device from above, when assembly space is restricted.

E-M-TN 03370 Page 4
08.03

from above
at heating holes

depth gauge

measuring sleeve

contouring washer


adjusting ring to press the spring

measuring rod elements screwed

from below
heating holes 20 and 26

E-M-TN 03370 Page 0000

COMMON PARTS FOR HEATING BORE (HOLE) 20, 25 & 32

C.B.O.M. No.				STATUS OF DRG				TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT										STEAM TURBINE																																																							
<table><tr><th>ISSUED</th><th>NAME</th><th>SIZE</th><th>DATE</th></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></table>				ISSUED	NAME	SIZE	DATE					<table><tr><th>NAME</th><th>SIZE</th><th>DATE</th><th>NO. OF PAGES</th></tr><tr><td>DRN ASHOK</td><td><3D></td><td>21.03.2017</td><td> </td></tr><tr><td>DRN DINCH</td><td><3D></td><td>21.03.2017</td><td> </td></tr><tr><td>APP'D DEVARA</td><td><3D></td><td>21.03.2017</td><td> </td></tr></table>										NAME	SIZE	DATE	NO. OF PAGES	DRN ASHOK	<3D>	21.03.2017		DRN DINCH	<3D>	21.03.2017		APP'D DEVARA	<3D>	21.03.2017												<table><tr><th>DEPT</th><th>STE</th><th>SCALE</th><th>WEIGHT</th><th>KG</th><th>REF. TO ASSY. DRG.</th><th>ITEM NO.</th><th>NO. OF ITEMS</th></tr><tr><td>CODE 4011</td><td> </td><td>N.T.S</td><td>70.0</td><td> </td><td> </td><td> </td><td> </td></tr></table>										DEPT	STE	SCALE	WEIGHT	KG	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS	CODE 4011		N.T.S	70.0				
ISSUED	NAME	SIZE	DATE																																																																						
NAME	SIZE	DATE	NO. OF PAGES																																																																						
DRN ASHOK	<3D>	21.03.2017																																																																							
DRN DINCH	<3D>	21.03.2017																																																																							
APP'D DEVARA	<3D>	21.03.2017																																																																							
DEPT	STE	SCALE	WEIGHT	KG	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS																																																																		
CODE 4011		N.T.S	70.0																																																																						
GRADE OF UNTOLDIM M/C# A002500B M/C# A002501A GAS CUTTING T9A0062110				REV. DATE ALTERED CHECKED REV. DATE ALTERED CHECKED				TITLE STUD HEATING AND MEASURING DEVICE CARD CODE 7 DRAWING NO. 1-12015-56600										SHEET No. 03 NO. OF SHEETS 13 REF. SEC. 14 41 577																																																							


SIZE

DRG, NO. 1-12015-56600

Steam Turbine

Contents

Two heaters are provided for simultaneous heating of two bolts.

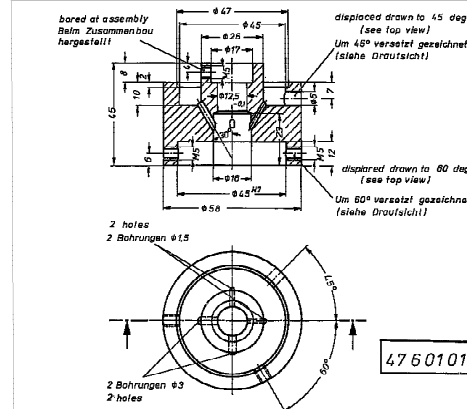
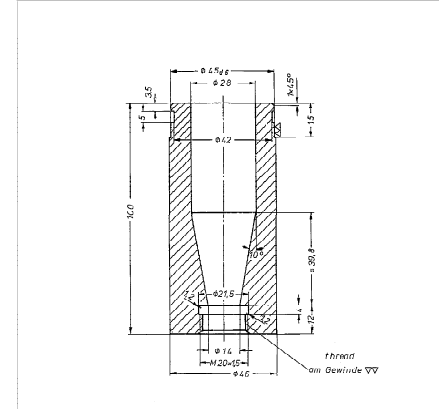
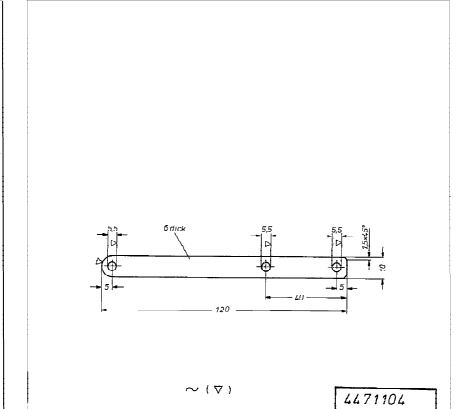
- A Claws for G1/4" external thread coupling
- B Gate valves V1+4"
- C Fuel gas hoses 8' length - 0.6 m, with connectors
- D Pressure measuring instruments with T- and union fittings
- E Measuring heads with tubes, diameter 40 mm
- F Carbon gauge A146
- G Measuring rod, 20 mm length
- H Measuring rod, 50 mm length
- I Measuring rod, 100 mm length
- J Measuring rods, each 200 mm length
- K Wrenches for twisting the measuring rods in the heating bore
- L Crepan-hair pin (thermal)
- M Description MT N 03720
- N Reducers, from M20 to 1.5 to M18 x 1.5
- O Pipes 10 mm diameter + 2.9 x 4.42 (length)
- P Sleeves (centering diameter 35 mm) with union nut and clamp ring
- Q Washers for centering the measuring rods, for 20 mm heating bore diameter
- R Sleeve 3.5 x 24 (diameter) x 80 mm (for measurement)
- S Nozzle, size 6 (B = 9 mm) for connection with heating tube, with clamping and mounting bands
- T Elbow with weld-on bushing (fabricated from 16, 20 p pipe)
- U Clamp rings (elbows)
- V Metal hoses, length 1000 (conjugated) to 20 mm diameter heating bore
- X Pipes 20 mm $\pm 2.9 \times 4.40$ (length)
- Y Sleeves (centering diameter 35 mm) with union nut and clamp ring
- Z Washers for centering the measuring rods, heating bore diameter 25 mm
- AA Sleeve 3.5 x 16 (diameter) x 110 (mm) for measurement
- AB Nozzles, size 6 (B = 11 mm) for connection with heating tube
- AC Elbow with weld-on bushing (fabricated from 16, 20 p pipe)
- AD Clump claws (elbows)
- AE Metal hoses, length 1000 (conjugated) to 25 mm diameter heating bore
- AF Mounting brackets 
- AG Hexagon threaded heat exchanger M20 x 40 and 4 screws M6 x 30
- AH Cylindrical compression spring and 1 adjusting ring for loosening the spring when performing measurement from below, for 20 mm diameter heating hose
- AI Threaded sleeve M20 x 1.5 for heating from below
- AJ Threaded bushings Hx3 Hx5 1.5 for fastening from below
- AK Cylindrical compression spring and 1 adjusting ring for loosening the spring when performing measurement from above, for 25 mm diameter heating bore
- AL Threaded sleeves M20 x 1.5 for heating from below
- AM Threaded bushings M46 x 1.5 for heating from below

The following parts are provided for each heating bore:

<u>Heating bore 20 mm diameter TUN 01440.2</u>	<u>Heating bore 25 mm diameter TUN 01440.2</u>
Type 1: all parts listed under A and B	Type 1: all parts listed under A and D
Type 2: all parts listed under A, B and C	Type 2: all parts listed under A, D and E
Type 3: all parts listed under A, B, C, F and G	Type 3: all parts listed under A, D, E, F and H

Siemens AG
Energieerzeugung (KWK)

E-M-TN 0337-
07.93

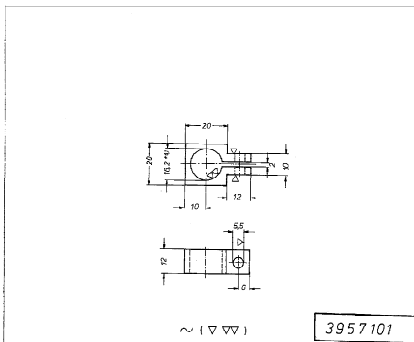
[illegible][illegible]

Verkehrsamt des SAH 01/02
 auf: Abgabefahrer

Nr. 1
 Fahrer 1
 Fahrer 2
 Fahrer 3
 Fahrer 4
 Fahrer 5
 Fahrer 6
 Fahrer 7
 Fahrer 8
 Fahrer 9
 Fahrer 10
 Fahrer 11
 Fahrer 12
 Fahrer 13
 Fahrer 14
 Fahrer 15
 Fahrer 16
 Fahrer 17
 Fahrer 18
 Fahrer 19
 Fahrer 20
 Fahrer 21
 Fahrer 22
 Fahrer 23
 Fahrer 24
 Fahrer 25
 Fahrer 26
 Fahrer 27
 Fahrer 28
 Fahrer 29
 Fahrer 30
 Fahrer 31
 Fahrer 32
 Fahrer 33
 Fahrer 34
 Fahrer 35
 Fahrer 36
 Fahrer 37
 Fahrer 38
 Fahrer 39
 Fahrer 40
 Fahrer 41
 Fahrer 42
 Fahrer 43
 Fahrer 44
 Fahrer 45
 Fahrer 46
 Fahrer 47
 Fahrer 48
 Fahrer 49
 Fahrer 50
 Fahrer 51
 Fahrer 52
 Fahrer 53
 Fahrer 54
 Fahrer 55
 Fahrer 56
 Fahrer 57
 Fahrer 58
 Fahrer 59
 Fahrer 60
 Fahrer 61
 Fahrer 62
 Fahrer 63
 Fahrer 64
 Fahrer 65
 Fahrer 66
 Fahrer 67
 Fahrer 68
 Fahrer 69
 Fahrer 70
 Fahrer 71
 Fahrer 72
 Fahrer 73
 Fahrer 74
 Fahrer 75
 Fahrer 76
 Fahrer 77
 Fahrer 78
 Fahrer 79
 Fahrer 80
 Fahrer 81
 Fahrer 82
 Fahrer 83
 Fahrer 84
 Fahrer 85
 Fahrer 86
 Fahrer 87
 Fahrer 88
 Fahrer 89
 Fahrer 90
 Fahrer 91
 Fahrer 92
 Fahrer 93
 Fahrer 94
 Fahrer 95
 Fahrer 96
 Fahrer 97
 Fahrer 98
 Fahrer 99
 Fahrer 100

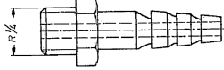
Fahrer 101
 Fahrer 102
 Fahrer 103
 Fahrer 104
 Fahrer 105
 Fahrer 106
 Fahrer 107
 Fahrer 108
 Fahrer 109
 Fahrer 110
 Fahrer 111
 Fahrer 112
 Fahrer 113
 Fahrer 114
 Fahrer 115
 Fahrer 116
 Fahrer 117
 Fahrer 118
 Fahrer 119
 Fahrer 120
 Fahrer 121
 Fahrer 122
 Fahrer 123
 Fahrer 124
 Fahrer 125
 Fahrer 126
 Fahrer 127
 Fahrer 128
 Fahrer 129
 Fahrer 130
 Fahrer 131
 Fahrer 132
 Fahrer 133
 Fahrer 134
 Fahrer 135
 Fahrer 136
 Fahrer 137
 Fahrer 138
 Fahrer 139
 Fahrer 140
 Fahrer 141
 Fahrer 142
 Fahrer 143
 Fahrer 144
 Fahrer 145
 Fahrer 146
 Fahrer 147
 Fahrer 148
 Fahrer 149
 Fahrer 150
 Fahrer 151
 Fahrer 152
 Fahrer 153
 Fahrer 154
 Fahrer 155
 Fahrer 156
 Fahrer 157
 Fahrer 158
 Fahrer 159
 Fahrer 160
 Fahrer 161
 Fahrer 162
 Fahrer 163
 Fahrer 164
 Fahrer 165
 Fahrer 166
 Fahrer 167
 Fahrer 168
 Fahrer 169
 Fahrer 170
 Fahrer 171
 Fahrer 172
 Fahrer 173
 Fahrer 174
 Fahrer 175
 Fahrer 176
 Fahrer 177
 Fahrer 178
 Fahrer 179
 Fahrer 180
 Fahrer 181
 Fahrer 182
 Fahrer 183
 Fahrer 184
 Fahrer 185
 Fahrer 186
 Fahrer 187
 Fahrer 188
 Fahrer 189
 Fahrer 190
 Fahrer 191
 Fahrer 192
 Fahrer 193
 Fahrer 194
 Fahrer 195
 Fahrer 196
 Fahrer 197
 Fahrer 198
 Fahrer 199
 Fahrer 200

Fahrer 201
 Fahrer 202
 Fahrer 203
 Fahrer 204
 Fahrer 205
 Fahrer 206
 Fahrer 207
 Fahrer 208
 Fahrer 209
 Fahrer 210
 Fahrer 211
 Fahrer 212
 Fahrer 213
 Fahrer 214
 Fahrer 215
 Fahrer 216
 Fahrer 217
 Fahrer 218
 Fahrer 219
 Fahrer 220
 Fahrer 221
 Fahrer 222
 Fahrer 223
 Fahrer 224
 Fahrer 225
 Fahrer 226
 Fahrer 227
 Fahrer 228
 Fahrer 229
 Fahrer 230
 Fahrer 231
 Fahrer 232
 Fahrer 233
 Fahrer 234
 Fahrer 235
 Fahrer 236
 Fahrer 237
 Fahrer 238
 Fahrer 239
 Fahrer 240
 Fahrer 241
 Fahrer 242
 Fahrer 243
 Fahrer 244
 Fahrer 245
 Fahrer 246
 Fahrer 247
 Fahrer 248
 Fahrer 249
 Fahrer 250
 Fahrer 251
 Fahrer 252
 Fahrer 253
 Fahrer 254
 Fahrer 255
 Fahrer 256
 Fahrer 257
 Fahrer 258
 Fahrer 259
 Fahrer 260
 Fahrer 261
 Fahrer 262
 Fahrer 263
 Fahrer 264
 Fahrer 265
 Fahrer 266
 Fahrer 267
 Fahrer 268
 Fahrer 269
 Fahrer 270
 Fahrer 271
 Fahrer 272
 Fahrer 273
 Fahrer 274
 Fahrer 275
 Fahrer 276
 Fahrer 277
 Fahrer 278
 Fahrer 279
 Fahrer 280
 Fahrer 281
 Fahrer 282
 Fahrer 283
 Fahrer 284
 Fahrer 285
 Fahrer 286
 Fahrer 287
 Fahrer 288
 Fahrer 289
 Fahrer 290
 Fahrer 291
 Fahrer 292
 Fahrer 293
 Fahrer 294

[illegible]

COMMON PARTS FOR HEATING BORE (HOLE) 20, 25 & 32

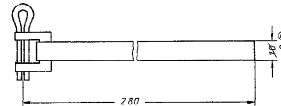
C.B.M. No.				STATUS OF Dwg		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				STEAM TURBINE			
ISSUED BY		NAME		SIGN		DATE							
GRADE OF UNTOLD DIM													
M/CG - AAC23020													
WELDING - AAC2104													
CNS - CUTTING - TS - AAC01110													
REV		DATE		ALTERED		CHECKED		DEPT		SCALE		WEIGHT KG	
								CODE 4011		N.T.S.		REF. TO ASSY. DRG.	
								TITLE		STUD HEATING AND MEASURING DEVICE		DRAWING NO. 1-12015-56600	
								CARD CODE		SHEET No. 04		NO. OF SHEETS 13	



Werkstoff: Stahl, verzinkt	Material: steel, galvanized
Lieferant: Fa. Heinz Runde	Mfg: Heinz Runde in Neukirchen-Vluyn
Lichte Schlauchweite 10	inside width 10
Bestell-Nr.: A. G. R 1 1/4"	order no.: A.G. R 1 1/4"
G 14 - 91	G 14 - 91

4

47111-0055



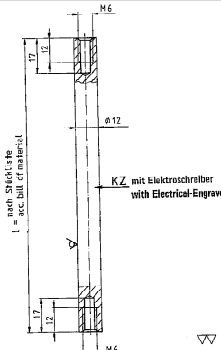
47106-0026

Material: steel
Werkstoff: Stahl

AS				
B	a	09.91	Lohrstein	Weiß, Maß 10 in 9 geändert

S	geprüft	10.1.78	<i>K. Schumann</i>	TN	280	hose clip	Benr
	geprüft		<i>fr</i>				
*	Kraftwerk Union Werk München	A4	07	47106-0026			2

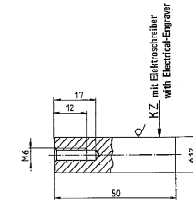
Seitenabstandung nach S'ichteile siehe MÜ054.3/I		Abstandsflächen für Eigene Personen mitten DIN 7680 Grenzfläche derbe MUN 251.4/I Schwefelreihe MÜ251.01.03		auf. Rauhiefe für Oberflächen: MÜN054.3/I $\nabla \nabla \nabla \geq 24 \mu m \quad \nabla \nabla \nabla \geq 16 \mu m \quad \nabla \nabla \nabla$ VSS = berechnessritten nach MUN 351.4/I											
TN	FY														
		An Verlagsformen gegebene Unterlegungen													
E		A	R	C	O	F	F	G	H	J	K				
		Ans d. ...													



0500 - 1114

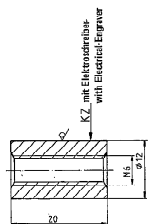
W (✓)

Kennzeichnung nach KUN 107.01 an mit KZ. bezeichneter Stelle Identification according to KUN 107.01 at the place indicated with KZ.

[illegible][illegible]

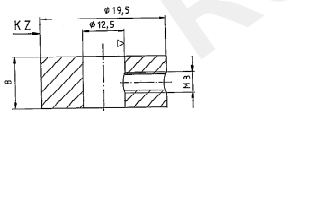
W (✓)

Kennzeichnung nach KUN 107.01 an mit KZ bezahlener Stelle Identification according to KUN 107.01 at the place indicated with KZ

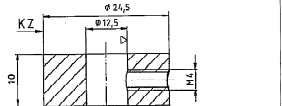
[illegible][illegible]

W (✓)

Kennzeichnung nach KUN 107.01 an mit KZ bezeichneter Stelle. Identification according to KUN 107.01 at the place indicated with KZ.

[illegible][illegible] $\nabla \nabla \quad (\nabla)$

Kennzeichnung nach KUN 107.01 an mit KZ bezeichneter Stelle Identification according to KUN 107.01 at the place indicated with K

[illegible][illegible] $\nabla \nabla \mid \nabla$

Kennzeichnung nach: KUN 107.01 an der KZ- bezeichneter Stelle Identification according to KUN 107.01 at the place indicated with KZ

Infer	Datum Date	Name	Gepäck Baggage
<i>Konferenzschiffbauingenieur / Fabrication of Cargo</i>			
<i>Grund / Reason</i>			

[illegible]

COMMON PARTS FOR HEATING BORE (HOLE) 20, 25 & 32

-GMS-No./C.B.O.M.-N

TYPE OF PRODUCT	STEAM TURBINE
OR	
NAME OF CUSTOMER/PROJECT	

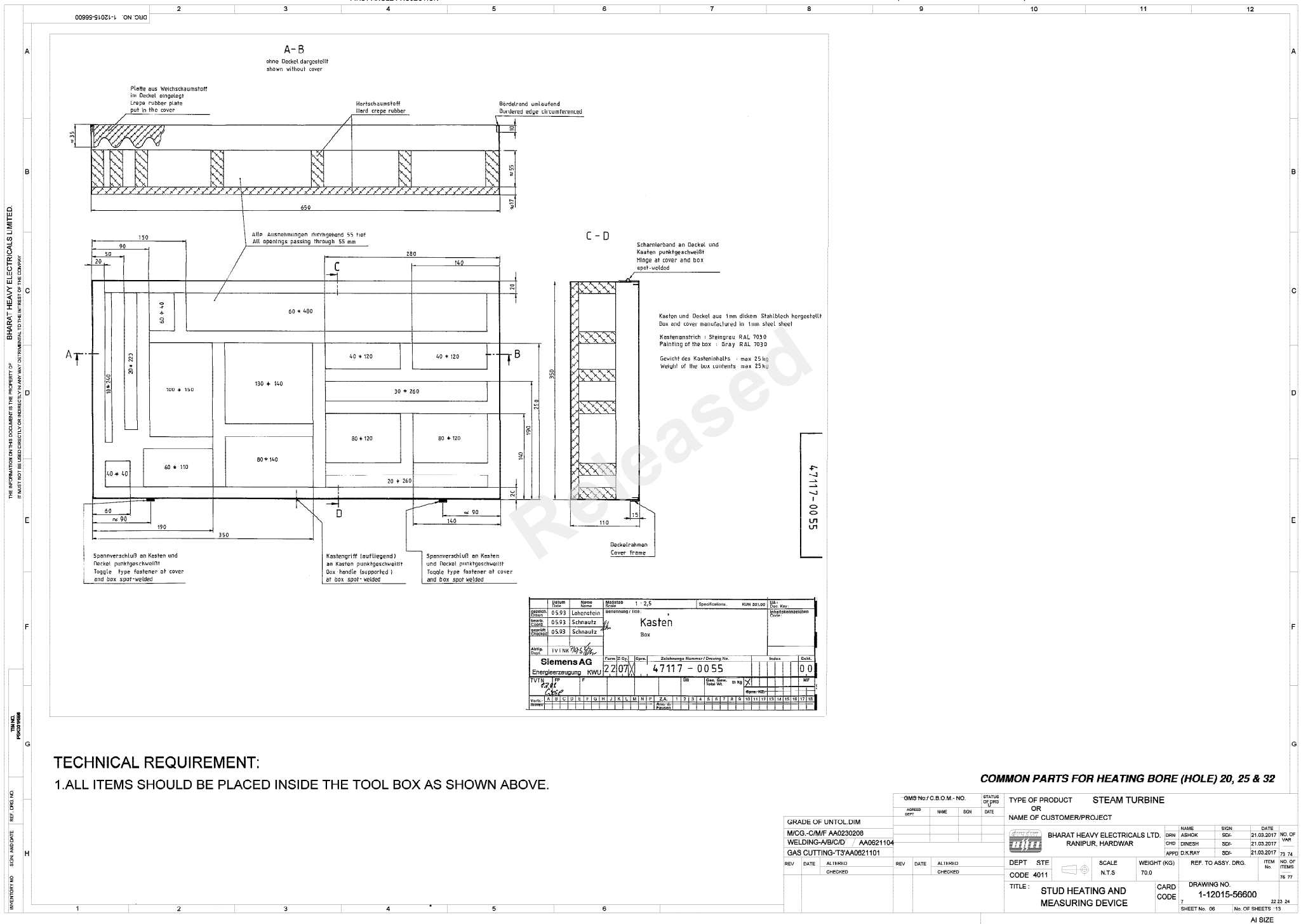
	BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR	
--	---	--

DEPT	STE		SCALE
CODE	4011		N.T.3
TITLE: STUD HEATING AND MEASURING DEVICE			

NAME	SIGN	DATE	NO. OF VAR
ASHOK	SD/-	21.03.2017	
DINESH	SD/-	21.03.2017	
□ K RAY	SD/-	21.03.2017	73 74
REF. TO ASSY. DRG.		ITEM No.	NO. OF ITEMS
			75 77

DRAWING NO.		75 77
1-12015-56600		
7		22 23 24
SHEET No. 05		No. OF SHEETS : 13


AI SIZE



TECHNICAL REQUIREMENT:

1.ALL ITEMS SHOULD BE PLACED INSIDE THE TOOL BOX AS SHOWN ABOVE.

COMMON PARTS FOR HEATING BORE (HOLE) 20, 25 & 32

OMS NO / C.B.O.M. - NO.				STATUS OF PRG		TYPE OF PRODUCT OR				STEAM TURBINE				
AGRD OFF				NAME		SIGN		DATE		NAME OF CUSTOMER/PROJECT				
GRADE OF UNTOL.DIM														
M/C - C/M/F AA0230208														
WELDING - A/B/C/D / AA0621104														
GAS CUTTING - T3-AA0621101														
REV	DATE	ALTERED	ALTRIED	REV	DATE	ALTERED	ALTRIED	DEPT	STE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
		CHECKED	CHECKED					CODE 4011		N.T.S	70.0			
TITLE :								STUD HEATING AND MEASURING DEVICE				CARD CODE		
												DRAWING NO.		
												7 1-12015-56600		
												SHEET No. 06		22 23 24
												No. OF SHEETS : 13		
												A1 SIZE		

0099510201 ON OHK

2

3

② Nacharbeit am Schweißbrenner - Mundstück: der Größe 5 (8 bis 9 mm) Zeichnungs-Nr. 47111 - 0051
und der Größe 6 (9 bis 14 mm) Zeichnungs-Nr. 47111 - 0052

② refinishing of the welding torch - mouth piece: Sch. 5 (8 up to 9mm) drawing 47111 - 0051
Sch. 6 (9 up to 14 mm) drawing 47111 - 0052

4810201

A	B	C	D	E	F	G	H	I	K
1									
b 21278 Schnout Zeichnungs-Nr. des Schweißbrenner-Mundstückes nacharbeitend									
Größengabe der Schweißbrenner-Mundstücke verworfen									
Index 5001-005									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 3

am Gewinde $\nabla \nabla$
im Thread

6080201

$\nabla \quad (\nabla \nabla)$

Werkstoff und Vorgefertigteile: 6080201, 6080202, 6080203, 6080204, 6080205, 6080206, 6080207, 6080208, 6080209, 6080210, 6080211, 6080212, 6080213, 6080214, 6080215, 6080216, 6080217, 6080218, 6080219, 6080220, 6080221, 6080222, 6080223, 6080224, 6080225, 6080226, 6080227, 6080228, 6080229, 6080230, 6080231, 6080232, 6080233, 6080234, 6080235, 6080236, 6080237, 6080238, 6080239, 6080240, 6080241, 6080242, 6080243, 6080244, 6080245, 6080246, 6080247, 6080248, 6080249, 6080250, 6080251, 6080252, 6080253, 6080254, 6080255, 6080256, 6080257, 6080258, 6080259, 6080260, 6080261, 6080262, 6080263, 6080264, 6080265, 6080266, 6080267, 6080268, 6080269, 6080270, 6080271, 6080272, 6080273, 6080274, 6080275, 6080276, 6080277, 6080278, 6080279, 6080280, 6080281, 6080282, 6080283, 6080284, 6080285, 6080286, 6080287, 6080288, 6080289, 6080290, 6080291, 6080292, 6080293, 6080294, 6080295, 6080296, 6080297, 6080298, 6080299, 6080300, 6080301, 6080302, 6080303, 6080304, 6080305, 6080306, 6080307, 6080308, 6080309, 6080310, 6080311, 6080312, 6080313, 6080314, 6080315, 6080316, 6080317, 6080318, 6080319, 6080320, 6080321, 6080322, 6080323, 6080324, 6080325, 6080326, 6080327, 6080328, 6080329, 6080330, 6080331, 6080332, 6080333, 6080334, 6080335, 6080336, 6080337, 6080338, 6080339, 6080340, 6080341, 6080342, 6080343, 6080344, 6080345, 6080346, 6080347, 6080348, 6080349, 6080350, 6080351, 6080352, 6080353, 6080354, 6080355, 6080356, 6080357, 6080358, 6080359, 6080360, 6080361, 6080362, 6080363, 6080364, 6080365, 6080366, 6080367, 6080368, 6080369, 6080370, 6080371, 6080372, 6080373, 6080374, 6080375, 6080376, 6080377, 6080378, 6080379, 6080380, 6080381, 6080382, 6080383, 6080384, 6080385, 6080386, 6080387, 6080388, 6080389, 6080390, 6080391, 6080392, 6080393, 6080394, 6080395, 6080396, 6080397, 6080398, 6080399, 6080400, 6080401, 6080402, 6080403, 6080404, 6080405, 6080406, 6080407, 6080408, 6080409, 6080410, 6080411, 6080412, 6080413, 6080414, 6080415, 6080416, 6080417, 6080418, 6080419, 6080420, 6080421, 6080422, 6080423, 6080424, 6080425, 6080426, 6080427, 6080428, 6080429, 6080430, 6080431, 6080432, 6080433, 6080434, 6080435, 6080436, 6080437, 6080438, 6080439, 6080440, 6080441, 6080442, 6080443, 6080444, 6080445, 6080446, 6080447, 6080448, 6080449, 6080450, 6080451, 6080452, 6080453, 6080454, 6080455, 6080456, 6080457, 6080458, 6080459, 6080460, 6080461, 6080462, 6080463, 6080464, 6080465, 6080466, 6080467, 6080468, 6080469, 6080470, 6080471, 6080472, 6080473, 6080474, 6080475, 6080476, 6080477, 6080478, 6080479, 6080480, 6080481, 6080482, 6080483, 6080484, 6080485, 6080486, 6080487, 6080488, 6080489, 6080490, 6080491, 6080492, 6080493, 6080494, 6080495, 6080496, 6080497, 6080498, 6080499, 6080500, 6080501, 6080502, 6080503, 6080504, 6080505, 6080506, 6080507, 6080508, 6080509, 6080510, 6080511, 6080512, 6080513, 6080514, 6080515, 6080516, 6080517, 6080518, 6080519, 6080520, 6080521, 6080522, 6080523, 6080524, 6080525, 6080526, 6080527, 6080528, 6080529, 6080530, 6080531, 6080532, 6080533, 6080534, 6080535, 6080536, 6080537, 6080538, 6080539, 6080540, 6080541, 6080542, 6080543, 6080544, 6080545, 6080546, 6080547, 6080548, 6080549, 6080550, 6080551, 6080552, 6080553, 6080554, 6080555, 6080556, 6080557, 6080558, 6080559, 6080560, 6080561, 6080562, 6080563, 6080564, 6080565, 6080566, 6080567, 6080568, 6080569, 6080570, 6080571, 6080572, 6080573, 6080574, 6080575, 6080576, 6080577, 6080578, 6080579, 6080580, 6080581, 6080582, 6080583, 6080584, 6080585, 6080586, 6080587, 6080588, 6080589, 6080590, 6080591, 6080592, 6080593, 6080594, 6080595, 6080596, 6080597, 6080598, 6080599, 6080600, 6080601, 6080602, 6080603, 6080604, 6080605, 6080606, 6080607, 6080608, 6080609, 6080610, 6080611, 6080612, 6080613, 6080614, 6080615, 6080616, 6080617, 6080618, 6080619, 6080620, 6080621, 6080622, 6080623, 6

4818101

▽▽(▽)

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> AIRCRAFT MILITARY </div>			
No.	Part Name	By	By Inspector
22.12.71	Ueberwurfmutter
22.12.71	Ueberwurfmutter
22.12.71	Ueberwurfmutter
Kraftschweiß Union Verein Industrie		At 02	4818101
Dr. Nr.		Zeichn. Nr.	
4818101		4818101	
Detail von:		Detail nach:	
Maßstab: 1:1 Maßstab: 1:1 Maßstab: 1:1		Maßstab: 1:1 Maßstab: 1:1 Maßstab: 1:1	
Material: ... Ausführung: ... Bemerkungen: ...		Prüfung: ... Unterschrift: ... Datum: ...	

[illegible]



Technical drawing of a mechanical part, likely a valve or plug, with dimensions and a cross-section. The drawing shows a cylindrical body with a central hole and a flange. Dimensions include diameters (H26x15, Ø 21, Ø 10, Ø 21,7, Ø 24), radii (R6,5, R10), and lengths (75, 20, 54, 934). A note indicates "KZ mit Elektroschreiber" (KZ with electro-writer).

Below the drawing is a table with fields for "Anker", "Hülse", "Schiebe", and "Kraftwerk Union Werk Mühlheim". The table also contains a section for "Eigenschaften" (Properties) with a list of characteristics and a section for "Material" (Material) with a list of materials.

The drawing is signed "H. U. 10" and dated "19.11.75".

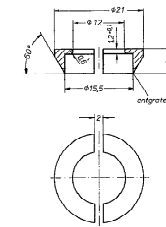
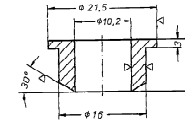
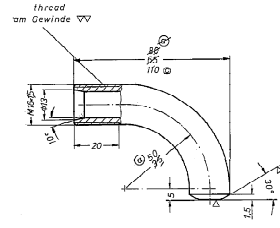
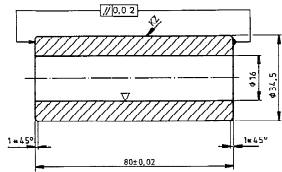
[illegible]

ADDITIONAL PARTS FOR HEATING BORE (HOLE) 20

GMS NO / C.B.O.M. - NO.				STATUS OF PRG		TYPE OF PRODUCT OR STEAM TURBINE			
AGRD OFF		NAME	SIGN	DATE		NAME OF CUSTOMER/PROJECT			
GRADE OF UNTOLD DIM						 BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR			
M/C/G-C/M/F-AA0230208						NAME	SIGN	DATE	
WELDING-B/W/C/D AA0621104						DRM	ASHOK	SD/-	21.03.2017
GAS CUTTING-T3AA0621101						CD	DINESH	SD/-	21.03.2017
						APPD	D.K.RAY	SD/-	21.03.2017
REV	DATE	ALTERED	REVIEWED	DATE	ALTERED	REF. TO ASSY. DRG.			
		CHECKED			CHECKED	ITEM No.			
						DEPT	STE	SCALE	WEIGHT (KG)
						CODE	4011	N.T.S	70.0
								CARD CODE	DRAWING NO.
						TITLE :		1-12015-56600	
						STUD HEATING AND MEASURING DEVICE		7	
								No. OF SHEETS: 13	
								22.23.24	

FIRST ANGLE PROJECTION

DRG. NO. 1-12015-58600

 $\nabla \nabla (\nabla)$

47 114-0054

6133704

$$\sim (\nabla, \nabla \nabla)$$

▽▽ (▽)

6094727

Kennzeichnung nach KUN 107.01
mit Anhängerkarte

W

THE INFORMATION ON THIS DOCUMENT IS "THE PROPERTY OF" **BHARAT HEAVY ELECTRICALS LIMITED.**
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

TIN NO.
PSKCCCH K9B3




INVENTORY NO.	SIGN. AND DATE	REF. DRG. NO.
---------------	----------------	---------------

ADDITIONAL PARTS FOR HEATING BORE (HOLE) 20

- GMS- No./ C.B.O.M.- NO.

TYPE OF PRODUCT	STEAM TURBINE
OR	
NAME OF CUSTOMER/PROJECT	

GRADE OF UNTOL.DIM
M/C.G.-C/M/F AA0230208
WELDING-A/B/C/D / AA0621104
GAS CUTTING-T3/AA0621101

		BHARAT HEAVY ELECTRICALS LTD. RANIPUR, HARDWAR		NAME ASHOK	SIGN 	DATE 21.03.2017	NO. OF COPIES
		DRN CHD DINESH	DRN 21.03.2017	APPD D.K.RAY	SDO 21.03.2017		NO. OF ITEMS
DEPT CONF 4011		SCALE N.T.S	WEIGHT (KG) 70.0	REF. TO ASSY. DRG.		ITEM No.	NO. OF ITEMS
TITLE: BOLT HEATING DEVICE PARTS BOLT 20 MM		CARD CODE	DRAWING NO. 1-12016-56660			73 74 75 77	
		7	SHEET No. 04		No. OF SHEETS: 23		22 24

AI SIZE



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 1

Page 1 of 12

GAS HEATING DEVICE

1. Description:

"Gas Heating Device" is used during heat-tightening of High Pressure & Intermediate Pressure Turbine joint plane bolts / studs to a predetermined joint pressure. The gas heating device consists of heating tube with clamping device and mixing head with supply pipes. It is used with inflammable gas-oxygen mixture (e.g. acetylene-oxygen) and compressed air. The heating tube is inserted into the bolt bore where it is kept centered by the clamping device. In mixing head, the gas-oxygen flame is surrounded by compressed air. This hot gas mixture flows through the heating tube, is reversed by bottom of the blind hole in the bolt and flows back up between outside of heating tube and the sides of bore in the bolt to emerge at the end of the bolt. (Refer Figure-1)

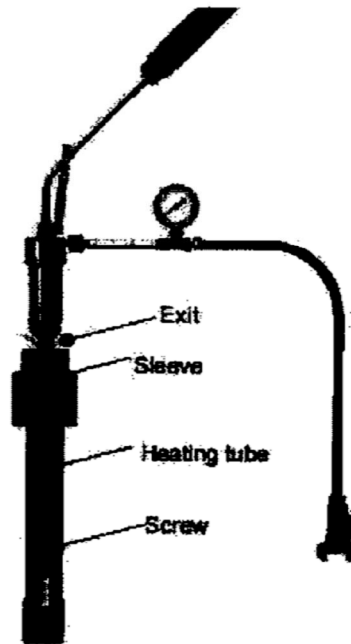


Figure-1

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of Bharat Heavy Electricals Limited.

संरक्षित और गोपनीय
इस दस्तावेज में दी गई सूचना भारत भारती प्रोपर्टी लिमिटेड की सम्पत्ति है इसका प्रयोग एवं प्रकाशन अन्य से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।

दिनांक एवं हस्ताक्षर
SIGN & DATE
04/07/19

सामग्री सूची संख्या
INVENTORY NO.
P-5275

MEMBER-PSC	NEELU GARG	निर्माणकर्ता WORKED BY	ANOOP KUMAR	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
QAX	R.P. Singh	जांचकर्ता CHECKED BY	DINESH L. GOND	19.06.2019
TSX	Sandeep Gupta	समीक्षाकर्ता REVIEWED BY	ALOK KR. SINGH	19.06.2019
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	D. K. RAY
SUPERSEDES			स्वीकृति APPROVED : AGM (STE) S. R. PRASAD	Gr. NO. ST : 8.20
REV.NO.	03	निर्माण PREPARED BY :	जारी ISSUED BY :	दिनांक DATE :
DI	19-06-2019	STE-TE	TSX	09-02-1981
CHANGE ADVICE NO.	STE-19-13			



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

पृष्ठ 12 का 2
Page 2 of 12

PRODUCT STANDARD (HEEP: HARIDWAR)

In order to determine the expansion after pre-stressing, a measurement should be carried out before heating (actual measured length). The heating device is assembled according to the following instruction, depending on the use. When inserting the rigid tube, make sure that a gap of approx. 50-60 mm remains free to the bottom of the bore (Refer Figure-2). If the heating tube is too long, it must be shortened so that the gap is not less than 50 mm. If the bore is deeper than the length of tube at hand, the tube must be lengthened by welding on extensions. The weld bulge must be adapted to tube outside diameter.

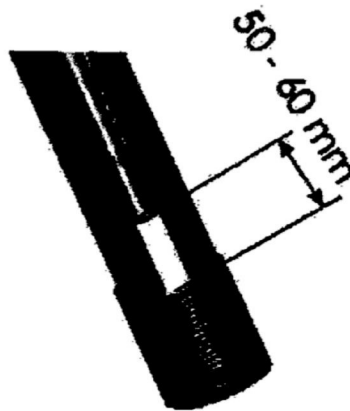


Figure-2

This heating causes elongation of the stud & then the cap nut of corresponding stud is screwed down by a specified amount in hot condition to provide a calculated joint pressure in cold condition.

2. Scope of Work:

- Scope includes designing, manufacturing and supply of gas heating device.
- All associated compressed air piping including a fine regulating valve, pressure gauge & pipe fittings.
- A measuring device for measuring the extension of stud / bolt due to heating.
- Scope of supply shall be as per Type-3 which shall include all the parts specified in Type-2 & Type-1 along with items specified in Type-3 as shown in this Figure 6.

चित्रक एवं हस्ताक्षर
SIGN & DATE

SUPERSEDES
INVENTORY NO.

आवृत्ति पूर्ण वस्तु को
प्रतिस्थापित करना है

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.

भारत भारी बिजली लिमिटेड
इस प्रलेख में दी गई सूचना भारत की एलेक्ट्रिकल लिमिटेड की संपत्ति है। इसका प्रयोग एवं प्रकाशन अन्य से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न सके।

चित्रक एवं हस्ताक्षर
SIGN & DATE

आवृत्ति पूर्ण वस्तु को
INVENTORY NO.

REV. NO. 03

निर्माणकर्ता
WORKED BY

ANOOP KUMAR

Anoop

19-06-2019

जांचकर्ता
CHECKED BY

DINESH L. GOND

Dinesh

19-06-2019

04/07/19

P-5275



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

पृष्ठ 12 का 3
Page 3 of 12

PRODUCT STANDARD (HEEP: HARIDWAR)

e) For more details regarding scope of supply, this standard shall be read along with BHEL drawing no. 1-12015-56600. All item specified in drawing no. 1-12015-56600 shall be considered as scope of supply. For item no. given in Figure 4, 5 & 6 of this standard refer BHEL drawing no. 1-12015-56600.

f) This heating device is a portable unit. Heating should be possible in any of the stud in assembled condition. Hence item should be supplied in carry case / box.

The arrangement shown in drawing (Refer Figure-4, 5 & 6) is for reference purpose. The sole responsibility of mechanical design rests with supplier.

3. Functional Requirement and design information:

- A minimum clear height of 600 mm above the cap nut is available for inserting and removal of the heating device.
- Separate heating arrangement / component is required for each hole size of heating hole in the stud i.e. 20, 25, 32 and 35.
- Design should ensure that vent holes for release of hot gases in outer tube remain open to atmosphere in all operating condition.

4. Functional information:

A typical outline sketch, refer Figure. No.4, 5 & 6 shows general arrangement of gas heating device and Figure No.7 – measuring device for reference purpose.

- Heating source is oxy-acetylene gas.
- Oxy-acetylene torch is ignited outside and then it is inserted in the hole meant for it in the inlet chamber.
- A compressed air piping of suitable size is fixed to inlet chamber. Compressed air inscribes the Oxy-acetylene flame at the exit from inlet chamber and led to a mixing chamber.
- From mixing chamber hot gas mixture is led to heating tube through a bend.

COPYRIGHT AND CONFIDENTIAL
The information on this documents is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.

संस्थापिका एवं गोपनीय
इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसका प्रयोग एवं अपर्याप्त रूप से निती भी तदनु प्रयोग, जो कि संस्थान के हित में हुआ करता हो या किया जाय।

निर्माणकर्ता
WORKED BY
04/07/19

जांचकर्ता
CHECKED BY
D-5275

REV. NO. 03

निर्माणकर्ता
WORKED BYANOOP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BYDINESH L.
GOND

19-06-2019



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 4

Page 4 of 12

- e) Heating tube is held co-axially in the stud hole. End of heating-tube kept at a reasonable distance from end of hole in the stud.
- f) After imparting the heat to the stud, this gas-mixture Traverse back through annulus passage between outer tube & heating tube & released to atmosphere through vent holes in the outer tube.
- g) A fine regulating valve on compressed air pipe line is provided to regulate the compressed air pressure and same is to be read on circular pressure gauge with a range 0 to 20 ata. A proper air pressure ensure that gas mixture reaches hole bottom with a reasonable velocity. This also helps in restricting the exit velocity of hot gases into atmosphere from safety consideration.
- h) An elongation measuring device includes a simple measuring rod, a sleeve and a depth gauge. Readings on the depth gauge showing length of stud are recorded in cold condition before start of heating process, and then after heat tightening again in cold condition. The difference of these reading gives the elongation achieved.

5. Mechanical Design:

- a) The sole responsibility of mechanical design rests with supplier. Construction & material of the device should be robust to withstand thermal cycling and thermal stresses. Device should be easy to install, assemble and disassemble.
- b) Welding if used anywhere in assembly shall be checked for crack & defects. Defects to be rectified.
- c) Due precaution toward operational safety must be taken.
- d) Measuring unit consists of sleeve, depth gauge and measuring rod. Depth gauge should have least count of 0.05 mm. Depth gauge should be in general as per DIN 862. Its scale must be case hardened.

6. Compressed air system:

- a) The hole in the inlet chamber for insertion of heating torch should match with the standard torch shapes without leaving a large clearance or causing insertion problem.

REV. NO. 03

निर्माणाकर्ता
WORKED BYANUP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BYDINESH L.
GOND

19-06-2019

COPYRIGHT AND CONFIDENTIAL
The information on this documents is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.

संस्थापिका एवं गोपनीय
इस प्रवेश से भी नहीं सुनाया जा सकता है। प्रमाणित सिस्टिम की सम्यक् है इसका प्रयोग एवं प्रसारण रूप से किसी भी तरह प्रयोग, जो कि संस्था के हित से हानिकारक हो न किया जाय।

04/07/19
04/07/19

संस्था
INVENTORY NO.
P-5275


निम्नक एवं हस्ताक्षर SIGN & DATE		उत्पाद मानक (हीप : हरिद्वार) PRODUCT STANDARD (HEEP: HARIDWAR)		ST 38007 पृष्ठ 12 का 5 Page 5 of 12	
SUPERSEDES INVENTORY NO. वापसी सूची में दर्ज की अवधि का है	<p>b) A clamping device to hold the heating torch should be provided.</p> <p>c) Regulating valve should be able to give the desired degree of regulation & placed close to heating device.</p> <p>d) Pressure gauge should be able to read the 0.5 ata. difference air pressure.</p> <p>e) In general, there should not be any burr left on any component. Threading done should of high standard for easy assembly & dissemble. Scale should be flat & move vertically upward or downward freely.</p>				
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	<p>7. Identification :</p> <p>Each gas heating device should be designated based on the stud heating hole i.e. 20mm, 25mm, 32mm or 35mm. Outer tube shall also be marked for the heating hole size. Heating tube shall also be punched with the O.D & thickness.</p>				
इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल लिमिटेड की संपत्ति है, इसका उपयोग एवं प्रसारण केवल से किसी भी तरह उपयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	<p>8. Functional Testing & Acceptance:</p> <p>Supplier shall exhibit the suitability of operation of the heating device at BHEL works or at site (to be mutually agreed at enquiry stage). Only after such successful field demonstration device will be finally accepted (if BHEL has already specified this clause in enquiry). This requirement may be waved-off if felt necessary.</p>				
6/1/19 04/07/19	<p>9. Packing & Dispatch:</p> <p>Complete gas heating device shall be dispatched in nicely parted & spaced briefcase / box for avoiding damage during transportation & should be easily carried anywhere. (Refer figure 3)</p>				
वापसी सूची में दर्ज INVENTORY NO. P-5275	REV. NO. 03		निर्माणकर्ता WORKED BY	ANOOP KUMAR	19-06-2019
			जांचकर्ता CHECKED BY	DINESH L. GOND	19-06-2019



Figure-3



उत्पाद मानक (हीप : हरिद्वार)

PRODUCT STANDARD (HEEP: HARIDWAR)

ST 38007

पृष्ठ 12 का 6
Page 6 of 12

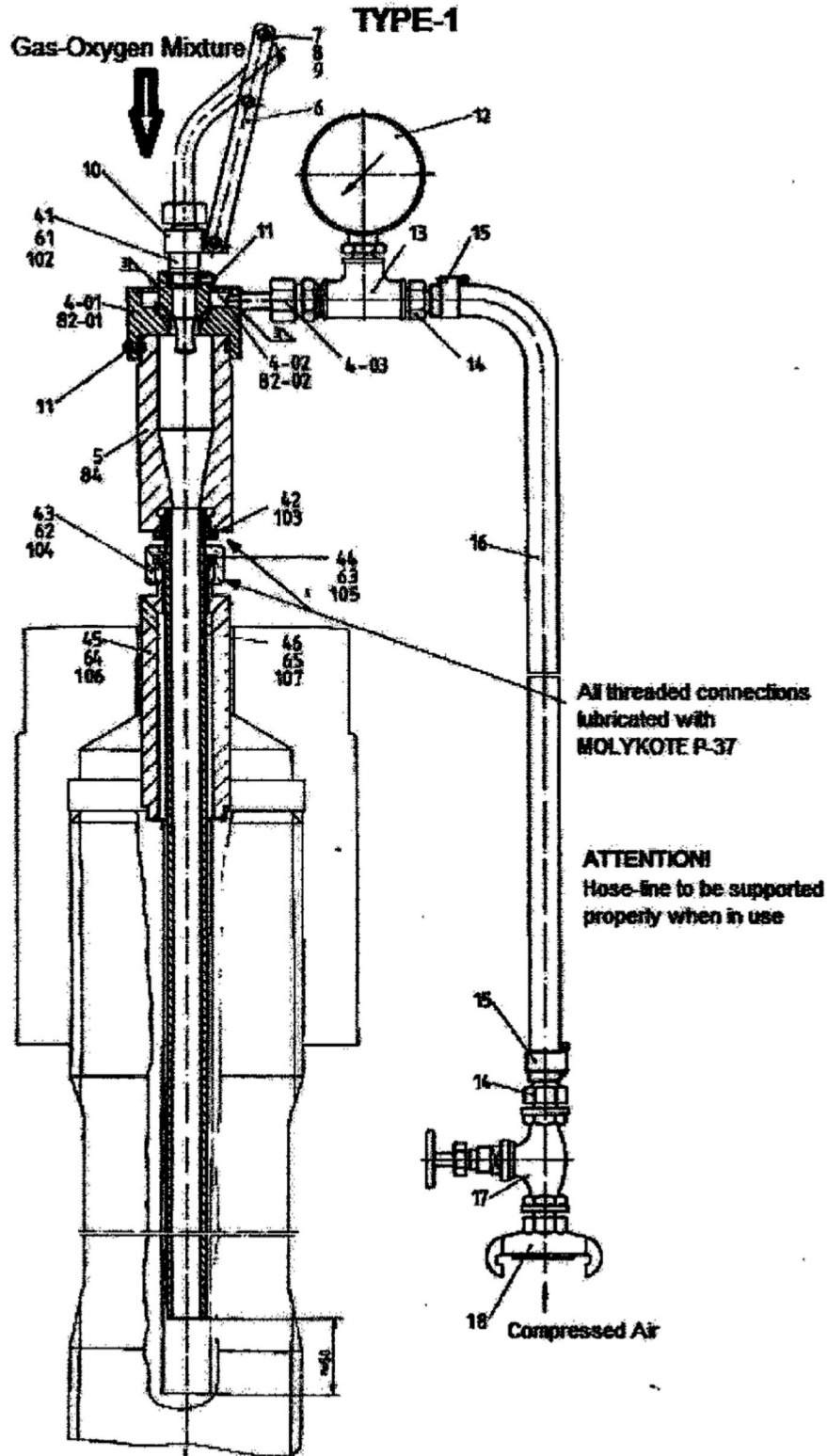


Figure-4 : TYPE - 1

निर्माक एवं हस्ताक्षर
SIGN & DATE

SUPERSEDES
INVENTORY NO.

आवृत्ति सूची संख्या को
अधिकृतित कराई

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

स्वाम्यधिकार एवं गोपनीय
सब प्रलेख में बी गरी सूचना भारत हेवी एलेक्ट्रिकल लिमिटेड की
सम्पत्ति है इसका प्रयोग एवं अनावरण अन्य से किसी भी तरह प्रयोग
को कि कंपनी के हित में हानिकारक हो न सिया जाए।

निर्माक एवं हस्ताक्षर
SIGN & DATE

आवृत्ति सूची संख्या
INVENTORY NO.

REV. NO. 03

निर्माणकर्ता
WORKED BY

ANOOP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BY

DINESH L.
GOND

19-06-2019

04/07/19

P-5275



उत्पाद मानक (हीप : हरिद्वार)

ST 38007
PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 7
Page 7 of 12

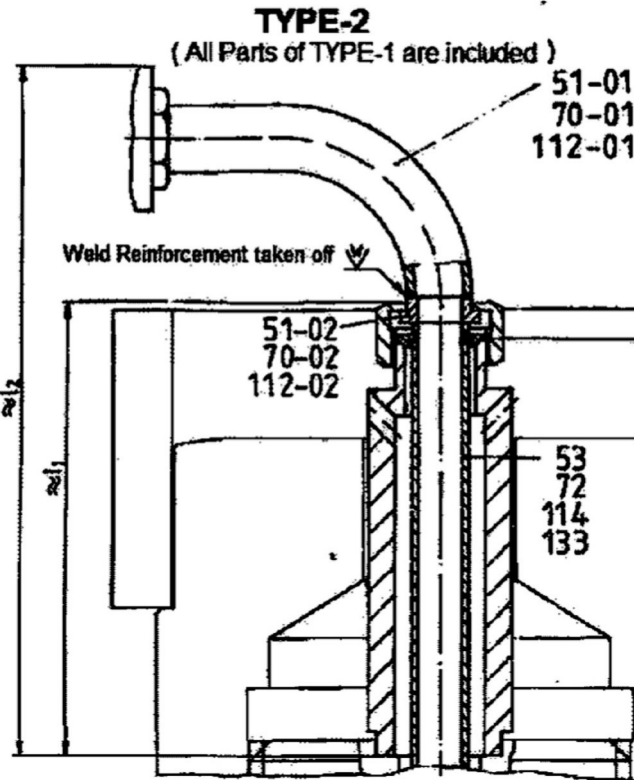
 SUPERSEDES
INVENTORY NO.

 भागीदारी संकाय के
परिवर्तित प्रारंभ है

COPYRIGHT AND CONFIDENTIAL
The information on this documents is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company

समाप्तिकार एवं गोपनीय
इस प्रयोग में ही गर्व करना भारत हेवी एलेक्ट्रिकल्स लिमिटेड की
सम्पत्ति है इसका प्रयोग एवं प्रसारण अन्य से किसी भी तरह प्रयोग
को कि कंपनी के हित में हानिकारक हो न किया जाय।

Heating Hole Diameter	1 ₁	1 ₂
20	105	186
25	142	220
32	162	245
35	184	295


ATTENTION!

 HOSELINE TO BE SUPPORTED
PROPERLY WHEN IN USE


Figure-5 : Type-2 (All parts of TYPE-1 shall also be included along with parts of TYPE-2)

 भागीदारी संकाय
INVENTORY NO.

REV. NO. 03

 निर्माणकर्ता
WORKED BY

 ANOOP
KUMAR

19-06-2019

 जांचकर्ता
CHECKED BY

 DINESH L.
GOND

19-06-2019



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

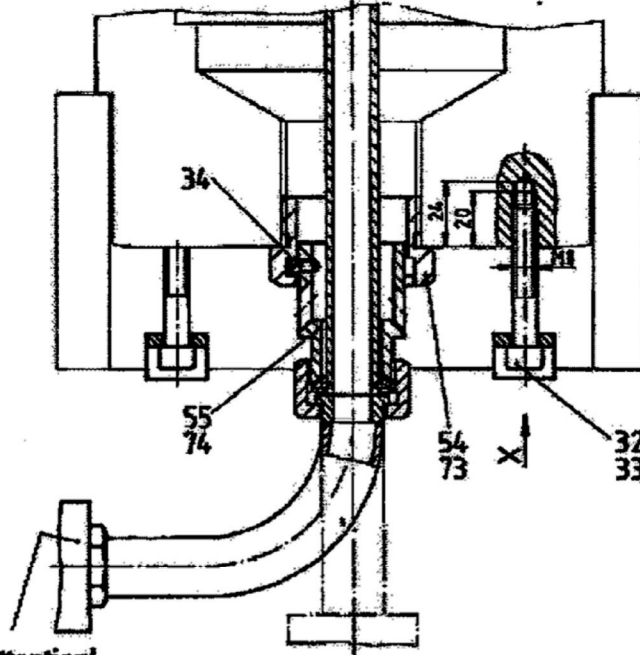
PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 8
Page 8 of 12

TYPE-3

(All parts of TYPE-2 and TYPE-1 shall be included along with parts of TYPE-3)

Heating from below only for heating hole Dia. 20 & Dia. 25mm



Attention!
Hose-line to be supported
properly when in use.

View X

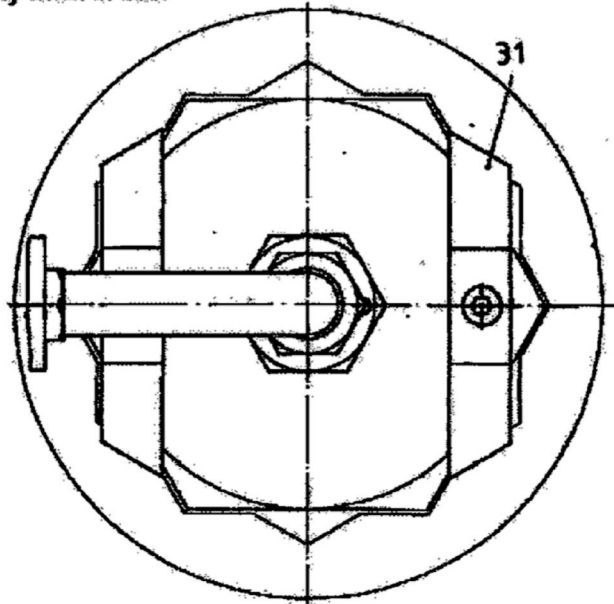


Figure-6 : Type-3 (All parts of TYPE-2 & TYPE-1 shall also be included along with parts of TYPE-3)

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

स्वातंत्र्य अधिकार एवं गोपनीय
इस प्रलेख में की गई सूचना भारत हेवी एलेक्ट्रिकल लिमिटेड की
सम्पत्ति है इसका प्रत्यक्ष एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग
, जो कि कंपनी के हित में हुआ बिना कंपनी की न किया जाय।

निर्माक एवं हस्ताक्षर
SIGNATURE

सामग्री सूची संख्या
INVENTORY NO.

REV. NO. 03

निर्माणकर्ता
WORKED BY

ANOOOP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BY

DINESH L.
GOND

19-06-2019



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 9
Page 9 of 12

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.

सकल अधिकार एवं गोपनीय
इस प्रमेय में की गई प्रस्ताव मान्य हेतु, एलेक्ट्रिकल लिमिटेड की संपत्ति है। इसका प्रयोग एवं प्रकाशक अन्य से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाय।

डिजाइनर
SIGN & DATE
04/07/19

आवृत्ति सूची संख्या
INVENTORY NO.
8-5235

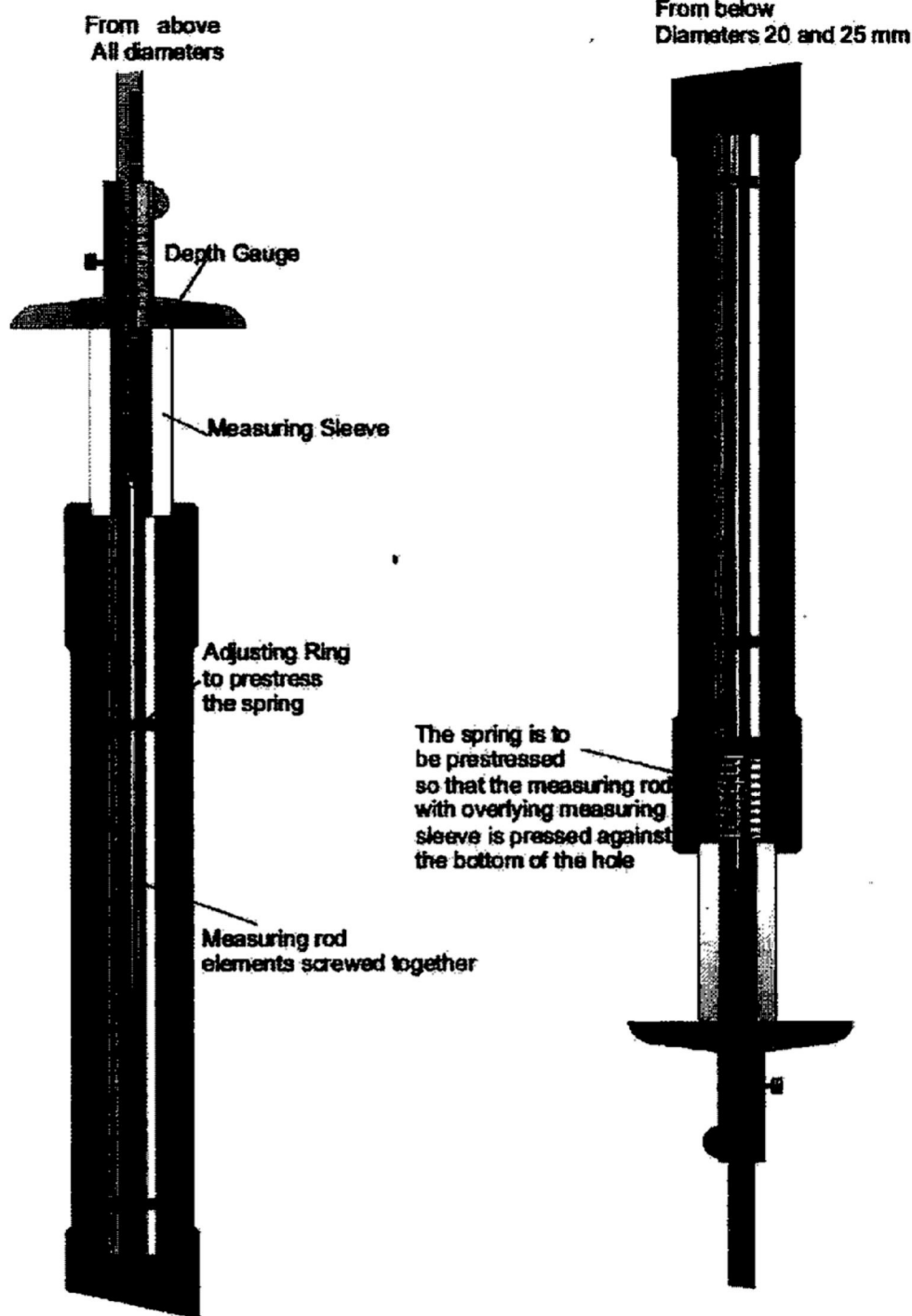


Figure-7 : Measurement scales

REV. NO. 03

निर्माणकर्ता
WORKED BYANOOP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BYDINESH L.
GOND

19-06-2019



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 10
Page 10 of 12

दिनांक एवं हस्ताक्षर
SIGN & DATE

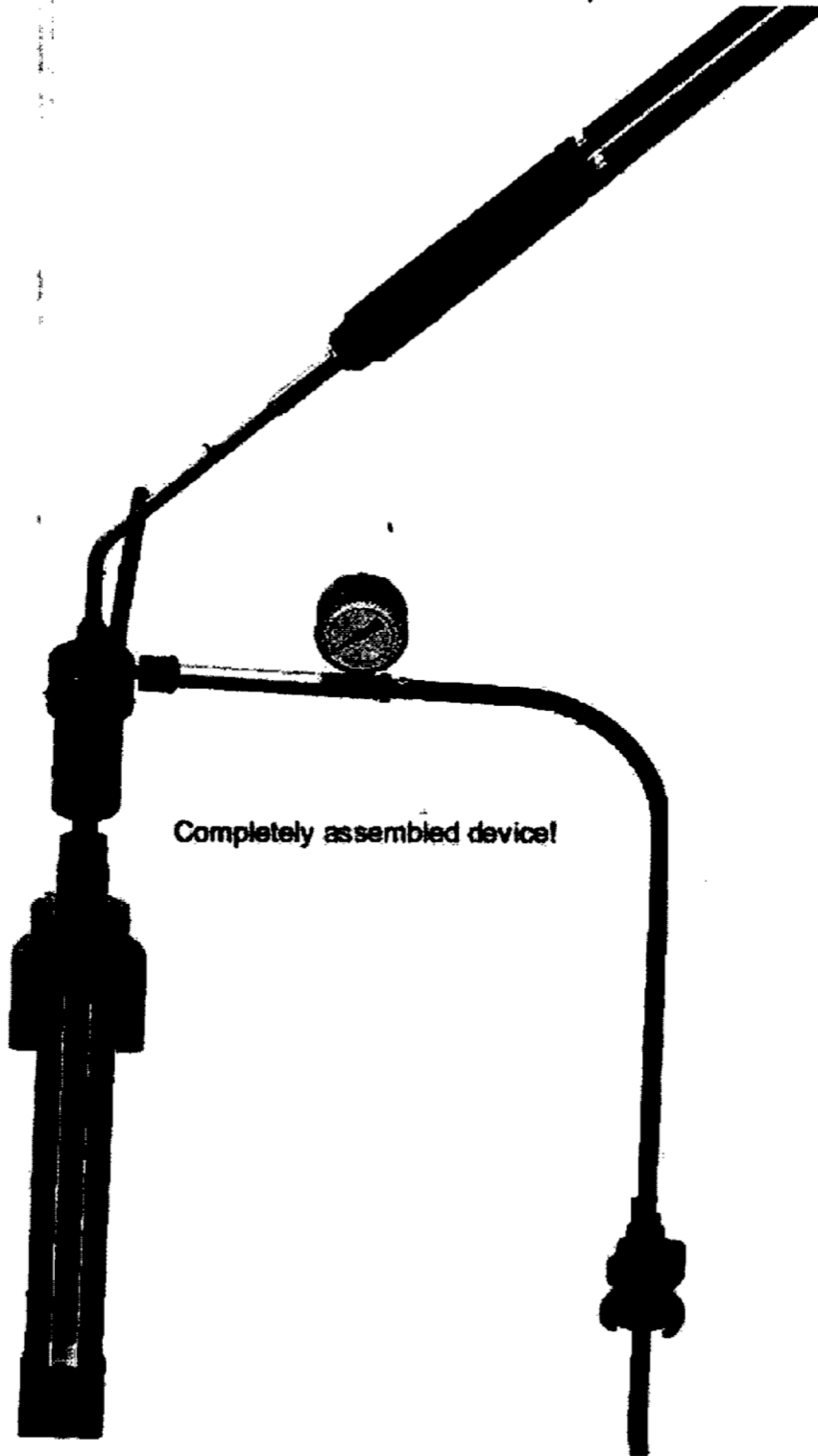
समूची सूची संख्या से
संश्लेषण संख्या है
SUPERSEDES
INVENTORY NO.

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of Bharti Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company

प्रसारित एवं गोपनीय
इस प्रलेख में दी गई सूचना भारत में ही एप्लिकेशन लिमिटेड की
सम्पत्ति है इसका प्रयोग एवं वितरण अन्य से किसी भी तरह प्रयोग
नहीं किया जायेगा। जो कि कम्पनी के हित से हानिकारक हो सके बिना बाध।

दिनांक एवं हस्ताक्षर
SIGN & DATE

समूची सूची संख्या
INVENTORY NO.



Completely assembled device!

Figure-8 : Standard Equipment (Type-1) Completely assembled device

REV. NO. 03

निर्माणकर्ता
WORKED BY

ANOOP
KUMAR

19-06-2019

जांचकर्ता
CHECKED BY

DINESH L.
GOND

19-06-2019

निम्नलिखित तारीख पर SIGN & DATE		उत्पाद मानक (हीप : हरिद्वार) PRODUCT STANDARD (HEEP: HARIDWAR)		ST 38007 पृष्ठ 12 का 11 Page 11 of 12	
मासिक सूची संख्या को SUPERSEDES INVENTORY NO.	<p>Completely assembled device!</p> <p>Ball valve</p>				
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					
इस प्रलेख में दी गई सूचना भारत भारी एलेक्ट्रिकल लिमिटेड की सम्पत्ति है। इसका प्रयोग एवं वितरण अन्य से किसी भी तरह इलाज न किया जाए। This document contains confidential information of Bharat Heavy Electricals Limited. It must not be used or disclosed in any way detrimental to the interest of the company.					
तैयार करने वाला PREPARED BY 04/07/19					
मासिक सूची संख्या INVENTORY NO. P-5275	REV. NO. 03		निर्माणकर्ता WORKED BY ANOOP KUMAR	19-06-2019	19-06-2019
			जांचकर्ता CHECKED BY DINESH L. GOND	19-06-2019	19-06-2019

Figure-9 : Type with Bend Equipment (Type-2 & 3) Completely assembled device



उत्पाद मानक (हीप : हरिद्वार)

ST 38007

PRODUCT STANDARD (HEEP: HARIDWAR)

पृष्ठ 12 का 12
Page 12 of 12

10. Documents to be submitted by supplier:

- Three copies of Operation & Maintenance Manual of "Gas Heating Device" which shall include part item details & its item number, the correspond assembly & dis-assembly of product & its operation procedure.
- Warranty certificate.
- Certificate of Compliance.

11. Cross Reference:

- BHEL drawing no. 11201556600
- Technical Catalogue of M/s Sirius Rohr- und Brennertechnik GmbH, Germany

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.

स्वत्वधिकार एवं गोपनीय
एक प्रतिलिपि में भी नहीं स्वतंत्र भाव से इसी एलेक्ट्रिकल लिमिटेड की संपत्ति है इसका प्रयोजन एवं अद्यतन रूप से किसी भी तरह प्रयोग जो कि कंपनी के हित में हानिकारक हो न किया जाए।

दिनांक एवं हस्ताक्षर
04/07/19

सामग्री सूची संख्या
INVENTORY NO.
P-5275

REV. NO. 03

निर्माणकर्ता
WORKED BY

ANOOP
KUMAR

Anoop

19-06-2019

जांचकर्ता
CHECKED BY

DINESH L.
GOND

Dinesh Gond

19-06-2019