

NC Joining Module NCFN

Type 2153A...

for Joining Operation with Single-Channel Control Systems

The NC joining module NCFN Type 2153A... with integrated strain gage force sensor for nominal forces of 30 ... 300 kN is excellent for use in assembly and joining processes monitored by force displacement.

- Force feedback control
- High velocity
- Practical repeatability <0,01 mm
- High measuring accuracy for all ranges
- Active compensation of process compression for exact positioning
- High overload capacity (approx. 150 %)
- Easy handling

Description

The NC joining modules NCFN Type 2153A... consist of a robust housing with an integral strain gage tension/compression force sensor. An absolute encoder for precise positioning is integrated in the drive motor. The motor is an electrically commutated AC servo motor which is driven by a servo controller. This servo controller provides constant speed, independent of load. Standard functions like block pressing, position pressing and force feedback controlled pressing as well as intermediate positioning are supported.

A NC joining system consists of the electromechanical NC joining module NCFN Type 2153A..., the evaluation system DMF-P A300 NCF Type 4734A... and the servo controller IndraDrive (Fig. 1, functioning principle).

The operation range of the threaded spindle drive is controlled by the servo electronics.

Signal evaluation of all sensors is done by the evaluation system DMF-P A300 NCF Type 4734A... . This device is an extremely efficient and compact instrument which displays the force-displacement measurement graphically and evaluates continuously all phases of a process by means of programmable tolerance windows. Profibus interface and an Ethernet connection for the output of QA data (I-P.M. or Q-DAS format) are standard for the DMF-P A300 NCF Type 4734A... . Positions and joining parameters may be edited via menu-driven parameters in the device unit.



Application

NC joining module NCFN Type 2153A... is excellent for applications in assembly and joining tasks in automated production plants and manual-work places.

Vertical and horizontal installation is possible and is performed by flange or wall mounting. Tapped holes for tool mounting are located at the tappet of the ball bearing screw (Fig. 2).

Technical Data

Dimensions	mm	Fig. 2
Assembly		Wall or flange assembly
Weight	kg	refer dimension
Max. tool weight*	kg	refer dimension
Direction of measurement		tension/ compression
Nominal force	kN	30, 60, 100, 200, 300
Stroke length		
only nominal force ≤100 kN	mm	200
nominal force 30 ... 300 kN	mm	400
Anti rotate tool fitting		Fig. 2
Safety device optional	V/A	24/3 to 5 ¹⁾
Holding brake (standard)	V/A	24/0,7 to 1,5 ¹⁾
Max. speed		
NC joining module 300 kN	mm/s	100
NC joining module 200 kN	mm/s	140
NC joining module 100 kN	mm/s	200
NC joining module 30, 60 kN	mm/s	250
Displacement sensor system		absolute encoder
Resolution	mm	0,001
Force sensor		strain gage
Accuracy	%	<0,5
Temperature range	°C	10 ... 40

Protection class		IP54
Life cycle ball screw (per defined drive profile)	cycles	approx. 10 million

Servo Controller	Bosch-Rexroth Type IndraDrive	
Interface		Profibus
Control voltage	VDC/W	24 (19,2 ... 28,8) /24
Power connection	V	400 (400 ... 500) ±10 %
	Hz	50/60 ±2 %
	phase	3

Evaluation Unit	DMF-P A300 NCF Type 4734A...	
Interface		Profibus
Supply	VDC	24 ±10 %

* Possible radial forces must be considered independent of the mounting.

¹⁾ Dependent size/type

To assure sufficient lubrication in case of strokes which are considerably smaller than the nominal stroke one nominal stroke has to be made at regular intervals.

Functional Principle

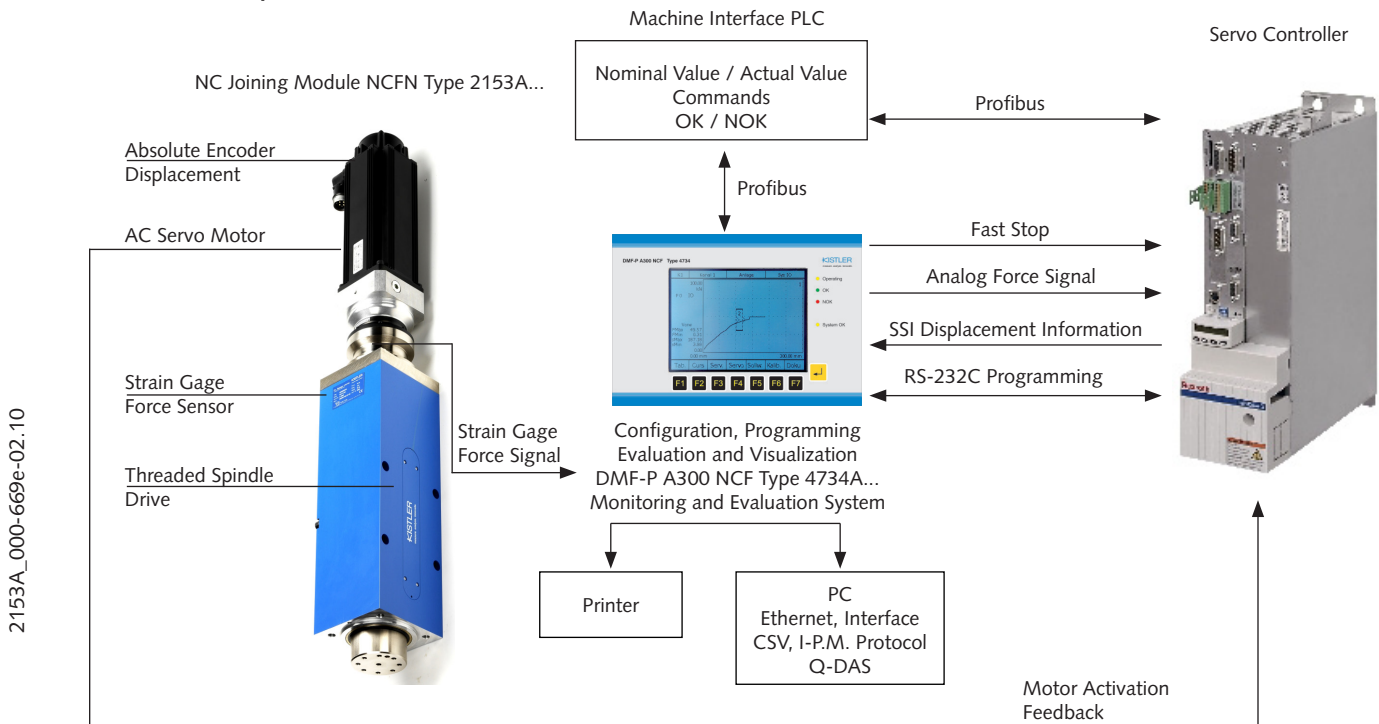


Fig. 1: Functional principle of NC joining system with NC joining module NCFN Type 2153A...

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Included Accessories

- None

Optional Accessories

Optional Accessories	Type/Art. No.
• Servo controller for Type 2153A... NCFN 30 kN IndraDrive 54A PB MPH07	KSM035375
• Servo controller for Type 2157A... NCFN 30 kN with integrated safety option IndraDrive 54A PB S2 MPH07	KSM035374
• Servo controller for Type 2153A... NCFN 60/100 kN IndraDrive 70A PB MPH07	KSM035376
• Servo controller for Type 2157A... NCFN 60/100 kN with integrated safety option IndraDrive 70A PB S2 MPH07	KSM035377
• Servo controller for Type 2153A... NCFN 200/300 kN IndraDrive 100A PB MPH07	KSM035378
• Servo controller for Type 2157A... NCFN 200/300 kN with integrated safety option IndraDrive 100A PB S2 MPH07	KSM035362
• Evaluation unit DMF-P A300 NCF	4734A...
• Desktop housing evaluation unit	4734ATDY1X400S1
• Wall housing evaluation unit	4734AWDY1X400S1
• Panel housing evaluation unit	4734AEDY1X400S1

Cables

• NCFN(S) 30 (35) motor cable RKL4309, length 5 m	KSM303490-5
• NCFN 60 motor cable RKL4314, length 5 m	KSM305640-5
• NCFN 100 motor cable RKL4323, length 5 m	KSM307530-5
• NCFN 200/300 motor cable RKL4329, length 5 m	KSM316330-5
• NCFN(S) MSK feedback cable RKG4200, length 5 m	KSM303500-5
• NCF cable SSI-displacement IndraDrive, length 5 m	KSM301750-5
• NCF data cable IndraDrive, length 5 m	KSM301640-5
• NCFN(S) strain gage force cable, length 5 m	KSM206000-5
• NCF cable F-analog IndraDrive, length 5 m	KSM301760-5
• NCF cable XTE, YTE IndraDrive, length 5 m	KSM314030-5

Other length on request

Ordering Key

Type 2153A

Nominal Force [kN]

30	030
60	060
100	100
200	200
300	300

Stroke Length [mm]

200 only nominal force ≤100 kN	200
400	400

Speed [mm/s]

100 mm/s only 300 kN	0
140 mm/s only 200 kN	1
200 mm/s only 100 kN	2
250 mm/s only 30 and 60 kN	3

Brake

holding brake (standard)	H
safety brake ¹⁾	K

Configuration

straight	G
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¹⁾ Safety device is optional

Ordering Example:

Type 2153A0602003HG

NC joining module NCFN **Type 2153A...**, nominal force **60 kN**,
stroke **200 mm**, speed **250 mm/s**, holding brake **H**, configuration **G**

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