

type no.: 45

overall - counter: 1692038



type name: CIVIC 1st LH DOM SLL3

## type management

### general

Input typename CIVIC 1st LH DOM SLL3

set of boundary 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	no			
setpoint clamping force		22.0	24.0	[kN]
monitoring clamping force	yes	20.0	25.0	[kN]

### planarity sensor

	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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11/03/2023 12:02:49

HBO021

User: ZapataF

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Date, Signature

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## overview - setpoints

setpoint clamping force

24.0 [kN]

### contacting

safety distance before Start

way [mm]

force [kN]

feed  
[mm/min]

pat down before clamping

no

1.000

5.000

3.0

pat down after clamping

yes

15.0

contact mode

force ctr. (rot.)

contacting parameter

4.000

6.000

200.000

lifting

0.600

8000.000

recontact

0.400

### process friction welding

phase friction welding

1.friction 1

2.friction 2

3.braking

4.upsetting 1

5.upsetting 2

force

9.000

5.000

9.000

9.000

[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

<u>process time</u>	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]

<u>force gradient time</u>	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]

<u>reduction</u>	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]

<u>rotation</u>	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 length</u>	part length	
selection	no	
maximum - length	0.00	[mm]
minimal - length	0.00	[mm]

<u>part angle</u>	angle pos.	
selection	yes	
maximum - angle	190.000	[deg.]
minimal - angle	170.000	[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

point 1

+4.200

+6.400

[kN]

0

[ms]

point 2

+3.000

+5.900

[kN]

12

[ms]

point 3

+2.500

+5.600

[kN]

18

[ms]

point 4

+2.000

+4.500

[kN]

30

[ms]

point 5

+2.000

+5.500

[kN]

38

[ms]

activation

yes

#### upsetting 2

min. - force

max. - force

phase - time

point 1

+2.000

+5.500

[kN]

0

[ms]

point 2

+4.000

+9.000

[kN]

12

[ms]

point 3

+7.000

+10.500

[kN]

28

[ms]

point 4

+9.000

+11.000

[kN]

75

[ms]

point 5

+9.000

+11.000

[kN]

250

[ms]

activation

yes

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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

min. - dist.

max. - dist.

phase - time

point 1

+0.550

+1.250

[mm]

0

[ms]

point 2

+0.600

+1.300

[mm]

12

[ms]

point 3

+0.670

+1.400

[mm]

22

[ms]

point 4

+0.830

+1.570

[mm]

38

[ms]

point 5

+0.870

+1.600

[mm]

42

[ms]

activation

yes

### upsetting 2

min. - dist.

max. - dist.

phase - time

point 1

+0.870

+1.600

[mm]

0

[ms]

point 2

+1.000

+1.900

[mm]

28

[ms]

point 3

+1.000

+1.900

[mm]

120

[ms]

point 4

+1.000

+1.900

[mm]

200

[ms]

point 5

+1.000

+1.900

[mm]

248

[ms]

activation

yes