

Dept. Prepared (Supplier or Dept, In charge)

Dept. Checked

Quality Assurance Division
Musashi Auto Parts India Pvt. Ltd.

Honda Motor Co., Ltd.
(Recieved)

Approved by	Confirmed by	Create by
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Confirmed
by

Created
by

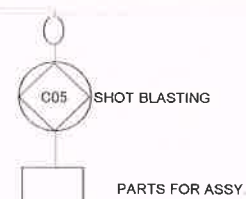
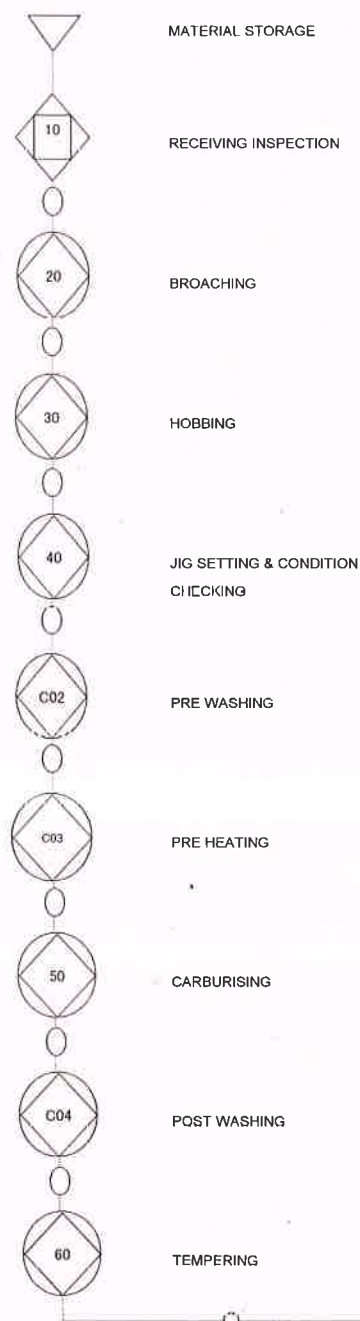
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Process Quality Control Table (I)

MODEL	KONA	DESIGNATION OF PARTS	HS	HA	HB	OTHERS
PART NUMBER	23431-KONA-D000					
PART NAME	GEAR- M2					

Process Quality Control Table (I)











PROCESS FLOW CHART



CONDITION OF COMPLETE PARTS

[illegible]

Flow process chart symbols shall confirm to JISZ8206 (Composite symbol : combine sub job symbol in main job symbol)

	PROCESS		QUANTITY CHECK		CROSS PART OF FLOW LINE		MAINLY AS INSPECTING QUALITY AND DOING QTY INSPECTION	3	11 03 2019	KONA-E-173 PRELAUNCH RELEASE	UMASANKAR	PRASHANTH	RAHUL	QA
	TRANSPORT		QUALITY CHECK		CONTROL DIVISION OF FLOW CHART			CODE	DATE	REVISION RECORD	APPROVED BY	CHECKED BY	PREPARED BY	DEPARTMENT CHECKED
	STORE		FLOW CHART		MAINLY AS PROCESSING PARTS AND DOING INSPECTION						CREATION DIVISION			


Route :-Dept. Approved \Rightarrow Dept. checked \Rightarrow Dept. Prepared

Original to be retained untill:-

PROCESS QUALITY CHECK TABLE-II

MFG ORDER	PROCESS NAME SECONDARY SUPPLIER MACHINE, EQUIPMENT	QUALITY CHARACTERISTICS									MANUFACTURING CONDITION CONTROL										ILLUSTRATION
		SI.NO.	CRITICAL ITEM	FAILURE MODE	CONTROL ITEM	SPECIFICATION	PERSON IN CHARGE	CHECK METHOD	MEASURING FREQUENCY	RECORDING FREQUENCY	CONTROL METHOD	SI.NO.	CRITICAL ITEM	CONTROL ITEM	SPECIFICATION	PERSON IN CHARGE	CHECK METHOD	MEASURING FREQUENCY	RECORDING FREQUENCY	CONTROL METHOD	
10	RECEIVING INSPECTION	1			Material	SCr420HV	RECEIVING QA	Supplier MTC (Latest by 6 months)	AS PER SAMPLING PLAN	AS PER SAMPLING PLAN	INCOMING INSPECTION REPORT										
		2			Hardness	80-95 HRB	↑	Hardness tester	↑	↑	↑										
		3			Appearance	Free from Burr, dent, damage, Sharp corners & scratches etc.	↑	Visual	↑	↑	↑										
		4			Microstructure	Uniform distribution of ferrite & pearlite bands 25% max	↑	Microscope	↑	↑	↑										
		5			Radius or Chamfer	R or C 0.5-1.2	↑	Contour	↑	↑	↑										
		6			Diameter	Ø35 8-0.05/-0.35	↑	Micrometer	↑	↑	↑										
		7			Diameter (Both side)	Ø18/±0.3	↑	D.V.C/Contour	↑	↑	↑										
		8			Angle (Both side)	120°±1' 30"	↑	Contour	↑	↑	↑										
		9	◇		Runout	0.05 wrt A	↑	Mandril, Dial & Bench centre	↑	↑	↑										
		10			Roughness	Rz 100	↑	Roughness tester/Visual	↑	↑	↑										
		11			Parallelism	0.02	↑	Height gauge	↑	↑	↑										
		12			Runout	0.02 wrt A	↑	Mandril, Dial & Bench centre	↑	↑	↑										
		13	◇		Diameter	Ø14 B/±0.02	↑	3 point micrometer / Bore gauge	↑	↑	↑										
		14	◇		Dimension	10-0.02/-0.08	↑	Height gauge	↑	↑	↑										
		15			Roughness (both side)	Rz 12.5	↑	Roughness tester	↑	↑	↑										
		16			Roughness	Rz 12.5	↑	Roughness tester	↑	↑	↑										
		17			Roughness (both side)	Rz 100	↑	Roughness tester/Visual	↑	↑	↑										
		18			Radius or Chamfer	R or C 0.5-1.2	↑	Contour	↑	↑	↑										
		19			Roughness	Rz 12.5	↑	Roughness tester	↑	↑	↑										
		20			Diameter	Ø26 MIN	↑	D.V.C / Contour	↑	↑	↑										
		21			Supplier identification	Supplier A : Radius on OD Supplier B : Chamfer on OD Supplier C : Feed mark on groove side chamfer	↑	Visual	↑	↑	↑										
		22			Dimension	3±0.2	↑	D.V.C / Contour	↑	↑	↑										
		23			Roughness	Rz100	↑	Roughness tester/Visual	↑	↑	↑										
		24			Dimension	0.1-0.3	↑	D.V.C / Contour	↑	↑	↑										
		25			Dimension	2-2.5	↑	D.V.C / Contour	↑	↑	↑										
		26			Radius	R	↑	Visual/Contour	↑	↑	↑										
		27			Hazardous or ELV	Hazardous items should be within limit	↑	ELV or Hazardous report	↑	↑	↑										
		28			Hazardous or ELV	Hazardous items should be within limit	↑	ELV or Hazardous report	↑	↑	↑										
20	BROACHING	1	◇		MINOR DIAMETER	Ø15 ^{+0.020}	QA	CMM	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & report	1	◇	RESTING CONDITION	NO DENTS	LINE ASSOCIATE	VISUAL	1 / SHIFT	1 / FIRST SHIFT	EQUIPMENT CHECK SHEET	<div>CONTROL PARAMETERS</div> <div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div>OD RUNOUT</div> <div>FACE RUNOUT</div> <div>255 Ø14 DIA. 1</div> <div>13.023±0.01</div> <div>Ø15 ^{+0.020}</div> <div>Ø17 C: ^{+0.020}</div> <div>±0.06</div> <div>±0.03</div> <div>13.023±0.01</div> <div>Ø15 ^{+0.020}</div> <div>Ø17 C: ^{+0.020}</div>
					OK	↑	PLAIN PLUG GAUGE	1/50	1/50	LOT CONTROL & INSP CHECK SHEET											
		2	◇		BET BALL DIA.	13.023 ±0.01	↑	SLIP GAUGE & PIN Ø2/1.68	5/SET UP & TC	5/SET UP & TC	SETTING APPROVAL SHEET DAILY CHECK SHEET										
					OK	↑	SPLINE GO & NO GO GAUGE	1/50	1/50	LOT CONTROL INSPECTION CHECK SHEET											
		3			MAJOR DIA	Ø17.01 ^{+0.020}	QA	CMM	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET										
		4	◇		FACE RUNOUT	≤0.03	LINE ASSOCIATE	TAPER MANDREL & DIAL INDICATOR	5/SET UP & TC	5/SET UP & TC	SETTING APPROVAL SHEET										
									1/50	1/50	LOT CONTROL & INSP CHECK SHEET										
		5			OD RUNOUT	≤0.06	LINE ASSOCIATE	TAPER MANDREL & DIAL INDICATOR	5/SETUP & TC 1/50	5/SETUP & TC 1/50	SETTING APPROVAL SHEET										
								1/50	1/50	LOT CONTROL SHEET & INSPECTION CHECK SHEET											
			SPLINE FLANK SURFACE ROUGHNESS	≤Rz 12.5	QA	ROUGHNESS TESTER	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & REPORT												
			IN V 5.17X15X1.0 FULL FORM	OK	LINE ASSOCIATE	SPLINE PLUG GAUGE	5/SETUP & TC	5/SETUP & TC	SETTING APPROVAL SHEET												
								1/50	1/50	LOT CONTROL & INSP CHECK SHEET											
			APPEARANCE	NO DENTS & BURRS	LINE ASSOCIATE	VISUAL	100%														
			↑	NO DOUBLE OPERATIONS	↑	↑	↑														

CONTROL PARAMETERS					
1	2	3	4	5	6
OD RUNOUT	\leq 0.06	FACE RUNOUT	\leq 0.03	3RD OPN DIA. \pm 0.01	13.023 \pm 0.01
4		2		1	
MINOR DIAMETER	Ø15 \pm 0.020	MAJOR DIAMETER	Ø17.01 \pm 0.02		

MFG ORDER	PROCESS NAME SECONDARY SUPPL. 零件 MACHINE, EQUIPMENT	QUALITY CHARACTERISTICS									MANUFACTURING CONDITION CONTROL									ILLUSTRATION	
		SI NO.	CRITICAL ITEM	FAILURE MODE	CONTROL ITEM	SPECIFICATION	PERSON IN CHARGE	CHECK METHOD	MEASURING FREQUENCY	RECORDING FREQUENCY	CONTROL METHOD	SI NO.	CRITICAL ITEM	CONTROL ITEM	SPECIFICATION	PERSON IN CHARGE	CHECK METHOD	MEASURING FREQUENCY	RECORDING FREQUENCY		CONTROL METHOD
30	HOBBING	1	◇		OBD (BALL 3 175)	34 769-34 789	LINE ASSOCIATE	OBD MICROMETER (25-50) & OBD LOCATOR	5/SET UP & TC	5/SET UP & TC	SETTING APPROVAL SHEET	1	◇	DIA WEAR LIMIT & ONE TOUCH ARBOUR R/O	0 010 MAX & Ø14 995 -0.012	LINE ASSOCIATE	MICROMETER DIAL INDICATOR & MAGNETIC STAND	1 / SHIFT	1 / FIRST SHIFT	EQUIPMENT CHECK SHEET	
					↑	↑	↑	↑	1/50	1/50	LOT CONTROL & INSP CHECK SHEET	2	◇	HOB ARBOUR R/O	0 010 MAX	↑	DIAL INDICATOR & MAGNETIC STAND	↑	↑	↑	
		2	◇		P C D R/O	≤0.04	↑	PCD R/O TESTER (PIN M2)	5/SET UP & TC	5/SET UP & TC	SETTING APPROVAL SHEET	3	◇	FIXTURE CONDITION	NO DENTS	↑	VISUAL	↑	↑	↑	
					↑	↑	↑	↑	1/50	1/50	LOT CONTROL & INSP CHECK SHEET										
		3			PROFILE	AS PER TABLE	QA	GEAR TESTER (PROBE Ø1.5)	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & GRAPH										
					↑	↑	↑	↑	1/50	1/50	GRAPH										
		4			LEAD	AS PER TABLE	↑	↑	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & GRAPH										
			↑	↑	↑	↑	1/50	1/50	GRAPH												
				ROOT DIAMETER	Ø26.5 ⁰ _{-0.30}	LINE ASSOCIATE	CMM	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & LOT CONTROL & INSP CHECK SHEET											
				TOOTH SURFACE ROUGHNESS	≤25 Rz	QA	ROUGHNESS TESTER	1/SET UP & TC	1/SET UP & TC	SETTING APPROVAL SHEET & REPORT											
				APPEARANCE	NO DENTS & BURRS	LINE ASSOCIATE	VISUAL	100%	---	---											
				↑	NO DOUBLE OPERATIONS	↑	↑	↑	---	---											
40	JIG SETTING & CONDITION CHECKING	1			JIG SETTING OF COMPONENT	SEE NOTE IN PROCESS SHEET	LINE ASSOCIATE	VISUAL	1/LOT	---	---	1		BASE TRAY	NO CRACK,BEND DAMAGE	LINE ASSOCIATE	VISUAL	1/LOT	---	---	
		2			SETTING CONDITION	NO COLLAPSE	↑	↑	↑	---	---	2		STACKING BASKET	↑	↑	↑	↑	---	---	
												3		MESH	↑	↑	↑	↑	---	---	
C02 & C04	PRE WASHING & POST WASHING	1			APPEARANCE	NO OIL, NO DIRT ON THE COMPONENT	LINE ASSOCIATE	VISUAL	100%	---	---	1		FOR NACHI MACHINE							
												2		TEMPRATURE	110±10°C	LINE ASSOCIATE	DIGITAL TEMP. INDICATOR	1/SHIFT	1/FIRST SHIFT	EQUIPMENT CHECK SHEET	
												2		WASHING TIME	20±5 MIN	LINE ASSOCIATE	TIMER	1/LOT	1/LOT	EQUIPMENT CHECK SHEET	
C03	PRE-HEATING	1			JIG SETTING	SEE NOTE-2	LINE ASSOCIATE	VISUAL	100%	---	---	1		TEMPRATURE	400±10°C	LINE ASSOCIATE	CONTROL METER	EACH LOT	EACH LOT	EQUIPMENT CHECK SHEET	
												2		PRE HEATING SOAKING TIME	110±10 MINUTES	LINE ASSOCIATE	TIMER	EACH LOT	EACH LOT	↑	
												3		HEATING VOLTAGE	350-450V	LINE ASSOCIATE	VOLTMETER	EACH LOT	EACH LOT	↑	
												4		HEATER CURRENT	50-70A	LINE ASSOCIATE	AMMETER	EACH LOT	EACH LOT	↑	
50 & 60	CARBURISING & TEMPERING	1	◇		CASE DEPTH	0.3-0.5 MM	QA	MICRO VICKERS (CUT OFF, 513 Hv LOAD 0.3KG)	1/LOT	1/LOT	CCF PROCESS CONTROL SHEET			FOR CCF							
		2			SURFACE HARONESS(BEFORE TEMPERING)	80-85 HRA (REFERENCE)	↑	ROCKWELL HARDNESS TESTER (LOAD 60KG)	5/LOT	5/LOT	↑	1	◇	HEAT UP TEMP	890±10° C	LINE ASSOCIATE	CONTROL METER	EACH LOT	EACH LOT	CCF PROCESS CONTROL SHEET	
		3	◇		SURFACE HARDNESS(AFTER TEMPERING)	78-83 HRA	↑	↑	↑	↑	↑	2	◇	HEAT UP TIME	50±5 MIN	↑	RECORD METER	↑	↑	↑	
		4	◇		CORE HARDNESS	25-45 HRC	↑	ROCKWELL HARDNESS TESTER (LOAD 150KG)	1/LOT	1/LOT	↑	3	◇	CARBURISING TEMP	900±10° C	↑	CONTROL METER	↑	↑	↑	
		5	◇		MICRO STRUCTURE AT SURFACE	FINE TEMPERED MARTENSITE	↑	MICROSCOPE	↑	↑	↑	4	◇	CARBURISING TIME	150±15 MINUTES	↑	RECORD METER	↑	↑	↑	
		6	◇		MICRO STRUCTURE AT CORE	LOW CARBON TEMPERED MARTENSITE	↑	MICROSCOPE	↑	↑	↑	5	◇	HARDENING TEMP.	830°C±10°C	↑	CONTROL METER	↑	↑	↑	
		7			APPEARANCE	FREE FROM OIL	LINE ASSOCIATE	VISUAL	EACH LOT	---	---	6	◇	HARDENING TIME	30±10 MINUTES	↑	RECORD METER	↑	↑	↑	
												7	◇	QUENCH OIL TEMP.	140°±15° C	↑	CONTROL METER	↑	↑	↑	
												8	◇	QUENCHING TIME	10±5 MINUTES	↑	RECORD METER	↑	↑	↑	
												9	◇	AGITATOR RPM	3 → 200 rpm	↑	INDICATOR	↑	↑	↑	
												10	◇	TEMPERING TEMP	170°±10° C	↑	CONTROL METER	↑	↑	↑	
										11	◇	TEMPERING TIME	140±5 MINUTES	↑	RECORD METER	↑	↑	↑			
C05	SHOT BLASTING	1			APPEARANCE	PARTS SHOULD FREE FROM SCALES, BURRS AND SHOTS	LINE ASSOCIATE	VISUAL	100%	---	---	1		SHOT BLASTING TIME	08 MINUTES	LINE ASSOCIATE	TIMER	EACH LOT	---	---	
												2		SHOT SIZE	Ø0.6 MM ROUND SHOTS	LINE ASSOCIATE	---	---	---		
												3		AIR PRESSURE	5 ~ 6 KG/CM²	LINE ASSOCIATE	PRESSURE GAUGE	1/SHIFT	1/FIRST SHIFT	EQUIPMENT CHECK SHEET	
												4		IMPELLER MOTOR CURRENT (UPPER & LOWER)	10 ~ 12 A	↑	AMMETER	↑	↑	↑	
												5		ID MOTOR CURRENT (UPPER & LOWER)	20 A MAX	↑	AMMETER	↑	↑	↑	
	PARTS FOR ASSEMBLY											6		MANOMETER READING	PSIG 15 MAX	↑	MANOMETER SCALE	↑	↑	↑	