

Special Characteristics Communication and Agreement

Lead / Support roles and
timing for each stage

1. DFMEA and potential special characteristics	Type ONLY in Yellow Boxes	1A. PFMEA & Special Characteristics Agreement	Type ONLY in Green Boxes
Ford PD engineer / Supplier		Supplier/ Ford PD	

Special Characteristics for:

2018 2.7L Nano

Eaton / Kearney NE

JT4E-6507-AA

Special Characteristics Approvals required at UNV2 / UPV2 / PA as per FAP 03-111

Program:	2018 2.7L Nano	Part Number:	JT4E-6507-AA
Supplier Name/Plant:	Eaton / Kearney NE	Engineering Release Number:	NE01-E-13035355-025
Supplier SIM Code:	E304C	Design Lead Brand:	Ford
Part / System Name:	INT VALVE	Ford Customer Plant:	Lima Engine Plant

Ford D & R Engineer	Signature	Name	e-mail	Date
Approval/Date:	/s/ John Carter	John Carter	JCARTER7@ford.com	10/20/2016
Ford STA Engineer	Signature	Name	e-mail	Date
Approval/Date:	/s/ Alfredo Gutierrez	Alfredo Gutierrez	aguties7@ford.com	11/02/16
Ford Craftsmanship/Sys Engr'g	Signature	Name	e-mail	Date
Approval/Date:	/s/ V. Woodiwiss	Vanessa Woodiwiss	vwoodiw2@ford.com	10/24/16
Supplier Plant Quality Manager	Signature	Name	e-mail	Date
Approval/Date:				11/22/16

Note: approvals may be electronic: complete the approval block above to identify the approvers, and include "/s/" ahead of the name typed into the "signature" box to indicate electronic approval and approve in e-mail with this file as an attachment.

Key:
For Special Characteristic definitions refer
to Ford FMEA Handbook.

From DFMEA:

YC	Sev 9,10: Potential CC
YS	Sev 5-8 and may require special control to maintain process capability Potential SC.

From PFMEA:

CC	Sev 9,10 (Part): Critical Characteristic.
OS	Sev 9,10 (Process): Operator Safety.

SC	Sev 5-8 AND Occ 4-10: Significant Characteristic.
HI	Sev 5-8 AND Occ 4-10: High Impact Characteristic.

Special Characteristic Totals:

Note 1: Automatic calculation of totals (for guidance only).
Note 2: Count of SCs may be less than count of YSs

YC	YS	CC	OS	SC	HI
0	32	0	0	7	1

Special Characteristics Communication and Agreement for all UN content required to support UN design and development is required by UNV2. The remaining UN content not required to support UN design and development is required by <PA>.
Special Characteristics Communication and Agreement for all UP content is required by UPV2.

Stage 1. DFMEA				Stage 1A. PFMEA	
No.	Characteristic Description	Specification & Tolerance	DFMEA Class	PFMEA Class	Process Control Method
1	cup runout	1mm to A	YS	Other	Operator checks at set-up and in process
2	keeper groove, stem thickness at bottom of groove	4.08 - 4.28 mm	YS	Other	Gage 1 per hour and record in data log at operation and check xbar and R on 10 pieces per pallet at pre audit
3	keeper groove chamfer	0.05 - 0.25 mm x 43 - 47 deg	YS	Other	Tool controlled with keeper groove depth, checked at change over by quality with automated optical comparator
4	Keeper Groove Spacing	3.975 - 4.025 mm	YS	Other	Checked by quality lab at change over with an automated optical comparator, tooling controlled
5	Keeper Groove Spacing	1.975 - 2.025 mm	YS	Other	Checked by quality lab at change over with an automated optical comparator program, tooling controlled
6	Back Angle1 Gage Height	3.22 - 3.62 mm	YS	Other	Evidence log, record gage reading every two hours
7	Back Angle2 Gage Height	4.0 - 4.5 mm	YS	Other	Evidence log, record gage reading every two hours
8	Tip Chamfer, Upper Angle	58 - 62 deg	YS	Other	Tool controlled, checked at change over by quality with automated optical comparator
9	Tip Chamfer, Lower Angle	13 - 17 deg	YS	Other	Tool controlled, checked at change over by quality with automated optical comparator
10	Tip Chamfer, Length	0.13 - 0.63 mm	YS	Other	Tool controlled, checked at change over by quality with automated optical comparator

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Ford D & R Engineer
Approval/Date
Ford STA Engineer
Approval/Date
Ford Craftsmanship/Sys Engr'g
Approval/Date
Supplier Plant Quality Manager
Approval/Date

Signature /s/ John Carter	Name John Carter	e-mail JCARTER7@ford.com	Date 10/20/2010
Signature /s/ Alfredo Gutierrez	Name Alfredo Gutierrez	e-mail aguties87@ford.com	Date 11/02/10
Signature /s/ V. Woodwiss	Name Vanessa Woodwiss	e-mail vwoodw2@ford.com	Date 10/24/10
			Date 11/22/10

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Stage 1. DFMEA

Stage 1A. PFMEA

No.	Characteristic Description	Specification & Tolerance	DFMEA Class	PFMEA Class	Process Control Method
11	Tip Flat Dia	5.09 mm min	YS	Other	Tool controlled, checked at change over by quality with automated optical comparator
12	Seat Face - Angle	45.50 - 46.00 deg	YS	Other	Inspect each chuck at 1st hour of shift, at wheel change and change over and track in data log CHECK LAST PIECE AT TOOL CHANGE AND CHANGE OVER
13	Seat Face - Runout	0.050 mm to A	YS	SC	Inspect 3 consecutive pieces at the operation and xbar and R, once per shift
14	Seat Face - Roundness	0.008 mm	YS	Other	Inspect one piece on each chuck every 2 hours and at wheel changes and change overs collected in metrology data log
15	Head Dia	32.38 - 32.62 mm	YS	Other	Audit 10 pieces per pallet xbar and R, measuring devices at operation for operators to monitor the process, form is checked on comparator at change over and is recorded in changeover log
16	Underhead Runout	0.28 mm to A	YS	Other	Gage evidence log, record 1 every two hours
17	Underhead Thickness- gage line to face	1.57 - 1.83 mm	YS	SC	Inspect 3 consecutive pieces at the operation and xbar and R, once per shift
18	Head Fillet Radius	5.35 - 7.35 mm	YS	Other	Tooling controlled, inspected at set up
19	Head Back Angle 1	23 - 27 deg	YS	Other	Tooling controlled, inspected at set up

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Approval/Date:	/s/ V. Woodwiss	Vanessa Woodwiss	vwoodwiz2@ford.com	10/24/16
Supplier Plant Quality Manager	Signature			
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From DFMEA:

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Sev 8, 10. Potential CC

YS

Sev 5-8 and may require special control to maintain process capability. Potential SC

From PFMEA:

CC

Sev 9, 10 (Part). Critical Characteristic.

OS

Sev 9, 10 (Process). Operator Safety

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Sev 5-8 AND Occ 4-10. Significant Characteristic

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Sev 5-8 AND Occ 4-10. High Impact Characteristic

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YC

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YS

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CC

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Stage 1. DFMEA

Stage 1A. PFMEA

No.	Characteristic Description	Specification & Tolerance	DFMEA Class	PFMEA Class	Process Control Method
20	Head Back Angle 2	10 -14 deg	YS	Other	Tooling controlled, inspected at set up
21	Stem Dia	5.430 - 5.448 mm	YS	SC	Inspect 3 consecutive pieces at the operation and xbar and R, once per shift and ring gaged 100%
22	Stem Straightness	0.01 mm	YS	Other	Audit 15 pieces recorded in audit log
23	Keeper Groove Location- gage line to undercut	93.79 - 94.09 mm	YS	SC	Overall length, tip to keeper groove, face to gageline will be measured at the process and recorded on xbar and R, once per shift (3 consecutive pieces). The variation of these three operations will contribute to the capability of the gage line to keeper groove. Gage line to keeper groove dimension will be measured at audit (10 pieces per pallet) and recorded on xbar and R
24	Surface Finish	Ra 0.3 max	YS	SC	Inspect at audit 10 pieces per hour and record data
25	Surface Finish	Rpm 1.0 max	YS	SC	Inspect at audit 10 pieces per hour and record data
26	Tip Surface Finish	Ra 0.8 max, 0.25 cutoff	YS	Other	1 piece at 1st hour of shift record in data log
27	Tip Runout	0.018 mm to A	YS	Other	X bar and r 10 pieces done at pre audit, record pass/fail 1 piece every hour, 5 piece set-up inspection approval
28	Material	SAE J775 - UNSS65007	YS	Other	Material verification stem material at eddy current before tip harden op

