PRICED BID FOR BHEL TENDER ENQUIRY NO. 1314-018 DATED 08.05.2013						
Sl. No.	**Material Specification**	**Item Description**	**Approx Qty (MT)**	**Currency of Quotation**	**Rate/Kg FOR BHEL, Goindwal**	
					In figures	**In words ***
1	ASTM A 216 Gr. **WCB & WCC**	Valve Casting components (Body, Bonnet, Yoke, Wedge and other components of class 150, 300 & 400 for size 2" & 3" Gate (GV), Globe (RV/SV) & NRV(FV) valves & Wall Blower castings.**[Description A]**	410			
2	ASTM A 216 Gr. **WCB & WCC**	Valve Casting components (Body, Bonnet, Yoke, Wedge and other components of class 150 , 300 & 400 for size 4" and above Gate (GV), Globe(RV/SV) & NRV(FV) valves. **[Description B]**	2500			
3	ASTM A 217 Gr. **WC9**	**Refer [Description A] above**	5			
4	ASTM A 217 Gr. **WC9**	**Refer [Description B] above**	60			
5	ASTM A 351 Gr. **CF8**	**Refer [Description A] above**	55			
6	ASTM A 351 Gr. **CF8**	**Refer [Description B] above**	20			
7	ASTM A 351 Gr. **CF8M**	**Refer [Description A] above**	15			
8	ASTM A 351 Gr. **CF8M**	**Refer [Description B] above**	135			
***** In case of disputes/errors/difficulty in interpretation of rates mentioned in figures, rates mentioned in words shall be taken as final.						

Signature with Seal

Authorised person
M/s

UNPRICED BID FOR BHEL TENDER ENQUIRY NO. 1314-018 DATED 08.05.2013						
Sl. No.	**Material Specification**	**Item Description**	**Approx Qty (MT)**	**Currency Of Quotation**	**Rate/Kg FOR BHEL, Goindwal**	
					In figures	**In words ***
1	ASTM A 216 Gr. **WCB & WCC**	Valve Casting components (Body, Bonnet, Yoke, Wedge and other components of class 150, 300 & 400 for size 2" & 3" Gate (GV), Globe (RV/SV) & NRV(FV) valves & Wall Blower castings.**[Description A]**	410		Pl. see price bid	
2	ASTM A 216 Gr. **WCB & WCC**	Valve Casting components (Body, Bonnet, Yoke, Wedge and other components of class 150 , 300 & 400 for size 4" and above Gate (GV), Globe(RV/SV) & NRV(FV) valves. **[Description B]**	2500		Pl. see price bid	
3	ASTM A 217 Gr. **WC9**	**Refer [Description A] above**	5		Pl. see price bid	
4	ASTM A 217 Gr. **WC9**	**Refer [Description B] above**	60		Pl. see price bid	
5	ASTM A 351 Gr. **CF8**	**Refer [Description A] above**	55		Pl. see price bid	
6	ASTM A 351 Gr. **CF8**	**Refer [Description B] above**	20		Pl. see price bid	
7	ASTM A 351 Gr. **CF8M**	**Refer [Description A] above**	15		Pl. see price bid	
8	ASTM A 351 Gr. **CF8M**	**Refer [Description B] above**	135		Pl. see price bid	
9	Present ED (%)				Inclusive/Extra	% Rate
10	Present cess on ED (%)				Inclusive/Extra	% Rate
11	Present CST/VAT rate (%)				Inclusive/Extra	% Rate
Monthly commitment, MT						

Validity of offers 90 Days from date of opening

We hereby confirm that all T&C including RT charges and repair charges are acceptable to us and no extra/additional condition is written in Price Bid. Any condition found in Price bid to already accepted condition may be ignored, **i.e. Price bid shall be considered ONLY for Prices of items.**

Signature with Seal

Authorised person
M/s

1. Sealed tenders in two parts; Part-I: Techno-commercial bids and Part-II: Price bids are invited for entering into Rate Contract for manufacture and supply of radiographic quality castings of valve & wall blower components as per BHEL drawings of various material grades (ASTM A 216 Gr. WCB/WCC; A 217 Gr. WC6/WC9; A 351 Gr. CF8/CF8M) as per relevant TDC/Matl Standards/Drgs and bill of materials mentioned. The offers should be submitted in **ENGLISH LANGUAGE** only.

   The two bids should be submitted in separate inner envelopes duly mentioning the detail as follows:

Bid		Superscription on envelope
Part-I	Techno-Commercial Quotation in response to tender enquiry no. 1314-018 Dt. 08.05.13	PART-I "Techno-Commercial Bid" Tender Enquiry no: 1314-018 Due date of opening: 29.05.13 Sender:
Part-II	Price Quotation in response to tender enquiry no. 1314-018 Dt. 08.05.13	PART-II "Price Bid" Tender Enquiry no: 1314-018 Sender:

   Both the sealed envelopes should be put in an outer envelope clearly mentioning Tender Enquiry No. and due date of opening & sender's address on it. Quotations shall reach us by 1500 Hrs (IST) on due date. Kindly ensure that signed copy of Integrity Pact is attached in Part-I. The tender can be dropped in tender box placed at start of administrative block opposite to notice board. The tender can also be submitted personally to either of following to persons:

   a. Mr. Rajesh Kumar/Engineer-MM
   b. Mr. Yashpal/Asst. Officer-HR

   Techno-Commercial bid shall be opened at 1530 hrs (IST) on same day.

   For finalizing prices, BHEL may go in for opening of sealed price bids (Part-II) or conduct reverse auction.

   Price bids/Reverse Auction of only those bidders shall be opened/conducted who qualifies in techno-commercial (Part-I) evaluation. Qualification in Part-I shall be adjudged by criteria mentioned in checklist. Date shall be informed.

   Please submit all the documents/confirmations as per checklist. This will facilitate quick evaluation and early finalization of tender. For any clarification you can contact on email id tendermm@bhelivp.in.

   In case overseas suppliers route their offer through their accredited selling agents, a letter of authority should be furnished mentioning the name and address of their selling agents who are authorised to bid, negotiate and conclude a Contract on their behalf. This letter should be sent before the tender submission or latest along with tender but not in tender envelope otherwise bid will be considered as unsolicited bid.

1.1 AGENCY COMMISSION:

In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariably be shown separately in the proforma invoice and this will be paid by us in India, in Indian Rupees, on satisfactory completion of the Contract.

If overseas Principal has any tie up with any third party in respect of Agency Commission it should be declared while submitting the offers.

Copies of current Agency, / Agreemental Authorization Letter in respect of Agency Commission shall be furnished along with order, if not made available earlier.

2. Price quotation format shall be as per under:

Sl. No.	Material Spec: ASTM	Item Description	Approx Qty (MT)	Currency of Quote	Rate/Kg FOR BHEL, Goindwal	
					In figures	In words *
1.	A 216 Gr. **WCB & WCC**	Valve Casting & Wall Blower components (Body, Bonnet, Yoke, Wedge and other components of class 150, 300 & 400 for size 2" & 3" Gate (GV), Globe (RV/SV), NRV(FV) valves & Wall Blower castings.**[Description A]**	410			
2.	A 216 Gr. **WCB & WCC**	Valve Casting & Wall Blower components (Body, Bonnet, Yoke, Wedge and other components of class 150 , 300 & 400 for size 4" and above Gate (GV), Globe(RV/SV) & NRV(FV) valves **[Description B]**	2500			
3.	A 217 Gr. **WC9**	**Refer [Description A] above**	5			
4.	A 217 Gr. **WC9**	**Refer [Description B] above**	60			
5.	A 351 Gr. **CF8**	**Refer [Description A] above**	55			
6.	A 351 Gr. **CF8**	**Refer [Description B] above**	20			
7.	A 351 Gr. **CF8M**	**Refer [Description A] above**	15			
8.	A 351 Gr. **CF8M**	**Refer [Description B] above**	135			
9.	Present ED (%)					
10.	Present cess on ED (%)					
11.	Present CST/VAT rate (%)					
* In case of disputes/errors/difficulty in interpretation of rates mentioned in figures, rates mentioned in words shall be taken as final.						

The tender quantity given above is tentative only. The actual ordering quantity may vary between grades and also overall tender quantity can vary by any percentage.

2a. Rates of raw casting components shall be quoted on **rate per kg basis & on FOR GOINDWAL SHAIB basis only. Foreign supplier can also quote on CIF Nhava Sheva (Mumbai) basis & in USD. For foreign supplier quotes on FOR Goindwal Sahib or CIF Nhava Sheva (Mumbai) basis will be considered only.**

2b. Rates shall be inclusive of pattern and development cost. The patterns cost shall be borne by the supplier.

2c. Excise duty + any cess on ED, CST/VAT shall be payable extra against ED Gate Pass valid for CENVAT benefit.

2d. **Comparison shall be made on landed rate per kg to BHEL Goindwal Sahib for deciding L1 offer.** Foreign supplier quoting on CIF basis will attract loading for duties, loading charges on CIF value, road transportation, Agent commission etc. For comparison purpose & Agent commission conversion rate from USD to INR will be taken for tender opening date. For conversion of fixed RT charges & repair charges into USD, the $ rate at tender opening date will be taken throughout the contract. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

2e. Unloading of material at Main Stores of BHEL shall be arranged by BHEL.

2f. In case of disputes/errors/difficulty in interpretation of rates mentioned in figures, rates mentioned in words shall be taken as final.

3. a. **VALIDITY OF OFFERS:**

The offers shall be kept open for acceptance **for 90 days** from the date of opening of the tender. In case of extension of tender opening date, the validity shall be suitably revised.

b.**VALIDITY OF RATE CONTRACT:**

The rate contract with PVC is proposed to be valid for from 01.06.2013 TO 31.12.2013. Same can be extended again for three months on mutual agreement. BHEL can terminate rate contract earlier also without assigning any reason.

4. **PRICE VARIATION:**

Casting prices shall be revised based on the prices of only four materials [viz; Ferrous scrap, Ferromoly, Nickel & Chromium] ; labour, Fuel & Power index. Price variation due to change in any other input shall not be considered during the currency of RC. Revised rates shall be arrived at by using following formulae:

Material	Formulae for calculating X_n, price for two months period
WCB, WCC	$X_n = X_o + 1.0909 (H_n - H_o) + 0.18*\Delta E + 0.10*\Delta L$
WC6	$X_n = X_o + 1.0713 (H_n - H_o) + 0.006 (Fm_n - Fm_o) + 0.0136 (Cr_n - Cr_o) + 0.18*\Delta E + 0.10*\Delta L$
WC9	$X_n = X_o + 1.0536 (H_n - H_o) + 0.0115 (Fm_n - Fm_o) + 0.0259 (Cr_n - Cr_o) + 0.18*\Delta E + 0.10*\Delta L$
CF8	$X_n = X_o + 0.7691 (H_n - H_o) + 0.0055 (Fm_n - Fm_o) + 0.2127 (Cr_n - Cr_o) + 0.1036 (Ni_n - Ni_o) + 0.18*\Delta E + 0.10*\Delta L$
CF8M	$X_n = X_o + 0.7364 (H_n - H_o) + 0.0273 (Fm_n - Fm_o) + 0.2127 (Cr_n - Cr_o) + 0.1145 (Ni_n - Ni_o) + 0.18*\Delta E + 0.10*\Delta L$

TERMS USED	
X_o	Price finalized & valid for first two months of the rate contract; taken as base for further calculations.
X_n	Revised price of the material to be declared after every two months. POs shall be released on this revised price for two months period.
H_o	Ferrous scrap price HMS (High Melting scrap 80:20 mix) from the Metal bulletin (monthly avg data for the preceding two months of finalization). Shall be informed by BHEL alongwith final rates.
H_n	New Average ferrous scrap price HMS (80:20 mix) taken from the Metal bulletin. (Avg for just preceding two months when the price is being revised)
Fm_o	Price of Ferromoly taken from the Metal bulletin, basis as for HMS, H_o above.
Fm_n	New Average Price for Ferromoly taken from the Metal bulletin, basis as for HMS, H_n above
Cr_o	Price of Chromium, taken from the Metal bulletin, basis as for HMS, H_o above.
Cr_n	New Average Price for Chromium taken from the Metal bulletin, basis as for HMS, H_n above
Ni_o	Price of Nickel during the start date of the rate contract taken from the website **www.lme.co.uk,** basis as for HMS H_o above. From average values of two months, Price in Rs./kg for all values of two months shall be calculated.
Ni_n	New Price arrived for Nickel from the website www.lme.co.uk, basis as for HMS, H_o above
ΔE	Change in Consumer Price Index Numbers for Industrial Workers – All-India basis reference taken from http://rbi.org.in/home.aspx>>publications>>Monthly>>RBI bulletin>>Prices [Table no. 21]-1.2: Fuel and Power. ΔE will be calculated as per below formula: **ΔE=(En-Eo)/Eo*Xo*0.18;** where Eo is base index for Fuel & Power and En is index for Fuel & Power for new months

ΔL	Change in Consumer Price Index Numbers for Industrial Workers – All-India basis reference taken from http://rbi.org.in/home.aspx>>publications>>Monthly>>RBI bulletin>>Prices [Table no. 19]-1. ΔL will be calculated as per below formula: **ΔL=(Ln-Lo)/Lo*Xo*0.10;** where Lo is base index for labour and En is index for labour for new months
All prices used in formulae are in Rs. per kg. $ (USD) to Rs. price shall be taken from www.rbi.org.in . Rs./kg value for any variant shall be derived for each value by using $/kg for respective date(nearest preceding date) and then average shall be derived for the period. For foreign supplier also new rate by PVC will be calculated in INR firstly. For calculating rate in INR, PVC formula on landed cost to BHEL (L1 rate in INR) will be applied. In this calculation for conversion of H, Fm, Cr, Ni rate from $ to INR, the $ (USD) rate at respective date (the date at which metal rate is taken) will be taken. Then this new rate in INR will be converted to $ (USD) by considering $ rate at tender opening date.	

Finalized prices shall be applicable from 01.06.2013 to 31.07.2013. These finalized prices shall be taken as base prices, X_o. Base indices shall be taken as avg. of indices published for the months of April'13 & May'13. New castings rates to be operated for POs to be released in Aug'13 & Sep'13 shall be declared in first week of Aug'13 based on indices of June'13 & July'13.

For a reference, avg. value of above variants, in Rs. per kg for the months of Jan'13 & Feb'13 are:

(These values are for indications only and are not intended to be referred as the base indices)

H =20.25, Fm = 1548.60; Cr 550.28; Ni = 945.91

The avg of below two variants of Nov'12 & Dec'12 are:

E=188.85,L=218.5

5. **SCOPE OF SUPPLY:**

Material shall be supplied as per the applicable latest Technical Delivery Conditions (TDC)/ Material Standard requirements/Drawings/RT Procedure and other requirement as given in the Purchase Order. The TDC applicable for Indian suppliers is TDC:0412 Rev20 (or latest applicable) and for foreign supplier is TDC:0:433 Rev00 (or latest applicable).

It is made clear that POs released in sets, i.e. [all components for a particular type of valve] have to be supplied in sets only. The claim of vendor for payment of supplies against any PO can be put on hold if the components have not been delivered in sets. However, depending upon our own planning and requirement, BHEL may ask for delivery of some components not in sets, for which due consideration shall be given relieving the vendor from above condition.

6. **WELL KNOWN FOUNDARY:**

It is the responsibility of successful vendor to ensure that all the castings are supplied with IBR TC [Valid IBR Well known Foundry status clearly mentioned on the TC] or under witness pouring clearly endorsed by IBR authority/authorized inspecting authority. The foundry will provide TCs in Form III G/III F (as applicable as per TDC) signed by competent authority. The cost for witness pouring from authorized inspecting authority has to be borne by supplier.

7. **DELIVERY SCHEDULE:**

There is no firm commitment against tender quantity. During the currency of the Rate Contract, BHEL will release POs from time to time based upon our requirement of any tonnage. Vendor shall be required to complete the order as per the schedule mentioned in PO/delivery requirement given through other communications. Vendor has to mention minimum time after

which supply will start after placement of PO for items in which pattern is available with vendor as per Annexure-A.

8. ACCESS TO MANUFACTURING PREMISES:

While Purchase Orders placed on the vendor are under execution, authorized representatives of BHEL shall be allowed free access to the manufacturing facilities for the purpose of inspection or monitoring the progress of purchase orders. This access will also be extended to representatives of BHEL's customers accompanying the authorized representative/s of BHEL, if our contractual requirements with our customers call for the same.

9. PROCEDURE FOR CASTING WEIGHT ESTABLISHMENT

Weights already established are attached along with tender documents. Weights of same patterns for different material grade castings shall be same. These established weights shall be applicable to all vendors. Weights shall be established again only on revision of dimensions of component. Weight shall be established as per clause no. 08 of TDC: 0:412: Rev 20 (or latest applicable). Rate of any item shall be derived by multiplying established weight with rate per kg for the period when PO is being released. When a vendor is taking any item as a new development, if his weight is less than already established weight, this weight will be considered as new established weight and binding on all vendors. If his weight is more than already established weight, it shall be binding on the vendor. For any new item, not established till date, the first verified weight by BHEL after complete dimensional verification and acceptance shall be declared as established weight (as per clause No. 08 of TDC). Payments shall be made on established weights only. Additional claim of any vendor due to his extra weight over and above the established weight shall not be entertained.

10. DEVELOPMENT ORDERS FOR CASTINGS REQUIRING NEW PATTERNS:

If a party has already developed a particular type and size of casting, regular orders will be placed for those castings. For the item/s for which pattern/s is yet to be developed by the party, in the first instance, a developmental order/s will be placed. BHEL can release Purchase order for development of pattern at any time as per our requirement. The vendor has to develop the pattern maximum within four months, failing which BHEL may resort to "Risk Purchase" clause additionally affecting his rating/loading for subsequent months. Regular order will be placed for that item after its establishment. Additional commitment to vendor for such cases can be given at the discretion of BHEL with an undertaking from vendor that delivery mentioned will be complied with. Sample clearance shall be by BHEL and bulk supply shall be undertaken only after sample clearance. Quality requirement of new developments shall be as per TDC: 0412 Rev 20/TDC:0:433 Rev00(or latest applicable) besides other technical documents.

11. TERMS OF PAYMENT:

For Indian Supplier: Due payment against supplies received shall be made within 30-45 days of acceptance of received material at IVP Goindwal and receipt of following dispatch documents.

Commercial invoice (in duplicate)
Excise invoice (in duplicate) valid for claiming CENVAT credit
Original VAT invoice valid for claiming input tax credit, if applicable
Material Test Certificates (MTC) and
Compliance Certificate.

Radiographic films and reports, if required.
Third Party Inspection reports, if applicable.
Packing Note

For Foreign Supplier:

Payment shall be made in USD/INR only. 100% payment shall be made within 30-45 days of acceptance of received material at IVP Goindwal and receipt of following dispatch documents.

Documents Required (Complete in all respects)

a. Bill of Lading.
b. Packing list & Invoice
c. Country of origin Certificate
d. Test Certificates / Compliance Certificate
e. PBG for 10% value of contract. The validity of PBG should be for 18 months from acceptance of material at BHEL with additional 2 months for claim period. Vendor has to furnish a Performance Bank Guarantee from a consortium Bank at no extra cost in a proforma attached.
f. A Certificate that :

One copy of Tests / Compliances Certificate with non-negotiable documents, comprising of House Airway Bill, Invoice, Packing list, Country of origin Certificate, applicable drawings and catalogues, duly signed and stamped, have been sent separately to the port Consignee, purchaser

Attn: Sr. DGM/ MM Department, BHEL, IVP Goindwal Sahib -142423 Distt. Tarn Taran, Punjab – India and to DGM / Finance, <<Same address>>

Above documents should include your Registration numbers such as ECC no, PAN no, CST no, TIN/ VAT nos. etc.

BHEL releases payment through EFT mode ONLY. Necessary details may please be submitted by filling required format before release of payment.

It is mandatory to mention proper material codes in the invoices and separate invoices to be raised for different POs and Radiographed castings. It is necessary to send MTCs and RT films along with material, failing which material will not be accounted for and no receipt will be given. Also RT charges are to be mentioned in same invoice in which material is being supplied.

12. INSPECTION:

Casting shall meet all requirement (Physical properties, Chemical properties, Heat Treatment, NDE, Visual, Surface finish etc.) of relevant standards mentioned in TDC/Matl Standards/Drgs as applicable. Integral test bars, as required, shall be made avl free of cost. All testing charges shall be inclusive and no extra charges shall be paid except for RT. Inspection of development casting shall be carried out by BHEL/TPI. Inspection of bulk supply shall be carried out by BHEL/TPI at suppliers' works. Inspection shall be arranged by BHEL but necessary facilities & testing shall be provided/ carried out by supplier. Required test certificates shall be submitted in prescribed format along with packing note & compliance certificate.

Castings shall also be subjected to impact tests as called for in TDC and the testing charges shall be borne by the vendor. **BHEL may arrange third party/ BHEL inspection at Foundry itself as and when necessary with prior intimation to the vendor.**

Sample castings are to be identified by vendor in the delivery challan as "Sample" and the dimensional reports and RT reports are to be provided to BHEL along with supply.

Vendor will give inspection call sufficiently in advance considering the delivery period stipulated in the purchase order.

13. **RADIOGRAPHY:**

Consistent radiography quality is to be ensured and to be maintained uniformly in bulk supply with adequate process and method controls. Since the castings required are of radiographic quality, BHEL reserves the right to conduct radiographic testing of sample pieces at its own arrangement and derive conclusion of soundness of casting supplied against the said lot/heat based on the results of such testing.

- Standard requirement of radiography of castings shall be as per TDC 412 Rev.20/TDC:0:433 Revoo
- Any additional requirement shall be specifically called for in PO.
- BHEL intends to get delivery of castings along with radiographed sets as ordered. The claim of vendor for payment of supplies against any PO can be put on hold if the requisite no. of radiographed sets has not been delivered by then. BHEL shall reserve the right to select any sample from a lot offered and get it radiographed at vendor's works.

As per requirement of BHEL, vendor will be required to submit radiographic test reports as specified in the purchase orders released under the purview of the contract. BHEL will review and evaluate radiography films and RT reports and reserves the discretion to do so at the premises of the vendor.

Radiography procedure shall be as per BHEL's TDC, ANSI B16.34 and specific instructions from BHEL/RT procedure. All the radiography films shall be dispatched to BHEL without delay either before the castings are being dispatched or along with the castings. Vendor shall undertake radiography on new development as per TDC 412 Rev.20/TDC:0:433 Revoo.

RT charges for Indian supplier: Fixed RT charges @ Ir_{192} : ₹ 0.99 & Co_{60} : ₹ 1.50 per sq. cm (In case CST is not applicable) shall be paid on actual verified film area and it is @ Ir_{192} : ₹ 0.97 & Co_{60} : ₹ 1.47 per sq. cm in case of CST applicable.

RT charges for Foreign supplier: Fixed RT charges @ Ir_{192} : ₹ 0.99 & Co_{60} : ₹ 1.50 per sq. cm shall be paid on actual verified film area. The above RT cost is landed cost to BHEL (FOR Goindwal). Loading as per clause 2d of tender will be done if vendor is not quoting FOR Goindwal basis.

14. **REPAIR OF CASTINGS:**

All castings shall be supplied free of defects like shrinkage, hot tears and process variable defects like sand inclusion, slag inclusion, gas entrapment etc. If any casting is found containing defects more than allowable limit, the same shall be upgraded at foundry itself before dispatch to BHEL with necessary documentation, enabling BHEL to make use of such castings immediately for production.

Castings at different stages of manufacturing are found to be defective shall be repaired at the defective area and the repaired area shall be accepted after performing requisite NDT at vendors cost for further acceptance. BHEL shall decide about the areas to be repaired in all such cases.

Castings that are found defective after receipt at BHEL, if necessary repair of the castings will be carried out by BHEL and repair charges @ Rs. 13/- per cc for Carbon Steel and Rs. 16/- per cc for other grades shall be deducted from any of the running bills of the vendor.

In case of rejection of casting after machining/ assembly/testing due to defects more than allowable limits or major variation in dimensions etc. then the entire cost incurred till that stage shall be deducted from any of the running bills of the vendor.

15. REPLACEMENT OF REJECTIONS

The castings that are received and are not acceptable during inspection at BHEL shall be intimated through Rejection Memo or similar communication from BHEL and shall have to be lifted by vendor from BHEL Stores within 60 days at their own risk and cost. Similarly, castings that are found defective during machining or assembly or hydraulic testing shall be accepted or rejected depending upon severity of defects. If the material is not lifted within 60 days, BHEL will not be responsible for any loss/demurrage. BHEL reserves the discretion to levy storage charges for material not lifted within the reasonable period.

Necessary deductions on account of such rejections shall be made from vendor's bills/PBG.

Vendor shall replace the rejected castings. Corresponding quantity shall be treated as unsupplied against respective purchase order till replacement is received at BHEL.

16. LOADING:

Rate Contract will be entered into requisite no. of vendors to ensure that our requirement is met. For this, BHEL reserves the right to give counter offers to others than L1 vendor except highest bidder.

1. Tender quantity shall be divided in the proportion 60:20:20 (60% for L1, 20% for L2 and 20% for MSE's) in case the L1 vendor is not a MSE subject to following conditions:

I. L2 acceptance of L1 rates.

II. In tender, participating Micro and Small Enterprises quoting price within price band of L1+15 per cent shall also be offered 20% quantity of tender quantity at L1 price in a situation where L1 price is from someone other than a Micro and Small Enterprise. In case of more than one such Micro and Small Enterprise, the supply shall be shared equally. If there are more than one MSE in the price band of L1+ 15% to whom the offer has been sent and some of them reject the offer then the remaining quantity shall be distributed equally to the MSEs accepting L1 prices.

III. 20% from the 20% quantity (i.e. 4% of the tender quantity) offered to the MSE's shall be reserved for MSE's owned by SC/STs. In event of failure of such Micro and Small Enterprises to participate in tender process or meet tender requirements and L1 price, 4 per cent quantity for Micro and Small Enterprises owned by SC/ST entrepreneurs shall be met from other Micro and Small Enterprises.

IV. In case any MSE vendor does not accept the counter offer, the above mentioned 20% quantity shall be offered to L2 subject to its acceptance to L1 price.

V. If there is no MSE in the Price band of L1+15% then the 20% quantity shall be offered to L2 vendor subject to his acceptance of L1 rates.

2. In case if the L1 vendor is MSE then quantity shall be provided as 56 % and 40% in L1 and L2 vendor respectively subject to acceptance to above mentioned provision no.(I). 4% tender quantity shall be offered to the MSEs owned by SC/ST's in the price band of L1+15%. In event of failure of such Micro and Small Enterprises to participate in tender process or meet tender requirements and L1 price, 4 percent sub-target for procurement earmarked for Micro and Small Enterprises owned by SC/ST entrepreneurs shall be met from L1 vendor.

3. In case the L1 vendor is a MSE owned by a SC/ST then the quantity shall be divided as 60% and 40% to L 1 and L2 vendor respectively subject to acceptance of L1 rates by L2 vendor.

In case of non- acceptance of counter offer by any vendor after above applicable provisions the whole quantity would be offered to L1 vendor. All above mentioned preferences shall be given to MSEs and SC/STs only on the submission of documentary evidence in the Techno-Commercial part only.

Above indicated criteria is liable to be monitored/controlled/regulated by BHEL from the first ordering itself/subsequent ordering based on commitment given by L1 vendor/other vendors, past performance, quality of castings, availability of patterns etc.

Once the rate contract is in place with various vendors based on acceptance of counter offer, while placing regular Purchase orders, BHEL will place orders for required quantity based on pattern availability, pattern development time, delivery requirement and vendor's monthly commitment, capability, delivery records and quality. Performance of vendors shall be monitored as per the performance monitoring system attached. Though BHEL requires and intend to procure castings in sets for a particular size, but BHEL reserve the right to release POs of casting components in any proportion to meet its requirement. The vendor has to mention his monthly commitment in MT.

17. GUARANTEE:

Vendor shall give a guarantee of eighteen months from acceptance of material at BHEL for undertaking repairs/replacement of any defect observed during machining/ assembly/ hydraulic testing or subsequent processing not withstanding the previous acceptance. Entire cost of such castings will be deducted from any of the running bills/PBG.

18. LIQUIDATED DAMAGES:

'Time is the essence of the contract'. As such, delivery of goods specified in the Purchase Orders released under the scope this contract shall be made within the time limit prescribed therein. Liquidated damages clause will be applicable for delayed supplies @ 0.5% per week or part thereof subject to a maximum of 10%.

19. RISK PURCHASE:

BHEL shall be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the vendor, either the whole of the goods or any part thereof which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid. Vendor shall be liable for the

losses, which BHEL may sustain by way of such risk purchase in addition to aforesaid penalty for delayed delivery.

20. SUB-CONTRACT:

The casting process shall not be sub-contracted, assigned or otherwise transferred without previously obtaining the BHEL's consent in writing.

21. FORCE MAJEURE:

If at any time during the continuance of the contract, the performance in which or in any part by either party of any obligations under the contract are prevented or delayed by reason of any war, hostilities, acts of public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine restrictions, or acts of God (hereinafter referred to "an events" then provided the notice of happening of any such event is given by either party to the other within 21 days of the occurrence thereof, neither party shall by reason of such event be entitled to terminate the contract nor shall either party have any claim for damages against the other in respect of such non-performance and delay in performance and delivery under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist. If the performance in whole or part of any obligation under the contract is prevented or delayed by reason of any such event, claims of extension of time shall be granted for periods considered reasonable by BHEL subject to prior notification by the vendor to BHEL of the particulars of the event and supply to BHEL, if required, of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed a waiver of time in respect of remaining deliveries.

22. DISPUTES:

In the event of any dispute and/or difference arising between the Vendor and BHEL as to interpretation and/or execution of the contract and/or the respective rights and liabilities of the parties, such disputes and/or differences shall be referred to the sole arbitrator nominated by BHEL. The provisions of the Indian Arbitration Act and the rules there under shall apply to such arbitration. The award passed by the arbitrator shall be final and conclusively binding on all the parties.

23. JURISDICTION:

The court of the place from where the purchase order is issued during the contractual period shall alone have jurisdiction to decide any dispute arising out of or in connection with the purchase order.

24. Integrity Pact:

In order to have more transparency, BHEL has appointed Independent External Monitor [IEM], who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above. Sh. J M Lyngdoh, IAS (Retd.) has been appointed as IEM for this contract. More details are given in "Integrity Pact" attached. **The supplier has to attach signed copy of integrity pact in Part-I of tender. Tender without signed copy of Integrity pact will not be accepted.**

25. **GENERAL:**

BHEL will not be bound by any power of attorney granted by the vendors or by changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the vendor concerned.

BHEL reserves the right to extend the due date of opening, which shall be informed. Bidder can revise his offer, if already sent, and clearly mentioning "Revised offer due to extension of due date of opening-canceling the earlier quotation." Validity of offer shall be revised accordingly.

BHEL reserves the right to cancel the tender without assigning any reason thereof and without any obligation.

Vendor has to return the Terms and Conditions, each page duly signed as "ACCEPTED" with seal along with quotation, without which it shall be concluded that the bidders agrees to all terms and conditions sent along with the enquiry.

If BHEL receives extra quantity (max 10%) against order from a vendor, then this quantity will be accepted in supplied PO provided rate/Kg in that PO is less than current rate/Kg provided BHEL has requirement of that item.

The Drawings and Technical documents given in this enquiry are the sole property of BHEL. It must not be used directly or indirectly in any way detrimental to the interest of the company.

For Foreign Supplier only:

a. All documents are to be in "ENGLISH LANGUAGE" only.
b. Contract No. and Import License No. are to be inducted in all documents
c. Invoice should show the description of the goods and the unit rate of each item as in the purchase contract.
d. Packing list must indicate case identification, case dimension, and case contents, gross and net weight.
e. Against each item in the invoice and packing list, the serial number of the corresponding item in the purchase contract or as per order acknowledgement should be indicated.
f. Demurrage charges due to delayed presentation of the original shipping documents for the reason not attributable to the buyer should be borne by the seller
g. All documents should be submitted in triplicate

26. **WORDS AND FIGURES:**

a. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity}, the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
b. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

c. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.

If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored

27. MSME Certification:

If the bidder is registered as any of Micro/Small/Medium enterprise as defined in Micro Small and Medium Enterprises Development Act, 2006; a copy of registration certificate to be attached.

28. BANNED FIRMS:

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website www.bhel.com.

29. REVERSE AUCTION:

BHEL reserves the option to either finalize the tender by opening sealed price bids (Part-II) submitted with the offer on a specified date and time in the presence of bidders, who may like to be present; or carrying out live reverse auction on-line. In case of reverse auction, adequate infrastructure like internet connection, uninterrupted power supply, printer, fax machine etc. will have to be arranged by bidder. BHEL will engage a service provider who shall interact, educate, guide and coordinate with bidder for reserve auction. Date and time of reverse auction shall be informed. For foreign supplier USD conversion rate will be taken as on tender opening date as explained in clause 2d.

Information and general terms and conditions governing RA are given below.

GENERAL TERMS AND CONDITIONS OF RA

Against this enquiry for the subject item with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL will inform the vendor in writing in case of reverse auction, the details of Service Provider to enable them to contact & get trained.
4. Business rules like event date, time, Start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
5. Vendors have to fax/email the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to Participate in the event.
6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges,

Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.

7. Reverse auction will be conducted on scheduled date & time.
8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. BHEL reserves the right to negotiate if need be, with the "L1" vendor of the Reverse Auction.

Check List for Tender

Necessary Document to be submitted in Part-I:

- Acceptance of all techno-commercial terms and conditions. If nothing is mentioned for any terms and condition, it shall be concluded that the same is accepted.
- Un-priced bid with all taxes and duties (extra/inclusive) and % mentioned.
- Monthly supply commitment in MT
- Signed copy of Integrity Pact.
- Annexure-A duly filled
- SC/ST certificate and MSME certificate

Document to be submitted in Part-II:

Prices per kg mentioned in figures as well as in words. **No other condition shall be mentioned.**

Procedure to finalise the rate contract:

- Receipts of sealed quotations (outer envelope containing two separate sealed envelopes, Part-I & Part-II): **By 1500 Hrs on due date**
- Opening of part-I: **By 1530 Hrs on due date**
- Evaluation of part-I of vendors and declaration of price bids opening or reverse auction : **Date shall be announced and informed to all bidders.**

List of Items With Wt.

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922017710000	ARM-WCB-5158-2-150-FV-FL-WCB	0.75		2V515814084R/00
922015190000	BODY-CF8M-Z057	18.80	20.80	2VZ05713874R/01
922015250000	BODY-2-C150-FV-BW-WCB-5179	18.80	20.80	2V517913766R/00
922007790000	BODY-2-C150-FV-FL-CF8	18.80	20.80	2VZ00406391R/00
920249410000	2-150-FV-BODY-FL-WCB	18.80	20.80	1V515802778R/01
922007800000	C0VER-2-150-FV-FL-CF8	6.90	8.20	3VZ00417688R/01
920336940000	COVER-2-C150-FV-A105-5158	6.90	8.20	3V515806410P/01
922017390000	COVER-2-C150-FV-FL-WCB-5158	8.10	8.20	3V515824641R/00
922006840000	BODY-2-C150-GV-BW CF8-N536	11.50	12.10	2VN53606257R/01
922020960000	BODY-2-C150-GV-BW CF8M-NG72	11.50	12.10	2VNG7206257R/00
922003220000	BODY-2-C150-GV-BW-WC6-N300	11.50	12.10	2VN30005885R/01
922003200000	BODY-2-C150-GV-BW-WCB	11.50	12.10	2VN29805885R/01
922002930000	BODY-2-C150-GV-FL-CF8-N277	14.10	15.10	2VN27705873R/00
922005550000	BODY-2-C150-GV-FL-CF8M-N472	14.10	15.10	2VN47205873R/00
922010550000	BODY-2-C150-GV-FL-WC6-N810	37.50	15.10	2VN81008016R/00
920270560000	BODY-2-C150-GV-FL-WCB	14.10	15.10	2VN07303401R/03
922003100000	WEDGE-2-C150-CF8-N277	1.75	1.70	3VN27706628R/03
922005800000	YOKE COVER 2-C150-GV CF8-N277	8.63	9.20	2VN27706107R/01
922005810000	YOKE COVER-2-150-GV-FL-HW-CF8M	8.63	9.20	2VN47206107R/01
922005090000	YOKE COVER WC9-N301	8.63	9.20	2VN30106107R/01
920085130000	YOKE COVER WCB-N073	6.10	9.20	2VN07303402R/01
922005060000	YOKE COVER-2-C150-GV-WCB	8.63	9.20	2VN29806107R/01
920247650000	BODY-2-C150-SV-FL-CF8-2880	14.00		1V288002570R/02
922017740000	ARM-WCB-5153	0.86		2V515314084R/00
922010090000	BODY-2-C300-FV-BW-CF8-Z014	22.00		2VZ01407915R/00
922015370000	BODY-2-C300-FV-BW-WCB-5175	22.00		2V517513880R/00
922012180000	BODY-2-C300-FV-FL-CF8-Z032	28.50	34.13	2VZ03208266R/00
922004690000	BODY-2-C300-FV-FL WC6-5198	28.50	34.13	2V519806095R/00
922010070000	BODY-2-C300-GV-FL-WC9-N753	19.50	34.13	2VN75307909R/01
920249100000	BODY-2-C300-FV-FL-WCB-5153	28.50	34.13	1V515302769R/01
922006530000	C0VERCF8-M332-2-300-FV	12.80	16.50	3VM33217688R/01
920336520000	COVER-2-C300-FV-A105-5153	12.80	16.50	3V515306410P/01
922017350000	COVER-2-C300-FV-FL-WCB-5153	14.70	16.50	3V515324641R/00
922000060000	FLAP CF8-M332	1.00		3VM33295062R/01
920336540000	FLAP-2-C150/C300-FV-F6A-5153	1.00		3V515306405P/00
922010010000	BODY-2-C300-GV-BW-CF8-N742	15.00	15.00	2VN74207890R/01
922002840000	BODY-2-C300-GV-BW-WC6-N261	15.00	15.00	2VN26105869R/02
922002850000	BODY-2-C300-GV-BW WC9-N262	15.00	15.00	2VN26205869R/02
922002820000	BODY-2-C300-GV-BW-WCB-N259	15.00	15.00	2VN25905869R/02
922004360000	BODY-2-C300-GV-FL-CF8-N363	19.50	22.70	2VN36307878R/02
922004660000	BODY-2-C300-GV-FL-CF8M-N374	19.50	22.70	2VN37406012R/01
920270570000	BODY-2-C300-GV-FL-WCB-N081	19.50	22.70	2VN08103404R/02
922010640000	BODY-2-C300-GV-FL-WCC-N816	19.50	22.70	2VN81608033R/01
922004740000	WEDGE-2-300-GV-FL-HW-CF8M	1.75	1.70	3VN37406628R/02
922004760000	WEDGE-A217-WC6-N261-2-C150/300 GV	1.75	1.70	3VN26106628R/02
922004770000	WEDGE-2-300-GV-BW-HW-WC9	1.75	1.70	3VN26206628R/02
920342890000	WEDGE-2-C150/C300-GV-WCB	1.75	1.70	3VN07306628R/03
922004750000	WEDGE-A216-WCC-N260	1.75	1.70	3VN26006628R/02
922005780000	YOKE COVER-2-300-GV-FL-HW-CF8	9.80	12.00	2VN36306099R/01
922005120000	YOKE COVER WC6-N261	9.80	12.00	2VN26106099R/01
922005080000	YOKE COVER WC6-N300-2-C150-GV	8.63	12.00	2VN30006107R/01
922005130000	YOKE -2-300-GV-BW-HW-WC9	9.80	12.00	2VN26206099R/01
922005100000	YOKE COVER-2-C300-GV-WCB-N328	9.80	12.00	2VN32806099R/01

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922030710000	BODY-2-C300-RV-BW-WC9-P577	14.00	15.25	2VP57707902R/000/00
922030720000	YOKE-2-C300-RV-WC9-P577	14.00	12.00	2VP57701776R/000/00
922009560000	BODY-2-C300-SV-BW-CF8-P339	14.00	15.25	2VP33903470R/02
922015100000	BODY-2-C300-SV-BW CF8M-P443	14.00	15.25	2VP44313764R/00
922010050000	BODY-2-C300-SV-BW-WC6-P354	14.00	15.25	2VP35407902R/01
920270740000	2-300-SV-BODY-BW-WCB	14.00	15.25	2V290803470R/02
922012060000	BODY-2-C300-SV-FL CF8-P385	20.00	23.00	2VP38508237R/00
922020860000	BODY-2-C300-SV-FL CF8M-P564	20.00	23.00	2VP56408237R/00
922010650000	BODY-2-C300-SV-FL-WC6-P363	20.00	23.00	2VP36308034R/01
920242950000	2-300-SV-BODY-FL-WCB	20.00	23.00	2V247701775R/03
922009550000	YOKE-2-300-SV-BW-HW-CF8	14.00	12.00	2VP33901776R/00
922015110000	YOKE-2-C300-RV-CF8M-P443	14.00	12.00	2VP44301776R/00
922010060000	YOKE-2-C300-RV-WC6-P354	14.00	12.00	2VP35401776R/00
920082480000	2-C300-SV-YOKE-WCB	14.00	12.00	2V247601776R/01
842000125500	VALVE BODY-10001001	16.03	20.60	12000100010/10
920243870000	VALVE BODY-WCB	16.00	20.60	12000100190/05
842020139900	WALL DESLAR.BODY-10016202	25.00	30.40	12020100162/05
920057850000	WALL BLOWER BODY	27.00	30.40	12020100189/05
922017790000	ARM-CF8M-Z024-3-150-FV-FL-CF8M	0.90		2VZ02414084R/00
922017770000	ARM-WCB-5157-3-150-FV-FL-WCB	0.90		2V515714084R/00
922015380000	BODY-3-C150-FV-BW-CF8-Z037	26.90	31.83	2VZ03713883R/00
922015390000	BODY-3-C150-FV-BW-CF8M-Z051	26.90	31.83	2VZ05113884R/00
922015400000	BODY-3-C150-FV-BW-WCB-5178	26.90	31.83	2V517813885R/02
922005390000	BODY-3-C150-FV-FL-CF8-5199	32.00	35.50	2V519906131R/00
922011320000	BODY-3-C150-FV-FL-CF8M-Z024	32.00	35.50	2VZ02408059R/00
920249230000	3-150-FV-BODY-FL-WCB	32.00	35.50	1V515702777R/03
922006560000	C0VER-3-150-FV-FL-CF8	10.20	13.00	3V519917688R/02
922011330000	COVER-3-150-FV-FL-CF8M	10.20	13.00	4VZ02426236R/00
920336630000	COVER-3-C150-FV-A105-5157	10.20	13.00	3V515706410P/01
922017380000	COVER-3-C150-FV-FL-WCB-5157	12.20	13.00	3V515724641R/00
922000070000	FLAP CF8-M331-3-150-FV	1.75	1.84	3VM33195062R/01
922030690000	SEAT RING-Z024	30.60		3VZ02917061R/00
922009330000	BODY-3-C150-GV-BW-CF8-N677	18.50	23.60	2VN67705875R/00
922012100000	BODY-3-C150-GV-BW-CF8M-N108	18.50	23.60	2VN10808269R/00
922002980000	BODY-3-C150-GV-BW-WC6-N291	18.50	23.60	2VN29105875R/00
922002990000	BODY-3-C150-GV-BW-WC9-N292	18.50	23.60	2VN29205875R/00
922002960000	BODY-3-C150-GV-BW-WCB	18.50	23.60	2VN28905875R/00
922018620000	BODY-3-C150-GV-BW-WCB-U436	25.00	23.60	3VU43624816R/00
922002920000	BODY-3-C150-GV-FL-CF8-N286	21.00	26.50	2VN28605872R/00
922004070000	BODY-3-C150-GV-FL-CF8M-N338	21.00	26.50	2VN33805872R/00
922007140000	BODY-3-C150-GV-FL WC9-N574	21.00	26.50	2VN57406293R/00
920270370000	BODY-3-C150-GV-FL-WCB	21.00	26.50	1VN02502864R/02
922014100000	BODY-3-C150-GV-FL-CF8M-U174	21.10	26.50	4VU17426419R/00
922003090000	SEAT RING-3-150-GV-FL-HW-CF8	0.59	1.10	3VN28617155R/00
922006830000	SEAT RING CF8M-N373-3-150-FV	0.59	1.10	3VN37317155R/00
922004000000	SEAT RING CF8M-N338	1.00	1.10	3VN33895181R/00
922014500000	SEAT RING	0.62	1.10	3VU19924076P/00
922003110000	WEDGE-3-C150-CF8-N286	2.75	3.08	3VN28606598R/00
922004060000	WEDGE-3-C150-GV-BW-HW-CF8M-N338	2.75	3.08	3VN33806598R/00
922006780000	WEDGE-WC6-N291	2.75	3.08	3VN29106598R/00
922007000000	WEDGE-WC6-N292	2.75	3.08	3VN29206598R/00
920342830000	WEDGE-3-C150-GV-WCB	2.75	3.08	3VN02506598R/00
922005890000	YOKE 3-C150-GV-CF8-N286	7.50	12.70	2VN28605937R/00
922005900000	YOKE CUM BONNET-3-C150-GV-HW-CF8M-N338	7.50	12.70	2VN33805937R/00
922005870000	YOKE CUM BONNET-WC6-N390	7.50	12.70	2VN39005937R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922005880000	YOKE CUM BONNET-WC9-N391	7.50	12.70	2VN39105937R/00
920085050000	YOKE-WCB-N025	12.70	12.70	1VN02502865R/01
922003600000	YOKE-3-C150-GV-WCB	7.50	12.70	2VN31305937R/01
922014110000	YOKE CUM BONNET-CF8M-U174	7.50	12.70	4VU17426421R/00
922017810000	ARM-WC9-Z005	1.21		2VZ00514084R/00
922017800000	ARM-WCB-5152-3-300-FV-FL-WCB	1.21		2V515214084R/00
922015420000	BODY-3-C300-FV-BW-CF8M-Z058	31.00	39.40	2VZ05813888R/00
922007940000	BODY-3-C300-FV-BW-WC9-Z005	31.00	39.40	2VZ00506415R/00
920270620000	BODY-3-C300-FV-BW WCB	32.00	39.40	1V517102653R/02
922019100000	BODY-3-C300SPL-FV-BW WCB-Z069	31.00	39.40	2VZ06914518R/00
922010100000	BODY-3-C300-FV-FL-CF8-Z015	45.00	50.27	2VZ01507916R/00
920249090000	BODY-3-C300-FV-FL-WCB	45.00	50.27	1V515202768R/01
922007810000	C0VER-CF8-5152	14.90	19.00	3V515217688R/01
922015440000	COVER-3-C300-FV-CF8M-Z058	14.90	19.00	3VZ05824314R/01
920336510000	COVER-3-C300-FV-A105-5152	14.90	19.00	3V515223302P/00
922017400000	COVER-3-C300-FV-FL-WCB	17.00	19.00	3V515224641R/00
922019110000	COVER-3-C300SPL-FV-A105-Z069	14.90	19.00	
922015430000	FLAP-3-300-FV-BW-CF8M	1.75		3VZ05895062R/01
920336530000	FLAP-3-C150/C300-FV-F6A-5152	1.75		3V515206405P/00
922009520000	BODY-3-C300-GV-BW-CF8-N696	30.00	32.40	2VN69605867R/00
922008440000	BODY-3-C300-GV-BW-CF8M-N610	30.00	32.40	2VN61006451R/01
922002760000	BODY-3-C300-GV-BW-WC6-N257	30.00	32.40	2VN25705867R/00
922002770000	BODY-3-C300-GV-BW-WC9-N258	30.00	32.40	2VN25805867R/00
922002740000	BODY-3-C300-GV-BW-WCB-N255	30.00	32.40	2VN25505867R/00
922008120000	BODY-3-C300-GV-BW-WCB-K727	35.50	32.40	4VK72706966R/01
922018660000	BODY-3-C300-GV-BW-WCB-U440	35.50	32.40	3VU44024816R/00
922004370000	BODY-3-C300-GV-FL-CF8-N364	40.00	42.80	2VN36406013R/00
922004650000	BODY-3-C300-GV-FL-CF8M-N373	40.00	42.80	2VN37306013R/00
922010740000	BODY-3-C300-GV-FL-WC9-N573	40.00	42.80	2VN57308041R/00
920270380000	3-300-GV-BODY-FL-WCB	40.00	42.80	1VN04902868R/02
922016070000	BODY-3-C300-GV-FL-WCB	31.00	42.80	2VNC3314024R/00
922004380000	WEDGE-A351-CF8-N364	4.60	4.70	3VN36406599R/00
922004780000	WEDGE-3-C300-GV-A351-CF8M-N373	4.60	4.70	3VN37306599R/00
922004800000	WEDGE-A217-WC6-N257	4.60	4.70	3VN25706599R/01
922004810000	WEDGE-3-300-GV-BW-HW-WC9	4.60	4.70	3VN25806599R/01
920342840000	3-300-GV-WEDGE-WCB	4.60	4.70	3VN04906599R/00
922005610000	YOKE CUM BONNET CF8-N364-3-300-GV	20.20	21.40	2VN36405934R/02
922005600000	YOKE -3-C300-GV-CF8M-N373	20.20	21.40	2VN37305934R/02
922005580000	YOKE CUM BONNET-3-C300-GV-WC6-N380	20.20	21.40	2VN38005934R/02
922005590000	YOKE CUM BONNET-3-C300-GV-BW-WC9-N381	20.20	21.40	2VN38105934R/02
922003570000	3-2.1/2 -300-GV-YOKE CUM BONT-WCB	20.20	21.40	2VN32605934R/02
922009990000	BODY-3-C300-SV-BW-CF8-P342	33.00	34.00	2VP34207861R/01
922009870000	BODY-3-C300-SV-BW-CF8M-P345	33.00	34.00	2VP34507850R/01
922003310000	BODY-3-C300-SV-BW WC6-P295	33.00	34.00	2VP29508232R/00
922006600000	BODY-3-C300-SV-BW-WC9-P324	33.00	34.00	2VP32406209R/01
920249420000	BODY-3-C300-SV-BW WCB-2885	33.00	34.00	2V288508231R/00
922018690000	BODY-3-C300-RV-BW-WCB-U434	25.00	34.00	3VU43424818R/00
922013010000	BODY-3-C300-SV-BW WCB-U144	33.00	34.00	4VU14426384R/00
920248850000	BODY-3-C300-SV-FL CF8-2909	41.00	46.50	1V290902767R/02
922012070000	BODY-3-C300-SV-FL-CF8M-P386	41.00	46.50	2VP38608245R/00
922010660000	BODY-3-C300-SV-FL WC6-P364	33.00	46.50	2VP3640035R/02
922020610000	BODY-3-C300-SV-FL WC9-P559	41.00	46.50	2VP55908035R/00
920243040000	BODY-3-C300-SV-FL-WCB	41.00	46.50	2V247807750R/02
922013000000	BODY-3-C300-SV-FL-WCB-U143	45.00	46.50	4VU14326382R/00
920010910000	SEAT RING-3-C300-SV	1.92		3V247802953R/02

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922016620000	YOKE-3-C300-SV-CF8-P259	15.00	23.43	2VP25914085R/01
922016630000	YOKE-3-C300-SV-CF8M-P464	15.00	23.43	2VP46414085R/01
922016600000	YOKE-3-C300-SV-WC6-P364	15.00	23.43	2VP36414085R/01
922016610000	YOKE-3-C300-SV-WC9-P324	15.00	23.43	2VP32414085R/01
922016590000	YOKE-3-C300-SV-WCB	15.00	23.43	2V289714085R/01
922030390000	BODY-4-C150-FV-BW-CF8	32.00	46.00	2VZ03313501R/00
922013850000	BODY-4-C150-FV-BW-CF8M	32.00	46.00	2VZ04613501R/00
920270610000	BODY-4-C150-FV-BW-WCB	37.00	46.00	1V517702871R/02
922004680000	BODY-4-C150-FV-FL-CF8-5197	46.00	55.80	2V519706094R/00
922009910000	BODY-4-C150-FV-FL -CF8M-Z011	46.00	55.80	2VZ01107852R/00
920249220000	BODY-4-C150-FV-FL-WCB	46.00	55.80	1V515602776R/01
922006570000	C0VER-4-150-FV-FL-CF8	13.20	17.30	3V519717688R/01
922009920000	C0VER -4-150-FV-FL-CF8M	17.50	17.30	3VZ01123268R/01
920336620000	COVER-4-C150-FV-A105-5156	13.20	17.30	3V515606410P/01
922017370000	COVER-4-C150-FV-FL-WCB	15.50	17.30	3V515624641R/00
922000080000	FLAP CF8-M333-4-150-FV	3.20	3.39	3VM33395062R/01
922009340000	BODY-4-C150-GV-BW CF8-N680	31.00	36.00	2VN68007944R/00
922010140000	BODY-4-C150-GV-BW CF8M-N759	31.00	36.00	2VN75907944R/00
922003030000	BODY-4-C150-GV-BW-WC6-N296	31.00	36.00	2VN29605878R/00
922003040000	BODY-4-C150-GV-BW-WC9-N297	31.00	36.00	2VN29705878R/00
922003010000	4-150-GV-BODY-BW-WCB	31.00	36.00	2VN29405878R/00
922016780000	BODY-4-C150-GV-BW-WCB-NC23	23.00		2VNC2314106R/00
922018630000	BODY-4-C150-GV-BW-WCB-U437	31.00	36.00	3VU43724816R/00
922003000000	BODY-4-C150-GV-FL-CF8	37.50	42.75	2VN28505877R/00
922005150000	BODY-4-C150-GV-FL-CF8M-N438	37.50	42.75	2VN43805877R/00
922010560000	BODY-4-C150-GV-FL-WC6-N809	37.50	42.75	2VN80908017R/00
920270390000	4-150-GV-BODY-FL-WCB	37.50	42.75	1VN03302862R/02
922014790000	BODY WCB 4-150-FL-GV-NC04	29.20	32.00	2VNC0413695R/00
922003080000	SEAT RING-4-150-GV-FL-CF8	0.92	1.73	3VN28517155R/00
922005180000	SEAT RING-4-150-GV-FL-HW-CF8M	0.92	1.73	3VN43817155R/00
922013100000	SEAT RING-SA105	1.06	1.73	2VN03308454P/00
922010950000	WEDGE-4-150-GV-FL-HW-CF8	6.00	5.50	2VN28503379R/02
922010960000	WEDGE-4-150-GV-FL-HW-CF8M	6.00	5.50	2VN43803379R/02
922010970000	WEDGE-4-C150-GV-WC6-N296	6.00	5.50	2VN29603379R/02
922016360000	WEDGE4-150-GV-BW-HW-WC9	6.00	5.50	2VN29703379R/00
922010940000	4-150-GV-WEDGE-WCB	6.00	5.50	2VN03303379R/02
922014800000	WEDGE WCB-NC04	3.40	3.80	2VNC0413697R/00
922005960000	YOKE CUM BONNET-4-150-GV-FL-HW-CF8	11.20	18.85	2VN28505925R/01
922005970000	YOKE CUM BON-4-C150-GV-CF8M-N438	11.20	18.85	2VN43805925R/01
922005940000	YOKE 4-C150 GV-WC6-N377	11.20	18.85	2VN37705925R/01
922005950000	YOKE CUM BONNET-4-150-GV-BW-HW-WC9-SG	11.20	18.85	2VN37805925R/01
920085070000	YOKE-WCB-N033	14.50	18.85	1VN03302863R/01
922003550000	4-150-GV-YOKE-WCB	11.20	18.85	2VN31705925R/02
921502380000	YOKE_ WCB_GV_4_1500-W053	24.60	18.85	2VW05315053R/03
922017010000	YOKE CUM BON WCB-NC23	9.00	18.85	2VNC2314174R/00
922016770000	YOKE CUM BON WCB-NC43	10.00	18.85	2VNC4314181R/00
922014810000	YOKE CUM BON WCB-NC04	8.00	9.00	2VNC0413699R/00
922016660000	ARM-CF8M-Z012	2.00		2VZ01214084R/00
922016640000	ARM-WCB-5144	2.00		2V514414084R/00
922009540000	BODY-4-C300-FV-BW-CF8-Z009	44.00	54.80	2VZ00907763R/00
922009860000	BODY-4-C300-FV-BW-CF8-M810	65.50	54.80	2VM81007819R/00
922009960000	BODY-4-C300-FV-BW-CF8M-Z012	44.00	54.80	2VZ01207855R/00
922000180000	BODY-4-C300-FV-BW-WC9-5182	65.00	54.80	1V518205001R/01
922015410000	BODY-4-C300-FV-BW-WCB-5172	44.00	54.80	2V517213886R/00
922018700000	BODY-4-C300-FV-BW-WCB-U426	44.00	54.80	4VU43526824R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922014940000	BODY-4-C300-FV-FL-CF8-Z055	65.00	73.80	2VZ05513752R/00
922011850000	BODY-4-C300-FV-FL-CF8M-Z028	65.00	73.80	2VZ02808160R/00
922003360000	BODY-4-C300-FV-FL-WC9-5194	73.60	73.80	2V519405913R/00
920248630000	BODY-4-C300-FV-FL-WCB-5144	65.00	73.80	1V514402746R/01
922009530000	COVER 04-C300-FV CF8-Z009	17.40	21.00	3VZ00923255R/00
922009970000	C0VER-4-300-FV-BW-CF8M	22.00	21.00	3VZ01223269R/01
920336320000	COVER-4-C300-FV-A105-5144	17.30	21.00	3V514406410P/01
922017340000	COVER-4-C300-FV-WCB-5144	20.00	21.00	3V514424641R/00
922016370000	COVER-4-300SPL-FV-A105-Z062	17.30	21.00	4VZ06226553P/00
922018710000	COVER-4-C300-FV-A105-U426	17.30	21.00	4VU43526822P/00
922016740000	FLAP CF8M-Z012	3.20		3VZ01295062R/00
922005240000	BODY-4-C300-GV-BW-CF8-N439	51.50	46.70	2VN43906116R/00
922005250000	BODY-4-C300-GV-BW-CF8M-N450	51.50	46.70	2VN45006116R/00
922030410000	BODY-4-C300SPL-GV-BW-CF8M-NG85	51.50	46.70	2VNG8506116R/00
922002680000	BODY-4-C300-GV-BW-WC6-N253	51.50	46.70	2VN25305865R/00
922002690000	BODY-4-C300-GV-BW-WC9-N254	51.50	46.70	2VN25405865R/00
922002660000	4-300-GV-BODY-BW-WCB	51.50	46.70	2VN25105865R/00
922002670000	BODY-4-C300-GV-BW-WCC-N252	51.50	46.70	2VN25205865R/00
922017150000	BODY-4-C300-GV-BW-WCB-NC83	44.00		2VNC8314212R/00
922018670000	BODY-4-C300-GV-BW-WCB-U441	51.50	46.70	3VU44124816R/00
922007190000	BODY-4-C300-GV-FL CF8-N576	68.00	65.60	2VN57606303R/00
922007200000	BODY-4-C300-GV-FL-CF8M-N577	68.00	65.60	2VN57706303R/00
922002130000	BODY-4-C300-GV-FL WC6-N228	68.00	65.60	2VN22805816R/01
922002400000	BODY-4-C300-GV-FL WC9-N232	68.00	65.60	2VN23205840R/01
920270660000	4-300-GV-BODY-FL-WCB	68.00	65.60	2VN09703439R/01
922015820000	BODY-4-C300-GV-FL-WCB-NC34	50.00		2VNC3413947R/00
920176880000	SEAT RING-CF8-1324	1.80		3V132406428R/00
922002060000	SEAT RING CF8-M357	1.30		3VM35795181R/00
922007740000	SEAT RING CF8M-N577-4-300-GV	1.30		3VN57795181R/00
922011200000	WEDGE-4-C300-GV-CF8-M357	5.00	6.30	2VM35703436R/02
922011240000	WEDGE 4-C300-CF8M-N450	5.00	6.30	2VN45003436R/02
922011210000	WEDGE-WC6-N228	5.00	6.30	2VN22803436R/02
922011220000	WEDGE-WC9-N232-4-C300-GV-WC9	5.00	6.30	2VN23203436R/02
922011190000	4-300-GV-WEDGE-WCB	5.00	6.30	2VN09703436R/02
922005680000	YOKE CUM BONNET-4-300-GV-BW-HW-CF8	23.00	24.40	2VN43905935R/02
922005690000	YOKE 4-C300-GV-CF8M-N450	23.00	24.40	2VN45005935R/02
922003800000	YOKE CUM BON WC6-N253	23.00	24.40	2VN25305935R/02
922003810000	YOKE-4-C300-GV-WC9-N254	23.00	24.40	2VN25405935R/02
920085180000	YOKE CUM BON-N097	23.50	24.40	2VN09703437R/01
922003580000	4-300-GV-YOKE CUM BONNET-WCB	23.00	24.40	2VN32405935R/03
922003790000	YOKE CUM BONNET-4-300-GV-BW-HW-WCC	23.00	24.40	2VN25205935R/02
922015830000	YOKE CUM BON-4-C300-GV-WCB-NC34	18.50		2VNC3413949R/01
922030420000	BODY-4-C300SPL-RV-BW-CF8M-P572	53.00	49.00	1VP57205193R/00
922014870000	BODY-4-C300-SV-BW-CF8-P428	53.00	49.00	1VP42805206R/00
922013670000	BODY-4-C300-SV-BW-CF8M-P408	53.00	49.00	1VP40805193R/00
922003300000	BODY-4-C300-SV-BW-WC6-P296	53.00	49.00	1VP29605104R/02
922000540000	BODY-4-C300-SV-BW WC9-P266	53.00	49.00	1VP26605019R/02
920249530000	4-300-SV-BODY-BW-WCB	53.00	49.00	1V292302664R/02
922020080000	BODY-4-C300SPL-RV-BW-WCB-P552	53.00	49.00	1VP55205250R/00
922030220000	BODY-4-C300-SV-BW-WCB-U475	53.00	49.00	3VU47524818R/00
922008680000	BODY-4-C300-SV-FL-CF8-P336	65.00	72.00	1VP33605148R/00
922013470000	BODY-4-C300-SV-FL-CF8M-P404	65.00	72.00	1VP40405148R/00
922003410000	BODY-4-C300-SV-FL-WC6-P299	85.00	72.00	1VP29905107R/02
920243050000	BODY-4-C300-SV-FL-WCB-2479	65.00	72.00	1V247905153R/02
920010920000	SEAT RING-4-C300-SV	3.80		3V247902953R/02

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922008690000	YOKE-A351-CF8-P336	24.00	27.00	2VP33601777R/00
920084440000	YOKE-4-C300-SV-CF8	24.00	27.00	2V290903153R/00
922009880000	YOKE-4-C300-SV-CF8M-P345	24.00	27.00	2VP34503153R/00
922003320000	YOKE-4-C300-RV-WC6-P295	24.00	27.00	2VP29501777R/00
922000620000	YOKE-A217-WC9-P266	24.00	27.00	2VP26601777R/00
920082080000	4-300-SV-YOKE-WCB	24.00	27.00	2V247801777R/00
920336340000	FLAP-4-C150/C300-FV-F6A-5144	3.20		3V514406405P/00
922014510000	SEAT RING	1.60		3VU20024076P/00
922011840000	BODY-5-C300-FV-BW-WC9-Z027	94.00		2VZ02708156R/00
922020990000	BODY-5-C300-FV-BW-WCB-Z074	94.00		2VZ07408156R/00
922011830000	BODY-5-C300-GV-BW-WC9-N943	71.00		2VN94308128R/00
922006510000	BODY-5-C300-GV-BW-WCB-M473	73.00		2VM47306208R/00
922016670000	ARM-WCB-5173	3.65		2V517314084R/00
922012140000	BODY-6-C150-FV-BW-CF8-Z036	91.00	77.00	2VZ03608284R/00
922013810000	BODY-6-C150-FV-BW-CF8M-Z044	91.00	77.00	2VZ04408499R/00
920270600000	BODY-6-C150-FV-BW-WCB	84.50	77.00	1V517602888R/02
922004670000	BODY-6-C150-FV-FL-CF8-5196	91.00	92.70	2V519606093R/00
922009890000	BODY-6-C150-FV-FL-CF8M-Z013	91.00	92.70	2VZ01307851R/00
920249210000	BODY-6-C150-FV-FL-WCB-5155	91.00	92.70	1V515502775R/01
922006580000	COVER-6-C150-FV-CF8-5196	29.00	32.10	3V519617688R/01
922009900000	COVER-6-C150-FV-CF8M-Z013	35.00	32.10	3VZ01323267R/01
922017410000	COVER-6-C150-FV-FL-WCB	33.00	32.10	3V515124641R/00
922006540000	FLAP-6-C150-FV-CF8-5196	8.80	9.05	3V519695062R/01
922013460000	FLAP-6-C150-FV-CF8M-Z042	8.80	9.05	3VZ04295062R/01
920176890000	SEAT RING-6-C150-FV-CF8-1325	3.00		3V132506428R/00
922009020000	SEAT RING-6-C150-FV-CF8-M773	2.45		3VM77317155R/00
922003910000	SEAT RING-6-C150-FV-CF8M-N336	2.45		3VN33617155R/00
922015090000	SEAT RING-6-C150-FV-CF8M-U250	3.00		4VU25026539R/00
922012110000	BODY-6-C150-GV-BW-CF8-N111	52.00	56.45	2VN11108279R/00
922013780000	BODY-6-C150-GV-BW-CF8M-N182	52.00	56.45	2VN18208495R/00
922014860000	BODY-6-C150-GV-BW-WC6-N523	52.00	56.45	2VN52313707R/00
922015360000	BODY-6-C150-GV-BW-WC9-NE01	52.00	56.45	2VNE0113878R/00
922016380000	BODY-6-C150-GV-BW-WC9-N353	52.00	56.45	2VN35314061R/00
920249980000	BODY-6-C150-GV-BW-WCB-N005	50.45	56.45	1VN00502833R/02
922017980000	BODY-6-C150-GV-BW-WCC-NF33	52.00	56.45	2VNF3314365R/00
922016950000	BODY-WCB-6-C150-GV-BW-NC24	38.00		2VNC2414166R/00
922018650000	BODY-6-C150-GV-BW-WCB-U439	50.45	56.45	3VU43924816R/00
922001560000	BODY-6-C150-GV-FL-CF8-N223	55.00	65.90	1VN22305066R/02
922002950000	BODY-6-C150-GV-FL-CF8-N284	55.00	65.90	1VN28405066R/02
922004040000	BODY-6-C150-GV-FL-CF8M-N339	55.00	65.90	2VN33907830R/00
922003340000	BODY-6-C150-GV-FL--WC6-N306	55.00	65.90	1VN30605106R/01
922003350000	BODY-6-C150-GV-FL-WC9-N308	55.00	65.90	1VN30805106R/01
920270140000	6-150-GV-BODY-FL-WCB	55.00	65.90	1VN00102827R/02
922010470000	BODY-6-C150-GV-FL-WCC-N801	55.00	65.90	2VN80108007R/00
922014250000	BODY-6-C150-GV-FL-WCB -NC06	42.40		2VNC0613591R/02
922012530000	BODY-6-C150-GV-FL-WCB-U113	55.00	65.90	4VU11326375R/00
922001570000	SEAT RING-6-C150-GV-CF8-N223	3.10	3.12	3VN22317155R/00
922003070000	SEAT RING-6-C150-GV-CF8-N284	1.91	3.12	3VN28417155R/00
922010440000	SEAT RING-6-C150-GV-CF8M-M838	1.91	3.12	3VM83817155R/00
922004010000	SEAT RING-6-C150-GV-CF8M-N339	2.50	3.12	3VN33995181R/00
922001610000	WEDGE-6-C150-GV-CF8-N223	8.60	10.20	2VN22303304R/00
922003140000	WEDGE-6-C150-GV-CF8-N284	8.60	10.20	2VN28403304R/00
922004050000	WEDGE-6-C150-GV-CF8M-N339	8.60	10.20	2VN33903304R/00
922003450000	WEDGE-6-C150-GV-WC6-N306	8.60	10.20	2VN30603304R/00
922004280000	WEDGE-6-C150-GV-WC9-N308	8.60	10.20	2VN30803304R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
920342800000	6-150-GV-WEDGE-WCB	8.60	10.20	2VN00103304R/00
922010490000	WEDGE-6-C150-GV-WCC-N801	8.60	10.20	2VN80103304R/00
922014270000	WEDGE-6-C150-GV-WCB-NC06	5.30		2VNC0613610R/00
922001600000	YOKE-CF8C-N223	18.50	24.98	1VN22302829R/01
922005920000	YOKE-6-C150-GV-CF8-N284	23.10	24.98	2VN28403328R/00
922008620000	YOKE CUM BONNET-6-C150-GV-CF8C-N223	23.10	24.98	2VN22303328R/00
922005910000	YOKE CUM BONNET-6-C150-GV-CF8M-N339	23.10	24.98	2VN33903328R/00
922004220000	YOKE CUM BONNET-6-C150-GV-WC6-N352	23.10	24.98	2VN35203328R/00
922004230000	YOKE CUM BONNET-6-C150-GV-WC9-N353	23.10	24.98	2VN35303328R/00
920084830000	YOKE-A216 WCB-N001	18.50	24.98	1VN00102829R/02
920084900000	6-150-GV-YOKE CUM BONT-WCB	23.10	24.98	2VN00403328R/01
922004210000	YOKE CUM BONNET-6-C150-GV-WCC-N351	23.10	24.98	2VN35103328R/00
922017000000	YOKE CUM BONNET-6-C150-GV-WCB-NC64	17.30		2VNC6414171R/00
922014280000	YOKE CUM BONNET-6-C150-GV-WCB-NC06	16.00		2VNC0613611R/02
922012630000	YOKE CUM BONNET-6-C150-GV-WCB-U113	23.10	24.98	4VU11326376R/01
920247680000	BODY-6-C150-SV-FL-CF8-2883	75.00		1V288302573R/02
920084050000	YOKE-6-C150-GLV-CF8-2883	24.00		2V288303030R/01
922016690000	ARM-6-300-FV-FL-CF8M	3.65		2VZ04214084R/00
922015050000	BODY-6-C300-FV-BW-CF8-Z056	90.00	95.00	2VZ05613761R/00
922014000000	BODY-6-C300-FV-BW-CF8M-Z049	94.00	95.00	2VZ04913504R/00
922030850000	BODY-6-C300-FV-BW-WC9-Z078	94.00	95.00	2VZ07813504R/00
922001880000	BODY-6-C300-FV-BW-WCB-5173	90.00	95.00	2V517305741R/00
922030210000	BODY-6-C300-FV-BW-WCB-U474	95.00	95.00	4VU47426824R/00
922012020000	BODY-6-C300-FV-FL-CF8-Z030	121.00	125.00	2VZ03008208R/00
922013440000	BODY-6-C300-FV-FL-CF8M-Z042	121.00	125.00	2VZ04208464R/00
922003260000	BODY-6-C300-FV-FL-WC9-5193	121.00	125.00	2V519305896R/00
920249030000	BODY-6-C300-FV-FL-WCB	121.00	125.00	1V515102766R/01
922012750000	BODY-6-C300-FV-FL-WCB-U136	121.00	125.00	4VU13626378R/00
920336460000	COVER-6-C300-FV-A105-5151	29.00	32.10	3V515117286P/00
922012800000	COVER-6-C300-FV-A105-U136	29.00	32.10	4VU13626379P/00
922030260000	COVER-6-C300-FV-A105-U474	29.00	32.10	4VU47426822P/00
920336470000	FLAP-6-C300-FV-A105-5151	9.00	9.05	3V515106405P/00
922015150000	SEAT RING-6-C300-FV-CF8-Z030	3.50		2VZ03008454P/00
922015160000	SEAT RING-6-C300-FV-CF8M-Z042	3.50		2VZ04208454P/00
922009410000	BODY-6-C300-GV-BW-CF8M-N688	73.00	94.50	2VN68805837R/00
922030520000	BODY-6-C300SPL-GV-BW-CF8M-NH01	73.00	94.50	2VNH0105837R/00
922002390000	BODY-6-C300-GV-BW-WC6-N233	73.00	94.50	2VN23305837R/00
922002650000	BODY-6-C300-GV-BW-WC9-N250	73.00	94.50	2VN25005837R/00
922002630000	6-300-GV-BODY-BW-WCB	73.00	94.50	2VN24805837R/00
922002640000	BODY-6-C300-GV-BW-WCC-N249	73.00	94.50	2VN24905837R/00
922017120000	BODY-6-C300-GV-BW-WCB-NC84	82.50		2VNC8414202R/00
922018680000	BODY-6-C300-GV-BW-WCB-U433	91.00	94.50	3VU43324816R/00
922003760000	BODY-6-C300-GV-FL-CF8-N337	103.00	124.00	2VN33705949R/00
922003750000	BODY-6-C300-GV-FL-CF8M-N336	103.00	124.00	2VN33605949R/00
922002140000	BODY-6-C300-GV-FL-WC6-N229	116.00	124.00	2VN22905817R/01
922003180000	BODY-6-C300-GV-FL-WC9-N281	103.00	124.00	2VN28105883R/00
920270360000	BODY-6-C300-GV-FL-WCB	116.00	124.00	1VN01702858R/03
922010480000	BODY-6-C300-GV-FL-WCC-N800	103.00	124.00	2VN80008008R/00
922015910000	BODY-6-C300-GV-FL-WCB-NC36	90.00		2VNC3613956R/01
922012590000	BODY-6-C300-GV-FL-WCB-U119	103.00	124.00	4VU11926375R/00
920010980000	SEAT RING-6-C300-GLV-CA15-2480	5.20	2.45	3V248002953R/02
922013070000	SEAT RING-6-C300-GV-WCB-N001	1.90	2.45	2VN00108454P/00
922010870000	WEDGE-6-C300-GV-CF8-M358	11.50	12.40	1VM35802860R/02
922010930000	WEDGE-6-C300-GV-CF8M-N336	11.50	12.40	1VN33602860R/02
922010900000	WEDGE-6-C300-GV-WC6-N229	11.50	12.40	1VN22902860R/02

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922010920000	WEDGE-6-C300-GV-WC9-N281	11.50	12.40	1VN28102860R/02
922010890000	6-300-GV-WEDGE-WCB	11.50	12.40	1VN01702860R/02
920342820000	WEDGE-A216-WCB-N017	10.00	12.40	
922010910000	WEDGE-6-C300-GV-WCC-N249	11.50	12.40	1VN24902860R/02
922015920000	WEDGE-6-C300-GV-WCB-NC36	7.00		2VNC3613960R/00
922005720000	YOKE CUM BONNET-6-C300-GV-CF8-N337	40.50	45.40	2VN33705901R/01
922005730000	YOKE CUM BONNET-6-C300-GV-CF8M-N336	40.50	45.40	2VN33605901R/01
922003330000	YOKE CUM BONNET-6-C300-GV-WC6-N302	40.50	45.40	2VN30205901R/02
922003840000	YOKE CUM BONNET-6-C300-GV-WC9-N250	40.50	45.40	2VN25005901R/01
922003830000	6-300-GV-YOKE CUM BONT-WCB	40.50	45.40	2VN21105901R/01
922003820000	YOKE CUM BONNET-6-C300-GV-WCC-N249	40.50	45.40	2VN24905901R/01
922017480000	YOKE CUM BONNET-6-C300-GV-WCB-NC96	30.40		2VNC9614230R/01
922015930000	YOKE CUM BONNET-6-C300-GV-WCB-NC36	27.00		2VNC3613958R/02
922012700000	YOKE CUM BONNET-6-C300-GV-WCB-U119	40.50	45.40	4VU11926376R/01
922030530000	BODY-6-C300SPL-RV-BW-CF8M-P574	73.20	99.80	1VP57405161R/00
922012170000	BODY-6-C300-SV-BW-CF8-P388	73.20	99.80	1VP38805184R/00
922010540000	BODY-6-C300-SV-BW-CF8M-P362	73.20	99.80	1VP36205161R/00
922005220000	BODY-6-C300-SV-BW-WC9-P309	95.30	99.80	1VP30905155R/01
920249430000	BODY-6-C300-SV-BW-WCB	73.70	99.80	1V288702635R/03
922020820000	BODY-6-C300SPL-RV-BW-WCB-P562	73.20	99.80	1VP56205161R/00
922030230000	BODY-6-C300-SV-BW-WCB-U476	95.30	99.80	3VU47624818R/00
922009780000	BODY-6-C300-SV-FL-CF8-P340	118.38	130.50	1VP34005154R/01
922012000000	BODY-6-C300-SV-FL-CF8M-P380	95.00	130.50	1VP38005179R/01
922003420000	BODY-6-C300-SV-FL-WC6-P300	118.38	130.50	1VP30005110R/03
922004080000	BODY-6-C300-SV-FL-WC9-P316	95.00	130.50	1VP31605110R/04
920243950000	BODY-6-C300-SV-FL-WCB	118.90	130.50	1V248001392R/02
922013030000	BODY-6-C300-SV-FL-WCB-U146	128.70	130.50	4VU14626382R/00
922009770000	YOKE-6-C300-RV-CF8-P340	44.60	47.00	2VP34001846R/00
922010570000	YOKE-6-C300-GLV-CF8M-P362	44.60	47.00	2VP36201846R/00
922003530000	YOKE-6-C300-GLV-WC6-P290	44.60	47.00	2VP29001846R/01
922004200000	YOKE-6-C300-GLV-WC9-P309	44.60	47.00	2VP30901846R/01
920082490000	YOKE-6-C300-RV-WCB	44.60	47.00	2V248001846R/01
922013050000	YOKE-6-C300-RV-WCB-U146	44.00	47.00	4VU14626383R/01
922014520000	SEAT RING	1.90		3VU20124076P/01
922016720000	ARM-CF8M-Z048	7.30		2VZ04814084R/00
922012150000	BODY-8-C150-FV-BW-CF8-Z035	82.00	114.00	2VZ03508283R/00
922013820000	BODY-8-C150-FV-BW-CF8M-Z045	82.00	114.00	2VZ04508500R/00
922002480000	BODY-8-C150-FV-BW-WCB-5170	82.00	114.00	2V517005856R/00
922006430000	BODY-8-C150-FV-FL-CF8-Z001	102.00	146.00	2VZ00106197R/00
920249200000	BODY-8-C150-FV-FL-WCB-5154	102.00	146.00	1V515402774R/01
922012860000	BODY-8-C150-FV-FL-WCB-U140	132.00	146.00	4VU14026378R/00
922006590000	COVER-8-C150-FV-CF8-Z001	42.20	50.70	3VZ00117688R/02
922013840000	COVER-8-C150-FV-CF8M-Z045	42.20	50.70	4VZ04526409R/01
920336610000	COVER-8-C150-FV-A105-5154	42.20	50.70	3V515406410P/01
922017360000	COVER-8-C150-FV-FL-WCB-5154	48.00	50.70	3V515424641R/00
922012980000	COVER-8-C150-FV-A105-U140	42.20	50.70	4VU14026379P/00
922006550000	FLAP-8-C150-FV-CF8-Z001	16.80		3VZ00195062R/01
922013830000	FLAP-8-C150-FV-CF8M-Z045	16.80		3VZ04595062R/01
922010410000	FLAP-8-C150-FV-F316-K967	16.80		3VK96706405P/00
920176900000	SEAT RING-8-C150-FV-CF8-1326	5.10		3V132606428R/00
922013860000	SEAT RING-8-C150-FV-CF8M-Z045	5.10		3VZ04517155R/00
922010420000	SEAT RING-8-C150-FV-F316-K967	16.17		4VK96790873P/00
922010530000	BODY-8-C150-GV-CF8--N80	78.00	83.10	2V-N803-08014R/00
922012130000	BODY-8-C150-GV-BW-CF8-N113	78.00	83.10	2VN11308280R/00
922013790000	8-150-GV-BODY-BW-CF8M	78.00	83.10	2VN18408496R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922002890000	BODY-8-C150-GV-BW-WC6-N273	78.00	83.10	2VN27305871R/00
922002900000	BODY-8-C150-GV-BW-WC9-N274	78.00	83.10	2VN27405871R/00
922002870000	8-150-GV-BODY-BW-WCB	78.00	83.10	2VN27105871R/00
922016900000	BODY-8-C150-GV-BW-WCB-NC25	62.30		2VNC2514162R/00
922018640000	BODY-8-C150-GV-BW-WCB-U438	78.00	83.10	3VU43824816R/00
922012460000	BODY-8-C150-GV-BW-WCB-U131	78.00	83.10	4VU13126374R/00
922002860000	BODY-8-C150-GV-FL-CF8-N243	90.00	97.00	2VN24305870R/00
922009940000	BODY-8-C150-GV-FL-CF8M-N734	79.08	97.00	2VN73407854R/00
920270340000	BODY-8-C150-GV-FL-WCB-N009	90.00	97.00	1VN00902856R/03
922008570000	BODY-8-C150-GV-FL-WCB-K779	90.00	97.00	4VK77926027R/00
922010580000	BODY-8-C150-GV-FL-WCC-N813	90.00	97.00	2VN81308025R/00
922014330000	BODY-8-C150-GV-FL-WCB-NC08	70.00		2VNC0813609R/00
922012540000	BODY-8-C150-GV-FL-WCB-U114	90.00	97.00	4VU11426375R/00
922005400000	SEAT RING-8-C150-GV-CF8-N243	3.54	5.36	3VN24317155R/00
922009980000	SEAT RING-8-C150-GV-CF8M-N734	3.54	5.36	3VN73417155R/00
922014360000	SEAT RING-8-C150-GV-WCB-NC08	4.70		3VNC0823997P/00
922010820000	WEDGE-8-C150-GV-CF8-N243	16.00	16.30	1VN24302855R/02
922009950000	8-150-GV-WEDGE-CF8M	16.00	16.30	1VN73402855R/01
922010840000	WEDGE-8-C150-GV-CF8M-N734	16.00	16.30	1VN73402855R/01
922010830000	WEDGE-8-C150-GV-WC6-M593	16.00	16.30	1VM59302855R/02
922010850000	WEDGE-8-C150-GV-WC9-N762	16.00	16.30	1VN76202855R/01
920342810000	WEDGE CASTING-N009	16.00	16.30	1VN00902855R/02
922010810000	8-150-GV-WEDGE-WCB	16.00	16.30	1VN00902855R/02
922010860000	WEDGE-8-C150-GV-WCC-N813	16.00	16.30	1VN81302855R/01
922014350000	WEDGE-8-C150-GV-WCB-NC08	12.00		2VNC0813624R/00
922014340000	YOKE CUM BONNET-8-C150-GV-WCB-NC08	21.50		2VNC0813619R/00
922002580000	YOKE-8-C150-GV-CF8-N243	31.50	34.90	2VN24305863R/00
922006160000	YOKE CUM BONNET-8-C150-GV-CF8M-N517	31.50	34.90	2VN51705863R/00
922006150000	YOKE CUM BONNET-8-C150-GV-WC9-N516	31.50	34.90	2VN51605863R/00
922002570000	YOKE CUM BONNET-8-C150-GV-MO-WCB-N492	31.50	34.90	2VN49205863R/00
922016920000	YOKE CUM BONNET-8-C150-GV-WCB-NC75	25.00		2VNC7514158R/00
922012650000	YOKE CUM BONNET-8-C150-GV-WCB-U147	36.00	34.90	4VU14726376R/01
922016910000	YOKE CUM BONNET-NC65	23.00		2VNC6514163R/00
922005320000	YOKE CUM BONNET-8-C150-GV-CF8-N375	31.90	36.50	2VN37505933R/02
922005850000	8-150-GV-YOKE-CF8M	31.90	36.50	2VN50405933R/02
922005830000	YOKE 8-C150-GV SG-WC6-N401	31.90	36.50	2VN40105933R/02
922005840000	YOKE 8-C150-GV SG-WC9-N402	31.90	36.50	2VN40205933R/02
920085010000	YOKE CUM BON WCB-N009	31.00	36.50	1VN00902857R/01
922003560000	8-150-GV-YOKE CUM BONNET-WCB	31.90	36.50	2VN27505933R/02
922005820000	YOKE CUM BONNET-8-C150-GV-WCC-N400	31.90	36.50	2VN40005933R/02
922012640000	YOKE CUM BONNET-8-C150-GV-WCB-U114	36.00	36.50	4VU11426376R/01
920336370000	ARM-SA105-5150	7.30		3V515006408F/01
922016700000	ARM-8-300-FV-FL-WCB	7.30		2V515014084R/00
922013990000	BODY-8-C300-FV-BW-CF8M-Z048	160.00	160.00	2VZ04813503R/00
922004090000	BODY-8-C300-FV-BW-WC9-5195	160.00	160.00	2V519505740R/00
922001870000	BODY-8-C300-FV-BW-WCB-5174	160.00	160.00	2V517405740R/00
922030200000	BODY-8-C300-FV-BW-WCB-U473	160.00	160.00	4VU47326824R/00
922014380000	BODY-8-C300-FV-FL-CF8-Z053	158.00	216.00	2VZ05313637R/00
920248840000	BODY-8-C300-FV-FL-WCB-5150	158.00	216.00	1V515002758R/01
922012760000	BODY-8-C300-FV-FL-WCB-U138	158.00	216.00	4VU13826378R/00
922016530000	BODY-C300SPL-Z064	160.00	216.00	2VZ06414125R/00
922014390000	COVER-8-C300-FV-CF8-Z053	47.00	56.00	4VZ05326444R/00
922014060000	COVER-8-C300-FV-CF8M-Z048	47.00	56.00	4VZ04826413R/00
920336330000	COVER-8-C300-FV-A105-5150	47.00	56.00	3V515017285P/00
922017420000	COVER-8-C300-FV-FL-WCB-5150	54.80	56.00	3V515024641R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922016540000	COVER-C300SPL-Z064	47.00	56.00	4VZ06426589P/00
922012810000	COVER-8-C300-FV-A105-U138	47.00	56.00	4VU13826379P/00
922030250000	COVER-8-C300-FV-A105-U473	47.00	56.00	4VU47326822P/00
920336350000	FLAP-8-C300-FV-A105-5150	16.80	16.17	3V515006405P/00
922014400000	SEAT RING-8-C300-FV-CF8-Z053	5.30		4VZ05326445R/00
922014050000	SEAT RING-8-C300-FV-CF8M-Z048	5.30		3VZ04817155R/00
922016860000	BODY-8-C300-GV-BW-CF8-NE83	151.00	143.20	2VNE8314156R/00
922014010000	BODY-8-C300-GV-BW-CF8M-N189	151.00	143.20	2VN18913505R/00
922030540000	BODY-8-C300SPL-GV-BW-CF8M-NH05	151.00	143.20	2VNH0513505R/00
922002610000	BODY-8-C300-GV-BW-WC6-N246	151.00	143.20	2VN24605864R/00
922002620000	BODY-8-C300-GV-BW-WC9-N247	151.00	143.20	2VN24705864R/00
922004150000	BODY-8-C300-GV-BW-WC9-K623	151.00	143.20	4VK62318315R/03
922002590000	8-300-GV-BODY-BW-WCB	151.00	143.20	2VN24405864R/00
922002600000	BODY-8-C300-GV-BW-WCC-N245	151.00	143.20	2VN24505864R/00
922017110000	BODY-8-C300-GV-BW-WCB-NC85	125.00		2VNC8514201R/01
922030170000	BODY-8-C300-GV-BW-WCB-U470	143.20	143.20	3VU47024816R/00
922012510000	BODY-8-C300-GV-BW-WCB-U126	151.00	143.20	4VU12626374R/00
922014420000	BODY-8-C300-GV-FL-CF8-N497	195.00	190.00	2VN49713644R/00
922002150000	BODY-8-C300-GV-FL-WC6-N230	191.00	190.00	2VN23005818R/01
920270630000	BODY-8-C300-GV-FL-WCB-N089	195.00	190.00	1VN08902891R/01
922015740000	BODY-8-C300-GV-FL-WCB-NC38	142.00		2VNC3814095R/01
922012600000	BODY-8-C300-GV-FL-WCB-U120	195.00	190.00	4VU12026375R/00
922014410000	SEAT RING-8-C300-GV-CF8-N497	3.26	3.32	4VN49726448R/00
922011560000	SEAT RING-8-C300-GV-CF8M-N498	3.26	3.32	3VN49817155R/00
922013080000	SEAT RING-8-C300-GV-WCB-N009	2.70	3.32	2VN00908454P/00
922011140000	WEDGE-8-C300-GV-CF8-M359	18.50	19.60	2VM35903417R/02
922011550000	WEDGE-8-C300-GV-CF8M-N498	18.50	19.60	2VN49803417R/00
922011150000	WEDGE-8-C300-GV-WC6-N230	18.50	19.60	2VN23003417R/02
922011160000	WEDGE-8-C300-GV-WC9-N247	18.50	19.60	2VN24703417R/02
922011130000	8-300-GV-WEDGE-WCB	18.50	19.60	2VN08903417R/02
922011170000	WEDGE-8-C300-GV-WCC-N245	18.50	19.60	2VN24503417R/02
922015750000	WEDGE-8-C300-GV-WCB-NC38	14.50		2VNC3813938R/02
922005650000	YOKE CUM BONNET-8-300-GV-FL-HW-CF8M	53.00	69.95	2VN49806097R/00
922005620000	YOKE CUM BON CF8-N495	57.00	68.10	2VN49506101R/02
922005630000	YOKE CUM BON CF8M-N496-8"-C300 GV-MO YOK	57.00	68.10	2VN49606101R/02
922004920000	YOKE CUM BONNET-8-C300-GV-WC6-N424	57.00	68.10	2VN42406101R/02
922004930000	YOKE CUM BONNET-8-C300-GV-WC9-N425	57.00	68.10	2VN42506101R/02
922004900000	YOKE CUM BONNET-8-C300-GV-MO-WCB-N422	57.00	68.10	2VN42206101R/02
922017490000	YOKE CUM BONNET-8-C300-GV-WCB-NC97	51.20		2VNC9714231R/01
922005640000	YOKE CUM BONNET-8-C300-GV-CF8-N497	53.00	69.95	2VN49706097R/00
922004950000	YOKE CUM BONNET-8-C300-GV-WC6-N443	53.00	69.95	2VN44306097R/01
922004960000	YOKE CUM BONNET-8-C300-GV-WC9-N444	53.00	69.95	2VN44406097R/01
922004710000	8-300-GV-YOKE CUM BONT-WCB	53.00	69.95	2VN39906097R/00
922004940000	YOKE CUM BONNET-8-C300-GV-WCC-N442	53.00	69.95	2VN44206097R/01
922015760000	YOKE CUM BONNET-8-C300-GV-WCB-NC38	43.00		2VNC3813834R/01
922012710000	YOKE CUM BONNET-8-C300-GV-WCB-U120	53.00	69.95	4VU12026376R/01
922016890000	BODY-8-C300-RV-BW-CF8-P485	158.00	164.50	1VP48505219R/00
922015490000	BODY-8-C300-RV-BW-CF8M-P462	158.00	164.50	1VP46205210R/00
922030550000	BODY-8-C300SPL-RV-BW-CF8M-P576	158.00	164.50	1VP57605210R/00
922030030000	BODY-8-C300-SV-BW-WC9-P569	158.00	164.50	1VP56905210R/00
920249490000	8-300-SV-BODY-BW-WCB	158.00	164.50	1V288802637R/02
922018110000	BODY-8-C300-SV-BW-WCC-P532	158.00	164.50	1VP53205221R/00
922018720000	BODY-8-C300-SV-BW-WCB-U443	158.00	164.50	3VU44324818R/00
922009270000	BODY-8-C300-SV-FL-CF8-P338	208.00	219.70	1VP33805150R/01
922020870000	BODY-8-C300-RV-FL-CF8M-P565	208.00	219.70	1VP56505150R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
920243920000	BODY-8-C300-SV-FL-WCB-2481	208.00	219.70	1V248101385R/03
922016210000	BODY-300SPL-WCB-P477	158.00	164.50	1VP47705214R/00
922019080000	BODY-300SPL-WCC-P546	158.00	164.50	1VP54605229R/00
922030050000	SEAT RING	6.44		3VP56924829P/00
920010990000	SEAT RING-8-C300-RV-CA15-2481	8.60		3V248102953R/02
922009300000	YOKE-8-C300-GLV-CF8-P338	88.00	92.00	2VP33802419R/00
922015500000	YOKE-8-C300-RV-CF8M-P462	88.00	92.00	2VP46202419R/00
922030040000	YOKE-8-C300-RV-WC9-P569	88.00	92.00	2VP56902419R/00
920083100000	8-300-SV-YOKE-WCB	88.00	92.00	2V267002419R/01
922018120000	YOKE-8-C300-RV-WCC-P532	88.00	92.00	2VP53202419R/00
922013040000	YOKE-A216-WCB-U143	24.00	92.00	4VU14326383R/01
922014530000	SEAT RING	2.70		3VU20224076P/01
921534110000	BODY-A216-WCC-10-C1500-GV	512.00	126.00	3VCE0821674R/00
922012120000	BODY-10-C150-GV-BW-CF8-N113	122.00	126.00	2VN11308281R/01
922013800000	BODY-10-C150-GV-BW-CF8M-N185	122.00	126.00	2VN18508497R/01
922002810000	BODY-10-C150-GV-BW-WC9-N270	122.00	126.00	2VN27005868R/01
922002780000	BODY-10-C150-GV-BW-WCB-N267	122.00	126.00	2VN26705868R/01
922006720000	BODY-10-C150-GV-BW-WCB-N267	122.00	126.00	4VN26706941R/00
922016850000	BODY-10-C150-GV-BW-WCB -NC26	93.00		2VNC2614151R/00
922012470000	BODY-10-C150-GV-BW-WCB-U130	122.00	126.00	4VU13026374R/00
922009350000	BODY-10-C150-GV-FL-CF8-N685	140.00	141.70	1VN68502878R/00
922020470000	BODY-10-C150-GV-FL-CF8M-N513	140.00	141.70	2VN51314639R/01
922003440000	BODY-10-C150-GV-FL-WC6-N305	140.00	141.70	2VN30505920R/01
922003850000	BODY-10-C150-GV-FL-WC9-N307	140.00	141.70	2VN30705920R/00
920270540000	10-150-GV-BODY-FL-WCB	140.00	141.70	1VN05702878R/04
922010620000	BODY-10-C150-GV-FL-WCC-N814	140.00	141.70	2VN81408027R/01
922014730000	BODY-WCB-10-C15-GV-FL-NC10	105.00		2VNC1013684R/01
922012550000	BODY-10-C150-GV-FL-WCB-U115	140.00	141.70	4VU11526375R/00
922007750000	SEAT RING-10-C150-GV-CF8-N512	3.78	5.90	3VN51217155R/00
922010290000	SEAT RING-10-C150-GV-CF8M-K960	3.78	5.90	3VK96017155R/00
922014540000	SEAT RING	3.63	5.90	3VU20324076P/00
922001280000	SEAT RING-10-C150-GV-A105-N206	4.92	5.90	3VN20695102P/01
922014770000	SEAT RING-10-C150-GV-WCB-NC10	6.60		3VNC1023997P/00
922011060000	WEDGE-10-C150-GV-CF8-N512	28.00	26.00	2VN51203384R/02
922011070000	WEDGE-10-C150-GV-CF8M-K960	28.00	26.00	2VK96003384R/01
922011040000	WEDGE-10-C150-GV-WC6-N305	28.00	26.00	2VN30503384R/02
922011050000	WEDGE A217-WC9-N307	28.00	26.00	2VN30703384R/02
922011030000	10-150-GV-WEDGE-WCB	28.00	26.00	2VN05703384R/02
922011080000	WEDGE-10-C150-GV-WCC-N814	28.00	26.00	2VN81403384R/01
922014750000	WEDGE-10-C150-GV-WCB-NC10	18.80		2VNC1013687R/00
922005770000	YOKE CUM BONT-MO-10-C150-GV-CF8M-N521	65.00	66.00	2VN52106179R/00
922005530000	YOKE CUM BONNET-10-C150-GV-WCB-N471	65.00	66.00	2VN47106179R/00
922016870000	YOKE CUM BONNET-NC66	42.00		2VNC6614152R/00
922016880000	YOKE CUM BONNET-NC76	44.00		2VNC7614154R/00
922014740000	YOKE CUM BONNET-10-C150-GV-WCB-NC10	40.00		2VNC1013685R/00
922006110000	YOKE CUM BONNET-10-C150-GV-CF8-N512	63.00	67.60	2VN51206023R/01
922006120000	YOKE CUM BONNET-10-C150-GV-CF8M-N513	63.00	67.60	2VN51306023R/01
922003520000	YOKE-10-C150-GV-WC6-N305	61.00	67.60	1VN30502881R/01
922004250000	YOKE A217-WC9-N307	61.00	67.60	1VN30702881R/01
922006100000	YOKE CUM BONNET-10-C150-GV-WC9-N270	63.00	67.60	2VN38806023R/01
920085110000	YOKE-10-C150-GV-WCB-N057	61.00	67.60	1VN05702881R/01
922004480000	10-150-GV-YOKE CUM BONNET -WCB	63.00	67.60	2VN36206023R/01
922006080000	YOKE CUM BON WCC-N386	63.00	67.60	2VN38606023R/01
922012660000	YOKE CUM BONNET-10-C150-GV-WCB-U115	63.00	67.60	4VU11526376R/01
922013770000	ARM-10-C300-FV-CF8M-Z043	10.30	10.30	3VZ04323420R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922010730000	ARM-10-C300-FV-WCB-Z017	10.30	10.30	3VZ01723420R/00
922013730000	BODY-10-C300-FV-BW-CF8M-Z043	194.00	234.00	2VZ04308493R/00
922010260000	BODY-10-C300-FV-BW-WCB-Z017	194.00	234.00	2VZ01707982R/01
922030190000	BODY-10-C300-FV-BW-WCB-U472	234.00	234.00	4VU47226824R/00
922010680000	BODY-10-C300-FV-FL-WCB-Z019	264.00	295.20	2VZ01908037R/01
922013760000	COVER-10-C300-FV-CF8M-Z043	78.00	78.00	4VZ04326405R/00
922010670000	COVER-10-C300-FV-WCB-Z017	78.00	78.00	4VZ01726213R/00
922030240000	COVER-10-C300-FV-WCB-U472	78.00	78.00	4VU47226971R/00
922013750000	FLAP-10-C300-FV-CF8M-Z043	26.25	26.50	3VZ04395062R/01
922010430000	FLAP-10-C300-FV-A105	26.25	26.50	4VZ01726176P/00
922030580000	FLAP-10-C300-FV-WCB-Z017	26.25	26.50	3VZ01725155R/00
922013740000	SEAT RING-10-C300-FV-CF8M-Z043	11.30	11.36	3VZ04317155R/00
922016500000	BODY-10-C300-GV-BW-CF8M-NE67	210.00	230.30	2VNE6714120R/00
922002520000	BODY-10-C300-GV-BW-WC9-N238	210.00	230.30	2VN23805859R/00
922002490000	BODY-10-C300-GV-BW-WCB-N235	210.00	230.30	2VN23505859R/00
922017100000	BODY-10-C300-GV-BW-WCB-NC86	175.00		2VNC8614200R/02
922030160000	BODY-10-C300-GV-BW-WCB-U469	230.30	230.30	3VU46924816R/00
920270550000	BODY-10-C300-GV-FL-WCB-N065	271.00	284.00	1VN06502884R/03
922016040000	BODY-10-C300-GV-FL-WCB-NC30	210.00		2VNC3014016R/03
922012610000	BODY-10-C300-GV-FL-WCB-U121	259.50	284.00	4VU12126375R/00
922016520000	SEAT RING-10-C300-GV-CF8M-NE67	5.24		2VNE6708454P/00
922016510000	WEDGE-10-C300-GV-CF8M-NE67	39.00	36.60	2VNE6703393R/00
922011100000	WEDGE-10-C300-GV-WC6-N304	39.00	36.60	2VN30403393R/02
922011120000	WEDGE-10-C300-GV-WC9-N238	39.00	36.60	2VN23803393R/02
922011090000	WEDGE-10-C300-GV-WCB	39.00	36.60	2VN06503393R/02
922016050000	WEDGE-10-C300-GV-WCB-NC30	32.00		2VNC3014020R/02
922005710000	YOKE CUM BON CF8M-N503	105.00	105.00	2VN50306082R/01
922004610000	YOKE CUM BONNET-10-C300-GV-WC9-N407	105.00	105.00	2VN40706082R/01
922004580000	YOKE-10-C300-GV-WCB-N404	105.00	105.00	2VN40406082R/01
922016060000	YOKE CUM BONNET-10-C300-GV-WCB-NC30	75.00		2VNC3014022R/02
922017500000	YOKE CUM BONNET-10-C300-GV-WCB-NC98	78.00		2VNC9814232R/01
922005670000	YOKE CUM BONNET-10-C300-GV-CF8M-N501	105.00	111.30	2VN50106096R/01
922004860000	YOKE CUM BONNET-10-C300-GV-WC9-N385	105.00	111.30	2VN38506096R/01
920085120000	YOKE-10-C300-GV-WCB-N065	105.00	111.30	1VN06502885R/01
922004700000	10-300-GV-YOKE-SG-WCB	105.00	111.30	2VN38206096R/01
922012720000	YOKE-10-C300-GV-WCB-U121	105.00	111.30	4VU12126376R/01
922018900000	BODY-10-C300-SV-BW-CF8M-P545	112.00	214.80	1VP54505211R/00
922030000000	BODY-10-C300-SV-BW-WC9-P566	112.00	214.80	1VP56605211R/00
922015770000	10-300-SV-BODY-BW-WCB	112.00	214.80	1VP36605211R/02
922030360000	BODY-10-C300-SV-BW-WCB-U480	130.00	214.80	3VU48024818R/00
922018930000	SEAT RING-P545	9.50		2VP54508454P/00
922030010000	SEAT RING-P566	9.50		3VP56624829P/00
922018910000	YOKE COVER-10-C300-RV-CF8M-P545	119.50	129.00	2VP54508125R/00
922030020000	YOKE COVER-10-C300-RV-WC9-P566	119.50	129.00	2VP56608125R/00
922011810000	10-C300-RV-YOKE-COVER-WCB	119.50	129.00	2VP36608125R/02
922017560000	10-400-SPL-SV-BODYSPL-BW-WCB	142.00	232.50	1VP49205220R/00
922017570000	BODY-10-C400-SV-BW-WCC(SPL)-P493	142.00	232.50	1VP49305220R/00
922017660000	YOKE COVER-WCC-P493-10-400-RV	119.50	129.00	2VP49308125R/00
922013680000	BODY-12-C150-GV-BW-CF8M-N171	227.00	185.00	2VN17108484R/01
922002730000	BODY-12-C150-GV-BW-WC9-N266	205.00	185.00	2VN26605866R/03
922002700000	BODY-12-C150-GV-BW-WCB-N263	205.00	185.00	2VN26305866R/03
922006680000	BODY-12-C150-GV-BW-WCB-N263	205.00	185.00	4VN26306941R/00
922016790000	BODY-WCB-12-C150-GV-BW-NC27	154.00		2VNC2714144R/00
922012480000	BODY-12-C150-GV-BW-WCB-U129	205.00	185.00	4VU12926374R/00
922009360000	BODY-12-C150-GV-FL-CF8-N686	231.00	209.50	2VN68607972R/01

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922020590000	BODY-12-C150-GV-FL-CF8M-NG52	231.00	209.50	2VNG5207972R/01
920270400000	BODY-12-C150-GV-FL-WCB-N041	231.00	209.50	1VN04102870R/04
922010630000	BODY-12-C150-GV-FL-WCC-N815	231.00	209.50	2VN81508028R/01
922014290000	BODY-12-C150-GV-FL-WCB-NC12	180.00		2VNC1213621R/00
922012560000	BODY-12-C150-GV-FL-WCB-U116	231.00	209.50	4VU11626375R/00
922007760000	SEAT RING-12-C150-GV-CF8-N505	4.64	4.91	3VN50517155R/00
922010300000	SEAT RING-12-C150-GV-CF8M-K961	4.64	4.91	3VK96117155R/00
922013110000	SEAT RING-12-C150-GV-WCB-N041	4.40	4.91	2VN04108454P/00
922001290000	SEAT RING-12-C150-GV-A105-N207	6.00	4.91	3VN20795102P/01
922011000000	WEDGE-12-C150-GV-CF8-N505	53.50	41.70	2VN50503380R/02
922011010000	WEDGE-12-C150-GV-CF8M-K961	53.50	41.70	2VK96103380R/01
922020920000	WEDGE-12-C150-GV-WC9-N266	53.50	41.70	2VN26603380R/00
922010990000	WEDGE-12-C150-GV-WCB-N041	53.50	41.70	2VN04103380R/02
922011020000	WEDGE-12-C150-GV-WCC-N815	53.50	41.70	2VN81503380R/01
922014300000	WEDGE-12-C150-GV-WCB-NC12	40.00		2VNC1213622R/00
922006070000	YOKE CUM BONNET-12-C150-GV-CF8M-N511	65.00	73.00	2VN51106016R/01
922004470000	YOKE CUM BONNET-12-C150-GV-WCB-N359	65.00	73.00	2VN35906016R/01
922014310000	YOKE CUM BONNET-12-C150-GV-WCB-NC12	55.00		2VNC1213623R/00
922016830000	YOKE CUM BONNET-12-C150-GV-WCB-NC67	57.00		2VNC6714147R/00
922016840000	YOKE CUM BONNET-12-C150-GV-WCB-NC77	59.00		2VNC7714159R/00
922006010000	YOKE CUM BONNET-12-C150-GV-CF8-N505	70.00	78.93	2VN50506077R/01
922006020000	YOKE CUM BONNET-12-C150-GV-CF8M-N506	70.00	78.93	2VN50606077R/01
922006000000	YOKE CUM BONNET-12-C150-GV-WC9-N395	70.00	78.93	2VN39506077R/01
920085080000	YOKE CUM BONNET-12-C150-GV-WCB-N041	63.00	78.93	1VN04102869R/01
922004570000	YOKE CUM BONNET-12-C150-GV-WCB-N392	70.00	78.93	2VN39206077R/01
922005980000	YOKE CUM BON WCC-N393	70.00	78.93	2VN39306077R/01
922012670000	YOKE CUM BONNET-12-C150-GV-WCB-U116	70.00	78.93	4VU11626376R/00
922013900000	ARM-12-C300-FV-CF8M-Z047	14.00	14.00	3VZ04723459R/01
922010700000	ARM-12-C300-FV-WCB	14.00	14.00	3VZ01823459R/02
922013890000	BODY-12-C300-FV-BW-CF8M-Z047	260.00	326.50	2VZ04713502R/00
922010720000	BODY-12-C300-FV-BW-WCB-Z018	260.00	326.50	2VZ01808040R/00
922020850000	BODY-12-C300-FV-FL-CF8M-Z073	343.00	426.50	2VZ07308048R/00
922010750000	BODY-12-C300-FV-FL-WCB-Z020	343.00	426.50	2VZ02008048R/00
922012770000	BODY-12-C300-FV-FL-WCB-U139	194.00	426.50	4VU13926378R/00
922013910000	COVER-12-C300-FV-CF8M-Z047	110.00	110.00	4VZ04726410R/00
922010710000	COVER-12-C300-FV-WCB-Z018	110.00	110.00	4VZ01826220R/00
922012820000	COVER A216 WCB-U139	80.00	110.00	4VU13926379R/00
922013880000	FLAP-12-C300-FV-CF8M-Z047	48.00	48.00	3VZ04795062R/01
922010690000	FLAP-12-C300-FV-A105-Z018	48.00	48.00	4VZ01826218P/00
922030590000	FLAP-12-C300-FV-WCB-Z018	48.00	48.00	3VZ01825155R/00
922013870000	SEAT RING-12-C300-FV-CF8M-Z047	11.90	11.70	3VZ04717155R/00
922002560000	BODY-12-C300-GV-BW-WC9-N242	243.00	288.00	2VN24205862R/00
922002530000	BODY-12-C300-GV-BW-WCB-N239	243.00	288.00	2VN23905862R/00
922017030000	12-300-GV-BODY-BW-WCB-NC	240.00		2VNC8714183R/01
922030180000	BODY-12-C300-GV-BW-WCB-U471	288.00	288.00	3VU47124816R/00
922015000000	BODY-12-C300-GV-FL-CF8-NA60	325.00	384.00	2VNA6013760R/00
922003370000	BODY-12-C300-GV-FL-WC6-N309	376.00	384.00	2VN30905914R/01
922004140000	BODY-12-C300-GV-FL-WC9-N310	320.00	384.00	2VN31005914R/01
920270830000	12-300-GV-BODY-FL-WCB	325.00	384.00	2VN10503498R/01
922015980000	BODY-12-C300-GV-FL-WCB-NC40	295.00		2VNC4013998R/03
922015030000	BONNET-12-C300-GV-CF8-NA60	142.50	127.00	2VNA6003497R/00
922003480000	BONNET-12-C300-GV-WC6-N309	142.50	127.00	2VN30903497R/01
922004120000	BONNET -12-300-GV-WC9-N310	142.50	127.00	2VN31003497R/01
922008650000	BONNET-12-C300-GV-WC9-N650	144.00	127.00	2VN65007541R/00
920382350000	12-300-GV-BONNET-WCB	142.50	127.00	2VN10503497R/01

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922008630000	BONNET-12-C300-GV-WCB-N648	144.00	127.00	2VN64807541R/00
922015040000	SEAT RING-12-C300-GV-CF8-NA60	5.60	10.00	2VNA6008454P/00
922015010000	WEDGE-12-C300-GV-CF8-NA60	73.00	81.80	2VNA6005554R/00
922011270000	WEDGE-12-C300-GV-WC6-N309	73.00	81.80	2VN30905554R/01
922011280000	WEDGE-12-C300-GV-WC9-N310	73.00	81.80	2VN31005554R/01
922011260000	12-300-GV-WEDGE-WCB	73.00	81.80	2VN10505554R/01
922016000000	12-C300-GV-WEDGE-WCB-NC	52.00		2VNC4014002R/02
920085220000	12-300-GV-YOKE-WCB	32.00	32.00	2VN10505553R/01
922015990000	12-C300-GV-YOKE-WCB-NC	110.00		2VNC4014000R/01
922020800000	YOKE COVER-12-C300-RV-WCB-P560	177.00		2VP56014687R/000/00
922020790000	BODY-12-C300-SV-BW-WCB-P560	297.00		1VP56005251R/000/00
922013650000	14-150-GV-BODY-BW-CF8M	285.00	258.00	1VN17205139R/01
922007880000	BODY-14-C150-GV-BW-WCB-N589	285.00	258.00	1VN58905139R/02
922018140000	BODY-14-C150-GV-FL-CF8-NF92	327.00		1VNF9205111R/00
922003540000	14-150-GV-BODY-FL-WCB	327.00		1VN31605111R/01
922018150000	BONNET-14-C150-GV-CF8-NF92	85.00	80.00	2VNF9205938R/00
922013660000	14-150-GV-BONNET-CF8M	85.00	80.00	2VN17205938R/01
922003610000	14-150-GV-BONNET-WCB	85.00	80.00	2VN31605938R/02
922009830000	SEAT RING-14-C150-GV-CF8-K756	23.60	18.85	3VK75695846R/01
922010330000	SEAT RING-14-C150-GV-CF8M-K963	23.60	18.85	3VK96395846R/01
922008430000	WEDGE-14-C150-GV-CF8-K756	75.00	64.00	2VK75605973R/04
922010390000	14-C150-GV-WEDGE-CF8M	75.00	64.00	2VK96305973R/04
922003950000	14-150-GV-WEDGE-WCB	75.00	64.00	2VN31605973R/04
922003620000	14-150-GV-YOKE-WCB	37.00	34.00	2VN31605939R/02
922020650000	ARM-Z072-WC9	16.50		3VZ07224672R/00
921526270000	ARM-14-C300-FV-A105-Z023	25.50		3VZ02322664F/00
922017670000	14-300-ARM-Z023-WCB	16.50		3VZ02324672R/02
922020620000	BODY-14-C300-FV-BW-WC9-Z072	407.00	471.90	2VZ07217268R/00
921526230000	BODY-14-C300-FV-BW-WCB-Z023	407.00	471.90	2VZ02317268R/02
922020640000	FLAP-14-C300-FV-F22-Z072	44.00		3VZ07222659P/00
921526310000	FLAP-14-C300-FV-A105-Z023	44.00		3VZ02322659P/01
922020630000	SEAT RING-14-C300-FV-F22-Z072	20.70		3VZ07222660P/00
922030680000	SEAT RING-Z023	18.10		3VZ02317061R/00
921526320000	SEAT RING-14-C300-FV-A105-Z023	20.70		3VZ02322660P/01
922030430000	BODY-14-C300-GV-BW-C12A-NG86	292.00		1VNG8605142R/00
922008460000	BODY-14-C300-GV-BW-WC9-N622	292.00	413.00	1VN62205142R/01
922007910000	BODY-14-C300-GV-BW-WCB-N593	292.00	413.00	1VN59305142R/01
922007970000	BODY-14-C300-GV-BW-WCB-N598	360.00	413.00	4VN59806962R/00
922014950000	BODY-14-C300-GV-FL-CF8-NA58	464.00	556.60	1VNA5805208R/00
922005140000	14-300-GV-BODY-FL-WCB	464.00	556.60	1VN43505125R/01
922012930000	BODY-14-C300-GV-FL-WCB-U122	464.00	556.60	4VU12226375R/00
922030450000	BONNET-14-C300-GV-C12A-NG86	123.00		2VNG8606109R/00
922014960000	BONNET-14-C300-GV-CF8-NA58	123.00	128.00	2VNA5806109R/00
922008480000	BONNET-14-C300-GV-WC9-N622	123.00	128.00	2VN62206109R/00
922005190000	14-300-GV-BONNET-WCB	123.00	128.00	2VN43506109R/01
922012940000	BONNET-14-C300-GV-WCB-U122	123.00	128.00	4VU12226381R/00
922030440000	WEDGE-14-C300-GV-C12A-NG86	70.00		2VNG8606111R/00
922014970000	WEDGE-14-C300-GV-CF8-NA58	70.00	73.00	2VNA5806111R/00
922008470000	WEDGE-14-C300-GV-WC9-N622	70.00	73.00	2VN62206111R/02
922005210000	14-300-GV-WEDGE-WCB	70.00	73.00	2VN43506111R/02
922005200000	14-300-GV-YOKE-WCB	35.00	37.00	2VN43506110R/02
922007890000	BODY-16-C150-GV-BW-WCB-N590	338.00	338.00	1VN59005140R/02
922007950000	BODY-16-C150-GV-BW-WCB-N596	317.00	338.00	4VN59606962R/00
922014980000	BODY-16-C150-GV-FL-CF8-NA59	379.00	337.50	1VNA5905209R/00
922020480000	BODY-16-C150-GV-FL-CF8M-NG47	379.00	337.50	1VNG4705118R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922003970000	BODY-16-C150-GV-FL-WCB-N350	379.00	337.50	1VN35005118R/01
922014990000	BONNET-16-C150-GV-CF8-NA59	120.00	115.00	2VNA5905975R/00
922020490000	BONNET-16-C150-GV-CF8M-NG47	120.00	115.00	2VNG4705975R/00
922003980000	BONNET-16-C150-GV-WCB-N350	120.00	115.00	2VN35005975R/02
922009840000	SEAT RING-16-C150-GV-CF8-N721	24.30	19.62	3VN72195846R/01
922010340000	SEAT RING-16-C150-GV-CF8M-K964	24.30	19.62	3VK96495846R/01
922009810000	WEDGE-16-C150-GV-CF8-N721	90.00	87.80	2VN72105974R/03
922010380000	WEDGE-16-C150-GV-CF8M-K964	90.00	87.80	2VK96405974R/03
922003960000	WEDGE-16-C150-GV-WCB-N350	90.00	87.80	2VN35005974R/03
922003990000	YOKE-16-C150-GV-WCB-N350	40.00	37.10	2VN35005976R/02
922017700000	ARM-Z029-WC9	19.00		3VZ02924673R/00
921526300000	ARM-16-C300-FV-A105	20.00		3VZ02222665F/00
922017690000	16-300 -ARM-Z022-WCB	19.00		3VZ02224673R/00
921526410000	BODY-WC9-Z029	500.00	557.80	2VZ02917300R/01
921526220000	BODY-16-C300-FV-BW-WCB-Z022	500.00	557.80	2VZ02217267R/01
922016200000	BODY-16-300SPL-FV-BW-WCB	500.00	557.80	2VZ06114059R/00
921526430000	FLAP-16-C300-FV-F22-Z029	70.70		3VZ02922659P/00
921526280000	FLAP-16-C300-FV-WCB	70.70		3VZ02222659P/00
922030700000	SEAT RING-Z025	18.10		3VZ07217061R/00
921526420000	SEAT RING-16-C300-FV-F22-Z029	26.30		3VZ02922660P/01
922030670000	SEAT RING-Z022	30.60		3VZ02217061R/00
921526290000	SEAT RING-16-C300-FV-A105-Z022	26.30		3VZ02222660P/01
922011990000	BODY-16-C300-GV-BW-WC6-N967	422.00	503.00	1VN96705143R/00
922013060000	BODY-16-C300-GV-BW-WC9-N956	422.00	503.00	1VN95605143R/00
922007920000	16-300-GV-BODY-BW-WCB	422.00	503.00	1VN59405143R/01
922012950000	BODY-16-C300-GV-BW-WC9-U133	470.00	503.00	4VU13326374R/00
922008400000	BODY-16-C300-GV-FL-WC9-N616	603.00		1VN61605127R/01
922005310000	BODY-16-C300-GV-FL-WCB-N436	603.00		1VN43605127R/01
922008410000	BONNET-16-C300-GV-WC9-N616	204.00	175.00	1VN61605126R/00
922005270000	16-300-GV-BONNET-WCB	204.00	175.00	1VN43605126R/00
922012960000	BONNET-16-C300-GV-WC9-U133	204.00	175.00	4VU13326381R/00
922008420000	WEDGE-16-C300-GV-WC9-N616	120.00	119.00	2VN61606124R/02
922005330000	WEDGE_GV_16_300/400_WCB	120.00	119.00	2VN43606124R/03
922005230000	YOKE_GV_16_300/400_WCB	63.00	64.00	2VN43606112R/02
922014180000	BODY-16-C400-GV-BW-WCB-NA14	422.00	503.00	1VNA1405196R/00
922007180000	BODY-18-C150-GV-BW-WCB-N575	331.00	447.00	1VN57505136R/01
922015950000	BODY-18-C150SPL-GV-BW-WCB-NE27	331.00	447.00	1VNE2705213R/00
922006880000	BODY-18-C150-GV-FL-WCB-N568	394.00	449.00	1VN56805135R/01
922006890000	BONNET-18-C150-GV-WCB-N568	122.00		2VN56806280R/02
922009850000	SEAT RING-18-C150-GV-CF8-N722	30.30		3VN72295846R/01
922009820000	WEDGE-18-C150-GV-CF8-N722	108.00	107.00	2VN72206281R/02
922006900000	WEDGE-18-C150-GV-WCB-N568	108.00	107.00	2VN56806281R/02
922001590000	YOKE-20-C150-GV-WCB-N224	58.00	53.50	2VN22405714R/01
922020090000	BODY-18-C300-FV-BW-WCB	596.00	740.00	2VNG2714618R/00
922030340000	BODY-18-C300SPL-FV-BW-WCB-Z076	596.00	740.00	2VZ07614738R/00
922020840000	BODY-18-C300-GV-BW-WC9-NG65	465.00		2VNG6514547R/00
922019870000	BODY-18-C300-GV-BW-WCB	465.00		2VNG2414547R/00
922020830000	BODY-18-C300SPL-GV-BW-WCB-NG64	465.00		2VNG6414547R/00
922005270000	16-300-GV-BONNET-WCB	204.00	175.00	1VN43605126R/00
922005330000	WEDGE_GV_16_300/400_WCB	120.00	119.00	2VN43606124R/03
922005230000	YOKE_GV_16_300/400_WCB	63.00	64.00	2VN43606112R/02
921526260000	ARM-20-C150-FV-A105-Z021	26.30		3VZ02122661F/00
922017680000	20-150-ARM-Z021-WCB	24.00		3VZ02124673R/00
922015940000	BODY-20-150-SPL-WCB-BW-SCV	528.00	656.20	2VZ05913965R/00
921526210000	BODY-20-C150-FV-BW-WCB-Z021	528.00	656.20	2VZ02117266R/01

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
921526240000	FLAP-20-C150-FV-A105-Z021	78.00		3VZ02122659P/00
922030660000	SEAT RING-Z021	40.10		3VZ02117061R/00
921526250000	SEAT RING-20-C150-FV-A105-Z021	35.40		3VZ02122660P/01
922004510000	BODY-20-C150-GV-BW-WCB-N370	460.00	547.00	1VN37005124R/03
922007960000	BODY-20-C150-GV-BW-WCB-N597	567.00	547.00	4VN59706962R/00
922015940000	BODY-20-150-SPL-WCB-BW-SCV	528.00	547.00	2VZ05913965R/00
922012830000	BODY-20-C150-GV-BW-WCB-U134	460.00	547.00	4VU13426374R/00
922004520000	BODY-20-C150-GV-FL-CF8-N396	531.00	587.00	1VN39605064R/02
922001510000	BODY-20-C150-GV-FL-WCB-N224	531.00	587.00	1VN22405064R/03
922012920000	BODY-20-C150-GV-FL-WCB-U124	531.00	587.00	4VU12426375R/00
922004540000	BONNET-20-C150-GV-CF8-N396	132.00	148.00	2VN39605713R/02
922001520000	BONNET-20-C150-GV-WCB-N224	132.00	148.00	2VN22405713R/02
922012900000	BONNET-20-C150-GV-WCB-U134	132.00	148.00	4VU13426381R/00
922000520000	SEAT RING-20-C150-GV-CF8-C346	25.40		3VC34606428R/00
922010350000	SEAT RING-20-C150-GV-CF8M-K965	35.60		3VK96595846R/01
922004530000	WEDGE-20-C150-GV-CF8-N396	164.00	137.00	2VN39605711R/03
922010400000	WEDGE-20-C150-GV-CF8M-K965	164.00	137.00	2VK96505711R/02
922001580000	WEDGE-20-C150-GV-WCB-N224	164.00	137.00	2VN22405711R/04
922001590000	YOKE-20-C150-GV-WCB-N224	58.00	53.50	2VN22405714R/01
922020050000	BODY-20-C300-GV-BW-WC9-NG10	684.00	850.00	1VNG1005144R/00
922007930000	BODY-20-C300-GV-BW-WCB-N595	684.00	850.00	1VN59505144R/01
922010250000	BODY-20-C300SPL-GV-BW-WCB-N788	684.00	850.00	1VN78805144R/01
922005370000	BODY-20-C300-GV-FL-WCB-N437	945.00		1VN43705128R/01
922012890000	BODY-20-C300-GV-FL-WCB-U123	650.00		4VU12326375R/00
922020070000	BONNET-20-C300-GV-WC9-NG10	269.00	269.50	2VNG1006130R/00
922005380000	BONNET-20-C300-GV-WCB-N437	269.00	269.50	2VN43706130R/00
922012910000	BONNET-20-C300-GV-WCB-U123	269.00	269.50	4VU12326381R/00
922020060000	WEDGE-20-C300-GV-WC9-NG10	210.00	214.00	2VNG1006126R/00
922005360000	WEDGE-20-C300-GV-WCB-N437	210.00	214.00	2VN43706126R/02
922005260000	YOKE-20-C300-GV-WCB-N437	118.00	132.00	2VN43706119R/01
922017440000	BODY-22-C300-GV-BW-WCB	795.00		2VNE9614220R/01
922017510000	BONNET-22-C300-GV-WCB	330.00		2VNE9614233R/01
922017460000	WEDGE-22-C300-GV-WCB	220.00		2VNE9614235R/00
922017530000	YOKE-22-C300-GV-WCB	177.00		2VNE9614275R/02
922017930000	ARM-24-150-FV-WCB-Z067	68.00		3VZ06724697R/00
920241750000	BODY_24_150_FV_WCB_0539	1010.00		0V053901012R/10
922017940000	BODY_24_150_FV_WCB_Z067	1330.00		2VZ06714345R/00
920241570000	COVER-24-C150-FV-WCB-0539	150.30		2V053901219R/02
922017920000	COVER-24-C150-FV-WCB-Z067	366.00		3VZ06724696R/00
922016460000	BODY-24-C150-GV-BW-WC9-NE60	550.00	742.00	1VNE6005216R/00
922010510000	BODY-24-C150-GV-BW-WCB-N805	550.00	742.00	1VN80505158R/01
922011340000	BODY-24-C150-GV-FL-WC6-N829	615.00	693.30	1VN82905157R/00
922010500000	BODY-24-C150-GV-FL-WCB-N799	615.00	693.30	1VN79905157R/00
922011360000	BONNET-24-C150-GV-WC6-N829	210.00	226.00	2VN82908002R/00
922016480000	BONNET-24-C150-GV-WC9-NE60	210.00	226.00	2VNE6008002R/00
922010460000	BONNET-24-C150-GV-WCB-N799	210.00	226.00	2VN79908002R/00
922011350000	WEDGE-24-C150-GV-WC6-N829	264.00	260.00	2VN82906009R/01
922016470000	WEDGE-24-C150-GV-WC9-NE60	264.00	260.00	2VNE6006009R/00
922004330000	WEDGE-24-C150-GV-WCB-N361	264.00	260.00	2VN36106009R/02
922004350000	YOKE_24_150_GV_WCB_N361	110.00	113.00	2VN36106011R/00
922018270000	BODY-26-C300-GV-BW-WCB	1587.00		1VNF9705228R/01
922014460000	BODY-26-C300-GV-FL-WCB-NA38	1550.00		1VNA3805202R/00
922018300000	BONNET-26-C300-GV-WCB	450.00		2VNF9714463R/01
922018320000	WEDGE-26-C300-MO-WCB	330.00		2VNF9714478R/00
922014480000	YOKE-26-C300-GV-WCB-NA38	160.00		2VNA3813654R/00

Material	Material Description	DSS/Drawing Weight	Established Weight	Drawing No.
922018290000	YOKE-26-C300-GV-WCB	301.00		2VNF9714460R/01
922014600000	BODY-28-C300-GV-FL-WCB-NA41	1880.00		1VNA4105203R/00
922014620000	BONNET-28-C300-GV-WCB-NA41	650.00		2VNA4113660R/00
922014610000	WEDGE-28-C300-GV-WCB-NA41	525.00		2VNA4113656R/00
922014630000	YOKE-28-C300-GV-WCB-NA41	242.00		2VNA4113661R/00
922012190000	BODY-32-C150-GV-BW-WCB-N929	1505.00		1VN92905185R/00
922012200000	BONNET-32-C150-GV-WCB-N929	625.00		2VN92908295R/01
922010770000	WEDGE-32-C150-GV-WCB-N827	480.00		2VN82708052R/02
922011790000	YOKE-32-C150-GV-WCB-N826	200.00		2VN82608121R/00
922012210000	BODY-36-C150-GV-FL-WCB-N930	2207.00		1VN93005186R/01
922012220000	BONNET-36-C150-GV-WCB-N930	910.00		2VN93008296R/00
922011590000	WEDGE-36-C150-GV-WCB-N846	645.00		2VN84608073R/01
922011600000	YOKE-36-C150-GV-WCB-N846	220.00		2VN84608074R/00
922015970000	BODY-2-1/2-C300-FV-BW-CF8M-Z060	43.50		2VZ06013985R/00
922006620000	BODY-2-1/2-C300-FV-BW-WCB-M476	51.00		2VM47606211R/01
922015960000	BODY-2-1/2-C300-GW-BW-CF8M	30.00		2VNE3613982R/00
922006500000	BODY-2-1/2-C300-GW-BW-WCB-M472	30.00		2VM47206207R/00

Note: The list given above is tentative only. The actual material codes may be more than above codes. Also weights given above are for reference only.

INTEGRITY PACT

BHARAT HEAVY ELECTRICALS LIMITED

433, Industrial Complex, Industrial Valves Plant,

Goindwal Sahib, Dist. Tarn Taran (Punjab)

Registered Office: BHEL House, Siri Fort, New Delhi-110049

INTEGRITY PACT

Between

BHARAT HEAVY ELECTRICALS LIMITED (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi-110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

M/s *[YOUR COMPANY NAME IN FULL WITH ADDRESS]*
hereinafter referred to as "The Bidder/Contractor", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract for "Manufacturing and Supply of Steel Castings of various grades and sizes and as per the terms and conditions of its tender enquiry Dated 08.04.2013". The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with the Bidder(s)/Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s) [IEM], who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of the contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain and advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2- Commitments of the Bidder(s)/Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employee involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any king whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certification, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines of Suspension of Business Dealings with Suppliers/Contractors" framed by the Principal.

Section 4 – Compensation for Damages

4.1 If the Principal has disqualified the Bidder(s)/ Contractor(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Gurantee, whichever is higher.

Section 5- Previous Transgression

5.1 The Bidder(s)/ Contractor(s) declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the anti-corruption approach or with any other Public Section Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder(s)/ Contractor(s) make incorrect statement on this subject, he can be disqualified from te tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidder(s)/ Contractor(s)/Sub-Contractor(s)

6.1 The Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment consistent with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7- Criminal Charges against violating Bidders/Contractors/Sub-Contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 – Independent External Monitor(s)- IEM

8.1 The Principal has appointed competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement. Sh. J M Lyngdoh, IAS (Retd.) has been appointed as IEM for this contract. His address is as below:

Shri J. M. Lyngdoh , IAS (Retd.)
Plot No. 144-145,
Pragati Resort,
Proddator Village & P.O.,
Shankarpally Road,
Rangareddy Distt. (AP)- 500 033

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-Contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/Sub-Contractor(s) with confidentially.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action, The Monitor can in this regard submit non-binding recommendation. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and , should the occasion arise, submit proposals for correcting problematic situations.

8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word Monitor would include both singular and plural.

Section 9 – Pact Duration

9.1 This pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/determined by the CMD, BHEL.

Section 10- Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be Distt. Tarn Taran (Punjab).

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
Industrial Valves Plant,
Goindwal (Tarn Taran)

Place....Goindwal
Date.....08/05/13

Witness:.....
Name & Address.....

For & On behalf of the Bidder/Contractor
(Office Seal)

Witness:.....
Name & Address.....

Tender Enquiry No. 1314-018 Dt. 08.05.2013

Annexure-A

Sl. No.	Desciption	Vendor to mention
1	Attach list of patterns	
2	Maximim pattern development time for new item	
3	Minimum time after which supply will start after receipt of regular POs for items in which pattern is available.	
4	Typical limitation in some pattern/group of patterns collectively, **Please mention the size and quantity per month which can be delivered.**	

Signature of vendor with stamp

VENDOR PERFORMANCE MONITORING AND RATING SYSTEM

The vendors shall be assessed with respect to the following main factors and calculated for each consignment/purchase order/ cumulative quantity from all consignments within the period of six months.

Rating	Weightage(%)
Quality	60
Delivery	30
Service	10

QUALITY RATING

Total Quality Rating will be as per formula given below.

QUALITY RATING (QR) = $[(Q_1+0.75xQ_2+0xQ_3)\ x60]/Q$

Where Q - Quantity inspected
Q_1 - Quantity accepted
Q_2 - Quantity accepted with concession/ deviation/rectification
Q_3 - Quantity rejected

The pre-inspection report (at supplier's works) shall include the quantity accepted after rework in Q2 category.

DELIVERY RATING

Vendor shall be rated on delivery parameters whereas Delivery rating shall be 30 in case of adherence to PO delivery.

For non-adherence to PO Delivery (i.e delay in supply), marks to be deducted in proportion of delay to PO delivery.

Deduction = 30* delay in days/PO delivery in days.

Note:

1. Delay is calculated on the date of GR/RR basis .
2. In cases, where delay is on account of BHEL in providing input, the delivery shall be extended with amendment to PO.
3. In case of rectification/replacement of item, the delivery is to be reckoned from the original supply date.

SERVICE RATING [SR, SR']

Service rating [SR'] out of 10 marks shall be given based on feedback from Quality/User department and Purchase department assessment of vendors. The service rating shall be 10 in case no negative feedback against the vendor for the given supply. Else, the service rating should be reduced proportionally based on the Demerit factor.

In case negative feedback (Substantiated by documentary evidence) is received from Shop Floor/Site on the supplies made, at a later date, demerit factor should be applied again accordingly.

Demerit factors for service rating shall be calculated based on % of rework and rejection [both taken separately and then added] as under:

% criteria	DF in case of Rework %
≤2%	0
>2% and ≤5%	2
>5% and ≤10%	3
>10% and ≤15%	4
>15%	5

% criteria	DF in case of Rejection %
≤0.5%	0
>0.5% and ≤2%	2
>2% and ≤5%	3
>5% and ≤10%	4
>10%	5

The SR' derived shall be updated by subtracting above demerit factor value, i.e. SR = SR'-DF. By virtue of SR' < DF in any case, i.e. SR coming negative, it shall be considered as "0".

The Vendor Performance Rating (VPR) will be equal to total sum of QR, DR & SR.

VENDOR PERFORMANCE RATING (VPR) = QR+DR+SR

Based on the total score the vendor performance will be rated as below.

Total Score	Rating	Action
95-100	A1	Can be considered for award appreciation/commendation letter.
90-95	A	Vendor can be considered for self certification or for reduced witness points during inspection.
75-90	B	No action in normal case. If any deterioration comes to notice on analysis, the vendor shall be informed.
60-75	C	(i) Vendor/ processes shall be subject to thorough analysis for identification of areas for improvement. (ii) Enquiry to be sent only after concerned MM Head approval
<60	D	To be dealt in accordance with the extant guidelines on suspension of Business dealings with Suppliers/contractors.

Revision record: Rev 16 – 27.04.2011.(1) Modified in entirety.
Rev.17 – 1) Cl 7.0 Table-1 NDE requirements. 2) Cl 7.1, Cl 9, Cl 11.0 – Revised. RT zone sketch added.
Rev.18 – 1) Cl 7.0 Table-1 Wedge NDE changed. 2) Cl 9.0 – PED requirements for welding & NDE added.
Rev. 19 – 1) Cl 2.0, Cl 7.0 & Cl 13.0 – Modified.
Rev. 20 – 1) Cl 7.0 – Acceptance limit – NDE for SS - Modified. Cl 15.0 – RT sketch for Soot Blower Valve Body changed.

1.0 MATERIAL:

Specification : ASME / ASTM {Latest on date of Purchase Order (PO)}:
CARBON STEEL (CS) : SA / ASTM A216 WCB, WCC & 352 LCB , LCC
ALLOY STEEL (AS) : SA / ASTM A217 WC6, WC9, C12A.
STAINLESS STEEL (SS): SA / ASTM A351 CF3M,CF8,CF8C & CF8M.
Additional Requirement : As listed below(Supplementary to Specification)
Size, Qty, Grade/Class : As per Purchase order & Drawing / Pattern.

2.0 CHEMICAL COMPOSITION AND PROCESS:

a) Melting: As per the Specification, Fully Killed.
Carbon= 0.25% maximum : for SA / ASTM A216 WCB only.
Carbon= 0.15% maximum : for SA / ASTM A217 WC6 & WC9 (For the castings used in QCNRV,CRHNRV,TOA Valves & Conventional valves having contours for welding)
Product Analysis on test bar for each melt including residual elements shall be carried out.

Additional requirements for API-6D materials:

CS: Carbon=0.23% max.(in ladle) and 0.25% max.(in Product analysis)
Carbon Equivalent=0.43 max.(in ladle) and 0.45 max.(in Product analysis)
Carbon Equivalent=%C+(%Mn/6)+(%Cr+%Mo+%V)/5+(%Ni+%Cu)/15
SS: Carbon=0.03% max. except as below.
Carbon=0.08% max. for stabilized steels with Nb >10xC.and
for stabilized steels with Nb and Ta mass of (Nb+Ta)>8xC.

b) All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity. (Applicable for SS material only)

3.0 DIMENSIONS AND TOLERANCES:

Tolerances as per the Drawing.
Non Tolerance Dimensions for valve components as per the Drawing:VL:STDC:023 (Latest)

4.0 HEAT TREATMENT :(HT)

CS. Castings of High Pressure Valve.(Cl.1500 & above),QCNRV & CRHNRV: Shall be in Annealed Condition.
AS. Castings: Normalized and Tempered.
Normalizing Temperature: SA/ASTM A217 WC6, WC9: 920-950 °C and for C12A: 1050-1080 °C
Tempering Temperature (Minimum): SA/ASTM A217 WC6: 680°C; WC9: 720 °C; C12A: 740-780°C
Others: Heat Treated as per the Specification.

5.0 MECHANICAL TESTS:

Test bars to be cast integral with the casting or separately. If cast separately, they shall be cast at the same time as the castings and from the same ladle. A metal strip with heat number stamped shall be fused with the test bar during casting, to maintain traceability. If one(1) casting is made from more than one heat, separate test bars for each cast to be poured and all test bars shall satisfy the requirements. Following tests to be conducted per heat / Heat treatment batch, as per ASTM A370. .

S. NO	TEST	MATERIAL SPECIFICATION		
		SA/ASTM A216,217	SA/ASTM A352	SA/ASTM A 351
1	Tension Test	As per the Specification		
2	Hardness Test	As per the Specification	225 BHN. max.	Not applicable
3	Bend Test Specimen 1" x ¾ "	WCB: Angle of Bend 90°, Dia of Pin 2t WCC: 90°, 2t WC6: 120°, 3t WC9: 90°, 3t C12A: 90°, 2t	Not applicable	S3 of SA703
4	Charpy- U Impact for all QCNRV.CRHNRV BODIES for IBR.	As per IBR. at Room temperature. Acceptance: Avg /Single=36J/32J min.	Not applicable	Not applicable
5	Charpy- V Impact for CE Marking-Pressure Equipment Directive (PED) items as Specified in the Purchase Order.	At 20 Deg.C temperature. Acceptance: Avg /Single=40J/27J min.	As per Specification	Not applicable
6	Charpy- V Impact for API -6D items if design temperature below minus 29°C (-29 °C)	Test Temperature=As per specification Acceptance: Avg/Single=34J/25J	As per Specification	Not applicable
7	Charpy- V Impact for LPBP BODIES	At 20 Deg.C temperature. Acceptance : Avg/Single = 27J/21J min.	Not applicable	Not applicable

6.0 FETTLING, DRESSING & CLEANING:

- Dressing of castings-Free from risers, in gates, notches, undercuts, deep marks etc.
- Fused wires, parting line fins, chills etc. shall be removed by grinding.
- Gas cutting if employed shall be done before Heat treatment.
- Preheat the material to 200 Deg. C. before gas cutting the Alloy steels.
- Castings shall be blast cleaned both inside and outside for the removal of fused sand, scales etc.
- Visual inspection of castings for surface quality as per MSS-SP-55.shall be carried out.

7.0 NON DESTRUCTIVE TESTING (NDT) AFTER HEAT TREATMENT:

The NDE requirements for the castings shall meet the following as shown in Table-1 below. Castings shall be free from surface and internal defects like porosity, shrinkage, sand inclusion, crack, cold shut and other harmful defects. All castings shall be of Radiographic Quality.

Radiographic Testing Procedure : As per ASME B 16.34
Magnetic Particle Inspection (MPI) : As per ASTM E 709
Liquid Penetrant Inspection (LPI) : As per ASTM E 165

Table : 1

Product	Components	Characteristics	Type of NDE Check				
			RT	RT Area	RT Acc. Std	MT $	MT Area
Conventional Valves (Gate, Globe & Check) and API 6D Gate Valves	Body, Bonnet Pr.part yoke	< 600 Class	10%#	ASME B 16.34 (latest) / On critical area as indicated in the Drawing.	As per Table: 2	--	--
	Body, Bonnet, Cover	600 Class & above	100%			--	
	Body, Bonnet, Cover	1500 Class & above	100%			100%	All accessible surfaces including belly.
	Wedge	All Special Class Valves	--	--	--	100%	
Safety Valve	Base	Flanged ends of All Castings	10%#	Critical Zones as given in the Drawing/ area shown in the sketch in Page-5. The areas where RT cannot be carried out MPI shall be done.	Class-4 of ASTM E446 / E186. For Butt weld ends Table-2	100%	All accessible surfaces.
		Weld ends of All Castings	100%			--	--
Safety Relief Valve	Base & Bonnet	All	10%#			--	--
	SRV Nozzle	All	100%	All area	Class-2 of ASTM E446 / E186.	--	--
QC NRV, CH NRV	Body	150 & 300 Class	10%	Butt Weld Ends.	As per Table: 2	100%	All accessible surfaces including belly.
		600 Class & above	100%	Critical Zones as given in the Drawing/ area shown in the sketch in Page-6. The areas where RT cannot be carried out MPI shall be done.	As per Table: 2	100%	All accessible surfaces including belly.
	Body (Special)	All					
Soot Blower Valve	Body	All	10%#	Critical Zones as given in the Drawing/ area shown in the sketch in Page-5. The areas where RT cannot be carried out MPI shall be done.	As per Table: 2	--	--
CRH Isolating Valve	Body	< 600 Class	100%	Critical Zones as given in the Drawing/ area shown in the sketch in Page-5. The areas where RT cannot be carried out MPI shall be done.	As per Table: 2	--	All accessible surfaces including belly.
		600 Class & above				--	
		1500 Class & above				100%	
LP Bypass Valve	Body	All	100%	Critical Zones as given in the Drawing/ area shown in the sketch in Page-6. The areas where RT cannot be carried out MPI shall be done.	As per Table: 2	--	--

$ LPI can be substituted for MPI in all inaccessible area and for stainless steel castings. # Refer Cl 7.1

Table: 2

TYPE OF DISCONTINUITY	ACCEPTANCE LEVEL CATEGORY	< 600 CLASS		≥ 600 CLASS	
		Thickness ≤2"	Thickness >2"	Thickness ≤2"	Thickness >2"
Gas Porosity	A	A2	A3	A1	A2
Sand/Slag inclusion	B	B3	B3	B2	B2
Shrink Type-1	C	CA2	CA3	CA1	CA2
Shrink Type-2	C	CB3	CB3	CB2	CB2
Shrink Type-3	C	CC3	CC3	CC2	CC2
Crack	D	NONE	NONE	NONE	NONE
Hot Tear	E	NONE	NONE	NONE	NONE
Unfused Inserts (Chills/Chaplets)	F	NONE	NONE	NONE	NONE

a. **Butt welding ends shall be free of shrinkage, crack & hot tear.**
b. **For butt weld ends Gas hole/Porosity and sand inclusions to be within level A1 &B1 respectively**

NDE for SS material: Castings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure near the surface.
Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hour or 1 micro Sievert per hour.

7.1 # 10% Sampling shall be done as follows: (Wherever specified):

The vendor shall select 10% of the Casting from the lot consisting of same size and type, (along with melt number / Sl.nos of the castings covered in the lot) for Radiography. A lot to be specified as the total number of castings as above, supplied in 4 months period (Jan-Apr, May-Aug, Sep-Dec). The vendor shall radiograph these specified castings and incorporate the lot size and meltno and Sl.no in the RT reports along with the other Sl.nos of the other castings covered in the lot.If the identified casting is defective then 2 more castings shall be radiographed.If these 2 castings are defect free then the lot is acceptable.If any one of these castings is defective then all the remaining castings shall be radiographed and all defective areas shall be repaired. BHEL will carry out audit on the lots at th vendor works at any time.

7.2 **Acceptance for MPI & LPI:** ASME B16.34.

(1) Cracks are not permitted.
(2) For linear indications (with length > 3 times width) other than cracks,indications must be separated by a distance greater than the length of an acceptable indication. Maximum allowable length of the indication shall be:
  (a) For thickness(t) up to 13mm= 8mm,
  (b) For thickness from 13 to 25mm = 13mm
  (c) For thickness above 25mm=18mm.
(3) For rounded indications (circular or elliptical with length < 3 times width), 4 or more indications in a line separated by 1.5 mm or less edge to edge are unacceptable. Maximum allowable diameter of the indication shall be:
  (a) For thickness up to 13mm =8mm
  (b) For thickness above 13mm =13mm

8.0 DEVELOPMENT STAGE OF CASTING:

a. During developmental stage, Foundry to ensure, first sample pieces meet dimensional, NDE & Quality requiremnets in this TDC, before starting bulk production. Sample castings, 3 castings with nominal bore (NB) ≤ 100mm. & 1 casting with NB > 100 mm for each type of casting shall be inspectedfor dimension and RT requiremnets at BHEL/Vendor works. RT shall be carried out on entire area of the casting to the acceptance requirement of table-1 & 2. In addition 100% MPI on all critical areas like change of sections, riser & in gate portions shall be carried out. Casting to be inspected for dimensions after proof machining wherever necessary. If machining operation is invloved the same shall be done and defect free condition shall be ensured. If any defect noticed in RT and machining, the type of defect shall be analyzed and accordingly size of gate, runner, riser and pouring methodolgy to be modified to get defect free casting. Sampling shall be continued till achieving sound casting. After satisfactory development of sampling bulk production shall be started. However weld repaired areas identified in visual examination for doubtful indications to be probed by MPI. Accepted sample castings may be considered for fixing the nominal weight of the castings.

b. During developmental stage RT on sample castings of Yoke, Yoke Clamp & Wedge/Disc shall meet Level-3 of ASTM E 446/E 186/E 280.

c. Radiography not required after satisfactory development of casting & production based on established method for following parts: SRV Bonnet, Disc Holder,Upper and Lower adjusting rings, Packed cap, Cover Plate, Yoke and SRV guide flanges.

9.0 REPAIR:

Castings with unacceptable cracks, hot tears, shrinkage, etc. to be rectified by grinding & if required by welding. Welding to be done by qualified welder and qualified procedure as per ASME Section IX .For IBR items welder shall be qualified as per IBR.

Guidelines for repair of steel castings shall be as per SIP:VS:17 (latest) for activities like defects require/ not require weld repair, welding, Post Weld Heat Treatment, NDE and surface treatment. All repaired areas after PWHT shall be NDE tested and Hardness tested. Hardness shall meet material specification.

For CE-Marking (PED) casting, permanent joining (welding and weld repair) of components must be carried out by suitably qualified personnel according to suitable operating procedures. Also Non-Destructive tests of permanent joints must be carried out by suitable qualified personnel.

The procedures and personnel must be approved by a Competent third party which at the manufacturer's discretion, may be
- a notified body,
- a third party organization recognized by a Member State of European Community.

10.0 SURFACE TREATMENT:

SS castings to be pickled & passivated (after repair & HT if any) as per ASTM A380. Satisfactory passivity of the surface to be checked using SS passivity test kit (Free iron test). After passivation, rinsing & test, the rinsed demineralised water to be checked for chloride with 1% Silver nitride, which shall not exceed 0.5 PPM.

11.0 DIMENSIONAL CHECK:

For all QCNRV & CRHNRV Body Castings: Thickness of the body shall be checked throughout the surface on a grid of 100mm x 100mm and recorded & submitted to BHEL.

12.0 MARKING AND PACKING:

Following details to be marked on each casting, on a raised pad using low stress stamps and Castings shall be suitably packed to avoid damage during transit.

1. Foundry code, 2. Specification, grade & Melt number, 3. Other details as per drawing.

13.0 INSPECTION AND CERTIFICATION:

13.1: For IBR items,

a) If the foundry is recognized as "Well known Foundry" under IBR, Items shall be inspected by foundry and works certificate along with IBR Form III F shall be issued.

b) If the foundry is not recognized as "Well known Foundry" under IBR, Items shall be inspected by an Inspecting Authority approved by IBR and work certificate along with IBR Form III G shall be issued.

13.2 For CE-marking items, the materails shall be inspected by M/s. LLoyd's/ TUV/ BVQI or anyother agengy approved for PED of CEmarking, if the foundry is not certified to ISO 9000 by any of the above organisation.

13.3 For API items, the castings shall be inspected by the foundry and works certificate with details like PSL No., Temperature calss rating, size shall be issued.

13.4 a) Test certificates shall contain the following details.

1. Purchase Order No.(BHEL),TDC No. & Test certificate number
2. Specification and Grade with applicable year of code, Heat Number, Quantity & Size
3. Steel making process, Chemistry including incidental elements - Heat wise.
4. Heat treatment details of the material and test bars.
5. Mechanical test results, NDE test results with reference & acceptance standard.
6. Repair details including HT, if any, Cleaning & Surface treatment details.
7. Any other information like clearance of sample casting.
8. Dimensional Inspection Report where applicable.

b) For SS: Measured Radioactivity levels at 5cm from the surface of the castings shall be reported in the Test Certificate. (Not to be recorded in IBR Form)

14.0 AUDIT CHECKS AT BHEL:

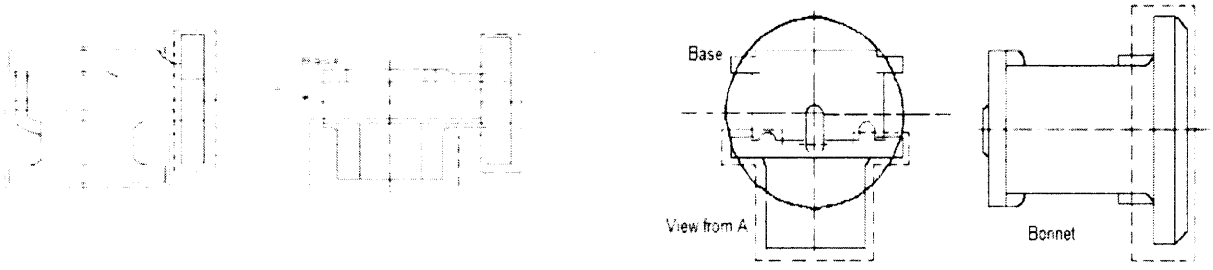
BHEL reserves the right to carry out audit checks for chemistry, HT condition, mechanical test and NDT on representative test bars or job. Items found defective during check or subsequent processing at BHEL are liable for rejection.

15.0 END USE:

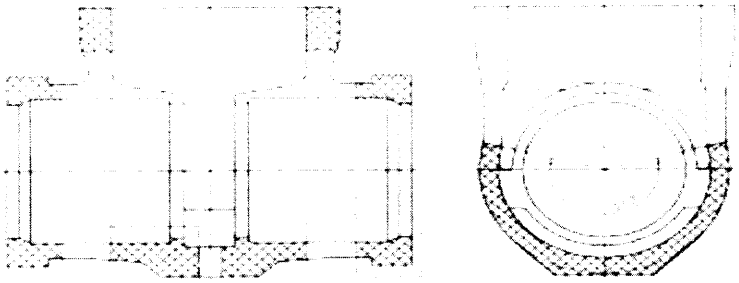
For use in valves and other components like flanges, fittings etc. for high temperature & high pressure applications meeting IBR, ASME Section I, ASME B 16.34, PED and API.

Sketch of zones for RT

SV and SRV Base castings

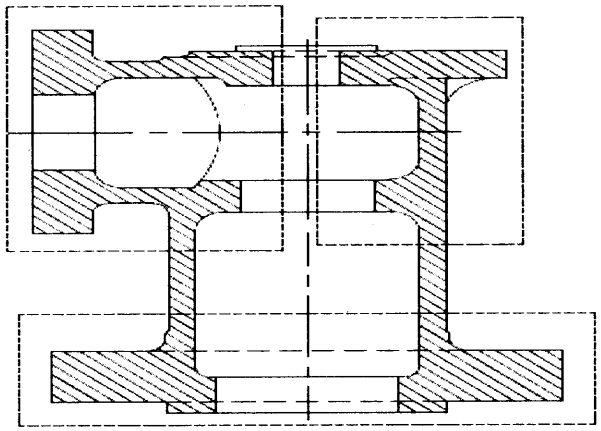


Reheater Isolating Device Body



Radiography Area

Soot Blower Valve Body



PART CODES : 920243870000, 920131810000, 920243870100, 920131810100

LRD IE, LRD IIE & WB IE – 2.5" 600#

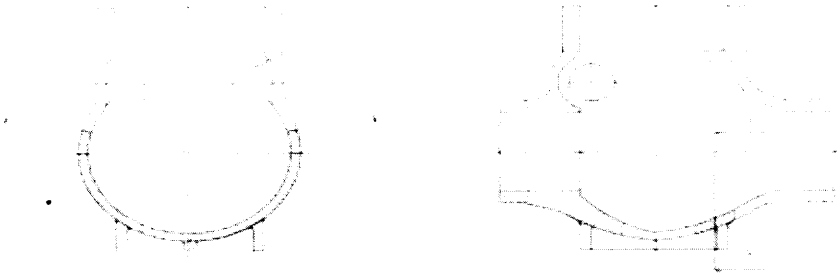
– RADIOGRAPHY AREA

Quick Closing Non Return Valve Body

Section-XX

Radiography Area

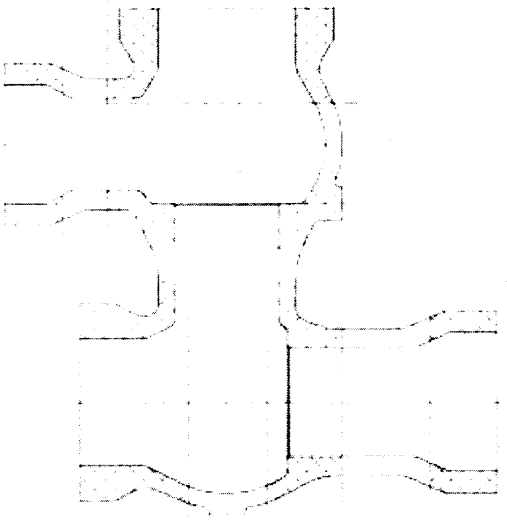
Cold Reheat Non Return Valve Body



Section-XX

Radiography Area

LP Bypass Stop cum Control Valve Body



Radiography Area

J. Nanthini 31/12/12			V. Ravikumar
J.NANTHINI QUALITY ASSURANCE	M.RAJAKUMAR ENGG/VALVES	S.SELVARAJRN QUALITY ASSUARANCE	V.RAVIKUMAR QUALITY ASSURANCE
PREPARED BY	REVIEWED BY		APPROVED BY

PROCEDURE FOR RADIOGRAPHIC EXAMINATION OF CASTINGS USED FOR VALVES AND BOILERS.

Prepared By	Reviewed &Approved By
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EFFECTIVE FROM 18-04-2009

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RECORD OF REVISION

Rev No	Revision Date	Revision of Details
05	01-06-1993	Revised in its entirety
06	12-06-1997	Procedure BHE:NDT:V:RT:9 Rev. 01merged with this procedure And revised to its entirety.
07	18-04-2009	2.0, 5.1, 8.1.1, 13.1, 15.1, 18.1, Annexure A , B, C, D, E, F – Revised.

1.0 SCOPE

1.1 This procedure describes the testing method and acceptance standard for the radiographic examination of steel castings of materials ASTM A 216 - WCB, WCC, A 217 -WC6, WC9, ASTM A351 Gr.- CF8M, Components covered under API 6A, thickness ranging up to 305mm and pertaining to conventional valves, TOA valves, Safety and Safety Relief Valves, Oil Field Equipments, and Boiler Components.

2.0 REFERENCES

2.1 ASME Boiler and Presser Vessel code - Section-V / VIII Div I /2007 / 2008 Addenda

2.2 ASME B 16.34 / 2004

2.3 ASTM E 94 / 2000

2.4 API-6A / 2005, 6D / 2008,16C / 1993, 17D / 1992.

3.0 EQUIPMENT

3.1 Radiation sources

3.1.1 The radiation energy (X-rays upto 6 Mev, Iridium 192, Cobalt 60) employed for any Radiographic technique shall achieve the Density and IQI image requirements.

3.2 Films

3.2.1 Industrial Radiographic Film shall be used. Generally the following brands of film or equivalent shall be used for radiography:
a) Agfa -Gevaert D7/(Laser D7)/D5/(Laser D5)
b) Kodak Industrex A/AA 400/T/M

3.3 Screen

3.3.1 Lead intensifying Screens shall be used for radiography. Fluorescent screen shall not be used. Minimum thickness of the Lead Screen shall be 0.10/0.15mm for Ir.192 and 0.20/0.25mm for Co.60.

4.0 SURFACE CONDITION

4.1 The surface to be radiographed shall have a relatively even surface to allow proper interpretation of the radiograph. All deep surface pits of casting shall be dressed smoothly before radiography. Fettling operation shall be done before radiography.

5.0 RADIOGRAPHIC SENSITIVITY

5.1 Radiography shall be performed with a technique to achieve the sensitivity of 2-2T . Selection of Image Quality Indictor (IQI) shall be based on the table 2 in Annexure -A .

5.2 If ASTM Wire Type IQI is used, the set of wires used shall be identified with the material with which the wire is made and their number. The set shall contain a wire equivalent to 2% of the thickness being radiographed.

5.3 The material of the IQI shall be radiographically similar to the object being radiographed. If this material is not available the IQI of the required dimensions, but of lower absorption material may be used. IQI shall conform to Recommended Practice SE 1025/SE 747.

5.4 Placement of IQI

5.4.1 Wherever possible, the IQI shall be placed on the source side of the section being

examined. For double wall single image technique, IQI may be placed on film side with identification 'F', if hand placement on source side is impracticable.

6.0 NUMBER OF IQI

6.1 When one or more film holders are used for an exposure, at least one IQI image shall appear on each radiograph except as outlined in 6.3 and 6.4.

6.2 If the requirement of 14.0 is met by using more than one IQI, one shall be representative of the lightest area of interest and the other shall be of the darkest area of interest; the intervening densities on the radiograph shall be considered as having acceptable density.

6.3 For cylindrical/spherical castings where the source is placed on the axis/centre of the object for a single exposure, at least three IQI shall be placed spacing approximately 120 degree apart under the following conditions;

6.3.1 When a complete circumference is radiographed using one or more film holders or

6.3.2 When a section or sections of the circumference, where the length between the ends of the outermost sections span 240 or more degree is radiographed using one or more film holders. Additional film locations may be required to obtain necessary penetrameter spacing.

6.4 For cylindrical/Spherical castings of the circumference of a cylindrical/spherical casting is radiographed placing source at the axis/centre of the component for a single exposure, at least three IQI's shall be placed at each end of the span of the circumference radiographed and one in the approximate centre of the span,

6.4.1 When a section of the circumference, the length of which is greater than 120 degree and less than 240 degree is radiographed using just one film holder, or

6.4.2 When a section or sections of the circumference, where the length between the ends of outermost sections span less than 240 degree is radiographed using more than one film holder.

6.5 In order to maintain the continuity of records involving subsequent exposures, all radiograph exhibiting IQI which qualify the techniques permitted in accordance with 6.3 and 6.4 shall be retained.

6.6 When an array of objects in a circle is radiographed, at least one IQI shall be seen on each object image.

7.0 RADIOGRAPHY COVERAGE

7.1 The castings sections to be radiographed shall be as per the sketches shown in Annexure F. However all the sample castings shall be radiographed for the entire accessible region.

8.0 GEOMETRICAL UNSHARPNESS (μ_g)

8.1.1 When required by the referencing code section, Geometric Un-sharpness of the radiograph shall not exceed the following and source to film distance shall be selected accordingly.

TABLE - 1

MATERIAL THICKNESS	μ_g Max.
Under 50.0 mm	0.51 mm
Over 50.0 to 75.0 mm	0.76 mm
Over 75.0 to 100.0mm	1.02 mm
Greater than 100.0 mm	1.78 mm

Material thickness is the thickness on which IQI is based.

8.2 For other cases, source to film distance shall be selected such that Geometric Un-sharpness shall not exceed 1.78mm.

8.3 Final acceptance of the radiograph shall be based on the achievement of requisite sensitivity.

9.0 LOCATION MARKER

9.1 Location markers which are to appear as radiographic images on the film, shall be placed on the part, not on the exposure holder/cassette. Their location shall be permanently marked on the surface of the part being radiographed when permitted or on a map in a manner permitting the area of interest on a radiograph to be accurately traceable to its location on the part for the required retention period of the radiograph. Evidence also shall be provided on the radiograph that the required coverage of the region being examined has been obtained.

9.2 Location markers shall be placed as in Annexure F

10.0 EXAMINATION

10.1 Radiographic technique: A single wall exposure technique shall be used whenever practical. When it is not practical to use a single wall technique a double wall technique shall be used (for cylindrical/spherical castings where outside diameter is less than 90 mm). An adequate number of exposures shall be made to demonstrate that the required coverage has been obtained.

10.2 For double wall viewing, only a source side IQI shall be used.

11.0 INFORMATION ON RADIOGRAPH

11.1 The following information shall appear on the radiograph as a permanent image.

11.1.1 Job Number i.e. serial number given for the part as per radiographic details register.

11.1.2 Segment number as per the shooting sketch of the part.

11.1.3 Image Quality Indicators.

11.1.4 Date of Radiography.

11.1.5 Name of the company/BHEL

11.1.6 If the radiograph is taken after any local repair revealed in the original radiograph, letters R1, R2 etc. shall be kept after the job number to indicate that the radiograph is after the repair and the suffix 1,2 etc. will specify the number of times repair is carried out. The radiographs taken after repair shall be submitted along with original. The repaired area shall be identified by placing lead arrows. Radiographic identification and IQI shall not be placed on the repaired region.

12.0 QUALITY OF RADIOGRAPHS

12.1 All radiographs shall be free from mechanical, chemical or other blemishes

12.2 Scattered Radiation: To check the back scattered radiation, a lead symbol 'B', of 13.0mm in height and 1.6mm in thickness shall be attached to the back of each film holder.

12.3 Excessive Scatter: If the light image of 'B' appears on the darker background of the radiograph, protection from back scatter is insufficient and the radiograph shall be considered unacceptable. A dark image of 'B' on a lighter background is not a cause for rejection.

13.0 RADIOGRAPHIC DENSITY

13.1 The transmitted film density through the radiographic image of the body of the appropriate IQI's and the area of interest shall be
for single film viewing- 1.5 minimum and 4.0 maximum
For Super imposed viewing of double film
each film shall have 1.00 minimum and 2.5 maximum and with double film 4.0 maximum

13.2 Either a densitometer or a step wedge comparison film shall be used for density measurements

14.0 DENSITY VARIATION

14.1 If the density of the radiograph anywhere through the area of interest varies by more than -15% or +30% from the density through the body of IQI, within the minimum/maximum allowable density ranges specified in 13.1, then an additional IQI shall be used for each exceptional area or areas and the radiograph retaken. When calculating the allowable variation in density, the calculation may be rounded off to the nearest 0.1 within the range specified in 13.1.

15.0 ACCEPTANCE STANDARDS

15.1 Evaluation of defects shall be carried-out as per ASTM E-446 for Steel Castings upto 50mm thickness, as per ASTM E-186 for steel castings - heavy walled (50mm to 115mm) and as per ASTM E-280 for heavy walled steel castings, wall thickness 115mm through 305mm.

15.2 Acceptance standards for various components are given in annexure B to D.

16.0 NDE PERSONNEL

16.1 Radiography shall be performed by personnel qualified as minimum level I and Evaluation by Level II / III in accordance with Procedure BHE:NDT:G:CRT.

17.0 REPORTING, RECORDING AND UP KEEPING OF THE RADIOGRAPHS

17.1 Results of radiographic examination shall be reported in formats approved by Head/NDTL-BHEL.

17.2 All the radiographs shall be clearly identified with serial numbers which can be linked up with the casting which bears the same serial number as that of radiographs.

17.3 The radiograph number shall be punched just below the heat numbers and encircled with white paint and the location number shall be legibly painted on the castings with white paint.

17.4 Radiographs of castings pertaining to API 6A - PSL 3 and 4 and of welds pertaining to API 6A - PSL 2 , 3 and 4 classification shall be retained for a period of minimum 5 years. Other radiographs will be retained till the manufacturing is completed or up to 3 years from the date of radiography, whichever is earlier.

18.0 SAFETY

18.1 Applicable safety precautions shall be followed in accordance with Procedure BHE:NDT:G:SFT

ANNEXURE-A
Table-2
Material Thickness, IQI designations and Essential hole / Wire diameter .

Nominal Single wall thickness range (mm)	Image Quality Indicator							
	Source side				Film side			
	Desgn	Essl. Hole	Wire		Desgn	Essl. Hole	Wire	
			No	Dia(mm)			No	Dia(mm)
Up to 6.4 incl.	12	2T	5	0.20	10	2T	4	0.16
Over 6.4 through 9.5	15	2T	6	0.25	12	2T	5	0.20
Over 9.5 through 12.7	17	2T	7	0.33	15	2T	6	0.25
Over 12.7 through 19.0	20	2T	8	0.41	17	2T	7	0.33
Over 19.0 through 25.4	25	2T	9	0.51	20	2T	8	0.41
Over 25.4 through 38.1	30	2T	10	0.64	25	2T	9	0.51
Over 38.1 through 50.8	35	2T	11	0.81	30	2T	10	0.64
Over 50.8 through 63.5	40	2T	12	1.02	35	2T	11	0.81
Over 63.5 through 101.6	50	2T	13	1.27	40	2T	12	1.02
Over 101.6 through 152.4	60	2T	14	1.60	50	2T	13	1.27
Over 152.4 through 203.2	80	2T	15	2.03	60	2T	14	1.60
Over 203.2 through 254.0	100	2T	16	2.54	80	2T	15	2.03
Over 254.0 through 304.8	120	2T	17	3.20	100	2T	16	2.54

ANNEXURE-B

RADIOGRAPHIC ACCEPTANCE STANDARDS FOR CASTINGS OF CONVENTIONAL VALVES, TOA DESIGN VALVES AND BOILER CASTINGS. (AS PER ASME B 16.34)

B1.0 Acceptance of pressure containing castings up to and including 600 PSI(g) or 40 atm. primary service rating shall be based on the following:

B1.1 Wall thickness less than 50 mm.

The following comparative plates of ASTM E 446 define acceptable indications as follows:-

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas	A	A2
Sand	B	B3
Shrink Type-1	C	CA2
Shrink Type-2	C	CB3
Shrink Type-3	C	CC3
Shrink Type-4	C	CD3
Hot tear & Cracks	D&E	None
Inserts (chills, chaplets)	F	None
Mottling	G	Reference Purpose only

B1.2 The following comparative plates of ASTM E 186 shall be acceptable for Wall thickness from 50mm up to 115 mm and of ASTM E 280 shall be acceptable for wall thickness from 115 mm through 305mm.

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas porosity	A	A3
Sand and slag inclusions	B	B3
Shrink Type-1	C	CA3
Shrink Type-2	C	CB3
Shrink Type-3	C	CC3
Cracks	D	None
Hot tear	E	None
Inserts	F	None

B2.0 ACCEPTANCE OF PRESSURE CONTAINING CASTINGS OVER 600 PSI(G) (40 atm) PRIMARY SERVICE PRESSURE RATING SHALL BE BASED ON THE FOLLOWING:

B2.1 Wall thickness less than 51mm.
The following comparative plates of ASTM E 446 define acceptable indications as follows:-

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas	A	A1
Sand	B	B2
Shrink Type-1	C	CA1
Shrink Type-2	C	CB2
Shrink Type-3	C	CC2
Hot tear & Cracks	D&E	None
Inserts (chills, chaplets)	F	None
Mottling	G	Reference Purpose only

B2.2 The following comparative plates of ASTM E 186 shall be acceptable for Wall thickness from 51mm upto 115mm and of ASTM E 280 shall be acceptable for wall thickness from 115mm through 305mm.

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas porosity	A	A2
Sand and slag inclusions	B	B2
Shrink Type-1	C	CA2
Shrink Type-2	C	CB2
Shrink Type-3	C	CC2
Cracks	D	None
Hot tear	E	None
Inserts (chills, chaplets)	F	None

B3.0 Butt welding ends shall be free from shrinkage and hot tear. Gas hole/porosity and sand inclusion shall be limited to level A1 and B1 respectively.

B4.0 The acceptance Standard for yoke, yoke clamp and wedge/Disc shall be level-III of E446/E186/E280. No crack, hot tear or unfused chaplet/insert is permitted.

B5.0 Acceptance of weld repairs of steel casting shall be as follows:-

Weld repair portions of castings that are shown by radiography to have any of the following type of discontinuities shall be unacceptable.

A) Any type of crack or zone of incomplete fusion or incomplete penetration.

B) Any other elongated indication which has a length greater than

- **i) 6.00mm for 't' upto 19mm inclusive**
- **ii) 1/3t for 't' from 19mm to 57mm inclusive**
- **iii) 19 mm for 't' over 57mm where 't' is the thickness of the repaired portion.**

C) Any group of indications in line that have an aggregate length greater than 't' in a length of 12t except when the distance between the successive indication exceeds 6 L where 'L' is the length of the longest indication in the group.

D) Rounded indication in excess of that shown as acceptable in rounded indication chart given in annexure 4 of ASME Section VIII, Division 1

ANNEXURE -C
RADIOGRAPHIC ACCEPTANCE STANDARDS FOR SAFETY AND SAFETY RELIEF VALVE COMPONENTS.

C1.0 Radiographic acceptance standard for area marked as critical in the respective casting drawing shall be as follows:-

C1.1 The following comparative plates of ASTM E-446 for thickness upto 51mm and ASTM-E 186 for thickness from 51mm to 115mm shall define the acceptable indication as mentioned below:

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas	A	A3
Sand	B	B3
Shrink Type-1	C	CA3
Shrink Type-2	C	CB3
Shrink Type-3	C	CC3
Shrink Type-4	C	CD4
Hot tear & Cracks	D &E	None
Inserts (chills, chaplets)	F	None
Mottling	G	Reference purpose only

C1.2 Other areas shall be accepted against the comparative plate as indicated below depending upon the thickness.

Discontinuity type	Acceptable comparative plate	
	Category	Level (ASTM E 446 / E 186
Gas porosity	A	A4/A4
Sand and slag inclusions	B	B4/B4
Shrink Type-1	C	CA4/CA4
Shrink Type-2	C	CB4/CB4
Shrink Type-3	C	CC4/CC4
Shrink Type-4	C	CD4/ -
Hot tear & Cracks	D &E	None
Inserts (chills, chaplets)	F	None
Mottling	G	Reference purpose only

C2.0 Butt welding ends shall be free from shrinkage and Hot Tear. Gas Hole/Porosity and sand inclusion shall be limited to A1 and B1 respectively.

C3.0 Acceptance of weld repairs of steel castings shall be as follows:-

C3.1 Weld repair portions of castings that are shown by radiography to have any of the following type of discontinuity shall be unacceptable:

A. Any type of crack or zone of incomplete fusion or incomplete penetration.

B. Any other elongated indication which has a length greater than

i) 6.00 for 't' upto 19mm inclusive.
ii) 1/3 t for 't' from 19mm to 57mm inclusive.
iii) 19mm for 't' over 57mm where 't' is the thickness of the repaired portion.

C. Any group of indications in line that have an aggregate length greater than 't' in a length of 12t' except when the distance between the successive indication exceeds 6L where 'L' is the length of the longest indication in the group.

D. Rounded indication in excess of that shown as acceptable in Appendix 4 of ASME Section VIII, Division 1.

ANNEXURE - D

D1.0 ACCEPTANCE STANDARDS FOR OIL FIELD EQUIPMENTS

D1.1 Castings

D1.1.1 The following comparative plate of ASTM E 446 for thickness less than 51mm, ASTM E 186 for thickness from 51mm to 114mm and ASTM E 280 for thickness from 114 through 305 mm shall define the acceptable criteria depending upon the section thickness being examined.

Discontinuity type	Acceptable comparative plate	
	Category	Level
Gas	A	2
Sand	B	2
Shrinkage(all types)	C	2
Hot tear	D	None
Crack	E	None
Inserts(chills, chaplets	F	None
Mottling	G	None

D1.2 Hot worked Parts of PSL-1,2 , 3 and 3G

D1.2.1 No type of cracks, laps or bursts.

D1.2.2 No elongated indications with length exceeding

(a) 6.4 mm for thickness upto 19mm.
(b) 0.33 of thickness for thickness 19mm upto 57mm.
(c) 19mm for thickness over 57mm.

D1.2.3 No group of indications in a line that have an aggregate length greater than the thickness in a length of twelve times the thickness.

D1.3 Hot worked material of PSL-4

D1.3.1 No type of cracks, laps or bursts.

D1.3.2 No elongated indications having length exceeding 6.4mm.

D1.3.3 No more than 2 indications separated by less than 13.0 mm.

D1.4 Welds:PSL-1,2 , 3 and 3G:

D1.4.1 No type of crack, zone of incomplete fusion, or incomplete penetration.

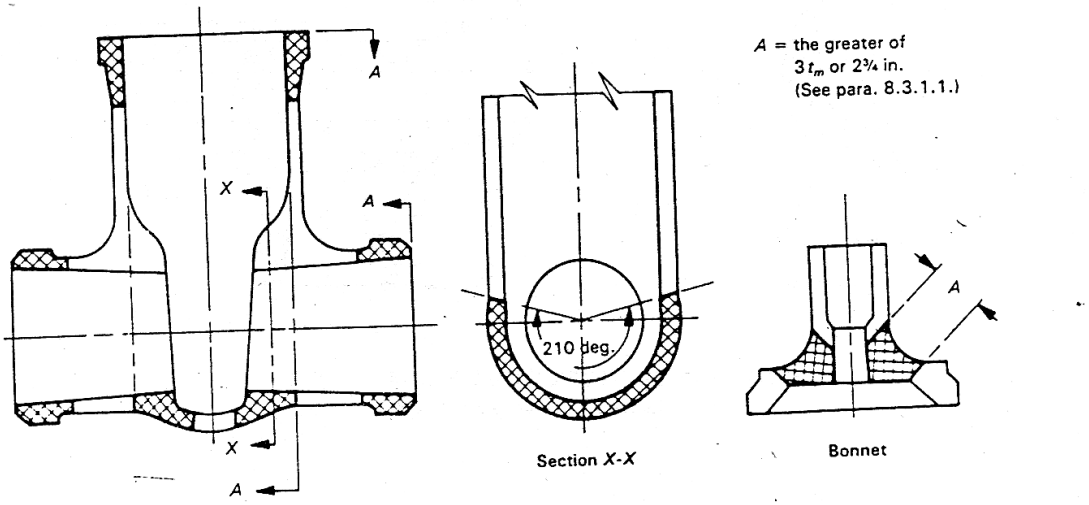
D1.4.2 No elongated slag inclusion which has a length equal to or greater than

a) 6.4mm for weld thickness less than 19mm inclusive.
b) 1/3 times the thickness for weld thickness from 19mm to 57mm.
c) 19mm for weld thickness greater than 57mm.

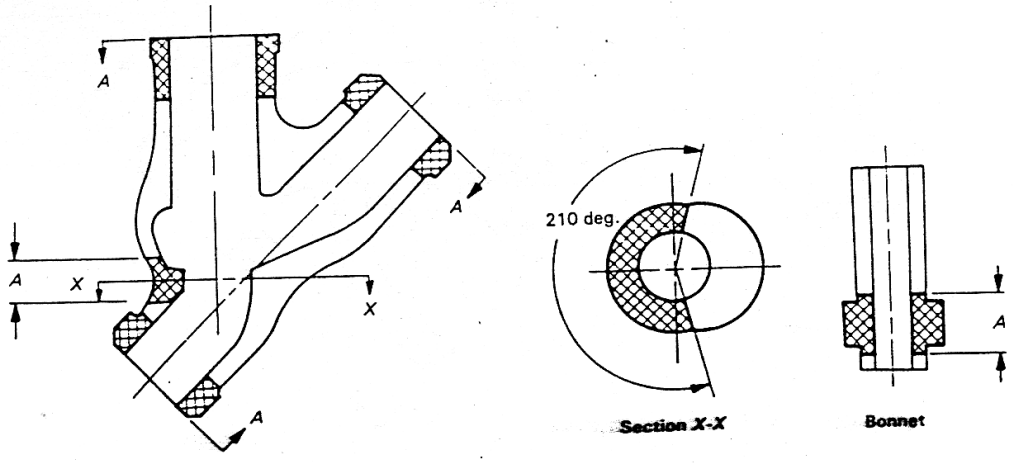
D1.4.3 No group of slag inclusions in a line having an aggregated length greater than the weld thickness, 'T', in any total weld length of 12T, except when the distance between successive inclusion exceeds six times the length of the longest inclusion.

D1.4.4 No rounded indications in excess of that specified in rounded indication chart, Appendix 4 of ASME Section VIII, Division 1.

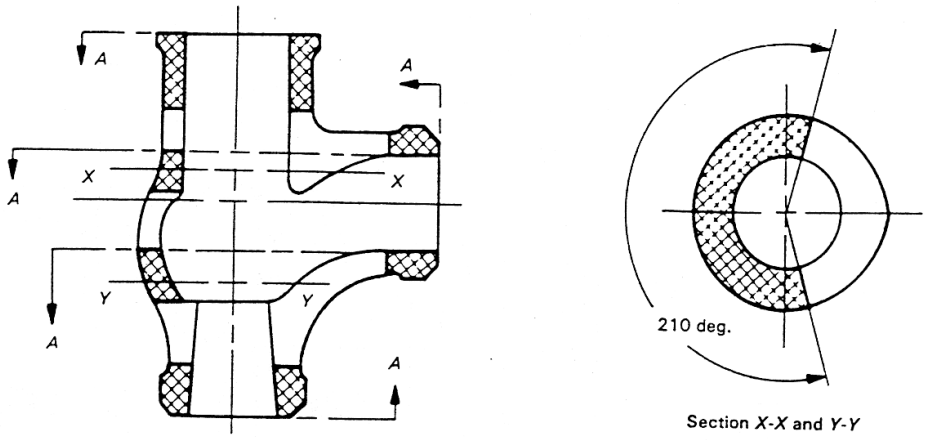
ANNEXURE E



GATE BODY (PRESSURE SEAL BONNET)

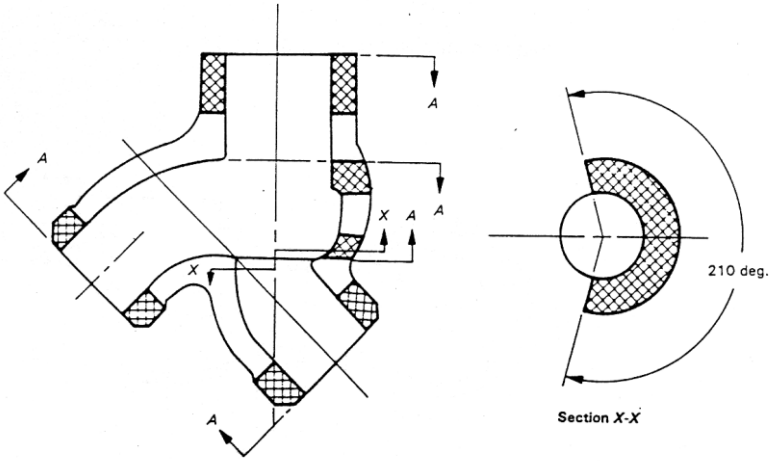


Y-PATTERN GLOBE BODY(PRESSURE SEAL BONNET)

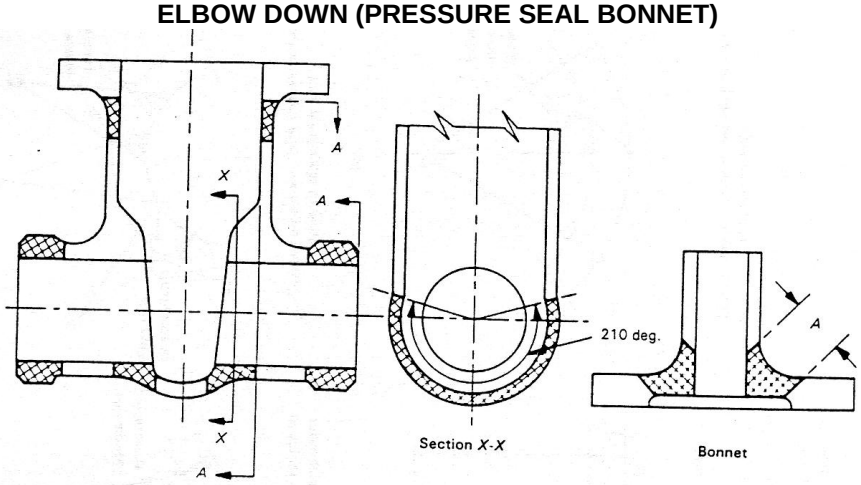


ANGLE BODY (PRESSURE SEAL BONNET)
BONNET SAME AS Y-PATTERN GLOBE

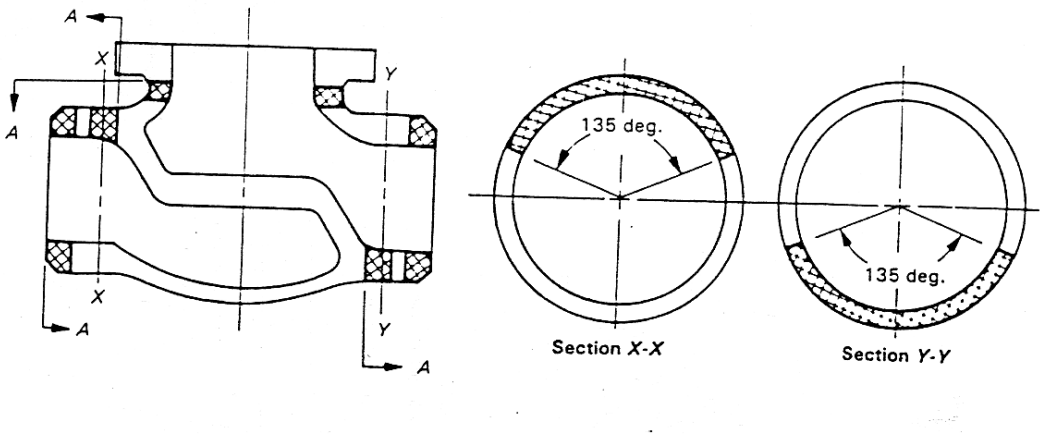
ANNEXURE-E



ELBOW DOWN (PRESSURE SEAL BONNET)

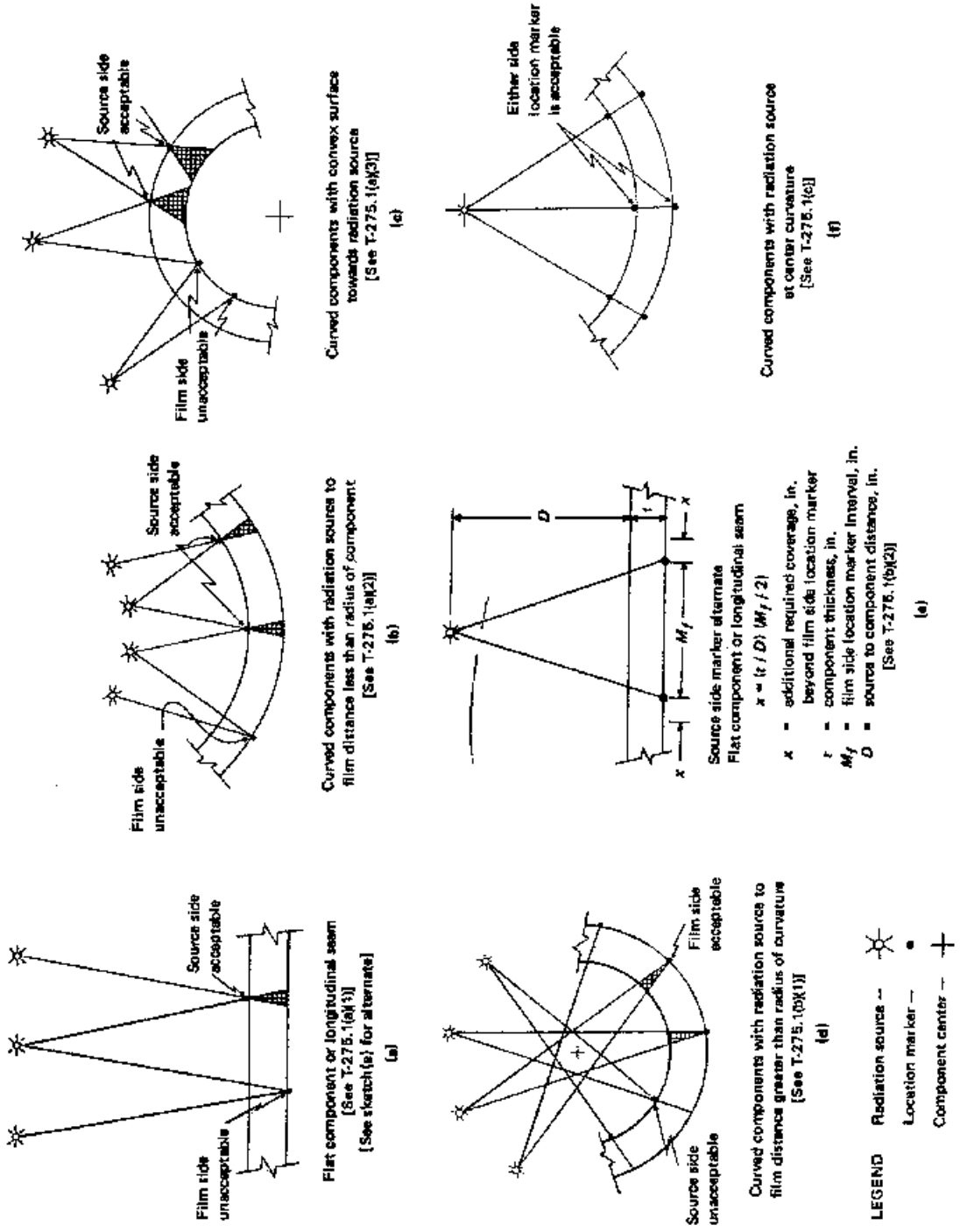


GATE BODY (FLANGED BONNET)



GLOBE BODY (FLANGED BONNET)

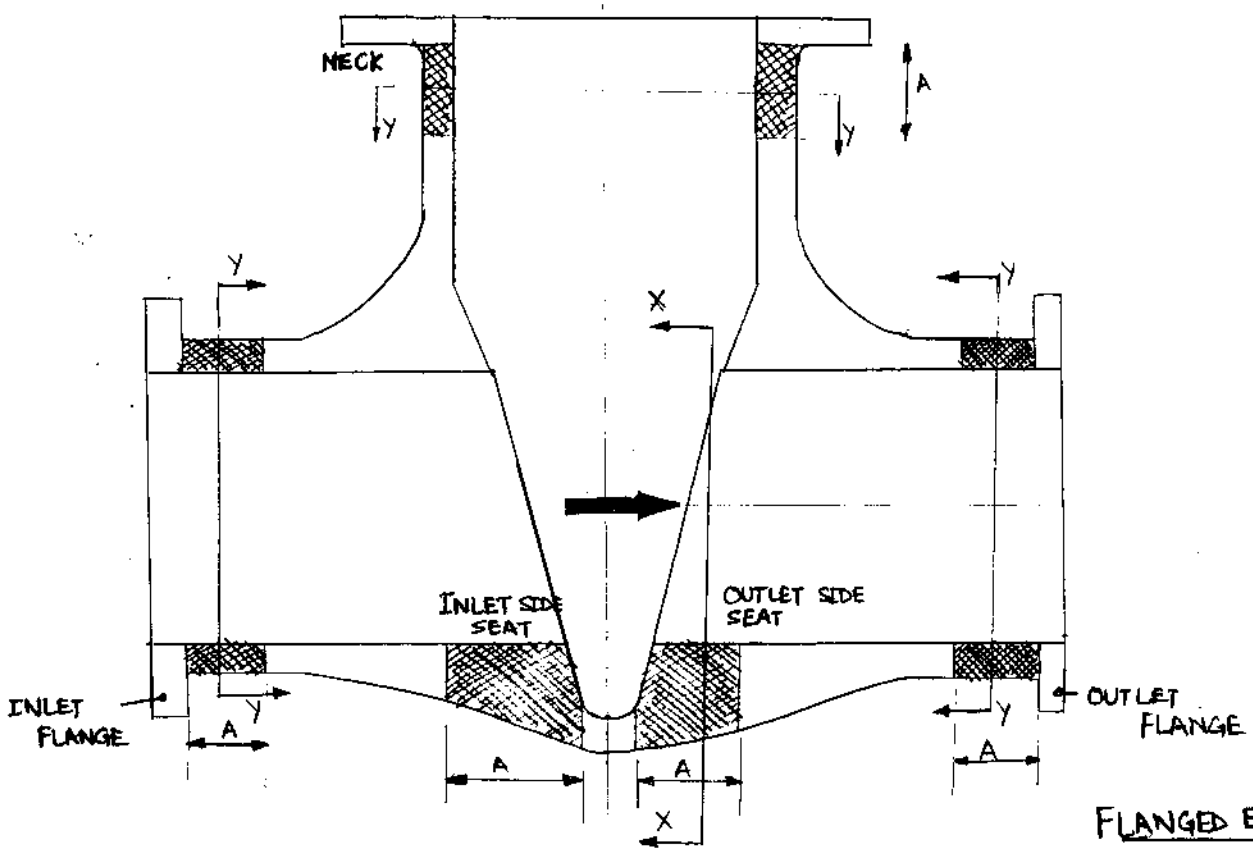
ANNEXURE - F



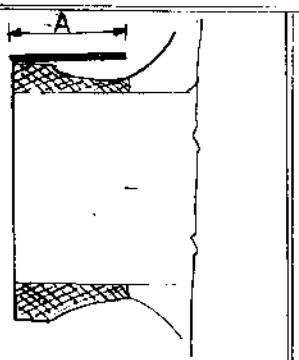
LOCATION MARKER SKETCHES

Annexure D

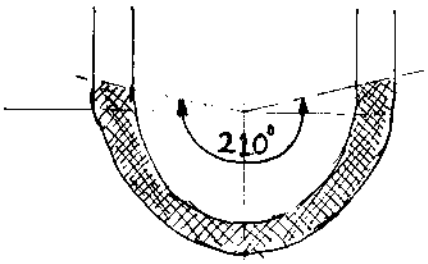
BHE:IVP:RT:PR Rev 03



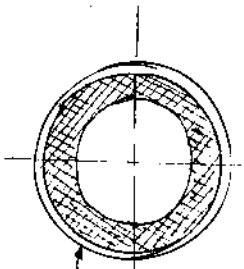
FLANGED END BODY



BW END BODY



SECTION X-X
210° coverage



To cover round the shell
SECTION Y Y

$A = \text{Max}\ [3t_m\ ,\ 70\,mm]$

t_m → wall thickness min'

SHOOTING LOCATION DESIGNATION

AT NECK : N1, N2, N3, N4,...

AT INLET FLANGE PIPE : A1, A2, A3, A4,....

AT INLET SIDE SEAT : SA1, SA2, SA3, SA4,....

AT OUTLET SIDE SEAT : SB1, SB2, SB3, SB4,...

AT OUTLET FLANGE PIPE : B1, B2, B3, B4.....

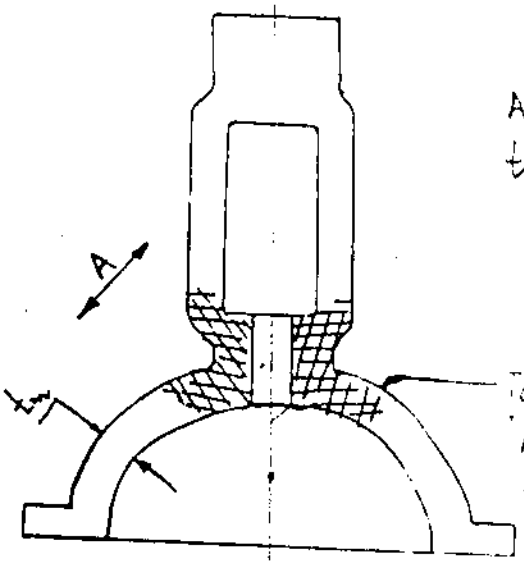
*AT INLET FLANGE FACE : FA1, FA2, FA3, FA4,....

*AT OUTLET FLANGE FACE : FB1, FB2, FB3, FB4,....

* FOR FLANGED END BODIES ONLY

Bharat Heavy Electricals Limited
433, Ind. Valves Plant. GOINDWAL SAHIB (Distt. Amritsar)-143 423.

BHE: IVP: RT: PR: Rev 03



$A = \text{Max}\ [3t_m, 70\,mm]$

$t_m \rightarrow$ wall thkness, min

To cover full area of 'A' mm width round the bonnet.

SHOT DESIGNATION AS 1, 2, 3, 4, ...

SHOOTING SKETCH OF GATE VALVE YOKE / BONNET

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$A = \text{Max}\{3.t_m, 70\text{mm}\}$

t_m — min. wall thickness, mm

SHOOTING LOCATION DESIGNATION

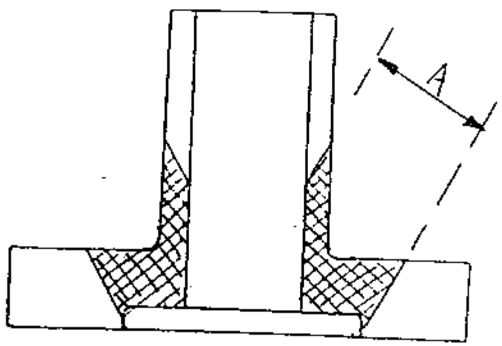
AT NECK :	N1, N2, N3, ...
AT INLET END	A1, A2, A3, ...
AT OUTLET END	B1, B2, B3, ...
AT SECTION XX	$X_1, X_2, \ldots$
AT SECTION YY	$Y_1, Y_2, \ldots$

SHOOTING SKETCH OF BONNET

A = max [3 t_m, 70 mm]

t_m = min thickness, mm

To cover full area round the bonnet



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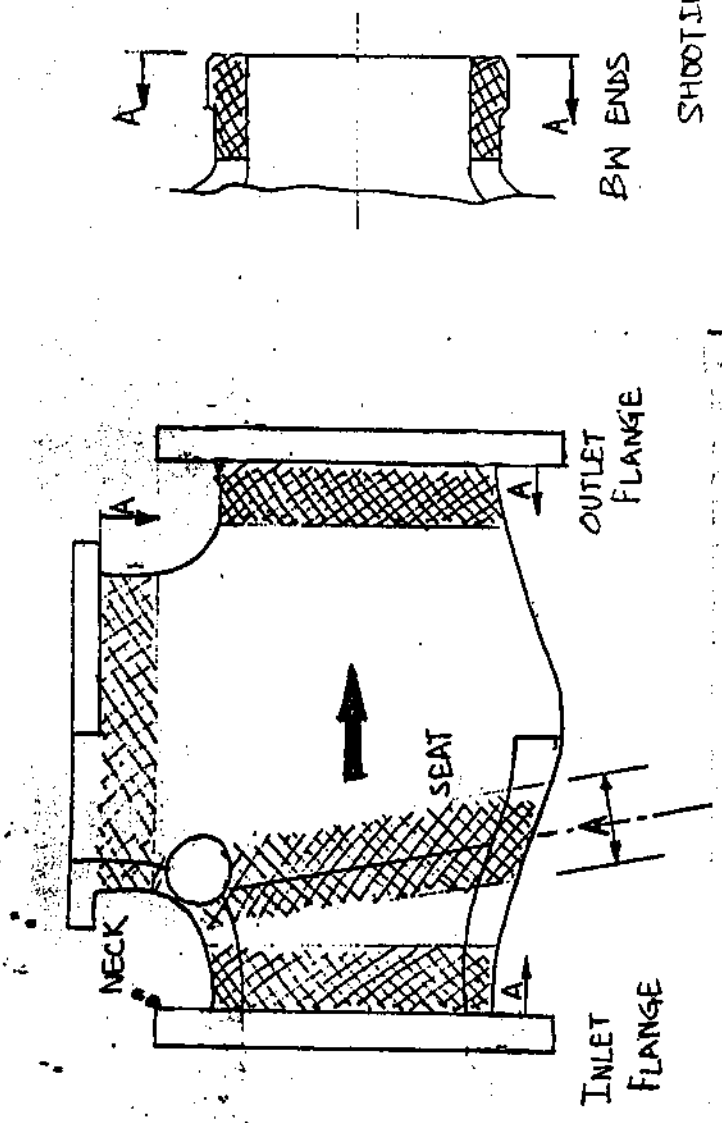
SHOOTING SKETCH OF FLAP VALVE BODY



SHOOTING LOCATION	DESIGNATION
AT NECK	N1, N2, N3, ...
AT INLET PIPE	A1, A2, A3, ...
AT INLET BW END	FA1, FA2, ...
AT OUTLET PIPE	B1, B2, B3, ...
AT OUTLET BW END	FB1, FB2, FB3, ...
AT SEAT	S1, S2, S3, ...

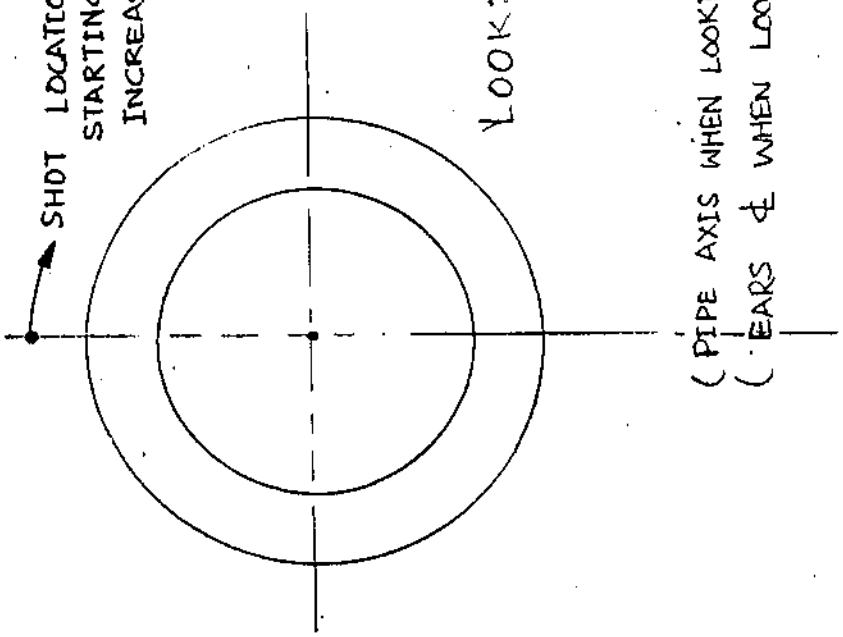
DIRECTION AND SHOT LOCATION

SHOT LOCATION NUMBERING STARTING POINT; INCREASING IN THE DIRECTION SHOWN

LOOKING FROM INLET SIDE TOWARDS OUTLET SIDE

(PIPE AXIS WHEN LOOKING FROM TOP WITH DIRECTION OF FLOW)

(EARS ⊥ WHEN LOOKING BONNET FROM TOP)



70-006

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PRODUCT ENGINEERING/VALVES

TDC FOR UNTOLERANCED DIMENSIONS IN CASTING & FORGING DRAWINGS

Scope :

This technical delivery condition specifies the tolerance for the untoleranced dimension for the castings and forgings wherever tolerances are not specified in the applicable drawin applicable material TDC.

A. Castings :

Nominal dimension (in mm)				Tolerance on diameter or height (in mm)
UPTO	4			± 0.5
OVER	4	UPTO	16	± 1.0
OVER	16	UPTO	65	± 1.5
OVER	65	UPTO	125	± 2.0
OVER	125	UPTO	250	± 2.5
OVER	250	UPTO	500	± 3.0
OVER	500	UPTO	1000	± 4.0
OVER	1000	UPTO	1600	± 5.0

B. Forgings : As per Table (1), (2), & (3) & (4)

PREPARED

CHECKED

APPROVED
(S. KUMAR
SM/PE/VSB
28/2/94)

TABLE 1. LENGTH, WIDTH, HEIGHT, MISMATCH, RESIDUAL FLASH AND TRIMMED FLAT OF DROP, PRESS AND UPSET FORGINGS (NORMAL TOLERANCES)

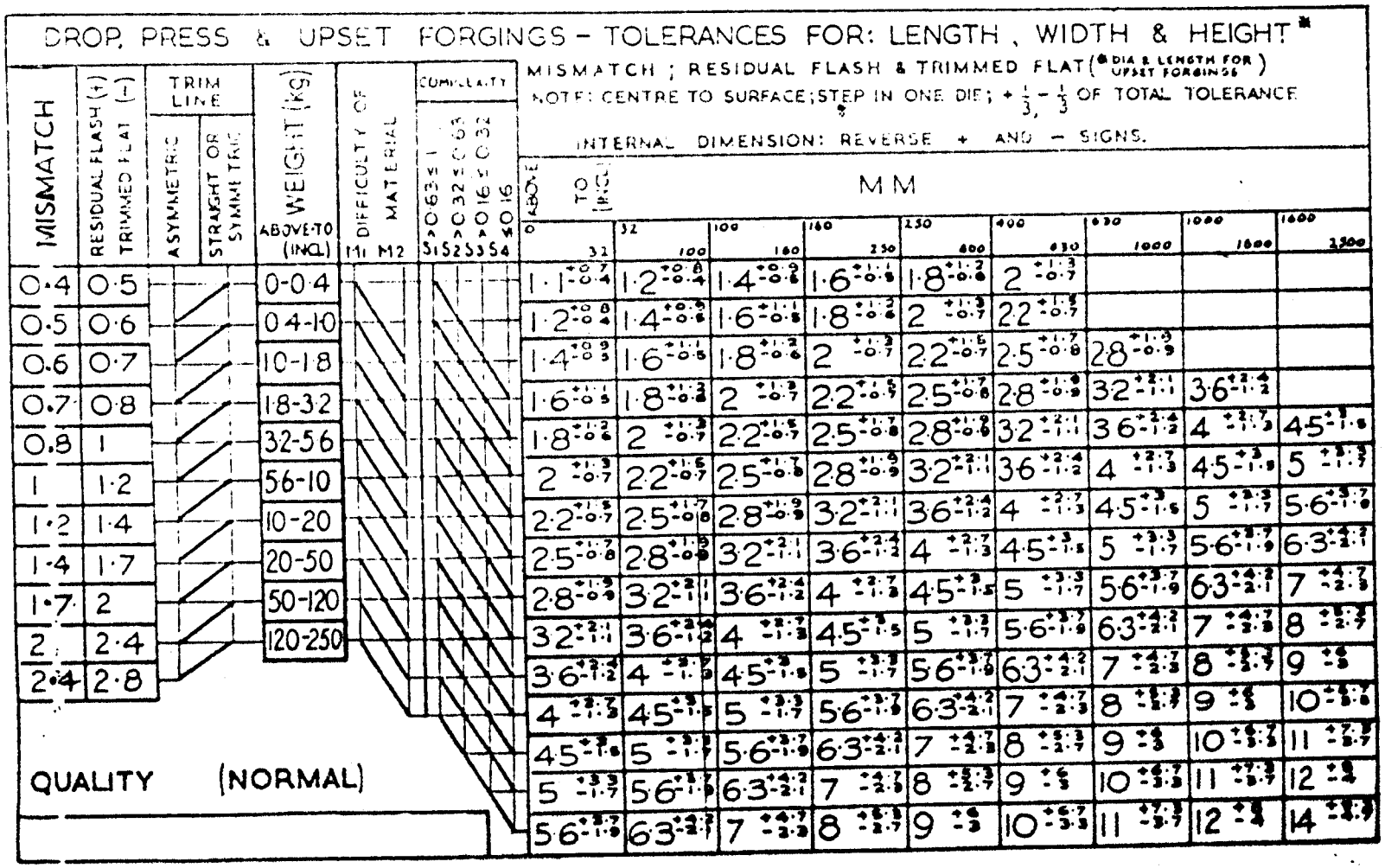


TABLE 2 THICKNESS FOR DROP, PRESS AND UPSET FORGINGS AND EJECTOR MARKS FOR DROP AND PRESS FORGINGS (NORMAL TOLERANCES)

DROP, PRESS & UPSET FORGINGS – TOLERANCES FOR: THICKNESS; EJECTOR MARKS*

*(DROP AND PRESS FORGINGS ONLY)

EJECTOR MARKS	WEIGHT (kg) ABOVE – TO (INCL)	DIFFICULTY OF MATERIAL M1	DIFFICULTY OF MATERIAL M2	COMPLEXITY S1 > 0·63 ≤ 1	COMPLEXITY S2 > 0·32 ≤ 0·63	COMPLEXITY S3 > 0·16 ≤ 0·32	COMPLEXITY S4 ≤ 0·16
1	0-0·4						
1·2	0·4-1·2						
1·6	1·2-2·5						
2	2·5-5						
2·4	5-8						
3·2	8-12						
4	12-20						
5	20-36						
6·4	36-63						
8	63-110						
10	110-200						
12·6	200-250						

QUALITY (NORMAL)

MM

ABOVE / TO (INCL) 0 – 16	16 – 40	40 – 63	63 – 100	100 – 160	160 – 250	> 250
1 $^{+0.7}_{-0.3}$	1·1 $^{+0.7}_{-0.4}$	1·2 $^{+0.8}_{-0.4}$	1·4 $^{+0.9}_{-0.5}$	1·6 $^{+1.1}_{-0.5}$	1·8 $^{+1.3}_{-0.6}$	2 $^{+1.5}_{-0.7}$
1·1 $^{+0.7}_{-0.4}$	1·2 $^{+0.8}_{-0.4}$	1·4 $^{+0.9}_{-0.5}$	1·6 $^{+1.1}_{-0.5}$	1·8 $^{+1.3}_{-0.6}$	2 $^{+1.5}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$
1·2 $^{+0.8}_{-0.4}$	1·4 $^{+0.9}_{-0.5}$	1·6 $^{+1.1}_{-0.5}$	1·8 $^{+1.2}_{-0.6}$	2 $^{+1.3}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$
1·4 $^{+0.9}_{-0.5}$	1·6 $^{+1.1}_{-0.5}$	1·8 $^{+1.2}_{-0.6}$	2 $^{+1.3}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$
1·6 $^{+1.1}_{-0.5}$	1·8 $^{+1.2}_{-0.6}$	2 $^{+1.3}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$
1·8 $^{+1.2}_{-0.6}$	2 $^{+1.3}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$
2 $^{+1.3}_{-0.7}$	2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$
2·2 $^{+1.5}_{-0.7}$	2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$
2·5 $^{+1.7}_{-0.8}$	2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$
2·8 $^{+1.9}_{-0.9}$	3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$
3·2 $^{+2.1}_{-1.1}$	3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$
3·6 $^{+2.4}_{-1.2}$	4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$
4 $^{+2.7}_{-1.3}$	4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$	8 $^{+5.3}_{-2.7}$
4·5 $^{+3}_{-1.5}$	5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$	8 $^{+5.3}_{-2.7}$	9 $^{+6}_{-3}$
5 $^{+3.3}_{-1.7}$	5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$	8 $^{+5.3}_{-2.7}$	9 $^{+6}_{-3}$	10 $^{+6.7}_{-3.3}$
5·6 $^{+3.7}_{-1.9}$	6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$	8 $^{+5.3}_{-2.7}$	9 $^{+6}_{-3}$	10 $^{+6.7}_{-3.3}$	11 $^{+7.3}_{-3.7}$
6·3 $^{+4.2}_{-2.1}$	7 $^{+4.7}_{-2.3}$	8 $^{+5.3}_{-2.7}$	9 $^{+6}_{-3}$	10 $^{+6.7}_{-3.3}$	11 $^{+7.3}_{-3.7}$	12 $^{+8}_{-4}$

TABLE 3 STRAIGHTNESS, FLATNESS AND CENTRE TO CENTRE DIMENSIONS FOR DROP, PRESS AND UPSET FORGINGS

DROP, PRESS AND UPSET FORGINGS

NOTE. QUALITY E DOES NOT APPLY TO UPSET FORGINGS

RANGE OF TOLERANCES FOR STRAIGHTNESS AND FLATNESS

LENGTH ABOVE TO (INCL)		MM														
		0 100	100 125	125 160	160 200	200 250	250 315	315 400	400 500	500 630	630 800	800 1000	1000 1250	1250 1600	1600 2000	2000 2500
QUALITY	NORMAL	0·6	0·7	0·8	0·9	1	1·1	1·2	1·4	1·6	1·8	2	2·2	2·5	2·8	3·2

RANGE OF TOLERANCES FOR CENTRE TO CENTRE DIMENSIONS

LENGTH ABOVE TO (INCL)		MM										
		0 100	100 160	160 200	200 250	250 315	315 400	400 500	500 630	630 800	800 1000	1000 1250
QUALITY	NORMAL	±0·3 0·6	±0·4 0·8	±0·5 1	±0·6 1·2	±0·8 1·6	±1 2	±1·2 2·4	±1·6 3·2	±2 4	±2·5 5	±3·2 6·4

TABLE 4 FILLET, EDGE RADII AND BURRS FOR DROP, PRESS AND UPSET FORGINGS

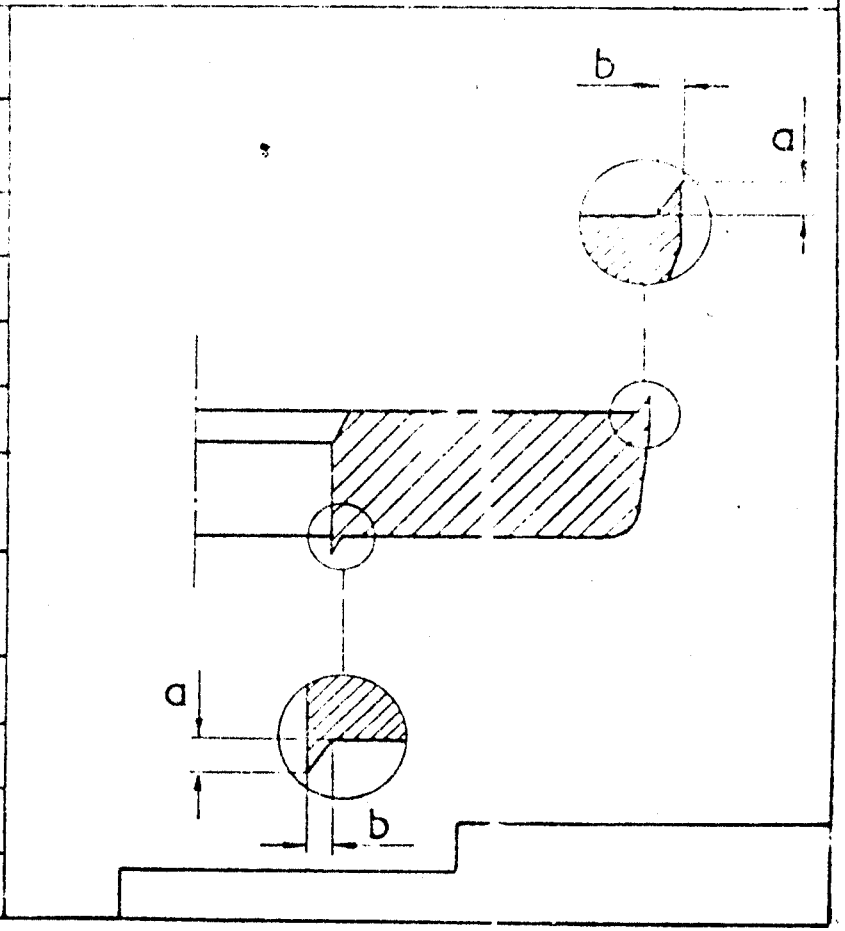
DROP, PRESS AND UPSET FORGINGS

FILLET AND EDGE RADII TOLERANCES

r MM ABOVE – TO (INCL)	+	–
0 – 10	50%	25%
10 – 32	40%	20%
32 – 100	32%	15%
> 100	25%	10%

BURR TOLERANCES (AND PARTING LINE FINS FOR UPSET FORGINGS)

WEIGHT (kg) ABOVE – TO (INCL)	a	b
0 – 1	1	0·5
1 – 6	1·6	0·8
6 – 40	2·5	1·2
40 – 250	4	2



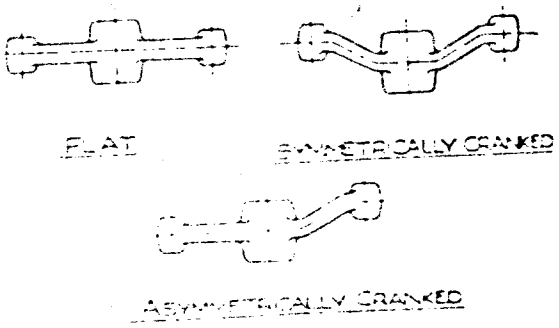


Fig. 1. Die lines

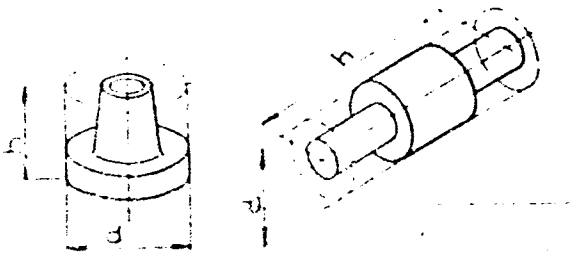


Fig. 2. Enveloping shapes of circular forgings

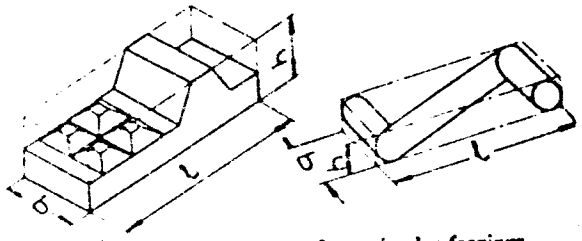


Fig. 3. Enveloping shapes of non-circular forgings

NOTE :

1. The type of steel used is determined as falling within one of the following categories :

   a. M1 - steel with carbon content not more than 0.65% and total of specified alloying elements not more than 5

   b. M2 - steel with carbon content above 0.65% or total of specified alloying elements above 5%.

2. Complexity factor of a forging is the ratio of the weight of the forging to the weight of the overall shape necessary to accommodate the maximum dimensions of the forging.

The resulting complexity factor is determined as falling within one of the following categories :

S4 - Upto and including 0.16

S3 - Above 0.16 upto and including 0.32

S2 - Above 0.32 upto and including 0.63

S1 - Above 0.63 upto and including 1.00
