WESTERN HEAT & FORGE	Work Instruction For Identification, Traceability, Inspection & test status of CDF & ODF Parts	Document No.	30-WI-PR-19
		Rev. No. & Rev. Date	06/10.02.2025
		MASTER COPY	

Purpose:	**To identify the part or batch in a manner which will ensure the traceability with respect to Die No, Material Grade, HT Lot No, Heat No, Inspection & test status etc.**	
Scope:	**Applicable for all closed die & open die parts manufactured in the plant.**	
Stage:	Description of Identification	Responsibility
Raw Material Inwarding & Storage (ODF&CDF)	Identification for section above 60Dia :- On Receipt of Raw Material, verify that heat no & Grade written by steel supplier on the bars / ingots is legible. Rewrite if not legible. Ensure that material description written on bars / ingots matches with description given on Test Certificates and GRN before approving the steel. Bar No Allotment:- Allot Bar no. sequentially to every consignment and every heat no that is received in the plant. Ensure that heat no and bar no is legible on end face of all the bars & one end for ingots. Write with paint or Put printed stickers showing details of heat no, bar no, material grade and size on end face of all the bars at reciept of steel. After steel is approved for use, write OK with paint or put OK sticker on end face of all the bars. Identification for Section below 60Dia :- Sections below 60 Dia to be stripped with aluminium plate .Complete identification of heat no ,bar no ,Material grade & section to be written on aluminium strip with permeanent marker. ***Note- After unloading, Raw material for Ultra corpotech customer shall be identified immediately with respsective color code of material grade on full lenngth as per WI for color scheme of bars (30-WI-MQC-05) ,***	MQC Lab
	Bars / Ingots of same cross section and different specifications shall not be stored next to each other. Bars / Ingots to be cut such that full identification as explained above i.e. Bar no,Heat no, Matl. Grade, Size and Quality status is always retained on face of all the left over pieces of bar / Ingots after cutting is over.	ODF & CDF Production Head

Colour Coding Scheme for Raw Material	**Color Scheme for Identification of Bars / ingots of Some regularly used steel grades**		
	Ref Work instruction No :- Colour Scheme for Identification of Bars of Some regularly used steel grades30-WI-MQC-05		ODF & CDF Production Head
Raw Material Cutting & Cut Blanks storage	CDF & ODF	Avoid cutting of Material of two grades with same cross section and Cut weight at same time. In such cases where it is absolutely necessary to cut material of different grades but same cross section and cut weight at same time use such cutting machines which are far away from each other after ensuring no possibility of mix up by identifying one of the bar with some colour. Two heats of same grade for same part no. not to be taken for cutting at one time.	Cutting Supervisor
Raw Material Cutting & Cut Blanks storage	CDF Cut Billets	Store Cut Blanks in pallets & put Tag to every pallet with all details filled in the tag to ensure complete traceability. Use Tag no 40-DF-PR-08 to identify cut blanks. Additionally each cut billet shall be identifed with Heat code & Die number by Hard punch or punching machine. Identify NC Material for RW with yellow paint.Scrap Material to identify with red paint.Test piece shall identified with Material grade ,Heat no & die no. ***Test piece shall be kept in designated pallet only*** .	
	ODF Cut Billets	Avoid cutting of Material of two grades with same cross section and Cut weight at same time. In such cases where it is absolutely necessary to cut material of different grades but same cross section and cut weight at same time, ensure that cut length difference between the two grades of materials cut is minimum 100 m.m. Identify each cut blank with Material grade, Heat no. & Cut weight which is ready to be charged in the furnace on the same day. All other cut blanks which could not be charged in furnace within 24 hrs after cutting and need to be stored for some reason should be identified with Material grade, Heat no, Cut weight, Section, and quality status. All the left over cut blanks generated inhouse and end pieces recieved from other plants should be stored at designated place within cuttting section or in the steel yard. The inventory with accounting record after reciept and usage of left over cut blanks should be maintained and updated regularly. Identify NC Material for RW with yellow paint.Scrap Material to identify with red paint. Test piece shall identified with Material grade ,Heat no & die no .	

Heat Code Allotment	CDF	Allot a unique heat code to every heat which should be referred always in close die forgings. Ref Work Instruction30-WI-MQC-04 for RM Inspection, Heat Code and RM Allotment and record heat code in 40-DF-LAB-02 Raw Material Register.	MQC Lab
		Ensure that allotted heat code is communicated to Die Shop for engraving on dies and recorded.	Head Production
Forging Manufacturing	CDF	Tool Design to ensure that Die no have prefix-SS to denote stainless steel for such purchase orders of bonnets and gate forgings when stainless steel and 4130 are to be forged from same die no. Production to enter the quantity produced of stainless steel and 4130 separately in ERP and all production records under the relevant die no.Additionally following care should also be taken during manufacturing. Most Important :- Production of Material grade 410 and 4130 for same die no not to be planned back to back 1) Finish the forging of one material grade i.e. one die no and empty the furnace. 2) Collect left over cut billets and store in a pallet. Tag the pallet with 40-DF-PR-08. Store all forgings in pallets & Use appropriate tags to identify forgings stored in pallets & and move at designated place. 3) Prepare Material Accounting slip doc no 40-DF-PR-01. Ensure that cut blank accounting is perfectly matched with forgings produced including process rejections. 4. In case of discrepancy, raise an ALERT to Head MQC/ Head QA for 100% PMI before releasing for next process & before dispatch to customer. 5) Load some other die no before loading the same die no for forging second material grade. 6) Change material specification in dies by engraving or change the depressed stamps in trim punch. 7) Load the new specification billets in furnace and start forging. 8) Ensure new material specification is clearly visible in all forgings. 9)Do not load material of more than one heat code in furnace at same time. 10) Bonnets and Gate forgings produced from 4130 and 410 grade must have depressed stamping of material grade on all parts. 11) All forged parts to be stored in pallets and each pallet to be tagged with appropriate tag.	n Supervisor/ Tool Design,PPC & Die Shop

	ODF	1) Identify each forged part with Die No. Material Grade, Heat No in cold condtion & for hot condtion Die No & weight. 2) Loading of Material of two specifications with identical cut weight and section should never be charged in the furnace at same time. 3)Avoid furnace load planning charging sheet with material loading of two different material grades and same cross section in the same charge. In such cases where material of two different material grades and same section has to be charged in the furnace at same time, ensure that cut length difference is always greater than 100 m.m.	Production
After Forging before Heat Treatment for CDF parts. After forging and before light cut for ODF parts.	CDF	Put In process tag 40-DF-PR-05 on Pallet. Ensure Material Grade depressed stamping is done on each forging of bonnets & Gate produced from 410 or 4130 grade only. Heat code and other stamping to be as per drawing. Identify NC parts for RW with yellow paint and pallet to be tagged with 40-DF-PR-09 Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Production Supervisor
	ODF	Each Part to be sent to vendor for proof machining before HT or to be directly taken for HT should be identified with Die No , Material Grade, Heat No. L&T as forged parts shall be identified with blue colour dot mark.	
After light cut & before Heat Treatment	CDF	Not Applicable as no such case exists as of date	Not Applicable
	ODF	Each part to be identified with Die No., Material grade , Heat No, machining vendor code on each part by permanent marker & L&T parts will be identified (Die No, Material grade, Heat No) by hard punch before HT. Identify NC parts for RW with yellow paint and pallet to be tagged with 40-DF-PR-09 Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Machining Vendor

After HT waiting for hardness testing	CDF	Parts to be kept in pallets and In process tag to be put on all pallet. All the information mentioned in the Tag should be filled including HT lot no and next process.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06. Test piece shall identified with Material grade ,Heat no, die no & HT lot no .	HT Supervisor
	ODF	Every part to be identified with Material Grade, die no, Heat no and HT lot no and hardness value.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06. Test piece shall identified with Material grade ,Heat no, die no & HT lot no .	
Handling of Hardness OK Parts (CDF bonnets for pre turning and ODF Parts for Light cut) All other CDF parts taken for shot blasting	CDF	Bonnets of one heat no and one grade only to be sent to vendor for pre-turning. Bonnets of 4130 and 410 should never be sent to the same vendor for preturning.Verification of visibility of Depressed stamping of material grade 410 or 4130 must be done on each bonnet & Gate forging before loading of bonnets/ gates for pre turning if applicable as per the route card. Details of stamping to be done on each bonnet i.e. Die no, Material grade, Heat no, HT lot no and vendor code after preturning to be mentioned on delivery challan or drawing. For all materials other than bonnets, store the parts in pallet after shot blasting and Put In process tag no 40-DF-PR-05 on Pallet to move to next process.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Supervisor Finishing / HT supervisor
	ODF	Every part to be identified with Material Grade, die no, Heat no, HT lot no and hardness value. Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	HT Supervisor
Handling of fall out in Hardness testing	CDF & ODF	Hard and soft fall out to be taken for rework as quickly as possible so as to be shipped with parent batch. In case of fall out of preturned parts e.g. bonnets and gate forgings, the fall out parts must be stamped deep for Heat no, HT lot no, Die no, Material Grade & Vendor code so that all these stamping is visible after completion of rework.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged with 40-DF-PR-06.	HT Supervisor

Reciept of parts after Pre Turning/ Light cut & hardness testing of bonnets and gate forgings.	CDF	Each bonnet to be identified with material grade, heat no, HT lot no, Vendor code. In addition to above,Each bonnet of 410 grade to be identified with blue paint dot and each bonnet of 4130 grade to be identified with black paint dot. Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Sub Contractor/ PPC
		For all parts other than bonnets, store the parts in pallet after shot blasting with in Process Tag no 40-DF-PR-05 duly filled on the pallet to move to next process.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Finishing Supervisor
	ODF	Identify each part with Die No, Material grade, Heat No, & Vendor code by permamnent marker	Sub Contractor/ PPC
After light cut/ pre machining before sending to finish Machining	CDF	Identify each bonnet or gate with Die No, Material grade, Heat No. and HT Lot no. by paint marker or permanent marker. Also put blue paint dot on bonnets of Material Grade 410 and put black paint dot on bonnets made from 4130 grade.	Sub Contractor/ Finishing Supervisor
After Subcontracted Process	ODF & CDF	Shall ensure traceability with respect to below from subcontractors For ODF : Heat No,Grade, Die No , Heat Lot No if applicable For CDF : Die No , Material Grade, Heat Lot No, Colour Code if applicable & Vendor Code. For vendor code identification Ref List OF Punching Codes for Suppliers ODF 40-DL-PPC-02 & For CDF 40-DL-PPC-03.	Sub contractor/ PPC
After Final Inspection & Before Dispatch to customer	CDF	Export Bonnets & Gate - Identification & Punching as per punching slip to be done on each part. Additionally Each bonnet, gate of 410 grade to be identified with blue paint dot and each bonnet and gate of 4130 grade to be identified with black paint dot. Store in pallets and identify pallet with OK Tag 40-DF-PR-06. Order under API 20B & 20C requriements Shall ensure that traceability number provided on parts manufactured as per API 20C & parts manufactured as per API 20B is linked to Traceability number tracking sheet 40-DF-MQC-16. Punching Shall be done by using low stress metal(dot or rounded)stamps or vibration technique.Scrap parts to identify with red paint and pallet to tag with 40-DF-PR-07. Pallet of OK parts to be tagged wit 40-DF-PR-06.	Dispatch Supervisor
		Domestic- Identification & Punching as per Part Drawing. Store in pallets and identify pallet with OK Tag 40-DF-PR-06.	

	ODF	Identification & Punching as per punching slip to be done on each part.Order under API 20B & 20C requriements Shall ensure that traceability number provided on parts manufactured as per API 20C & parts manufactured as per API 20B is linked to Traceability number tracking sheet 40-DF-MQC-16. Punching Shall be done only by using low stress metal(dot or rounded)stamps or vibration technique.	
Labelling on box after packaging	CDF & ODF	Export Customers:- Label to have Invoice no & Date, PO No & Date, Part no, Line Item no, Die no, Customer Name & Address, WHF Name and Address, Box no, Contents Details, Heat no, HT Lot no, Sr nos, Qty, Net wt. and Gross Weight. ODF Domestic customers for example GE, Taurus, Alstom & CDF Domestic Customer for example Wipro :- Write on every box or put labels showing Die no, Sr nos, Qty & Customer Name.Additionally Identification on all parts as per the part drawing or PO requirements.	Packaging supervisor
Loose Shipments	CDF & ODF	CDF Domestic:- Identification parts as per the part drawing requirements. ODF Domestic:-Identification on all parts as per Punching slip.	
Declaration of Parts for Rework	CDF	Yellow colour dot on each part. Store parts in a pallet and pallet to be identified with Non conformance Tag 40-DF-PR-09	Final Inspection Supervisors
	ODF	Yellow colour dot on each part. Identify each part with Die No, Material grade, HT Lot No. hardness and reason of rework by paint marker.	
Declaration of Parts for Rejection.	CDF	Red colour dot on each part.Store parts in a pallet and pallet to be identified with Rejection Tag 40-DF-PR-07	Respective stage Supervisors
	ODF	Red colour dot on each part.Identify each part with Die No, Material grade, HT Lot No.and reason of rejection by paint marker.	

Maintenance, Re-application & Loss of Identification & Traceability	Stage wise reapplication of identification & traceability to all material throughout the product manufacturing	Identification & Traceability to be maintain throughout the product realization process as per 30-WI-PR-19. Actions shall be to taken when part or product loss their identification and traceability throughout the product realization process. Re-application of Identification & Traceability- 1. Raw material storage - Apply new sticker with the same details available in bundle or sticker at another end to the bar. 2. Cut billets - Re-apply the tag to the pallet as per the details punched on the cut billet for CDF and for ODF Write the die number, Heat number, Material Grade and Cut Weight with paint on the cut blank. 3. Forging – Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number, Heat number and material grade on the part with the paint. 4. After forging before heat treatment for CDF parts & After forging & before light cut for ODF parts – The parts which are directly send to the supplier for light cut process Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number, Heat number and material grade on each part with the paint. 5. After light cut and before heat treatment - The parts which are directly send to the supplier for light cut or Pre-turning process Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number, Heat number and material grade on each part with the paint. 6. Heat Treatment – Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number, Material Grade & Heat number on the part with the paint. 7. After Heat treatment waiting for hardness testing - The parts which are directly send to the supplier for light cut or Pre-turning process Re-apply tag to the pallet as per route card & Scrap	

	parts to identify with the red paint or pallet tagged with 40-DF-PR-07 & OK parts to be tagged with 40-DF-PR-07 for CDF and for ODF write the Die number, Heat number and material grade on each part with the paint & Scrap parts to identify with the red paint & OK parts to be tagged with 40-DF-PR-07. 8. Handling of Hardness OK parts - Re-apply tag to the pallet as per route card & Scrap parts to identify with the red paint or pallet tagged with 40-DF-PR-07 & OK parts to be tagged with 40-DF-PR-07 for CDF and for ODF write the Die number, Heat number, material grade & HT lot number on each part with the paint & Scrap parts to identify with the red paint & OK parts to be tagged with 40-DF-PR-07. 9. Shot Blasting – Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number or other traceability factors on the part with the paint by verifying the part by the help of drawing on the parts. 10. Grinding – Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number or other traceability factors on the part with the paint by verifying the part with the help of drawing. 11. NDT Testing - Re-apply tag to the pallet as per route card for CDF and for ODF write the Die number or other traceability factors on the part with the paint by verifying the part with the help of drawing. 12. After Final Inspection & Before Dispatch to the customer - Re-apply tag to the pallet as per route card & Scrap parts to identify with the red paint or pallet tagged with 40-DF-PR-07 & OK parts to be tagged with 40-DF-PR-07 for CDF and for ODF write the Die number, Heat number and material grade on each part with the paint & Scrap parts to identify with the red paint & OK parts to be tagged with 40-DF-PR-07. 13. Packing or labeling on the box – For CDF Export customer Label to have invoice no & date, Part no, Line Item no, Die no, Customer name & Address, WHF name and address, Box no, Contents Details, Heat no, HT lot no, Serial no, Quantity, Net weight & Gross weight etc. For CDF Domestic – Identification of the parts as per drawing requirements. For ODF customer – Labels showing die number, Serial no, Quantity & Customer Name and Identification on all parts as per Punching slip. 14. Loose shipment – For CDF Identification to be done according to drawing For ODF parts Identification to be done according to punching slip.	Respective Process Owner
Loss of Identification & Traceability	In case identification is lost during processing If there is no any traces found of that part or material should be scrap	Respective Process Owner

Prepared By: Management Representative	Approved BY : Head MQC	Approved BY : Head Prod	Approved BY : Head HT	Approved BY : Head QA