

Process control statement

issuing section

Electric manufacturing department 2 production engineering room 4

date of creation

2/8/2016

Approval

6/02/08

examination

6/02/08

create

6/02/08

Distribution

cloth

Ahead

System No. -System diagram number Line name

690A MG Stereoline

Assembly part number, part name

212100-0080

Stater S / A, Mo Tar

name

For initial flow

Priority management designations

13

C

1

2

1317

Delivery destination, reserved vehicle type

Toyota

690A

Process No.

06 06

Process name

Twist molding (No. 1)

Station name

<1/1>

Model Product Name

212100-0080

Stater S / A, Mo Tar

Process specifications>

Form the wire to be welded in the post-process.

Equipment>

NO.1 equipment

Equipment machine number

SMC-0811

Equipment name

Twisting machine

Model

4kW, 2.1t

capacity

Manufacturer name

Machinery Department

Tools>

NO.1 tool

Tool name: Twisting jig (M-3651576)

Processing conditions>

Molding side restraint dimension

22.1mm ± 0.1mm

Molding coil & core presser pressure

60N ± 20N

Main air pressure

Molding side restraint dimension (outer diameter)

R102.5mm

Molding side restraint dimension (inner diameter)

R66.5mm

Twisted profile

[see Attachment]

Twisted crown shape

[Refer to the processing drawing]

Twisting speed

20 ± 10 mm / s

Positioning cylinder thrust

100N ± 10N

Main air pressure

Backup cylinder thrust

500N ± 50N

Main air pressure

Cycle time

90s

Working method>

1. Insert the work.

2. Advance the positioning cylinder.

3. Lower the molding side presser.

4. Advance the presser back-up on the molding side.

5. Lift the twisting jig & coil inner diameter jig to the set position.

6. Lift the twisting jig at a constant pressure.

7. Read the core product thickness and calculate the twist profile.

8. Perform 1-2T torsion molding.

9. Perform 3-4T torsion molding.

10. Twist molding of 5-6T.

11. Perform torsion molding of 7-8T.

12. All layers are untwisted and untwisted at the same time.

13. Lower the twisting jig.

14. Retreat the back-up of the presser on the molding side.

15. Raise the molding side presser.

16. Retreat the positioning cylinder.

17. Drain the work.

Regular cleaning>

For the following items, please perform regular cleaning with a fence or the like. (1 / straight) Special part

Twisting jig

Daily inspection>

Implemented based on the daily inspection check sheet.

Implemented based on the refueling guidance table.

Disposal of defective products>

All works that have failed to twist should be abandoned.

Quality>

At the time of measurement

Heavy

No.

Characteristic

Measuring instrument

Management method

Management interval

Management method

Administrator

Process capability

σ, X, Cp, Cpk

remarks

Quality ID

Relationship criteria

1

Main air pressure 0.4 ± 0.05MPa

Pressure gauge (0.001)

1 / Direct (at the time of work)

Condition management

worker

2

Twisting jig sliding state Smooth operation

Visually

1 / Direct (at the time of work)

Condition management

worker

3

Cylinder operation Smooth operation

Visually

1 / Direct (at the time of work)

Condition management

worker

Four

Exterior Abnormal things (coil deformation, coil scratches)

Visually

1 / Straight, twist jig replacement

Check

worker

* See limit sample

Five

Terminal circumferential position 0 ± 1.5 mm

3-dimensional measuring devices

When changing conditions

Recording paper

Team leader

16 slot measurement (No. 1, 4, 7 ... every 3 slots)

6

Radial position 1T <99.4mm, 2T> 92.13mm

3-dimensional measuring devices

When changing conditions

Recording paper

Team leader

16 slot measurement (No. 1, 4, 7 ... every 3 slots)

7

Radial position 3T <91.47mm, 4T> 85.63mm

3-dimensional measuring devices

When changing conditions

Recording paper

Team leader

16 slot measurement (No. 1, 4, 7 ... every 3 slots)

8

Radial position 5T <84.97mm, 6T> 79.53mm

3-dimensional measuring devices

When changing conditions

Recording paper

Team leader

16 slot measurement (No. 1, 4, 7 ... every 3 slots)

9

Radial position 7T <78.87mm, 8T> 72.04mm

3-dimensional measuring devices

When changing conditions

Recording paper

Team leader

16 slot measurement (No. 1, 4, 7 ... every 3 slots)

Ten

Film thickness 71 μm or more

Cross-section inspection ⇒ Tool microscope (0.001m)

When changing conditions

Recording paper

Proposal

* Refer to the attached sheet for the measurement site.

△

No.

Revision Date

Revision item

Reason for revision

Revised person

1枚がベスト

品質と安全のデンソー

Structure system diagram	issuing section	Electric manufacturing department 2 production engineering room 4			Approval	吉田	小坂	山地	create				Distribution					
	date of creation	2/8/2016			6/02/08	6/02/08	6/02/08						cloth					
Line name		Assembly part number, part name								name								
690A MG Stereoline		212100-0080								For quantity confirmation								
		Stater S / A, Mo Tar								Priority management designation								
System No.		Model Product Name								Delivery destination, reserved vehicle type								
06 06		212100-0080								Toyota								
Twist molding		Stater S / A, Mo Tar								690A								

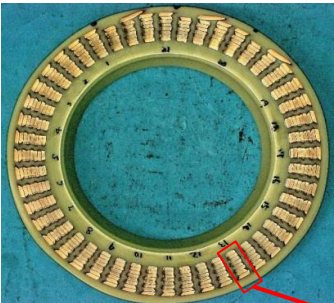
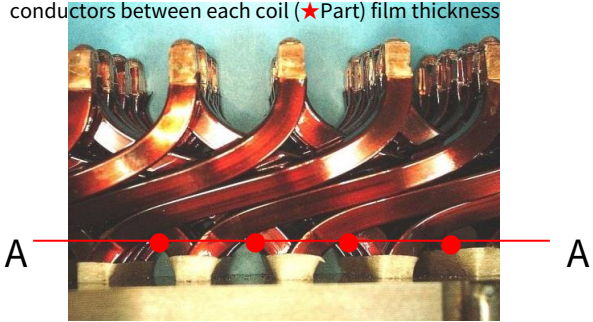
● Twisted profile parameter

Aim stomach Up under Rank Place	1 layer	31.842 ~ 31.904
	2 layers	32.844-32.924
	3 layers	33.818 ~ 33.931
	4 layers	34.570-34.676
	5 layers	35.767-35.830
	6 layers	36.498 ~ 36.706
	7 layers	37.938 ~ 37.981
	8 layers	39.188-39.158
Aim stomach leg Long difference	1 layer	42.408-42.470
	2 layers	41.389-41.469
	3 layers	40.378-40.490
	4 layers	39.632 ~ 39.738
	5 layers	38.477-38.540
	6 layers	37.606 ~ 37.814
	7 layers	36.329 ~ 36.372
	8 layers	35.124-35.154
Twist the law of nature Oh - Ba -	1 layer	108.100
	2 layers	
	3 layers	108.100
	4 layers	
	5 layers	108.100
	6 layers	
	7 layers	108.100
	8 layers	
Twist the law of nature Return death	1 layer	102.000-103.306
	2 layers	
	3 layers	102.000-103.306
	4 layers	
	5 layers	102.071 ~ 103.306
	6 layers	
	7 layers	103.535 ~ 103.763
	8 layers	
Twist the law of nature original Rank Place	1 layer	103.763
	2 layers	
	3 layers	103.763
	4 layers	
	5 layers	103.763
	6 layers	
	7 layers	103.763
	8 layers	

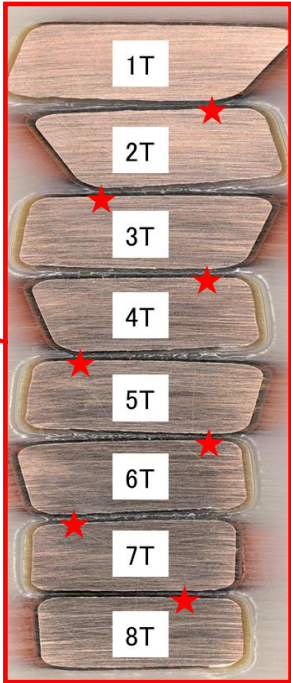
● Film thickness scrutiny site

- Bottom cross part (●Part) Cut the cross section
- Measurement slots are 4 slots of 1,13,25,37 • Min part between

conductors between each coil (★Part) film thickness

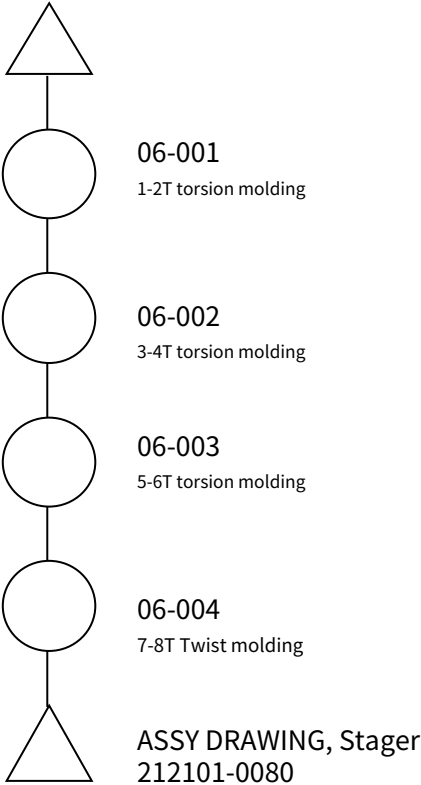


AA cross section



No.	Kai	Revision item	Reason for revision	Revised person

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	date of creation		2/8/2016		6/02/08	6/02/08	6/02/08									
Line name 690A MG Stereoline			Assembly part number, part name 212100-0080 Stater S / A, Mo Tar				name For initial flow									
							Priority management designation									
System No. 06 06			Systematic name <1/1>			Model Product Name 212101-0080				Delivery destination, reserved vehicle type Toyota						
Twist molding			ASSY DRAWING, statuser				690A									



No.	Revision Date	Revision item	Reason for revision	Revised person