

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919860	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208002
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208003						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798604		Item : 0001		Picklist:		

0003	L	TC92970-08		33208004						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798604		Item : 0002		Picklist:		

0004	L	TC92970-09		33208006						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798604		Item : 0003		Picklist:		

0005	L	TC9752002013		33208008						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798604		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	1	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919860		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208002			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		2	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919860		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208002		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	3	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919860		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	4	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919860		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208002		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
0210	AB4315	P001	ZP01							
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:										
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	
AV	15.06.2021	00			VM		MRAVI		5	
									No.of Pgs	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919860		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		6	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919860		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	7	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919860		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208002			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		8	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919860		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	9	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order		Date	
Plant: P001		Equipment No:					101919861		08.05.2021	
Type		WBS Element		Customer					Part No	
		P-1044302300-33208		Technip India Limited.					33208013	
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			MDCC	
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			YES	

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208014						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798605		Item : 0001		Picklist:		

0003	L	TC92970-08		33208015						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798605		Item : 0002		Picklist:		

0004	L	TC92970-09		33208017						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798605		Item : 0003		Picklist:		

0005	L	TC9752002013		33208019						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798605		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	10	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant: P001		Equipment No:				101919861		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208013			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		11	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919861		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208013		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	12	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919861		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	13	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919861		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208013		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
0210	AB4315	P001	ZP01							
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:										
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	
AV	15.06.2021	00			VM		MRAVI		14	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919861		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208013		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089										
0220	AB9863	P001	QM01							
Inspect the above operation.										
0230	AB4315	P001	ZP01							
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.										
0240	AB9863	P001	QM01							
Inspect the above operation.										
0241	AA9412	P001	ZP04							
Mark for the key ways as per drawing. (Refer VIEW-Z).										
0242	AA4928	P001	ZP01							
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	15	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919861		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	16	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919861		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208013			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		17	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919861		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	18	140

	TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:				101919862	08.05.2021
Type		WBS Element		Customer			Part No
		P-1044302300-33208		Technip India Limited.			33208020
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208021						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798606		Item : 0001		Picklist:		

0003	L	TC92970-08		33208022						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798606		Item : 0002		Picklist:		

0004	L	TC92970-09		33208024						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798606		Item : 0003		Picklist:		

0005	L	TC9752002013		33208026						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798606		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP01					
Collect								
Disc: Forging size OD 350 / ID 100 X L = 120 mm.								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	19	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919862		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208020			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		20	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919862		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208020		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	21	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919862		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	22	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919862		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208020		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
0210	AB4315	P001	ZP01							
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:										
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM		MRAVI		23	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919862		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	
AV		15.06.2021	00			VM		MRAVI	
							Pg no		No.of Pgs
							24		140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919862		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	25	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919862		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208020			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		26	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919862		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	27	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919863	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208031
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208032						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798607		Item : 0001		Picklist:		

0003	L	TC92970-08		33208033						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798607		Item : 0002		Picklist:		

0004	L	TC92970-09		33208035						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798607		Item : 0003		Picklist:		

0005	L	TC9752002013		33208037						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798607		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	28	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919863		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		29	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919863		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208031		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	30	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919863		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> , <)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	31	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919863		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.											
0190	AB9863	P001	QM01								
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.											
0200	AB9421	P001	ZP01								
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.											
0210	AB4315	P001	ZP01								
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		32	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919863		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		33	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919863		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required:									
Profile cutter as per the detail - G: R0.2/20deg/R1.0:									
45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note:									
1. The milling should be diametrically opposite to facilitate the balancing weights assembly.									
2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	34	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919863		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		35	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919863		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	36	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919864	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208009
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208010						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798608	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	37	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919864		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208009		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	38	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919864		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208009		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).										
As per the customer approved data sheet< (> ,<)>										
Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	39	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919864		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208009		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	40	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919864		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:									
Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs		
AV	15.06.2021	00		VM	MRAVI	41	140		

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919864		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	42	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919864		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	43	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919864		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	44	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919865	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208011
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208012						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798609	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	45	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919865		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208011		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	46	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919865		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208011			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0110	AB9863	P001	QM01								
Verify the attestation of the test rings and proper placement of same on the impeller.											
0120	MB1716	P004	ZP01								
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.											
Refer - C W 1007.											
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.											
0130	MB9863	P004	QM01								
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.											
0140	MB9863	P004	QM01								
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc.											
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).											
As per the customer approved data sheet< (> ,<)>											
Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.											
0150	AB6151	P001	ZP01								
Carry out grit blasting on internal surfaces of impeller to remove scales etc.											
0160	AB9863	P001	QM01								
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		47	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant: P001		Equipment No:				101919865		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208011			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0170	AB9421	P001	ZP01								
Clean the impeller completely.											
0171	AB9421	P001	ZP01								
Polish the impeller in the impeller polishing machine.											
Tools required:											
Catcher plates for holding impeller:											
For dia. 120: 45-72-11032-14											
0172	AB9863	P001	QM01								
Inspect the above operation.											
0180	AB4315	P001	ZP01								
Transfer the material attestation marks in the presence of inspector during machining.											
JOB SETTING:											

1. Place the impeller resting on disc face, clamp & align.											
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).											
3. Take indications at 4 points 90 deg apart.											
4. Adjust all the 4 points to the mean of the indication by placing shims wherever required.											
5. Tighten the impeller fully.											
OPERATION:											
Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.											
0190	AB9863	P001	QM01								
Inspect at the above operation, for planarity setting.											
Carryout the planarity check for planarity control and make protocol.											
0200	AB9421	P001	ZP01								
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		48	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919865		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1044302300-33208/ 33208		Technip India Limited.				33208011			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0210	AB4315	P001	ZP01								
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		49	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919865		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	50	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919865		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	51	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919865		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	52	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919866	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208027
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208028						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798610	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	53	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919866		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	54	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919866		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).										
As per the customer approved data sheet< (> ,<)>										
Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	55	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919866		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	56	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919866		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0210	AB4315	P001	ZP01							
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:										
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM		MRAVI		57	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919866		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	58	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919866		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	59	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919866		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	60	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919867	08.05.2021
Type		WBS Element		Customer				Part No
		P-1044302300-33208		Technip India Limited.				33208029
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208030						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798611	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	61	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919867		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP99							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	62	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919867		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector. Refer - C W 1007. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature). As per the customer approved data sheet< (> , <)> Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	63	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919867		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1044302300-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	64	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919867		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		65	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919867		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	66	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919867		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
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		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919867		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	68	140

	TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:				101919868	08.05.2021
Type		WBS Element		Customer			Part No
		P-1044302300-33208		Technip India Limited.			33208048
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
33320800023-00			00	33320800023-00		MOCK UP PLATE FOR IMP 13320805166-67	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0020	1.000	1.000	EA	IS01	45.000	MOCK UP PLATE FOR IMP 13320805166-67	YES

BOM Details

Pos.No	IC	Material Code			P.No	Remarks					
Matl.Spec		SPK	Qty	MU	Size 1		Size 2	Size 3	Formula Key	MPcs	St.
0001		R	AA1011819287			33208049					
AA10119			63.026	KG	335.000		100.000	0.000	F4	1.000	ST12
Material Description : PLATE 100 IS2062 GRE250(FE410W) QLTY-B					Reservation : 0013798612		Item : 0001		Picklist:1000607014		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	DE9412	P006	ZP04					
Mark for gas cutting the plate 100 mm thick to size OD 335 mm & ID 100 mm.								
0020	DE9421	P006	ZP01					
Drill a pilot hole of dia. 10 mm for gas cutting the inside diameter.								
0030	DE2818	P006	ZP01					
Pre heat and gas cut the plate as per marking.								
0040	DE9421	P006	ZP01					
Clean and grind the gas cut edges.								
0050	DE9863	P006	QM01					
Inspect at the above operation. Send to W.C 01-3113.								
0060	AC4292	P001	ZP99					
Machining of disc: ----- Finish machine the disc completely to dimensions including the bore dia. 112 H7 and step dia. 172 mm and OD 321 mm as indicated in the drawing.								
0070	AC9863	P001	QM01					
Inspect the above operation.								
0080	AC9412	P001	ZP04					
Mark for the holes as per drg.								
0090	AC4821	P001	ZP99					
Drill and tap 2 x M10 to depth 28/37 equi-spaced as per drawing for lifting purpose.								
0100	AC9863	P001	QM01					
Inspect at the above operation.								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	69	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919868		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1044302300-33208/ 33208		Technip India Limited.				33208048	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
33320800023-00			00	33320800023-00		MOCK UP PLATE FOR IMP 13320805166-67			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0020	1.000	1.000	EA	IS01	45.000	MOCK UP PLATE FOR IMP 13320805166-67			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0110	KB5392	P055	ZP99						
a) Refer the notes given on the drawing for informative details for machining. b) Mill the groove 12 H7 X 5 + /- 0.1 mm depth to length 85 + /- 1 mm from outside dia. on right face for centering and locating the job as per drawing. c) Mill 3 vanes to prove Blade machining program on the MOCK UP piece for drawing no. 33320800023-00. For detail of vane profile refer impeller drawing 13320805166-00 or the UG model provided for the above drawing for establishing the program proving. The blade geometry is as per the solid model.									
0120	KB9863	P055	QFNL						
Final inspection of the vane profile on 3D Coordinate Measuring Machine.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	70	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919873	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208002
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208003						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798629		Item : 0001		Picklist:		

0003	L	TC92970-08		33208004						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798629		Item : 0002		Picklist:		

0004	L	TC92970-09		33208006						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798629		Item : 0003		Picklist:		

0005	L	TC9752002013		33208008						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798629		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
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		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
and provide them for further operation.									
0030	AB9864	P001	ZP04						
Inspect and ensure the forgings for dimensional suitability and attestations.									
0040	AB4315	P001	ZP99						
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.									
Machine the test rings from the Impeller disc as per the Fig. -C.									
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.									
Tools required:									
Checking template for the profile 9 deg: 45-08-14087									
0050	AB9863	P001	QM01						
Inspect the above operation.									
0051	AC9412	P001	ZP04						
Mark for peripheral holes on outside dia. of DISC as per Fig-C.									
0052	AC4821	P001	ZP99						
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.									
0053	AC9863	P001	QM01						
INSPECTION OF ABOVE OPERATION.									
0070	KB5392	P055	ZP99						
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.									
a) Refer the notes given on the drawing for informative details for machining.									
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.									
For detail of vane profile, refer to the solid model issued by compressor Engineering.									
Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs		
AV	15.06.2021	00		VM	MRAVI	72	140		

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.									
0080	KB9863	P055	QM01						
Inspection of the vane profile on 3D CMM.									
0090	AB9425	P001	ZP01						
Clean the milled surfaces and de-burr the sharp edges.									
0100	AB9421	P001	ZP01						
Collect the corresponding test rings from Q.C. and get them tack welded.									
0110	AB9863	P001	QM01						
Verify the attestation of the test rings and proper placement of same on the impeller.									
0120	MB1716	P004	ZP01						
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.									
Refer - C W 1007.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature)									
Maximum Hardness: Max. 240 BHN.									
0130	MB9863	P004	QM01						
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.									
0140	MB9863	P004	QM01						
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from									
Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs		
AV	15.06.2021	00		VM	MRAVI	73	140		

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	74	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
		Plant: P001				Equipment No:		101919873	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.									
0190	AB9863	P001	QM01						
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.									
0200	AB9421	P001	ZP01						
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		75	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		76	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	77	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919873		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208002			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		78	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919873		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208002	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P1		IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0002	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 1 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	79	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919874	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208013
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208014						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798630		Item : 0001		Picklist:		

0003	L	TC92970-08		33208015						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798630		Item : 0002		Picklist:		

0004	L	TC92970-09		33208017						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798630		Item : 0003		Picklist:		

0005	L	TC9752002013		33208019						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798630		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	80	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919874		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208013			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		81	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919874		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208013		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	82	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919874		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	83	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919874		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.									
0190	AB9863	P001	QM01						
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.									
0200	AB9421	P001	ZP01						
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		84	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919874		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208013		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089										
0220	AB9863	P001	QM01							
Inspect the above operation.										
0230	AB4315	P001	ZP01							
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.										
0240	AB9863	P001	QM01							
Inspect the above operation.										
0241	AA9412	P001	ZP04							
Mark for the key ways as per drawing. (Refer VIEW-Z).										
0242	AA4928	P001	ZP01							
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	85	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919874		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	86	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919874		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208013			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		87	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919874		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208013	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P4		IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0005	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 4 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	88	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919875	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208020
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208021						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798631		Item : 0001		Picklist:		

0003	L	TC92970-08		33208022						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798631		Item : 0002		Picklist:		

0004	L	TC92970-09		33208024						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798631		Item : 0003		Picklist:		

0005	L	TC9752002013		33208026						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798631		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	89	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919875		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208020		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
and provide them for further operation.										
0030	AB9864	P001	ZP04							
Inspect and ensure the forgings for dimensional suitability and attestations.										
0040	AB4315	P001	ZP99							
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.										
Machine the test rings from the Impeller disc as per the Fig. -C.										
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.										
Tools required:										
Checking template for the profile 9 deg: 45-08-14087										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining.										
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	90	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919875		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208020		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	91	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919875		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc.									
YIELD STRENGTH: 55 - 65 Kg/mm sq.									
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).									
As per the customer approved data sheet< (> ,<)>									
Min. yield strength: 3100 kg/cm sq.									
Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									

1. Place the impeller resting on disc face, clamp & align.									
2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	92	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919875		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208020		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
0210	AB4315	P001	ZP01							
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	93	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919875		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		94	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919875		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required:									
Profile cutter as per the detail - G: R0.2/20deg/R1.0:									
45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note:									
1. The milling should be diametrically opposite to facilitate the balancing weights assembly.									
2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	95	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919875		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.									
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	
AV		15.06.2021	00			VM		MRAVI	
								Pg no 96	
								No.of Pgs 140	

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919875		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208020	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P5		IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0006	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 5 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	97	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919876	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208031
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0001	L	TC32029-236FI		33208032						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798632		Item : 0001		Picklist:		

0003	L	TC92970-08		33208033						
		13.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798632		Item : 0002		Picklist:		

0004	L	TC92970-09		33208035						
		23.000	EA	0.000	0.000	0.000		0.000	IS01	
Material Description : BALANCING WEIGHT				Reservation : 0013798632		Item : 0003		Picklist:		

0005	L	TC9752002013		33208037						
AA10721		36.000	EA	0.000	0.000	0.000		0.000	ST01	
Material Description : GRUB SCREW M4X6				Reservation : 0013798632		Item : 0004		Picklist:1000606433		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				

Sub Operation Text

0010	AJ9863	P001	QM01					
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CAUTION: INTERCHANGEABLE JOB NO DEVIATION PERMITTED.

Verify the material attestation marks on the forging.

Material code - TC32029-236FI

Verify the certificates duly attested by quality inspector and technical delivery conditions.

0020	AB9421	P001	ZP99					
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Collect

Disc: Forging size OD 350 / ID 100 X L = 120 mm.

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	98	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919876		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
and provide them for further operation.											
0030	AB9864	P001	ZP04								
Inspect and ensure the forgings for dimensional suitability and attestations.											
0040	AB4315	P001	ZP99								
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc.											
Machine the test rings from the Impeller disc as per the Fig. -C.											
Note: Preserve the test ring with proper identification mark for further tests after scoop milling.											
Tools required:											
Checking template for the profile 9 deg: 45-08-14087											
0050	AB9863	P001	QM01								
Inspect the above operation.											
0051	AC9412	P001	ZP04								
Mark for peripheral holes on outside dia. of DISC as per Fig-C.											
0052	AC4821	P001	ZP99								
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.											
0053	AC9863	P001	QM01								
INSPECTION OF ABOVE OPERATION.											
0070	KB5392	P055	ZP99								
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.											
a) Refer the notes given on the drawing for informative details for machining.											
b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805166-00.											
For detail of vane profile, refer to the solid model issued by compressor Engineering.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		99	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919876		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208031		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected. Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	100	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919876		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
disc & counter disc. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature). As per the customer approved data sheet< (> ,<)> Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
0170	AB9421	P001	ZP01						
Clean the impeller completely.									
0171	AB9421	P001	ZP01						
Polish the impeller in the impeller polishing machine.									
Tools required:									
Catcher plates for holding impeller:									
For dia. 120: 45-72-11032-14									
0172	AB9863	P001	QM01						
Inspect the above operation.									
0180	AB4315	P001	ZP01						
Transfer the material attestation marks in the presence of inspector during machining.									
JOB SETTING:									
----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc).									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	101	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919876		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully. OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.											
0190	AB9863	P001	QM01								
Inspect at the above operation, for planarity setting. Carryout the planarity check for planarity control and make protocol.											
0200	AB9421	P001	ZP01								
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.											
0210	AB4315	P001	ZP01								
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING:											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		102	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919876		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208031		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg: 45-08-14089										
0220	AB9863	P001	QM01							
Inspect the above operation.										
0230	AB4315	P001	ZP01							
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters. Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm. Finish turn, eye outside diameter as per drawing.										
0240	AB9863	P001	QM01							
Inspect the above operation.										
0241	AA9412	P001	ZP04							
Mark for the key ways as per drawing. (Refer VIEW-Z).										
0242	AA4928	P001	ZP01							
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	103	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919876		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0244	AB9421	P001	ZP01						
Mark for the dovetail slot turning as per the VIEW - O and detail - G of the drawing.									
0245	AB4315	P001	ZP01						
Turn the dove tail slot on the back of the impeller as per the detail - G and View - O.									
Tools required: Profile cutter as per the detail - G: R0.2/20deg/R1.0: 45 - 11 -									
0246	AB9863	P001	QM01						
Inspect the above operation.									
0247	AB9421	P001	ZP01						
Mark for slot milling for opening the dovetail profile at two locations as per View # O and note 12 on the drawing.									
Note: 1. The milling should be diametrically opposite to facilitate the balancing weights assembly. 2. The millings shall be at 90 deg w.r.t to the impeller keyways and has to be carried out after the keyway milling.									
0248	AB5326	P001	ZP01						
Clamp the impeller on the table with the hub side on the top. Mill two openings on the dove tail slot with end mill of radius R5.0 mm.									
0249	AB9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	104	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919876		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208031			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0270	AH9421	P001	ZP01								
Make necessary arrangements for dynamic balancing of the Impeller. Tools Required: Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005											
0280	AH9863	P001	QM01								
Inspect the above arrangements and check for run outs.											
0290	AH8675	P001	QM01								
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.											
0300	AH9421	P001	ZP01								
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012											
0310	AH8676	P001	ZP03								
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.											
0320	AH9863	P001	QM01								
Ensure the bore for any elongation after over speed test.											
0330	AH9863	P001	QM01								
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		105	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919876		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208031	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805166-00			00	13320805166-00P8		IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0009	1.000	1.000	EA	IS01	8.500	IMP L3 DIA 310 CCW - BAL.GROOVE 8 STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
The dimension K shall be measured in the areas as below: a. Gas Entrance (B1) b. Central (B2) c. Opposite to Gas Entrance (B3) Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	106	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919877	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208009
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208010						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798633		Item : 0001		Picklist:		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	107	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919877		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208009		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	108	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919877		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208009		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector. Refer - C W 1007. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature). As per the customer approved data sheet< (> ,<)> Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	109	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant: P001		Equipment No:				101919877		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208009			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks					
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0170	AB9421	P001	ZP01								
Clean the impeller completely.											
0171	AB9421	P001	ZP01								
Polish the impeller in the impeller polishing machine.											
Tools required:											
Catcher plates for holding impeller:											
For dia. 120: 45-72-11032-14											
0172	AB9863	P001	QM01								
Inspect the above operation.											
0180	AB4315	P001	ZP01								
Transfer the material attestation marks in the presence of inspector during machining.											
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.											
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.											
0190	AB9863	P001	QM01								
Inspect at the above operation, for planarity setting.											
Carryout the planarity check for planarity control and make protocol.											
0200	AB9421	P001	ZP01								
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		110	140

		TECHNOLOGICAL PROCESS				Production Order		Date			
Plant:P001		Equipment No:				101919877		08.05.2021			
Type		Work Order / PGMA		Customer				Part No			
		P-1644302301-33208/ 33208		Technip India Limited.				33208009			
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part					
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE					
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks					
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE					
Operation Details											
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature			
PRT Cat	PRT No.			PRT Description							
Sub Operation Text											
0210	AB4315	P001	ZP01								
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:											
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI		111	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919877		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	112	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919877		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
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		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919877		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208009	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P2		IMPELLER L3 DIA 310 CCW 2ND STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0003	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 2ND STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	114	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919878	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208011
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208012						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798634	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	115	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919878		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208011		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	116	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101919878		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0110	AB9863	P001	QM01						
Verify the attestation of the test rings and proper placement of same on the impeller.									
0120	MB1716	P004	ZP01						
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector. Refer - C W 1007. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.									
0130	MB9863	P004	QM01						
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.									
0140	MB9863	P004	QM01						
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc. YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature). As per the customer approved data sheet< (> , <)> Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.									
0150	AB6151	P001	ZP01						
Carry out grit blasting on internal surfaces of impeller to remove scales etc.									
0160	AB9863	P001	QM01						
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.									
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	
AV		15.06.2021	00			VM		MRAVI	
								Pg no	
								No.of Pgs	
								117	
								140	

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919878		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/33208		Technip India Limited.				33208011		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: -----										
1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	118	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919878		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:									
Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs		
AV	15.06.2021	00		VM	MRAVI	119	140		

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919878		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	120	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919878		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	121	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919878		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208011	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P3		IMPELLER L3 DIA 310 CCW 3RD STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0004	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 3RD STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	122	140

		TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:					101919879	08.05.2021
Type		WBS Element		Customer				Part No
		P-1644302301-33208		Technip India Limited.				33208027
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part		
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE		
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks		MDCC
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE		YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208028						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798635	Item : 0001	Picklist:				

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	123	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919879		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	124	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919879		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq.										
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature)										
Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc.										
YIELD STRENGTH: 55 - 65 Kg/mm sq.										
IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).										
As per the customer approved data sheet< (> ,<)>										
Min. yield strength: 3100 kg/cm sq.										
Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	125	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919879		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208027		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	126	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
		Plant:P001				Equipment No:		101919879	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:									
Chkd. By	Dt.	ECR/ Rev No		Dt.	Pro.Plnr	Rate Fixr / Tool Plnr		Pg no	No.of Pgs
AV	15.06.2021	00			VM	MRAVI		127	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919879		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	128	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919879		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	129	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919879		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208027	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P6		IMPELLER L3 DIA 310 CCW 6TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0007	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 6TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	130	140

		TECHNOLOGICAL PROCESS FOR VENDOR				Production Order	Date
Plant: P001		Equipment No:				101919880	08.05.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208029
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE	YES

BOM Details

Pos.No	IC	Material Code		P.No	Remarks					
Matl.Spec	SPK	Qty	MU	Size 1	Size 2	Size 3	Formula Key	MPcs	St.	
0010	L	TC32029-236FI		33208030						
		1.000	EA	0.000	0.000	0.000		0.000	IS08	
Material Description : IMPELLER FORGING OD 350 / ID 100, L= 120				Reservation : 0013798636		Item : 0001		Picklist:		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	AJ9863	P001	QM01					
CAUTION: INTERCHANGEBLE JOB NO DEVIATION PERMITTED. ----- Verify the material attestation marks on the forging. Material code - TC32029-236FI Verify the certificates duly attested by quality inspector and technical delivery conditions.								
0020	AB9421	P001	ZP99					
Collect Disc: Forging size OD 350 / ID 100 X L = 120 mm. and provide them for further operation.								
0030	AB9864	P001	ZP04					
Inspect and ensure the forgings for dimensional suitability and attestations.								
0040	AB4315	P001	ZP99					
Finish machine disc as per the Fig-A while maintaining the allowances on the finished sizes of the disc. Machine the test rings from the Impeller disc as per the Fig. -C. Note: Preserve the test ring with proper identification mark for further tests after scoop milling. Tools required: Checking template for the profile 9 deg: 45-08-14087								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	131	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919880		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0050	AB9863	P001	QM01							
Inspect the above operation.										
0051	AC9412	P001	ZP04							
Mark for peripheral holes on outside dia. of DISC as per Fig-C.										
0052	AC4821	P001	ZP99							
Drill and tap 2 X M 10 on outside diameter equi-spaced as per marking, for lifting purpose.										
0053	AC9863	P001	QM01							
INSPECTION OF ABOVE OPERATION.										
0070	KB5392	P055	ZP99							
Mill the groove 12 H7 X 5 mm depth, to length 85 + /- 1 mm from outside dia. on right face, for centering and locating the disc.										
a) Refer the notes given on the drawing for informative details for machining. b) Mill three pockets to prove the blade machining program on the MOCK UP piece for drawing no. 13320805167-00.										
For detail of vane profile, refer to the solid model issued by compressor Engineering.										
Note: 1. FOR VANES MACHINING, PROGRAME SHALL BE USED SAME AS PROVED ON MOCK UP PIECE drawing no.: 2. The vane milling shall be taken up only after the 3 pockets in the mock up piece are milled and successfully inspected.										
Mill the 17 vanes with R 2, formation at bottom on either side.										
0080	KB9863	P055	QM01							
Inspection of the vane profile on 3D CMM.										
0090	AB9425	P001	ZP01							
Clean the milled surfaces and de-burr the sharp edges.										
0100	AB9421	P001	ZP01							
Collect the corresponding test rings from Q.C. and get them tack welded.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	
AV		15.06.2021	00			VM		MRAVI	132	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant:P001		Equipment No:				101919880		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt.Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0110	AB9863	P001	QM01							
Verify the attestation of the test rings and proper placement of same on the impeller.										
0120	MB1716	P004	ZP01							
Heat treat the impeller with its rings in atmosphere controlled furnace to obtain the strength values. Get the HT Charts verified by Inspector.										
Refer - C W 1007.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch at room temperature) Maximum Hardness: Max. 240 BHN.										
0130	MB9863	P004	QM01							
Remove the test rings from the impeller, conduct hardness test. If hardness test values are satisfactory, send the test rings to Laboratory.										
0140	MB9863	P004	QM01							
Machine the test bars from the rings of disc and counter disc, and conduct yield point test and impact test, on test bars of rings from disc & counter disc.										
YIELD STRENGTH: 55 - 65 Kg/mm sq. IMPACT STRENGTH: Min. 25 J. (Charpy 5 mm U notch, at room temperature).										
As per the customer approved data sheet< (> ,<)>										
Min. yield strength: 3100 kg/cm sq. Max. Hardness: 240 BHN.										
0150	AB6151	P001	ZP01							
Carry out grit blasting on internal surfaces of impeller to remove scales etc.										
0160	AB9863	P001	QM01							
Conduct D.P. test on the surfaces of the vanes to detect any cracks as per Product Std. TC 7 2020.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	133	140

		TECHNOLOGICAL PROCESS				Production Order		Date		
Plant: P001		Equipment No:				101919880		08.05.2021		
Type		Work Order / PGMA		Customer				Part No		
		P-1644302301-33208/ 33208		Technip India Limited.				33208029		
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part				
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE				
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks				
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE				
Operation Details										
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature		
PRT Cat	PRT No.			PRT Description						
Sub Operation Text										
0170	AB9421	P001	ZP01							
Clean the impeller completely.										
0171	AB9421	P001	ZP01							
Polish the impeller in the impeller polishing machine.										
Tools required:										
Catcher plates for holding impeller:										
For dia. 120: 45-72-11032-14										
0172	AB9863	P001	QM01							
Inspect the above operation.										
0180	AB4315	P001	ZP01							
Transfer the material attestation marks in the presence of inspector during machining.										
JOB SETTING: ----- 1. Place the impeller resting on disc face, clamp & align. 2. Place the dial, on tool carriage at approachable place to adjust the planarity points (on diameter at inside of counter disc). 3. Take indications at 4 points 90 deg apart. 4. Adjust all the 4 points to the mean of the indication by placing shims wherever required. 5. Tighten the impeller fully.										
OPERATION: Take a skim cut (for reference) on outside diameter, Counter disc face & eye outside diameter.										
0190	AB9863	P001	QM01							
Inspect at the above operation, for planarity setting.										
Carryout the planarity check for planarity control and make protocol.										
0200	AB9421	P001	ZP01							
Maintain planarity as desired by the inspector, by grinding the material from the tip of the disc.										
Chkd. By		Dt.	ECR/ Rev No		Dt.	Pro.Plnr		Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV		15.06.2021	00			VM		MRAVI	134	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
		Plant:P001				Equipment No:		101919880	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0210	AB4315	P001	ZP01						
GET IT ENSURED THE CORRECTNESS OF THE PROGRAMME BEFORE STARTING: ----- Finish machine the impeller: Refer view - Z & Section Y-Y. ----- NOTE: For the shroud profile refer the UG model. In case UG model is not provided use the radii given in section Y-Y. JOB SETTING: ----- Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. OPERATION:,,Finish turn all, EXCEPT SEAL & BORE DIAMETERS. ----- Finish turn all the dimensions except seal diameter & the bore. Maintain 1 mm allowance on seal diameters and 3 mm allowance in the bore. JOB SETTING: ----- Reverse, clamp on hub seal dia. with soft jaws align, with respect of finished diameters, with in 0.01 mm. OPERATION: ----- Finish turn all the dimensions except seal diameter & bore diameters. Maintain 1 mm allowance on seal diameters and 2 mm allowance in the bore, rest completely as per drawing. Tools required: Checking template for the shroud profile 4 deg - R50 - 15 deg: 45-08-14088 Checking template for the eye profile R13/R23: 45-08-14090 Checking template for the hub profile 9 deg - R50 - 15 deg:									
Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs		
AV	15.06.2021	00		VM	MRAVI	135	140		

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919880		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
45-08-14089									
0220	AB9863	P001	QM01						
Inspect the above operation.									
0230	AB4315	P001	ZP01						
Set the impeller butting on counter disc face and align with respect to outside diameter with in 0.01 mm. Finish turn hub seal and bore diameters.									
Reverse, clamp on hub seal dia. with soft jaws align, with respect to finished diameters with in 0.01 mm.									
Finish turn, eye outside diameter as per drawing.									
0240	AB9863	P001	QM01						
Inspect the above operation.									
0241	AA9412	P001	ZP04						
Mark for the key ways as per drawing. (Refer VIEW-Z).									
0242	AA4928	P001	ZP01						
Slot two key ways on the impeller as per marking, by maintaining the off set for both key ways with in 0.02 mm, as per drawing.									
Tools Required:									
Key way tool with R1 (12 E7): 45-12-07011									
0243	AA9863	P001	QM01						
Inspect the above operation.									
0250	AH9421	P001	ZP01						
Clean the impeller completely.									
0260	AH9863	P001	QM01						
Inspect and ensure the concentricity of outside dia., eye dia., bore dia. and record their dimensions.									
0270	AH9421	P001	ZP01						
Make necessary arrangements for dynamic balancing of the Impeller.									
Tools Required:									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
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		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919880		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
Tools Required: Balancing mandrel: 45-88-07088 Clamping pads dia. 118: 45-88-11081 Adapter: 45-88-07005									
0280	AH9863	P001	QM01						
Inspect the above arrangements and check for run outs.									
0290	AH8675	P001	QM01						
Balance the Impeller dynamically. Refer Technological Instructions CT - 052. Remove the unbalance material from the places indicated by Testing Engineer. Get the test report verified by Inspector.									
0300	AH9421	P001	ZP01						
Make necessary arrangements for conducting over speed test. Tools Required: Bottom assly : 45-88-07011 Adapter : 45-88-07012									
0310	AH8676	P001	ZP03						
Perform the over speed test at 14611 RPM. Refer Technological instructions, CT - 053.									
0320	AH9863	P001	QM01						
Ensure the bore for any elongation after over speed test.									
0330	AH9863	P001	QM01						
Carryout the dye-penetrant test to detect any cracks, as per Product Std. TC 7 2020. Make the dimensional check up of the Impeller particularly the out side dia., bore and eye, outside dia. Make a protocol of all the dimensions. The dimension K shall be measured in the areas as below: a. Gas Entrance (B1)									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
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		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant:P001		Equipment No:				101919880		08.05.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208029	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
13320805167-00			00	13320805167-00P7		IMPELLER L3 DIA 310 CCW 7TH STAGE			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0008	1.000	1.000	EA	IS01	8.500	IMPELLER L3 DIA 310 CCW 7TH STAGE			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
b. Central (B2)									
c. Opposite to Gas Entrance (B3)									
Get the dimensional & D.P.CHECKS Records REVIEWED.									
0340	AH9421	P001	ZP01						
Clean the Impeller thoroughly.									
0345	AH9863	P001	ZQ01						
0350	AH9863	P001	QFNL						
Final Inspection. Send to IS - 3105.									

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Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	138	140

	TECHNOLOGICAL PROCESS FOR VENDOR					Production Order	Date
Plant: P001		Equipment No:				101922802	08.06.2021
Type		WBS Element		Customer			Part No
		P-1644302301-33208		Technip India Limited.			33208048
Drawing No.-Var		E.Rev.	T.Rev	Material No.		Name Of The Part	
33320800023-00			00	33320800023-00		MOCK UP PLATE FOR IMP 13320805166-67	
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks	MDCC
0019	1.000	1.000	EA	IS01	45.000	MOCK UP PLATE FOR IMP 13320805166-67	YES

BOM Details

Pos.No	IC	Material Code			P.No	Remarks					
Matl.Spec		SPK	Qty	MU	Size 1		Size 2	Size 3	Formula Key	MPcs	St.
0001		R	AA1011819287			33208049					
AA10119			63.026	KG	335.000		100.000	0.000	F4	1.000	ST12
Material Description : PLATE 100 IS2062 GRE250(FE410W) QLTY-B					Reservation : 0013828599		Item : 0001		Picklist:		

Operation Details

Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature
PRT Cat	PRT No.			PRT Description				
Sub Operation Text								
0010	DE9412	P006	ZP04					
Mark for gas cutting the plate 100 mm thick to size OD 335 mm & ID 100 mm.								
0020	DE9421	P006	ZP01					
Drill a pilot hole of dia. 10 mm for gas cutting the inside diameter.								
0030	DE2818	P006	ZP01					
Pre heat and gas cut the plate as per marking.								
0040	DE9421	P006	ZP01					
Clean and grind the gas cut edges.								
0050	DE9863	P006	QM01					
Inspect at the above operation. Send to W.C 01-3113.								
0060	AC4292	P001	ZP99					
Machining of disc: ----- Finish machine the disc completely to dimensions including the bore dia. 112 H7 and step dia. 172 mm and OD 321 mm as indicated in the drawing.								
0070	AC9863	P001	QM01					
Inspect the above operation.								
0080	AC9412	P001	ZP04					
Mark for the holes as per drg.								
0090	AC4821	P001	ZP99					
Drill and tap 2 x M10 to depth 28/37 equi-spaced as per drawing for lifting purpose.								
0100	AC9863	P001	QM01					
Inspect at the above operation.								

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	139	140

		TECHNOLOGICAL PROCESS				Production Order		Date	
Plant: P001		Equipment No:				101922802		08.06.2021	
Type		Work Order / PGMA		Customer				Part No	
		P-1644302301-33208/ 33208		Technip India Limited.				33208048	
Drawing No.-Var		E.Rev.	T.Rev.	Material No.		Name Of The Part			
33320800023-00			00	33320800023-00		MOCK UP PLATE FOR IMP 13320805166-67			
Pos.No	BOM Qty	Ord Qty	MU	St.	Nt. Wt.	Remarks			
0019	1.000	1.000	EA	IS01	45.000	MOCK UP PLATE FOR IMP 13320805166-67			
Operation Details									
Opr No	W.C.	Plant	Ctl. ky	Prep Time	Time/ PC(M)	Time/ PC(L)	Total Time	QC Signature	
PRT Cat	PRT No.			PRT Description					
Sub Operation Text									
0110	KB5392	P055	ZP99						
a) Refer the notes given on the drawing for informative details for machining. b) Mill the groove 12 H7 X 5 + /- 0.1 mm depth to length 85 + /- 1 mm from outside dia. on right face for centering and locating the job as per drawing. c) Mill 3 vanes to prove Blade machining program on the MOCK UP piece for drawing no. 33320800023-00. For detail of vane profile refer impeller drawing 13320805166-00 or the UG model provided for the above drawing for establishing the program proving. The blade geometry is as per the solid model.									
0120	KB9863	P055	QFNL						
Final inspection of the vane profile on 3D Coordinate Measuring Machine.									

Chkd. By	Dt.	ECR/ Rev No	Dt.	Pro.Plnr	Rate Fixr / Tool Plnr	Pg no	No.of Pgs
AV	15.06.2021	00		VM	MRAVI	140	140