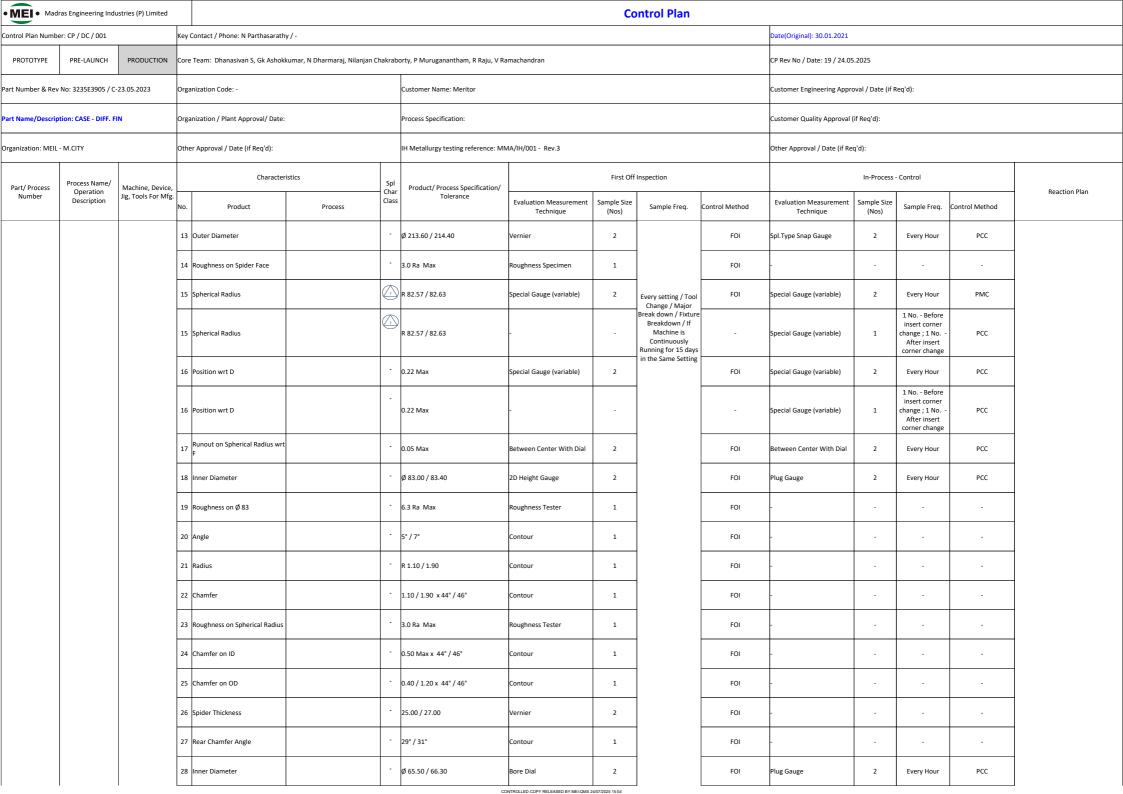
• MEI • Madra	as Engineering Indus	tries (P) Limited						Co	ntrol Plan						
Control Plan Number	:: CP / DC / 001	I	Key Contact / Phone: N Parthasarat	hy / -							Date(Original): 30.01.2021				
PROTOTYPE	PRE-LAUNCH	PRODUCTION	Core Team: Dhanasivan S, Gk Ashol	kkumar, N Dharmaraj, Nilanjan Ch	akrabo	orty, P Muruganantham, R Raju, V Ra	machandran				CP Rev No / Date: 19 / 24.0!	5.2025			
Part Number & Rev N	No: 3235E3905 / C-2	3.05.2023	Organization Code: -			Customer Name: Meritor					Customer Engineering Appr	oval / Date (if	Req'd):		
Part Name/Descripti	ion: CASE - DIFF. FIN	I	Organization / Plant Approval/ Date	2:		Process Specification:					Customer Quality Approval	(if Req'd):			
Organization: MEIL -	M.CITY		Other Approval / Date (if Req'd):			IH Metallurgy testing reference: MN	IA/IH/001 - Rev.3				Other Approval / Date (if Re	eq'd):			
Part/ Process	Process Name/	Machine, Device,	Characte	eristics	Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		
Number		Jig, Tools For Mfg.	No. Product	Process	Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
05 II	Receiving nspection - Casting	-	A) Material Characteristics												
			1 Material Test	-	-	Nodular Cast Iron - Refer - Specification : D25 - 6	Material Test Report	1	Every Batch	Supplier Test Report	-	-	-	-	If not furnished, Hold the lot and inform purchase to collect the reports/Confirm the material
			2 Radiography Test	-		Specification : D1	RT Report	1	Once In Year	Supplier Test Report	-	-	-	-	inhouse /External Lab.
			B) Dimensional Characteristics					•	•			1	•	1	
			1 Refer Supplier Report		-	Refer Supplier Report (As per AOI)	Refer Supplier Report	1 No/Cavity	Every Lot	Cross verification of supplier self-certified Inspection Report	-	-	-	-	Raise Flash Report and inform purchase / SCM Discuss with HOD QA, based on the decision given by him lot can be accepted / Rejected or Reworked to meet drawing specification
									1					1	
10	ID Turning .	ACE - 2 & 3 / ACE - 2 & 3	1 Total height	Refer SOP: SOP / DC / 001A & SOP / DC / 001B	-	179 / 180	2D Height Gauge	2		FOI	2D Height Gauge	2	Every Hour	PCC	Stop the production & Inform to supervisor Check the parts produced
			2 Distance		-	77.35 / 77.75	Contour	1		FOI	-	-	-	-	earlier3. Rework to be done with in 48 hrs & Rejection move to scrap.4.Correct the program / tool / fixture/ parameters5.After
			3 Step height		-	94.80 / 95.20	Special Gauge (variable)	2		FOI	Special Gauge (variable)	2	Every Hour	PCC	correction, get first off approval & Continue to production
			4 Runout wrt F		-	0.10 Max	Between Center With Dial	2		FOI	Between Center With Dial	2	Every Hour	PCC	
			5 Parallelism wrt B		-	1.0 Max	Height Gauge + Dial	2	Every setting / Tool	FOI	Height Gauge + Dial	2	Every Hour	PCC	
			6 Flatness on Spider face		<u>(,)</u>	0.04 Max	Spl Gauge	2	Change / Major Break down / Fixture Breakdown / If		Special Gauge (variable)	2	Every Hour	PMC	
			7 Height		<u>(•)</u>	64.24 / 64.33	2D Height Gauge	2	Machine is Continuously Running for 15 days	FOI	Special Gauge (variable)	2	Every Hour	PMC	
			8 Parallelism wrt D		(i)	0.06 Max	Spl Gauge	2	in the Same Setting		Special Gauge (variable)	2	Every Hour	PMC	
			9 Roughness on 64 Depth Face		-	3.0 Ra Max	Roughness Specimen	1		FOI	-	-	-	-	
			10 Angle		-	19° / 21°	Contour	1		FOI	-	-	-	-	
			11 Distance		-	14.60 / 15.40	Contour	1		FOI	-	-	-	-	
			12 Roughness on Ø 214 OD		-	6.3 Ra Max	Roughness Tester	1		FOI	_	-	-	-	
	·		<u> </u>			COI	NTROLLED COPY RELEASED BY MEI-QMS	24/07/2025 15:04							



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PROTOTYPE	PRE-LAUNCH	PRODUCTION (Core Team: Dhanasivan S, Gk Ashokk	xumar, N Dharmaraj, Nilanjan Ch	akrabo	orty, P Muruganantham, R Raju, V Ra	machandran				CP Rev No / Date: 19 / 24.0	5.2025			
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Part Name/Descripti	on: CASE - DIFF. FIN	ı	Organization / Plant Approval/ Date:			Process Specification:					Customer Quality Approval	(if Req'd):			
Organization: MEIL -	M.CITY	C	Other Approval / Date (if Req'd):			IH Metallurgy testing reference: MN	MA/IH/001 - Rev.3				Other Approval / Date (if Re	q'd):			
Part/ Process	Process Name/	Machine, Device,	Character	istics	Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		Boorties Plan
Number		Jig, Tools For Mfg.	No. Product	Process	Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			29 Radius Depth on Shoulder Y		-	0.25 / 0.30	Contour	1		FOI	-	-	-	-	
			30 Appearance - Machining			Free from Burr, Tool Mark, Step Mark, Chattering Mark, Damage,Rust.	Visual	2		FOI	Visual		100%	PCC	
			31 Appearance - Casting			Free From Fettling Damage, Extra Material, Unwash, Casting Damage & Rust. Blow Holes, Sandrop as per Meritor STD.	Visual	2		FOI	Visual		100%	PCC	
30	Laser Marking A	ACONEX / ACONEX	1 -	Program No	-	DC 3905	Visual in screen	1	Every Day	Process Parameter Monitoring Sheet	-	-	-	-	If not OK inform to Supervisor to take corrective action
			2 -	Air pressure	-	4-6 Bar	Pressure Gauge	1	Every Day	Process Parameter Monitoring Sheet	-	-	-	-	
			3 -	Laser Marking Height	-	37.5 cm	Measuring Scale	1	Every Day	Process Parameter Monitoring Sheet	-	-	-	-	
			4 -	Marking Direction	-	Clockwise	Visual	1	Every Day	Process Parameter Monitoring Sheet	-	-	-	-	
				Refer SOP: SOP / DC / 003		3235E3905	Visual	2	Every setting / Tool	FOI	Visual		100%	PCC	
			2 Date Code		(XXXX - (Julien code) 1st 3 digit Date code & Last Digit year code	Visual	2	Change / Major Break down / Fixture Breakdown / If	FOI	Lab View Display		100%	PCC	
			3 Serial No		<u>(1)</u>	YYYY - Running Serial no	Visual	2	Machine is Continuously Running for 15 days	FOI	Visual		100%	PCC	
			4 Legibility of marking		<u>(1)</u>	Should be Legible	Visual	2	in the Same Setting	FOI	Visual		100%	PCC	
40	Spline Hobbing	CIMA-8 / CIMA-8	1 Measuring location for BOD @ 10.0	Refer SOP: SOP / DC / 004	-	9.7 / 10.7	Special Gauge (variable) Ref	-		-	-	-	-	-	1.Stop the production & Inform to supervisor 2.Check the parts produced
			2 Radius (Ensure cutter Radius)		-	R 39.28 / 40.72	Contour	1		FOI	-	-	-	-	earlier3. Rework to be done with in 48 hrs & Rejection move to scrap.4.Correct the program / tool / fixture/ parameters5.After
			3 Measuring location for Major dia @ 19.30		-	18.90 / 19.70	Height Gauge With Scriber	2	Every setting / Tool			-	-	-	correction, get first off approval & Continue to production
			4 Face to Cutter Center Distance		-	34.18 / 34.82	Contour	1	Change / Major Break down / Fixture Breakdown / If	FOI	-	-	-	-	
			5 OPD Runout wrt F		-	0.15 Max	Special Gauge (variable)	2	Machine is Continuously Running for 15 days	FOI	-	-	-	-	
			6 OPD (Pin size dia 4.0mm)		-	Ø 105.56 / 105.68	Special Gauge (variable)	2	in the Same Setting	FOI	Spline Gauge	2	Every Hour	PCC	
			7 Tooth relief Chamfer		-	0.1-0.3 x 44° / 46° TYP	Contour	1		FOI	-	-	-	-	
			8 Minor diameter		-	Ø 96.84 / 96.49	Spline Gauge	2		FOI	Spline Gauge	2	Every Hour	PCC	
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Part Number & Rev N	No: 3235E3905 / C-2	23.05.2023	Organization Code: -			Customer Name: Meritor					Customer Engineering Appro	oval / Date (if F	Req'd):		
Part Name/Descripti	ion: CASE - DIFF. FIN	N	Organization / Plant Approval/ Da	te:		Process Specification:					Customer Quality Approval	if Req'd):			
Organization: MEIL -	M.CITY		Other Approval / Date (if Req'd):			IH Metallurgy testing reference: MN	MA/IH/001 - Rev.3				Other Approval / Date (if Re	q'd):			
Part/ Process	Process Name/	Machine, Device,	Charac	teristics	Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		
Number	Operation Description	Jig, Tools For Mfg.	No. Product	Process	Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			10	Polymer Quench Oil Temperature	-	25 - 35°C	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			11	Coil cooling flow	-	5.0 - 8.0 LPM	Flow Meter	1 Reading	Every Day	Daily Maintenance Check Sheet	Flow Meter	1 reading	Once in a day	Daily Maintenance Check Sheet	
			12	Coil Cooling temperature	-	25 - 35°C	Thermal Indicator	1 Reading	Every Day	Daily Maintenance Check Sheet	Temperature Indicator	1 reading	Once in a day	Daily Maintenance Check Sheet	
			13	Induction Hardening Traceability	-	Laser marking SI no used as traceability for the IH process	-	-	-	-	Lab view Program	100%	Each sample	Online Data logger	
			Heat Position											_	
			14	Power	-	30 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			15	Position	-	87.1 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			16	Feed Rate	-	800 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			17	Dwell	-	2 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Quench Start								,			,	
			18	Position	-	94.60 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Zone 1												
			19	Power	-	32 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			20	Position	-	94.60 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			21	Feed Rate	-	120 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
		22	Dwell	-	0 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger		
		Zone 2								1					
			23	Power	-	37 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			24	Position	-	110.60 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
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Part Number & Rev N	lo: 3235E3905 / C-2	3.05.2023	Organization Code: -			Customer Name: Meritor					Customer Engineering Appr	oval / Date (if F	Req'd):		
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Part/ Process	Process Name/	Machine, Device,	Character		Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		Reaction Plan
Number	Operation Description	Jig, Tools For Mfg.	No. Product		Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			25	Feed Rate	-	55 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			26	Dwell	-	0 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Zone 3												
			27	Power	-	27 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			28	Position	-	124.3 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			29	Feed Rate	-	95 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			30	Dwell	-	0 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Quench Stop												
			31	Position	-	155.6 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			32	Feed Rate	-	520 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
		-	33	Dwell	-	60 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Induction Tempering												
			Heat Position												
		-	34	Power	-	8 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
		35	Position	-	87.1 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger		
		36	Feed Rate	-	1000 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger		
			Zone 1							•	-	•	•	•	
			37	Power	-	8 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			38	Position	-	94.60 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
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Part/ Process	Process Name/	Machine, Device,	Charact	eristics	Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		Position Plan
Number	Operation Description	Jig, Tools For Mfg.	No. Product	Process	Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			39	Feed Rate	-	40 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Zone 2												
			40	Power	-	8 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			41	Position	-	106.60 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			42	Feed Rate	-	70 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Zone 3												
			43	Power	-	6 ± 5 KW	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			44	Position	-	124.1 ± 1 mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			45	Feed Rate	-	60 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Air Cool												
			46	Dwell	-	30 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			Quench Stop												
			47	Position	-	175 ± 1mm	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			48	Feed Rate	-	200 mm / min	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
			49	Dwell	-	15 Sec	PLC	1	Every Setting	Metallurgical Lab Report	PLC	100%	Each sample	Online Data logger	
		1 Surface Hardness	Refer SOP: SOP / DC / 006	-	49 - 58 HRC on Full spline	Hardness Tester	First Job	Every Setup	Metallurgical Report	Hardness Tester	1	Last Job or Before Setting Change	e Metallurgical Report	If not OK inform to Lab in charge	
			2 Induction Pattern		-	8 ± 2 mm from spline ending at OD	Vernier	First Job	Every Setup	Metallurgical Report	Vernier	1	Last Job or Before Setting Change	e Metallurgical Report	
			3 Total Case depth		-	2.6 – 5.0 mm from spline root	Vernier	First Job	Every Setup	Metallurgical Report	Vernier	1	Last Job or Before Setting Change	e Metallurgical Report	
			4 Microstructure		-	austenite.	Microscope	First Job	Every Setup	Metallurgical Report	Microscope	1	Last Job or Before Setting Change	e Metallurgical Report	
l l						No overheating / carbide	NTROLLED COPY RELEASED BY MEI-QMS 2	24/07/2025 15:04				<u> </u>			

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Part/ Process	Process Name/	Machine, Device,	Character		Spl	Product/ Process Specification/		First Off	Inspection			In-Process	s - Control		
Number	Operation Description	Jig, Tools For Mfg.	No. Product		Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			5 Crack			Free from Crack	МРІ	First Job	Every Setup	Metallurgical Report	-	-	-	Metallurgical Repor	t
70	OD Grinding	HMC- OD GRINDING / HMC- OD GRINDING		Refer SOP: SOP / DC / 007	\bigcirc	0.064 Max	СММ	2		FOI	Special Gauge (variable)	2	Every Hour	PMC	1.Stop the production & Inform to supervisor 2.Check the parts produced
		-	2 Roughness on Ø 101	(10	1.6 Ra Max	Roughness Tester	1		FOI	-	-	-	-	earlier3. Rework to be done with in 48 hrs & Rejection move to scrap.4.Correct the program / tool /
			3 Bearing Diameter	(Ø 101.675 / 101.730	Air gauge	2		FOI	Air gauge		100%	PMC	fixture/ parameters5.After correction, get first off approval & Continue to production	
		=	4 Runout on Bearing Dia wrt F			0.064 Max	Between Center With Dial	2		FOI	-	-	-	-	
			5 Cylindricity	(0.013 Max	СММ	2		FOI	-	-	-	-		
			6 Ovality on Bearing Diameter	(0.01 Max	Air gauge	2		FOI	Air gauge		100%	PMC		
		=	7 Taper on Bearing Diameter	(0.01 Max	Air gauge	2		FOI	Air gauge		100%	PMC		
			8 Runout on Ø 82 wrt A			0.16 Max	Special Gauge (variable)	2	/	FOI	-	-	-	-	
		-	9 Runout on groove top face wrt		-	0.16 Max	Special Gauge (variable)	2	Every setting / Tool Change / Major Break down / Fixture Breakdown / If		-	-	-	-	
		-	10 Runout on groove bottom face wrt A			0.16 Max	Special Gauge (variable)	2	Machine is Continuously Running for 15 days	FOI	-	-	-	-	
			11 Distance			33.68 / 34.32	Special Gauge (variable)	2	in the Same Setting	FOI	-	-	-	-	
		=	12 Groove Depth Distance			2.25 / 2.75	Contour	1		FOI	-	-	-	-	
			13 Radius Depth on Shoulder X			0.30 max	Contour	1		FOI	-	-	-	-	
			14 Radius Depth on Shoulder Y		-	0.15 Max	Contour	1		FOI	-	-	-	-	
			15 Gleason on Test		-	As per WI - MC - SM - 33	Every Setting	1		MEI Lab Report	-	-	-	-	
			16 Radius (Smooth Merge)		-	Positive step is not allowed near the radius after grinding	Visual	2		FOI	Visual		100%	PCC	1
			17 Grinding Burning Mark		-	Burning mark - Not Allowed	Visual	2		FOI	Visual		100%	PCC	_
		16 Radius (Smooth Merge) - 17 Grinding Burning Mark -				Free from Line mark, Scratches, Blow holes, etc	Visual	2		FOI	Visual		100%	PCC	
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Part Number & Rev N	lo: 3235E3905 / C-2	3.05.2023	Organization Code: -			Customer Name: Meritor					Customer Engineering Appr	oval / Date (if F	Req'd):		
Part Name/Descripti	on: CASE - DIFF. FIN	l	Organization / Plant Approval/ Date:			Process Specification:					Customer Quality Approval	(if Req'd):			
Organization: MEIL -	M.CITY	(Other Approval / Date (if Req'd):			IH Metallurgy testing reference: MN	IA/IH/001 - Rev.3				Other Approval / Date (if Re	eq'd):			
Part/ Process	Process Name/	Machine, Device,	Characteri	istics	Spl	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		Position Plan
Number		lig, Tools For Mfg.	No. Product	Process	Char Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			18 Roughness on Slot Reliving Depth		-	6.3 Ra Max	Roughness Specimen	1		FOI	-	-	-	-	
			19 Profile of a Surface wrt E (M)		-	0.20 Max	СММ	2		FOI	-	-	-	-	
			20 Slot Reliving Depth		-	15.61 / 15.80	СММ	1		FOI	-	-	-	-	
			21 Position on Spline wrt C-B / A		9	0.16 Max	СММ	2		FOI	Special Gauge (variable)	2	Every Hour	PMC	
			22 Slot Center to Spherical Center		-	0.06 / 0.16	СММ	2		FOI	-	-	-	-	
			23 Appearance - Machining		-	Free from Burr, Tool Mark, Step Mark, Chattering Mark, Damage, Rust.	Visual	2		FOI	Visual	1	100%	PCC	
			24 Appearance - Casting			Free From Fettling Damage, Extra Material, Unwash, Casting Damage & Rust. Blow Holes, Sandrop as per Meritor STD.	Visual	2		FOI	Visual	1	100%	PCC	
100	Washing	SPM Machine / SPM MACHINE		Ref SOP: SOP / DC / 009	-	No Dust Allowed	Visual		100%	Sop	-	-	-	-	If not ok, Stop the production, Inform to Cell Leader - QA
			2 Part Drying		-	Part Wetness Not Allowed	Visual		100%	Sop	_	-	-	-	
110	Dewatering & RP Oiling	SPM Machine / SPM MACHINE		Ref SOP: SOP / DC / 010		Part free from dust, burr & Excess oil	Visual		100%	Sop	-	-	-	-	If not ok, Stop the production, Inform to Cell Leader - QA
			2 Part oiling		-	Oil Should be present on part Surface, Oil droplet (Excess oil) not allowed.	Visual		100%	Sop	-	-	-	-	
120	Final Inspection - PDI	PDI Station		Refer SOP: SOP/PDI/040		Part No,Julian Date, Serial No	Visual		100%	PDI Summary Report	-	-	-	-	Stop the production, Inform to Cell Leader - QA
			2 Induction Hardening		<u></u>	Presence of IH on Spline	Visual		100%	PDI Summary Report	-	-	-	-	
			3 Thread		(3)	12 x M16 x 1.5 - 6H Thru	Auto Thread Gauge		100%	PDI Summary Report	-	-	-	-	
	4 Position on Thread wrt C-B /D (M) 5 Bearing Diameter				(3)	0.45 Max	Receiver Gauge		100%	PDI Summary Report	-	-	-	-	
			<u>(4)</u>	Ø 101.675 / 101.730	Air gauge		100%	PDI Summary Report	-	-	-	-			
			6 Taper on Bearing Diameter		<u>(4)</u>	0.01 Max	Air gauge		100%	PDI Summary Report	-	-	-	-	
			7 Ovality on Bearing Diameter		4	0.01 Max	Air gauge		100%	PDI Summary Report	-	-	-	-	
			8 Runout on Bearing Dia wrt C-B / D		<u>(4)</u>	0.064 Max	Special Gauge (variable)	2	Per Skid	PDI Check Sheet	-	-	-	-	1
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• MEI • Madra	as Engineering Indu	stries (P) Limited						Co	ntrol Plan						
Control Plan Number	r: CP / DC / 001	ı	Key Contact / Phone: N Parth	asarathy / -							Date(Original): 30.01.2021				
PROTOTYPE	PRE-LAUNCH	PRODUCTION	Core Team: Dhanasivan S, Gl	Ashokkumar, N Dharmaraj,	Nilanjan Chakrab	orty, P Muruganantham, R Raju, V Ra	machandran				CP Rev No / Date: 19 / 24.0	i.2025			
Part Number & Rev I	No: 3235E3905 / C-2	23.05.2023	Organization Code: -			Customer Name: Meritor					Customer Engineering Appr	oval / Date (if I	Req'd):		
Part Name/Descript	ion: CASE - DIFF. FII	N (Organization / Plant Approva	/ Date:		Process Specification:					Customer Quality Approval	if Req'd):			
Organization: MEIL -	M.CITY	(Other Approval / Date (if Req	'd):		IH Metallurgy testing reference: MN	MA/IH/001 - Rev.3				Other Approval / Date (if Re	q'd):			
Part/ Process	Process Name/	Machine, Device,	Ch	aracteristics	Spl	Product/ Process Specification/		First Off I	nspection			In-Process	- Control		
Number	Operation Description	Jig, Tools For Mfg.	No. Product	Process	Char Class	Toloranco	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
			28 Inner Diameter		-	65.50 / 66.30	Plug Gauge		100%	PDI Summary Report	-	-	-	-	
			29 Oil Drying		-	Visual	Visual		100%	PDI Summary Report	-	-	-	-	
			30 Burr & Tool Mark		-	Not Allowed	Visual		100%	PDI Summary Report	-	-	-	-	
			31 Step Mark & Chattering	Mark	-	Not Allowed	Visual		100%	PDI Summary Report	-	-	-	-	
			32 Machining Damage & Machining Rust		-	Not Allowed	Visual		100%	PDI Summary Report	-	-	-	-	
			33 Fettling Damage & Extra Material	1	-	Not Allowed	Visual		100%	PDI Summary Report	-	-	-	-	
			34 Unwash & Casting Dam	age	-	Not Allowed	Visual		100%	PDI Summary Report	-	-	-	-	
			35 Casting Rust and Porosit	у	-	Not Allowed	Visual		100%	PDI Summary Report	_	-	-	-	
			36 Blow Holes & Sandrop		-	Not Allowed	Visual		100%	PDI Summary Report	_	-	-	-	
			37 Meritor Logo		-	Should Presence	Visual		100%	PDI Summary Report	-	-	-	-	
			38 MEI ID		-	Should Presence	Visual		100%	PDI Summary Report	-	-	-	-	
			39 Date Code		-	Should Presence	Visual		100%	PDI Summary Report	-	-	-	-	
130	Packing	Packing station	1 Skid Packing	Ref SOP: SOP / DC / 013	-	As per SOP	Visual		100%	Packing & Layer Audit Report	-	-	-	-	Stop the Packing, Inform to Supervisor
			2 No of Qty. / Layer		-	As per SOP	Visual		100%	Packing & Layer Audit Report	-	-	-	-	
			3 Skid Qty.		-	As per SOP	Visual		100%	Packing & Layer Audit Report	-	-	-	-	
			4 Part Cleanliness		-	No Burr, Rust & Oil Contamination	Visual		100%	Packing & Layer Audit Report	-	-	-	-	
			5 Casting Date Code / Mai	king	-	Note the Date Code	Visual	2	Per Layer	Packing & Layer Audit Report	-	-	-	-	
			6 Oil Traces on Part Surfac	e		Oil Should be present on part Surface, Oil Droplet not allowed.	Visual		100%	Packing & Layer Audit Report	-	-	-	-	
140	Dock Audit	Packing Station	1 Identification Mark			Part No, Julian Date, Serial No	Visual	2	Per Skid	Dock Audit Report	-	-	-	-	Stop the production, Inform to Cell Leader - QA-
'	'	·		•		co	NTROLLED COPY RELEASED BY MEI-QMS:	24/07/2025 15:04			•		•	•	_

Control Plan Number: CP / DC / 001 Key Contact / Phone: N Parthasarathy / - Date(Original): 30.01.2021 PROTOTYPE PRE-LAUNCH PRODUCTION Core Team: Dhanasivan S, Gk Ashokkumar, N Dharmaraj, Nilanjan Chakraborty, P Muruganantham, R Raju, V Ramachandran CP Rev No / Date: 19 / 24.05.2025 Part Number & Rev No: 3235E3905 / C-23.05.2023 Organization Code: - Customer Name: Meritor Customer Engineering Approval / Date (if Req'd): Part Name/Description: CASE - DIFF. FIN Organization / Plant Approval / Date: Process Specification: Organization: MEIL - M.CITY Other Approval / Date (if Req'd): H Metallurgy testing reference: MMA/H/001 - Rev.3 Other Approval / Date (if Req'd):	
Part Number & Rev No: 3235E3905 / C-23.05.2023 Organization Code: - Customer Name: Meritor Customer Engineering Approval / Date (if Req'd): Part Name/Description: CASE - DIFF. FIN Organization / Plant Approval / Date: Process Specification: Customer Quality Approval (if Req'd):	
Part Name/Description: CASE - DIFF. FIN Organization / Plant Approval / Date: Process Specification: Customer Quality Approval (if Req'd):	
Other Assembly Date / Final day	
Organization: MEIL - M.CITY Other Approval / Date (if Req'd): IH Metallurgy testing reference: MMA/IH/001 - Rev.3 Other Approval / Date (if Req'd):	
Part/ Process Name/ Operation	Ption Plan
Number Number Operation Description Operation Operation Description Operation Operation Description Description Operation Description Descri	Reaction Plan
21 Position on Spherical Radius vrt D - 0.24 max Special Gauge 2 Per Skid Dock Audit Report	
22 External Spline - 12/24 Pitch (2.117 / 1.058) Spline Gauge 2 Per Skid Dock Audit Report	
Blow Holes, Sandrop as per Meritor std. Sharp edges, Line mark, Step mark, Chattering mark, Loose burr No step on Ground OD, Presence of cross hole, No cast surface projection on Spherical machined area, No extra material on 64.285 depth face.	
24 Contamination on part, Foreign articles and Burrs - Not Allowed Visual 2 Per Skid Dock Audit Report	
25 Rust - Not Allowed Visual 2 Per Skid Dock Audit Report	
26 Excess Oil - Not Allowed Visual 2 Per Skid Dock Audit Report	
27 Burrs - Not Allowed Visual 2 Per Skid Dock Audit Report	
28 Marking Cast Part No, Heat Code, MERITOR Logo and ME Identification Visual 2 Per Skid Dock Audit Report	
29 PVC Protector on Spline area - Should be provided Visual 2 Per Skid Dock Audit Report	
Dust and contamination on Spacer V-EMB 81 Dust and contamination on Spacer V-EMB 81 Not Allowed Visual 2 Per Skid Dock Audit Report	
Remarks: 1. Layout inspection to be carried once in a year for all product 2. Process Capability study for special characteristics (32 nos) will be Performed during new machine, new part, any process change or improvement, any ECN change. If no change once in 3 month to be conduct 3. 100% Inspection Parameter - to recorded as hourly basis FOI - First Off Inspection PMC - Process Monitoring Chart	
Meritor - QCC Symbol Meritor - QCC Symbol MEI Symbol MEI Symbol	al .
Legend - Meritor (Denotes Major Characteristics) (Denotes Safety Related Characteristics) (Denotes Process Critical Characteristic) Approved By: Dhanasivan S	

• MEI • Madra	s Engineering Indus	tries (P) Limited							Co	ntrol Plan						
Control Plan Number	: CP / DC / 001	ı	Key Contact / Phone: N Parthasarath	1/-								Date(Original): 30.01.2021				
PROTOTYPE	PRE-LAUNCH	PRODUCTION	Core Team: Dhanasivan S, Gk Ashokk	umar, N Dharma	ıraj, Nilanjan Ch	akrabo	orty, P Muruganantham, R Raju, V Ra	machandran				CP Rev No / Date: 19 / 24.0	5.2025			
Part Number & Rev N	No: 3235E3905 / C-2	3.05.2023	Organization Code: -				Customer Name: Meritor					Customer Engineering Appr	oval / Date (if I	Req'd):		
Part Name/Descripti	on: CASE - DIFF. FIN	ı	Organization / Plant Approval/ Date:				Process Specification:					Customer Quality Approval	(if Req'd):			
Organization: MEIL - I	M.CITY	(Other Approval / Date (if Req'd):				IH Metallurgy testing reference: MN	IA/IH/001 - Rev.3				Other Approval / Date (if Re	eq'd):			
Part/ Process		Machine, Device,	Characteri	stics		Spl Char	Product/ Process Specification/		First Off	Inspection			In-Process	- Control		Reaction Plan
Number	Description	Jig, Tools For Mfg.	No. Product	Proc	ess	Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Neaction Plan
Rev. No	Rev. Date			Na	ature of Change							Reason	for Change			
0		Release of control plan							-							
1		Crack Detection Test Introduction	t						Audit Observat	ion						
2		Customer PPAP Obseupdated	ervation						-							
3		Added Grind burn m & All Process SOP	ark						-							
4		Cylindricity & PCD runout Inspection r	nethod changed as per customer ma	il on 10th may'22	2				-							
5		Operation Combined pre-Boring & ID tur							-							
6		As new stage Drawir Changed	ng						-							
7		ayout Changes & Machine Added (AC	CE - Turning Machine, DIV - VMC Mac	hine)					Layout standar	disation & Capacity I	mprovement					
8	06.10.2022	Customer Drawing re from B8 to B9. & Pr Quench introduced	rocess Parameter Changed - Air cool 8	& Polymer					-							
9			ge opn 125 removed						process improv	vement						
10	01.06.2024 C	Control Plan Implem	ented in Software						System Improv	ement						
11	08.07.2024 A	Appearance Checkpo	pint Separated						System Improv	rement						
12	15.10.2024 V	erification Error Co	rrected						System Improv	ement						
13	06.12.2024 V	erification Error Co	rrected						System Improv	ement						
14	24.02.2025	Document No Rearra	anged						System Improv	ement						
15	28.02.2025 V	erification Error Co	rrected						System Improv	ement						
16	01.03.2025 T	To avoid defect proc	duced parts during insert change						System Improv	rement						
							col	NTROLLED COPY RELEASED BY MEI-QMS	24/07/2025 15:04							

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Control Plan Numbe	er: CP / DC / 001		Key Co	Contact / Phone: N Parthasarathy	1/-								Date(Original): 30.01.2021				
PROTOTYPE	PRE-LAUNCH	PRODUCTION	Core T	Feam: Dhanasivan S, Gk Ashokk	umar, N Dharmaraj	j, Nilanjan Cha	krabo	rty, P Muruganantham, R Raju, V Ra	machandran				CP Rev No / Date: 19 / 24.05	.2025			
Part Number & Rev	No: 3235E3905 / C-	-23.05.2023	Organ	nization Code: -			(Customer Name: Meritor					Customer Engineering Appro	val / Date (if R	eq'd):		
Part Name/Descript	tion: CASE - DIFF. FI	iN	Organ	nization / Plant Approval/ Date:				Process Specification:					Customer Quality Approval (if Req'd):			
Organization: MEIL	- M.CITY		Other	r Approval / Date (if Req'd):				IH Metallurgy testing reference: MN	/IA/IH/001 - Rev.3				Other Approval / Date (if Red	ղ'd)։			
Part/ Process	Process Name/ Operation	Machine, Device,		Characteris	stics		Spl Char	Product/ Process Specification/		First Off Ir	nspection			In-Process -	Control		Reaction Plan
Number	Description	Jig, Tools For Mfg.	No.	Product	Process		Class	Tolerance	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Evaluation Measurement Technique	Sample Size (Nos)	Sample Freq.	Control Method	Reaction Plan
17	13.03.2025	IH distortion								System Improve	ment						
18	19.04.2025	Auto thread gauge i	introdu	uced in PDI						1.Improvement 2.To avoid manu 3.To avoid custo							
19	24.05.2025	Readable gauge intr	roduce	∍d						Improvement		_					