

NC Joining Module NCFS

Type 2152B...

for Joining Operation with Single-Channel Control Systems

The joining module Type 2152B... with integral piezoelectric force sensor and two predefined measuring ranges of 25 and 15 kN is ideal for force-displacement monitored press-fit and joining processes in compact configurations.

- Force signal
- Integral charge amplifier
- High measuring accuracy in two ranges
- High speed
- Practical repeatability <0,01 mm
- High rigidity
- Precise guidance
- High level of sensor overload protection

Description

The NC joining module NCFS Type 2152B... consists of a robust case with integral piezoelectric force sensor for measuring both compression and tension. Its motor has an absolute encoder for exact positioning. The compression or tensile forces acting on the sensor's piezoelectric measuring element generate a proportional electric charge converted by the integral charge amplifier into an analog voltage signal. The drive motor is an electronically commutated AC servo type handled by a matching controller to ensure constant rotational and hence translational speed. Standard functions such as block pressing, position pressing and force feedback controlled pressing as well as intermediate positioning are supported.

The NC joining module NCFS can be operated with the IndraDrive servo controller in combination with the DMF-P A300 NCF Type 4734A..., DMF-P A310 Universal Type 4740A... or with the NC Compact Type 2159A. Monitoring of the work area of the screw drive is assumed the electronics in the servo controller.

The functional principle of the individual systems is described on the following pages. A field bus slave interface is used to connect the system to the system control, the Ethernet connection, including output of QA data.



Application

The NCFS joining module Type 2152B... is ideal for use in automated production systems. Its special design allows close workstation spacing. Throughput is speeded up by eliminating the usual need for timing. The module can be flanged onto the frame of the machine either vertically or horizontally. Threaded bores of sufficient strength to hold tools are provided in the ram of the threaded spindle drive (Figure 1).

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Technical Data

Dimensions	mm	Fig. 3
Assembly		Flange assembly
Weight	kg	89
Max. tool weight *	kg	25
Direction of measurement		tension/ compression
Measuring range	kN	15, 25
Length of stroke	mm	350
Anti rotate tool fitting		Fig. 3
Max. speed	mm/s	250
Displacement sensor system		Absolute encoder
Resolution	mm	0,001
Force sensor		piezoelectric
Temperature range	°C	10 ... 40
Protection class		IP54
Linearity in all ranges	%FSO	≤1
Service life of spindle (acc. to defined drive profile)	cycles	approx. 10 million

Short stroke	mm	≤60
Lubrication connection (exterior)	number	3

Servo Controller	Bosch-Rexroth Typ IndraDrive	
Standard 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

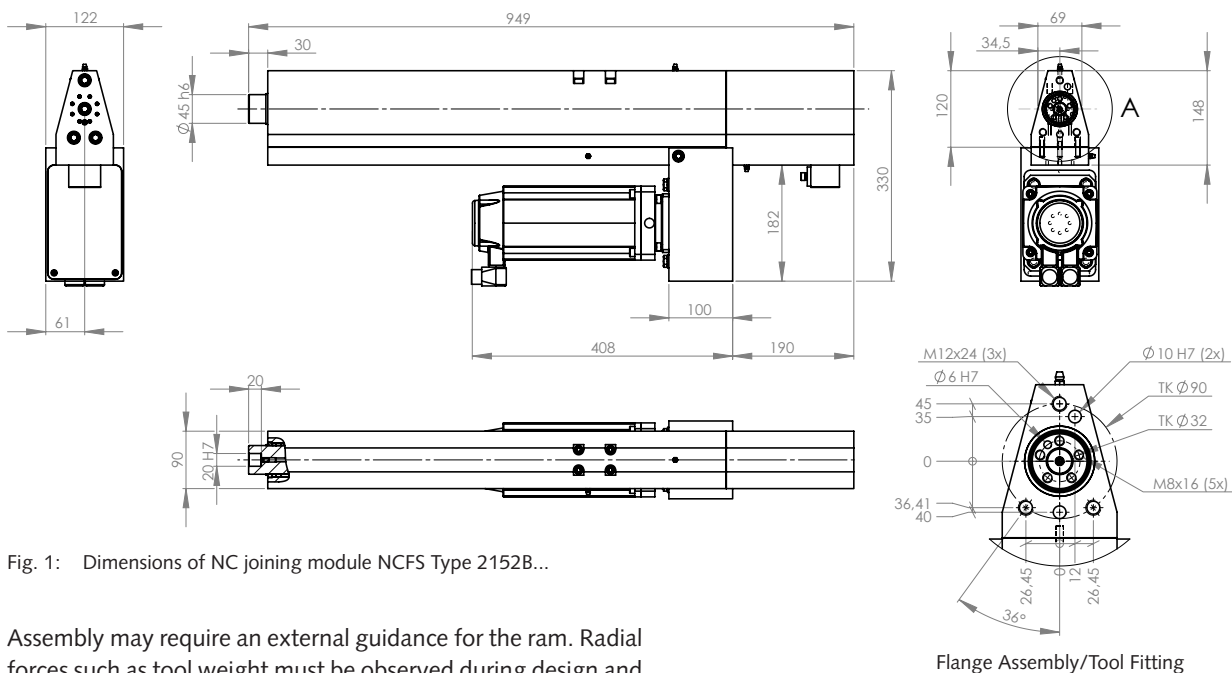
Evaluation Unit	Type 4734A... or Type 4740A...	
Standard Interface		Profibus
Power supply	VDC	24 ±10 %

Evaluation Unit		
NC Compact Firmware		Type 2159A
Operating Panel		Type 2158A

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

** Dependent of system

Dimensions



Assembly may require an external guidance for the ram. Radial forces such as tool weight must be observed during design and installation.

Functional Principle with DMF-P A300 NCF Type 4734A...

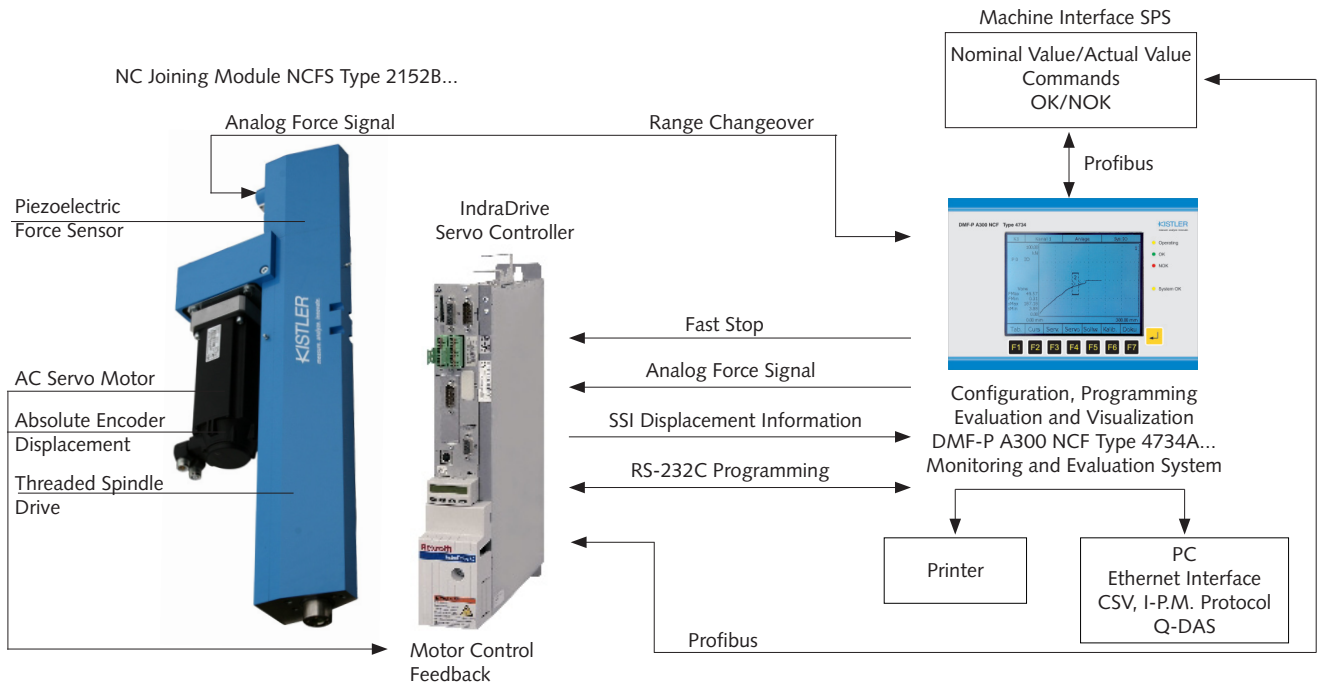


Fig. 2: Functional principle of NC joining system with NC joining module NCFs Type 2152B... and DMF-P A300 NCF Type 4734A...

Included Accessories

- None

Optional Accessories

- Servo controller for Type 2152A... with integrated safety option IndraDrive 28 A PB S2 MPH07
- Evaluation unit DMF-P A300 NCF
- Wall housing evaluation unit
- Desktop housing evaluation unit
- Panel housing evaluation unit

Type/Art. No.

- KSM035371
- 4734A...
- 4734AWDY2X4...
- 4734ATDY2X4...
- 4734AEDY2X4...

Cable

- NCFs 25 motor cable, length 5 m RKL4302 KSM341600-5
- NCFs MSK Feedback cable, length 5 m RKG4200 KSM303500-5
- NCF cable SSI displacement IndraDrive, length 5 m KSM301750-5
- Data cable IndraDrive, length 5 m KSM301640-5
- NCF cable force transmitter, length 5 m KSM313720-5
- NCF cable analog force signal, length 5 m KSM301760-5
- NCF cable XTE, YTE IndraDrive, length 5 m KSM314030-5

Other length on request.

Typ/Art. Nr.

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Functional Principle with DMF-P A310 Universal Type 4740A...

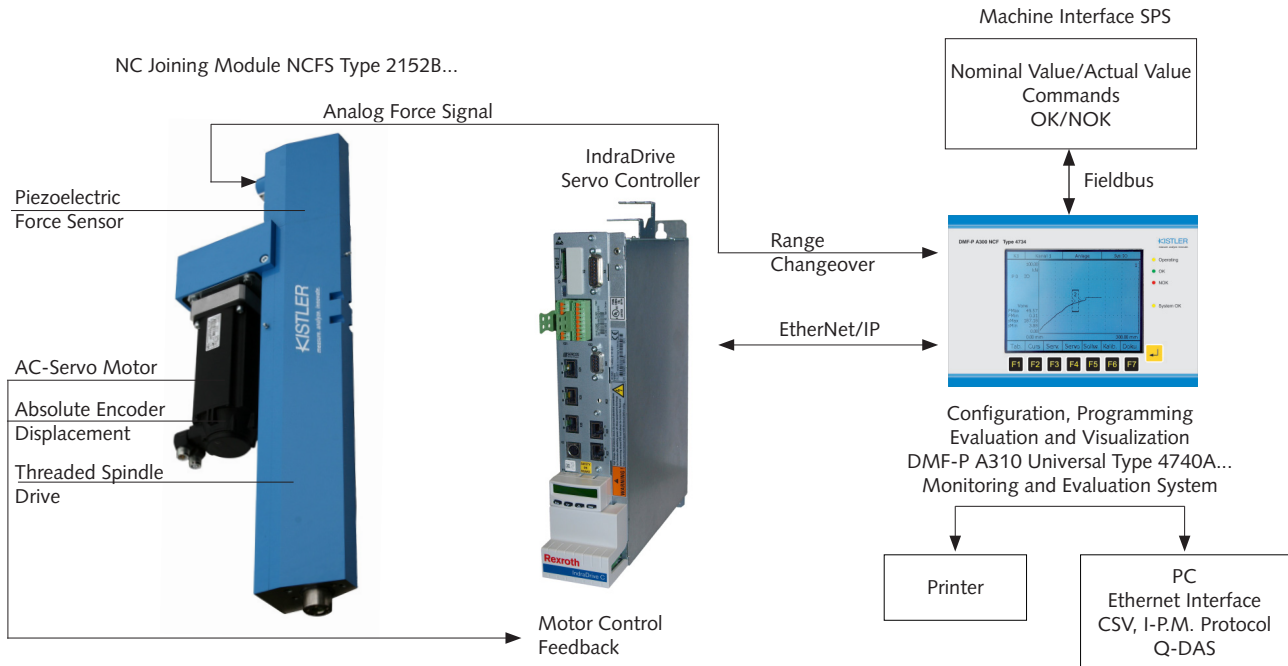


Fig. 3: Functional principle of NC joining system with NC joining module NCFS Type 2152B... and DMF-P A310 Universal Type 4740A...

Included Accessories

- None

Optional Accessories

- | | |
|--|----------------------------|
| • Servo controller IndraDrive 28 A EI S2 MPC07, NCFS 25 kN | Type/Art. No.
KSM036436 |
| • Evaluation unit DMF-P A310 Universal | 4740A... |
| • Wall housing evaluation unit | 4740AWY2... |
| • Desktop housing evaluation unit | 4740ATY2... |
| • Panel housing evaluation unit | 4740AEY2... |

Cable

- | | |
|---|------------------------------|
| • NCFS 25 motor cable, length 5 m RKL4302 | Type/Art. No.
KSM341600-5 |
| • NCFS MSK Feedback cable, length 5 m RKG4200 | KSM303500-5 |
| • NCF cable force transmitter, length 5 m | KSM313720-5 |
| • Network cable A310 EtherNet/IP, length 5 m | KSM036457-5 |
| • Network cable A310 EtherNet/IP, length 10 m | KSM036458-10 |
| • Network cable A310 EtherNet/IP, length 20 m | KSM036459-20 |
| • Network cable A310 EtherNet/IP, length 30 m | KSM036460-30 |

Other length on request.

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Functional Principle with NC Compact

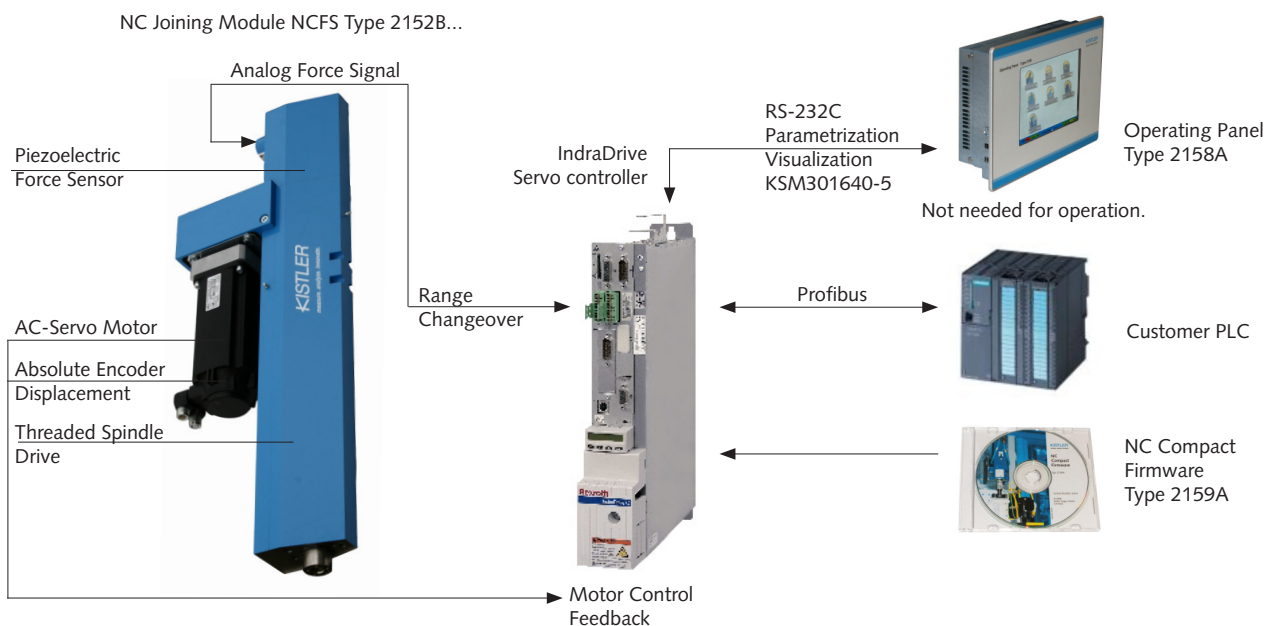


Fig. 4: Functional principle of NC joining system with NC joining module NCFS Type 2152B... and NC Compact Type 2158A and Type 2159A

Included Accessories

- None

Optional Accessories

- Servo controller for Type 2152A... with integrated safety option
 IndraDrive 28 A PB S2 MPH07
- NC Compact Firmware
- NC Compact Operating Panel

Type/Art. No.

- KSM035371
- 2159A
- 2158A

Cable

- NCFS 25 motor cable, length 5 m RKL4302 KSM341600-5
- NCFS MSK Feedback cable, length 5 m RKG4200 KSM303500-5
- Data cable IndraDrive, length 5 m KSM301640-5
- NCF cable force transmitter, length 5 m (NC Compact) KSM313710-5

Other length on request.

Note:

Other Fieldbus Interfaces e.g. EtherNet/IP, Profinet, etc. on request.

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Possible Assembly

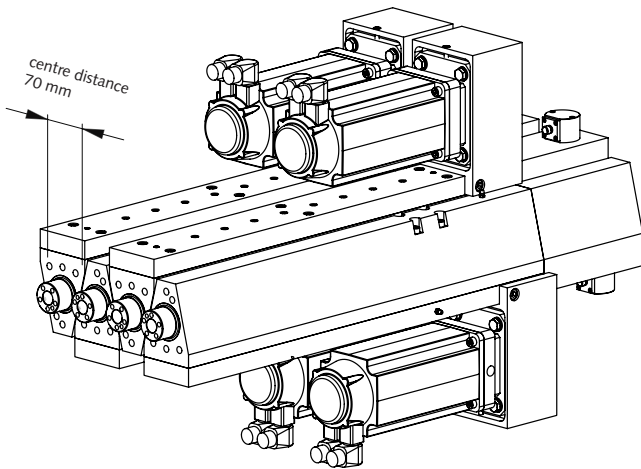


Fig. 5: Extremely narrow assembly space requirements from NC joining module NCFS

Ordering Key

Nominal Force [kN]

Measuring range 1	25	25
Measuring range 2	15	

Stroke [mm]

350	350
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Type 2152B

Ordering Example

Type 2152B25350

NC Joining Module NCFS **Type 2152B...**, nominal force, measuring range 1: 25 kN, measuring range 2: 15 kN **25 kN**, stroke **350 mm**

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