

Practical options for special cases.
Please contact us if you have further needs.

Overview
& Facts

System &
smartBOX

Rotary tables

KAB, VDF,
CNC, WMS

AGG, DDF,
RST, LOZ

Service &
Technology

Tooling

Raised center height on T-type rotary tables

For all combinations of possible spindle accessories.

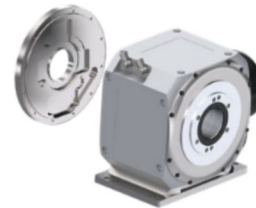
Item No.	Increase	SPZ	DDF	SPL91x-Ada
TDDxx	without	•	•	
SPH.TAP9-40	40mm	•	•	•

SPZ = clamping cartridges with release cylinder, DDF = rotary union



End cap for third-party systems

Item No.	Designation	Required center height increase
SPL91x-Ada	End cap for attachment of external rotary union / clamping cylinder	SPH.TAP9-40



Vertical clamping

	Item No.	DDF	SPZ	Height [mm]	Weight [kg]
ED3	GPL91xver-242*	•	•	242	10.6
ED5	GPL91xver-242*	•	•	242	10.6
ED8			on request		

* only 1 accessory possible (e.g. DDF), cannot be combined (e.g. DDF+SPZ)

SPZ = for clamping cylinder; for more, please refer to p. 43

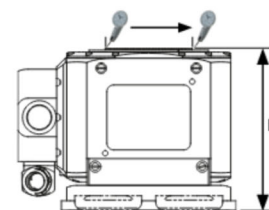
DDF = for rotary union; for more, please refer to p. 41



Add-on housing for vertical clamping.
Shown with rotary union.



Add-on housing for vertical clamping.
Shown with direct measuring system compact.



0.01/100 mm (with height increase: 0.005/100 mm)
H = ±0.1

Maximum possible standardization simplifies startup and service

Cabling

Cable set, complete, as follows:

- incl. HARTING connector, incl. wall bushing
- only 1 connector per axis
- bifunctional wall bushings for cab wall as well as for cabinet
- mounted and tested at factory, plug&play

Order items

Item no.	Designation	Dimensions
KAB.F9-4.0-M4g	Fanuc DD, fully cabled	4 m, straight HARTING connector
KAB.H9-4.0-M4g	Siemens and Heidenhain DD, fully cabled	4 m, straight HARTING connector
KAB.MI9-4.0-M4g	Mitsubishi DD, fully cabled	4 m, straight HARTING connector
KAB.H9-6.0vss-M4g	Heidenhain 1Vss DD, fully cabled	6 m, straight HARTING connector

Item no.	Designation	Dimensions
WDF.F9-M4	Wall bushing	per axis for Fanuc
WDF.SH9-M4	Wall bushing	per axis for Siemens
WDF.MI9-M4	Wall bushing	per axis for Mitsubishi
WDF.HH9-M4	Wall bushing	per axis for Heidenhain
WDF.F9-FAc	Wall bushing	for Fanuc Robodrill, 4th axis
WDF.F9-FAc2	Wall bushing	for Fanuc Robodrill, 5th axis

Item no.	Designation	Weight [kg]
WDF.lo	Air/oil	0.09
WDF.h	Hydraulics (2 fluted)	
WDF.M4-9xx	Mating connector, without cabling	

FANUC Robodrill

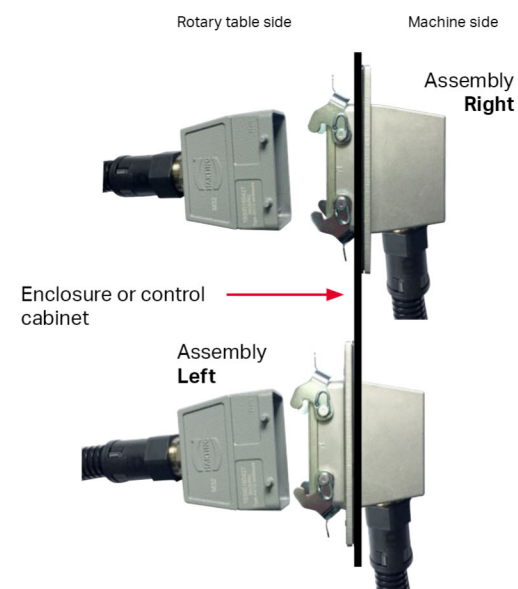
Automatic parameter setting by program
(included in delivery)

Item no.	Designation	Dimensions
KAB.F9-5.0-FAc	Fanuc DD, fully cabled	Robodrill



Standard items included in delivery

Always supplied as standard (except Fanuc Robodrill)



Supplied with FANUC interface, compatible with FANUC DDR



Machine preparation

- 80A servo required
- Additional CNC options may be needed, for instance, for rotating function, radius compensation, constant cutting speed, pole detection, 5-axis function for simultaneous operation
- PLC must be prepared and adapted accordingly

Quality at pL LEHMANN «The right processes automatically yield the desired results»

Elasticity of tilting axes TPD** (guideline values for pitch error)

0° to 90° [arcsec]	Unloaded	Standard load sls [*] cube
TPD3-M	-19	+1
TPD5-M	-19	+22
TPD3-V	-55	-45
TPD5-V	-55	-32

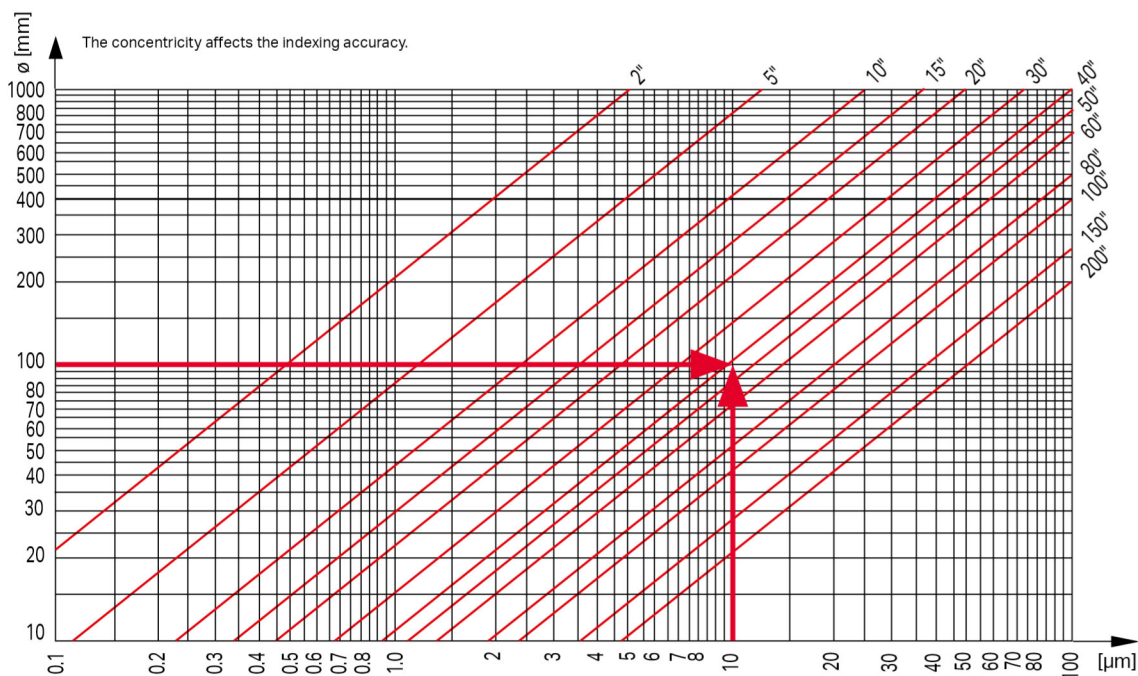
* see p. 56

** Tilting axes with direct drive do not have a pitch error

Explanation: The pitch error corrects the positioning error resulting from elasticity caused by the eccentric load of the rotary axis on the tilting axis.

Recommendation: In order to achieve the best possible accuracies, we always recommend compensating for the gear backlash and the pitch error (5th axis) with the CNC control unit and/or by using a direct measuring system (option, p. 38). A tilting range of 180° results in other compensation values; please contact the factory if necessary.

Angular seconds and radian compared



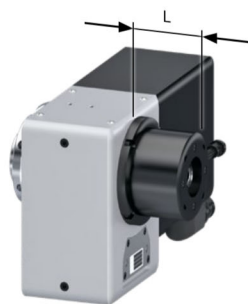
For the highest indexing accuracy:
Fully encapsulated, leak-proof, protected
against impact, adjusted with high precision

Measuring method used to determine the gear unit's accuracy to VDI/DGQ 3441 or ISO 230-2

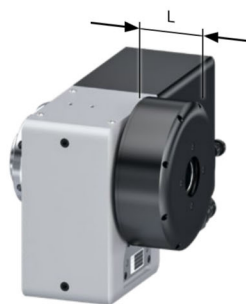
- Measured at operating temperature of the unit after 5 warm-up cycles
 - 5 measuring cycles
 - 24 measuring points (15° increments)
 - Acceleration $500^{\circ}/s^2$
 - All measured values apply in unloaded condition at room temperature approx. 22 °C
 - The values WITHOUT load apply
- Attention:** Due to the influence of environmental factors during the measurement (temperature, vibration, etc.), the recorded measurement error may exceed the catalog limit value by up to 10%.

Attachment variants of the direct measuring system

Applicable depending on the selected direct measuring system (see p. 39)



WMS.520-Vor2



WMS.520-Vor7



WMScompact
(WMS.520-VorCX)



Example WMS with DDF
* see p. 41

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