type name: CIVIC 1st LH DOM SLL3



#### type management

<u>general</u>
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Input typename CIVIC 1st LH DOM SLL3
set of boundery parts 49

retractor

retractor article code P34361270A

retractor type top-connect

retractor laser job number 1

**MGG** 

MGG article code 34311248

MGG color 5 - light grey YAZAKI top-connect

MGG cam angle tolerance 10.000 [deg.]

FW max. - angle pos. 190.000 [deg.]

FW - set angle pos. 180.000 [deg.]
FW min. - angle pos. 170.000 [deg.]

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## positions, speed, geometry & clamping force

### Z1 - axis: feed spindle

basic position / start loading position MGG	270.000	[mm]
planarity measuring position	232.800	[mm]
MGG transfer position / end loading position MGG	225.500	[mm]
MGG nok unload position	225.000	[mm]
basic position feed	1500.0	[mm]
full speed feed	30000.0	[mm]

### X1 - axis: stator clamping

basic position	61.000	[mm]
pre position clamping	12.800	[mm]
clamping pos.	12.600	[mm]
full speed feed	5000.0	[mm/min]

#### geometry data

1. chuck length spindle	97.000	[mm]
2. unsupported length spindle	0.000	[mm]
3. part length spindle	3.000	[mm]
4. free length spindle (cup-length)	32.000	[mm]
5. chuck length stator clamping	23.000	[mm]
6. unsupported length stator clamping	5.000	[mm]
safety distance	1.000	[mm]

stator clamping	selection	min force	max force
selection clamping force - control active			

	по			
setpoint clamping force		22.0	24.0	[kN]
monitoring clamping force	yes	20.0	25.0	[kN]

<u>planarity sensor</u>	selection	min	max	
monitoring planarity MGG	yes	0.000	0.070	[mm]
monitoring distance MGG	no	0.000	0.000	[mm]

#### contact pos.

monitoring - contact pos.	yes	123.800	126.000	[mm]
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## overview - setnoints

overview - setpoints						
setpoint clamping force				24.0	[kN]	
contacting			way [mm]	force [kN]	feed [mm/min]	
safety distance before Start			1.000			
pat down before clamping		no	5.000	3.0		
pat down after clamping		yes		15.0		
contact mode				force ct	r. (rot.)	
contacting parameter			4.000	6.000	200.000	
lifting			0.600		8000.000	
recontact			0.400		00001000	
process friction welding						
phase friction welding	1.friction 1	2.friction 2	3.braking	4.upsetting 1	5.upsetting 2	
force	11.000	7.000		11.000	11.000	[kN]
force gradient time	0.000	0.080		0.050	0.020	[s]
rotation	14000.0	14000.0		2000.0		[rpm]
switch - mode	time	time		time		
process time	0.030	0.100	+0.020	0.040	0.250	[s]
reduction	0.020	0.040	+0.000	0.100	0.100	[mm]
angle pos.	180.000	[degree]				
set angle pos.	yes					
process control	0. contacting	1. friction 1	2. friction 2	4. upsetting 1	5. upsetting 2	
Kp: P - contribution	4.000	3.000	2.000	2.000	1.000	[s]
Tn: I - contribution	0.000	0.000	0.000	0.000	0.000	[s]
Tv: D - contribution	0.000	0.250	0.270	0.270	0.300	
V_max	300.000	150.000	250.000	600.000	300.000	[mm/min]
V_offset		0.000	0.000	0.000	0.000	[% V_max]

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# overview - monitoring values

process time	1. friction 1	2. friction 2	3. braking	4. upsetting 1	5. upsetting 2	rotation speed = 0	
selection	yes	yes	yes	yes	yes	yes	
maximum - time	0.035	0.105	0.230	0.045	0.255	0.320	[s]
minimal - time	0.025	0.095	0.190	0.035	0.245	0.245	[s]
force gradient time	<b>2</b> 1. friction 1	2. friction 2		4. upsetting 1	5. upsetting 2		
selection	no	no		no	no		
maximum - time	0.000	0.000		0.025	0.000	[s]	
minimal - time	0.000	0.000		0.008	0.000	[s]	
reduction	1. friction 1	2. friction 2	3. braking / 4.upsetting 1		5. upsetting 2	overall	
selection	no	no	yes		no	yes	
maximum - reduction	0.280	0.100	1.200		0.140	1.900	[mm]
minimal - reduction	0.100	0.025	0.700		0.020	1.000	[mm]
rotation	1. friction 1	2. friction 2		4. upsetting 1			
selection	yes	no		no			
maximum - rotation	14100.0	13010.0		27.0	[rpm]		
minimal - rotation	12000.0	12990.0		-120.0	[rpm]		

<u>part l</u>	<u>ength</u>	part length

 selection
 no

 maximum - length
 0.00
 [mm]

 minimal - length
 0.00
 [mm]

### part angle pos.

selection yes
maximum - angle 190.000

minimal - angle 170.000 [deg.]

[deg.]

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# overview - force envelope settings

overall-					
activation	yes				
friction 1	min force	max force		phase - time	
point 1	+5.000	+8.500	[kN]	0	[ms]
point 2	+6.500	+10.500	[kN]	13	[ms]
point 3	+6.500	+11.200	[kN]	22	[ms]
point 4	+6.500	+11.700	[kN]	30	[ms]
point 5	+6.500	+12.000	[kN]	38	[ms]
activation	yes				
friction 2	min force	max force		phase - time	
point 1	+6.500	+12.000	[kN]	0	[ms]
point 2	+6.500	+12.500	[kN]	16	[ms]
point 3	+5.300	+9.500	[kN]	70	[ms]
point 4	+4.400	+6.500	[kN]	120	[ms]
point 5	+4.200	+6.400	[kN]	290	[ms]
activation	yes				
	,				
	, , ,				
upsetting 1	min force	max force		phase - time	
		max force +6.400	[kN]	phase - time	[ms]
upsetting 1	min force		[kN] [kN]		[ms]
upsetting 1 point 1	min force +4.200	+6.400		0	
upsetting 1 point 1 point 2	min force +4.200 +3.000	+6.400	[kN]	0 12	[ms]
upsetting 1 point 1 point 2 point 3	min force +4.200 +3.000 +2.500	+6.400 +5.900 +5.600	[kN]	0 12 18	[ms]
upsetting 1 point 1 point 2 point 3 point 4	min force +4.200 +3.000 +2.500 +2.000	+6.400 +5.900 +5.600 +4.500	[kN] [kN]	12 18 30	[ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5	min force +4.200 +3.000 +2.500 +2.000	+6.400 +5.900 +5.600 +4.500	[kN] [kN]	12 18 30	[ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5 activation	min force +4.200 +3.000 +2.500 +2.000 +2.000 yes	+6.400 +5.900 +5.600 +4.500 +5.500	[kN] [kN]	12 18 30 38	[ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5 activation upsetting 2	min force +4.200 +3.000 +2.500 +2.000 +2.000 yes min force	+6.400 +5.900 +5.600 +4.500 +5.500	[kN] [kN] [kN]	12 18 30 38	[ms] [ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1	min force +4.200 +3.000 +2.500 +2.000 +2.000 yes min force +2.000	+6.400 +5.900 +5.600 +4.500 +5.500 max force +5.500	[kN] [kN] [kN]	12 18 30 38	[ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1 point 2	min force +4.200 +3.000 +2.500 +2.000 +2.000 yes min force +2.000 +4.000	+6.400 +5.900 +5.600 +4.500 +5.500 max force +5.500 +9.000	[kN] [kN] [kN] [kN]	0 12 18 30 38 phase - time 0 12	[ms] [ms] [ms]
upsetting 1 point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1 point 2 point 3	min force +4.200 +3.000 +2.500 +2.000 +2.000 yes  min force +2.000 +4.000 +7.000	+6.400 +5.900 +5.600 +4.500 +5.500 max force +5.500 +9.000 +10.500	[kN] [kN] [kN] [kN] [kN]	0 12 18 30 38 phase - time 0 12 28	[ms] [ms] [ms] [ms]

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# overview - distance envelope settings

overall- activation	yes				
friction 1	min dist.	max dist.		phase - time	
point 1	-0.030	+0.030	[mm]	0	[ms]
point 2	+0.000	+0.060	[mm]	10	[ms]
point 3	+0.015	+0.070	[mm]	15	[ms]
point 4	+0.030	+0.080	[mm]	20	[ms]
point 5	+0.040	+0.100	[mm]	28	[ms]
activation	yes				
friction 2	min dist.	max dist.		phase - time	
point 1	+0.040	+0.100	[mm]	0	[ms]
point 2	+0.060	+0.200	[mm]	30	[ms]
point 3	+0.100	+0.460	[mm]	100	[ms]
point 4	+0.330	+0.870	[mm]	210	[ms]
point 5	+0.550	+1.250	[mm]	302	[ms]
activation	yes				
upsetting 1		Pal			
	min dist.	max dist.		phase - time	
point 1	+0.550	+1.250	[mm]	0	[ms]
point 1 point 2	+0.550	+1.250	[mm]	12	[ms]
point 1 point 2 point 3	+0.550 +0.600 +0.670	+1.250 +1.300 +1.400	[mm]	0 12 22	[ms]
point 1 point 2 point 3 point 4	+0.550 +0.600 +0.670 +0.830	+1.250 +1.300 +1.400 +1.570	[mm] [mm]	0 12 22 38	[ms]
point 1 point 2 point 3 point 4 point 5	+0.550 +0.600 +0.670 +0.830 +0.870	+1.250 +1.300 +1.400	[mm]	0 12 22	[ms]
point 1 point 2 point 3 point 4	+0.550 +0.600 +0.670 +0.830	+1.250 +1.300 +1.400 +1.570	[mm] [mm]	0 12 22 38	[ms]
point 1 point 2 point 3 point 4 point 5	+0.550 +0.600 +0.670 +0.830 +0.870	+1.250 +1.300 +1.400 +1.570	[mm] [mm]	0 12 22 38	[ms]
point 1 point 2 point 3 point 4 point 5 activation	+0.550 +0.600 +0.670 +0.830 +0.870 yes	+1.250 +1.300 +1.400 +1.570 +1.600	[mm] [mm]	0 12 22 38 42	[ms]
point 1 point 2 point 3 point 4 point 5 activation upsetting 2	+0.550 +0.600 +0.670 +0.830 +0.870 yes min dist.	+1.250 +1.300 +1.400 +1.570 +1.600	[mm] [mm] [mm]	0 12 22 38 42 phase - time	[ms] [ms] [ms]
point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1	+0.550 +0.600 +0.670 +0.830 +0.870 yes min dist. +0.870	+1.250 +1.300 +1.400 +1.570 +1.600 max dist. +1.600	[mm] [mm] [mm]	0 12 22 38 42 phase - time	[ms] [ms] [ms]
point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1 point 2	+0.550 +0.600 +0.670 +0.830 +0.870 yes min dist. +0.870 +1.000	+1.250 +1.300 +1.400 +1.570 +1.600 max dist. +1.600 +1.900	[mm] [mm] [mm]	0 12 22 38 42 phase - time 0 28	[ms] [ms] [ms] [ms]
point 1 point 2 point 3 point 4 point 5 activation  upsetting 2 point 1 point 2 point 3	+0.550 +0.600 +0.670 +0.830 +0.870 yes min dist. +0.870 +1.000	+1.250 +1.300 +1.400 +1.570 +1.600 max dist. +1.600 +1.900 +1.900	[mm] [mm] [mm] [mm]	0 12 22 38 42 phase - time 0 28	[ms] [ms] [ms] [ms]

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