

Rotary and Lifting Units

Overview

RDH-M Indexing Table / Rotary Axis

C 158



RDH-S Indexing Table / Rotary Axis

C 160



RDH-XS Indexing Table / Rotary Axis

C 162



DSH-S Rotary Swivelling Unit

C 164



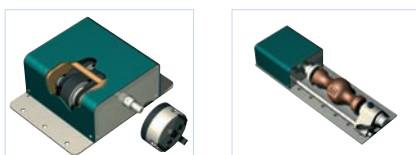
RF 1 Indexing Table

C 166



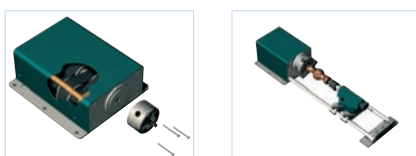
D 1 Rotary Axis

C 168



D 2 Rotary Axis

C 170



Rotary and Lifting Units

Overview

MD 1 Midget Rotary Axis

C 172



ZR 20 Indexing Table

C 174



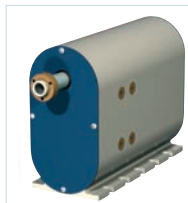
ZD 30 Rotary Axis

C 176



MH 1 Midget Lifting Unit

C 178



Transport Loads,
Processing Forces, Feed

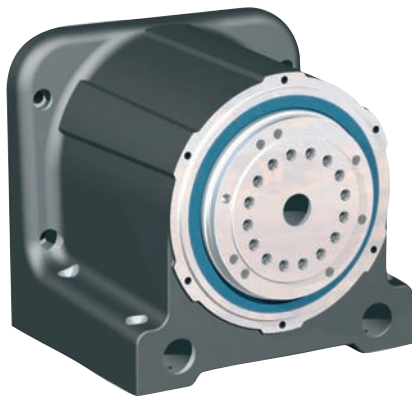
C 180

Permissible Moment of
Inertia J_z

C 183

Indexing Table/Rotary Axis

RDH-M



RDH-M as rotary axis
(hollow shaft)

RDH-M as indexing table
(solid shaft)



Features

- with precision gear
 - extremely loadable and stiff drive bearing
 - zero backlash and high torsion stiffness
- reduction 1:51 or 1:101
- Servo motor
- protection type IP 65
- rust-proof design
- transmission accuracy < 1 arcmin
- repeatability $< \pm 6$ arcsec
- optionally, in solid or hollow shaft design
- maintenance-free
- Options:
 - stepping motor
 - other drive motors
 - own motor adaptation upon request

with servo motor MV 120 (brush-type)
upon request

Order Key

2 6 6 2 X X X X X X

Stub shaft

0 = Solid shaft
1 = Hollow shaft

Gear reduction

0 = 101
1 = 51

0 = Standard

Motors

0 = Stepping motor
1 = DC servo motor (brushless)
2 = DC servo motor (brush-type)

0 = Standard

Accessory



Chuck

3-jaw chuck Ø 80
Item no.: 269060 1080

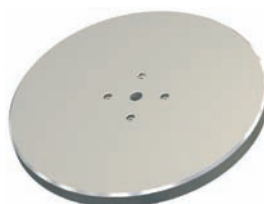
3-jaw chuck Ø 125
Item no.: 269060 0125



Aluminium T-Groove Plate

Ø240 mm / PT 25
Item no.: 269050 0240

Ø365 mm / PT 25
Item no.: 269050 0365



Aluminium Rotary Plate

Ø 490 mm, customer-specific
Fixing holes are possible at extra charge
Item no.: 269051 0500



Tailstock Unit RE M

Item no.: 269100 2100 (1,000 mm)
Item no.: 269100 2150 (1,500 mm)
Item no.: 269100 2200 (2,000 mm)

Indexing Table/Rotary Axis

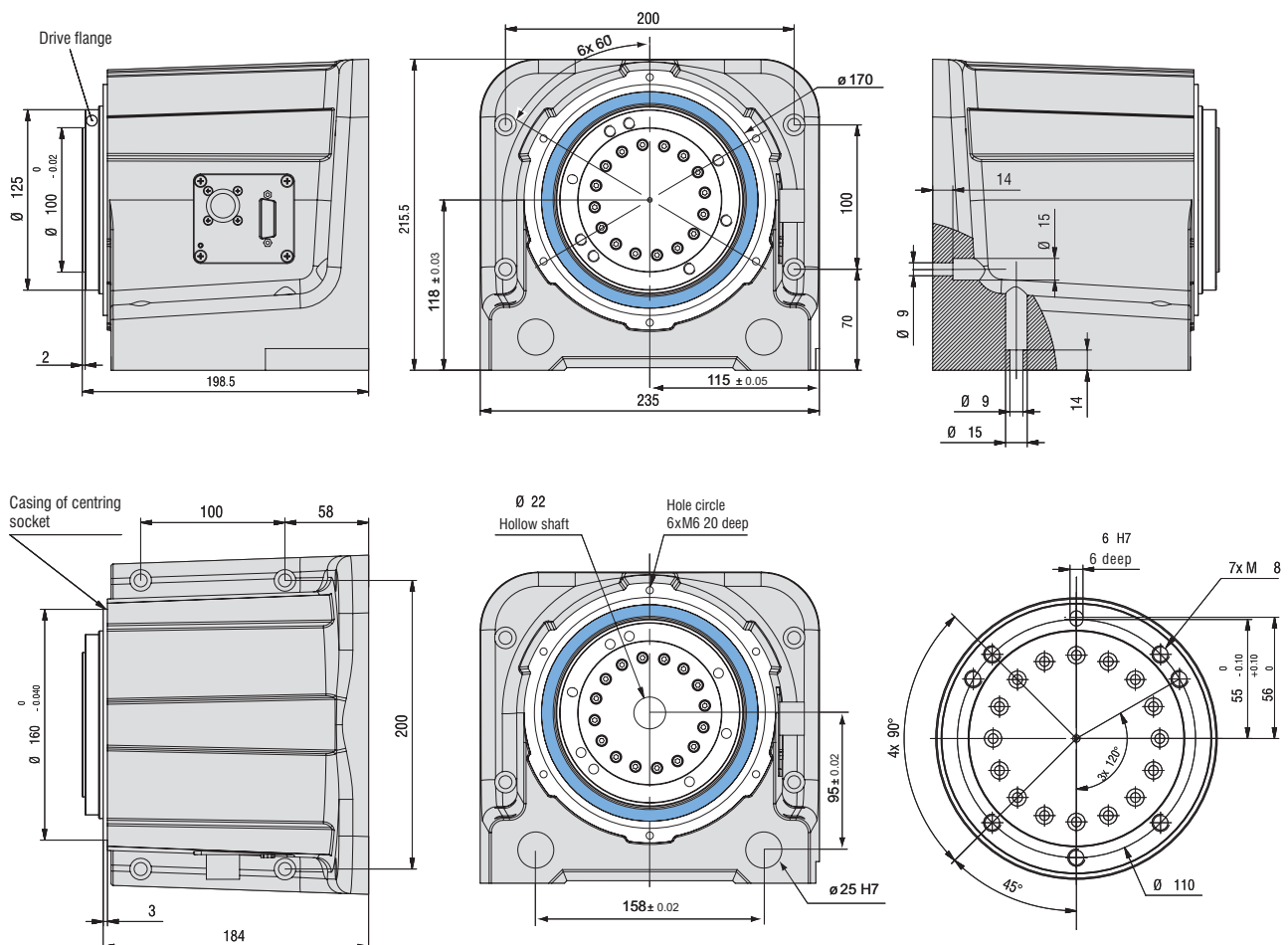
RDH-M

Technical Data

	Stepping Motor MS 200 HT *		EC Servo Motor MD 200 (brushless)	
Reduction ratio	1:51	1:101	1:51	1:101
Nominal drive revolution [1/min]	4	2	22	11
Max. drive revolution [1/min]	24	12	59	30
Nominal torque [Nm]	24	46	15	29
Max. torque (temporary) [Nm]	--	--	46	88
Nominal holding torque (static load) [Nm]	55	108	33	65
Max. load capacity of the gear [Nm]	98	157	98	157
Dynamic load rate C [N]	21800			
Static load rate C0 [N]	35800			

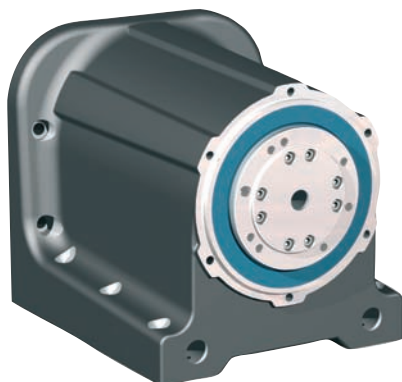
* Values at half-step operation

Scale Drawings



Indexing Table/Rotary Axis

RDH-S



RDH-S as rotary axis
(hollow shaft)

RDH-S as indexing table
(solid shaft)



Features

- with precision gear
 - extremely loadable and stiff drive bearing
 - zero backlash and high torsion stiffness
- reduction 1:51 or 1:101
- Servo motor
- protection type IP 65
- rust-proof design
- transmission accuracy $< 1,5$ arcmin
- repeatability $< \pm 6$ arcsec
- optionally, in solid shaft or quill design
- maintenance-free
- Options:
 - stepping motor
 - other drive motors
 - own motor adaptation upon request

Order Key

2 6 6 1 X X X X X

Stub shaft

0 = Solid shaft
1 = Hollow shaft

Gear reduction

0 = 101
1 = 51

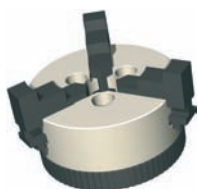
0 = Standard

Motors

0 = Stepping motor
1 = DC servo motor (brushless)
2 = DC servo motor (brush-type)

0 = Standard

Accessory



Clamping Chuck

3-jaw chuck Ø 65

Item no.: 269060 3065



Clamping Chuck

3-jaw chuck Ø 80

Item no.: 269060 2080



Tailstock Unit RE S

for RDH-S

Item no.: 269100 1020 (200 mm)

Item no.: 269100 1030 (300 mm)

Item no.: 269100 1040 (400 mm)

Item no.: 269100 1050 (500 mm)

Indexing Table/ Rotary Axis

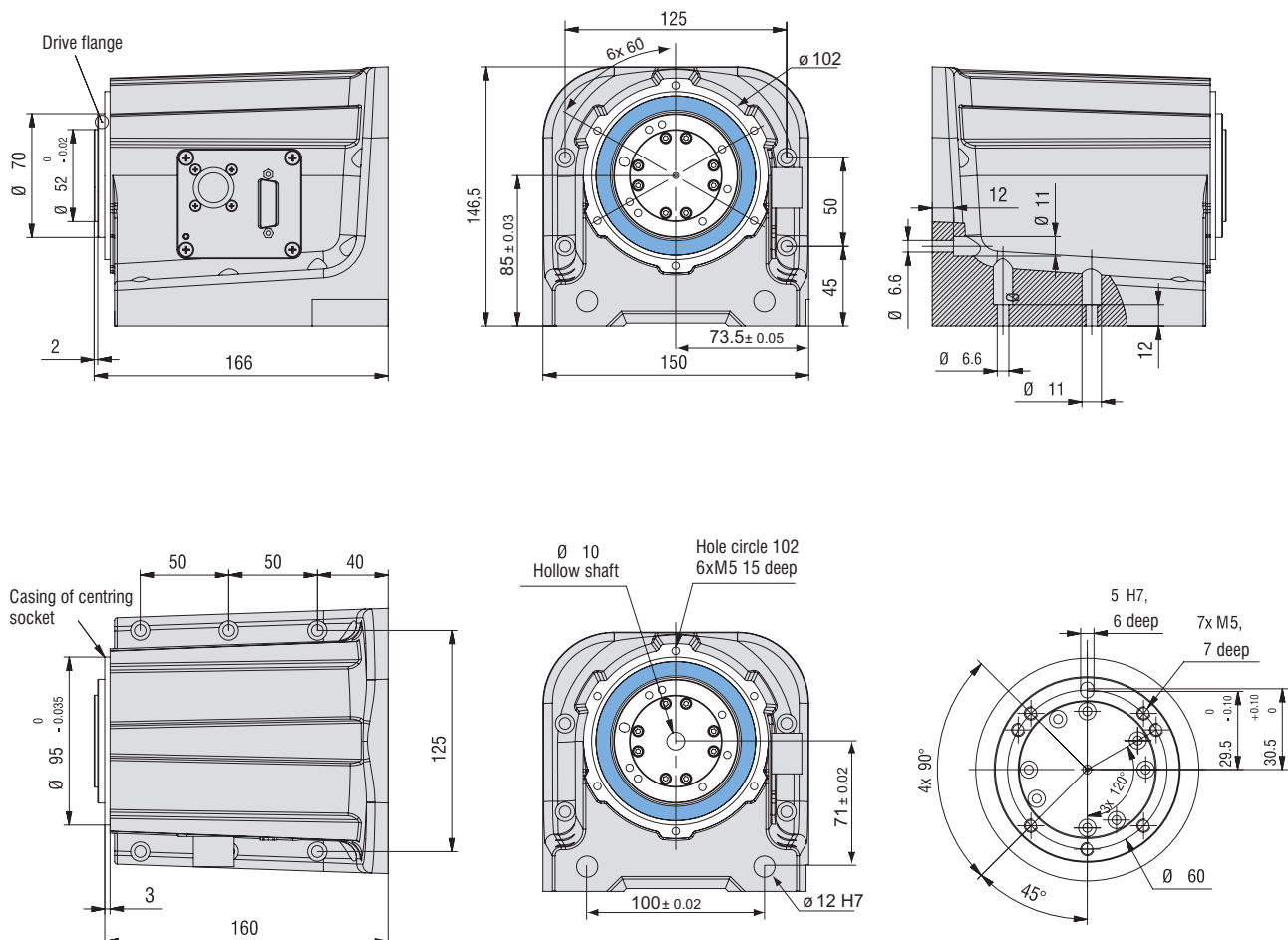
RDH-S

Technical Data

	Stepping Motor MS 045 HT *		EC Servo Motor MD 100 (brushless)		DC Servo Motor RE 40 (brush-type)	
Reduction ratio	1:51	1:101	1:51	1:101	1:51	1:101
Nominal drive revolution [1/min]	4	2	22	11	22	11
	at 1500 Hz (225 1/min)		at 1100 1/min		at 1100 1/min	
Max. drive revolution [1/min]	24	12	59	30	69	35
	at 8000 Hz				--	
Nominal torque [Nm]	7	11	7	11	4,6	9
	at 1500 Hz				--	
Max. torque (temporary) [Nm]	--	--	7	11	7	11
Nominal holding torque (static load) [Nm]	7	11	7	11	7	11
Max. load capacity of the gear [Nm]	18	28	18	28	18	28
	Limit for repeatable peak torque					
Dynamic load rate C [N]	5800					
Static load rate C ₀ [N]	8600					

* Values at half-step operation

Scale Drawings



Indexing Table/Rotary Axis

RDH-XS



RDH-XS as rotary axis

RDH-XS as indexing table



Features

- with precision gear
 - extremely loadable and stiff drive bearing
 - zero backlash and high torsion stiffness
- reduction 1:50 or 1:100
- Servo motor
- protection type IP 65
- rust-proof design
- transmission accuracy < 2,0 arcmin
- repeatability < $\pm 1,0$ arcmin
- maintenance-free
- Options:
 - stepping motor
 - other drive motors
 - own motor adaptation upon request

Order Key

2 6 6 0 0 X X X X X

Gear reduction

0 = 101
1 = 51

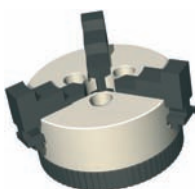
0 = Standard

Motors

0 = Stepping motor
1 = DC servo motor (brushless)
2 = DC servo motor (brush-type)

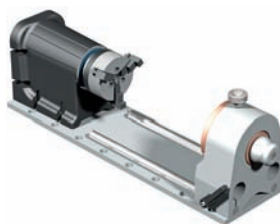
0 = Standard

Accessory



Clamping Chuck

3-jaw chuck $\varnothing$ 65
incl. adapter
Item no.: 269060 3065



Tailstock Unit RE XS

for RDH-XS
Item no.: 269100 0020 (200 mm)
Item no.: 269100 0030 (300 mm)
Item no.: 269100 0040 (400 mm)
Item no.: 269100 0050 (500 mm)

Image: RDH-XS
with Tailstock unit RE XS
and 3-jaw chuck

Indexing Table/Rotary Axis

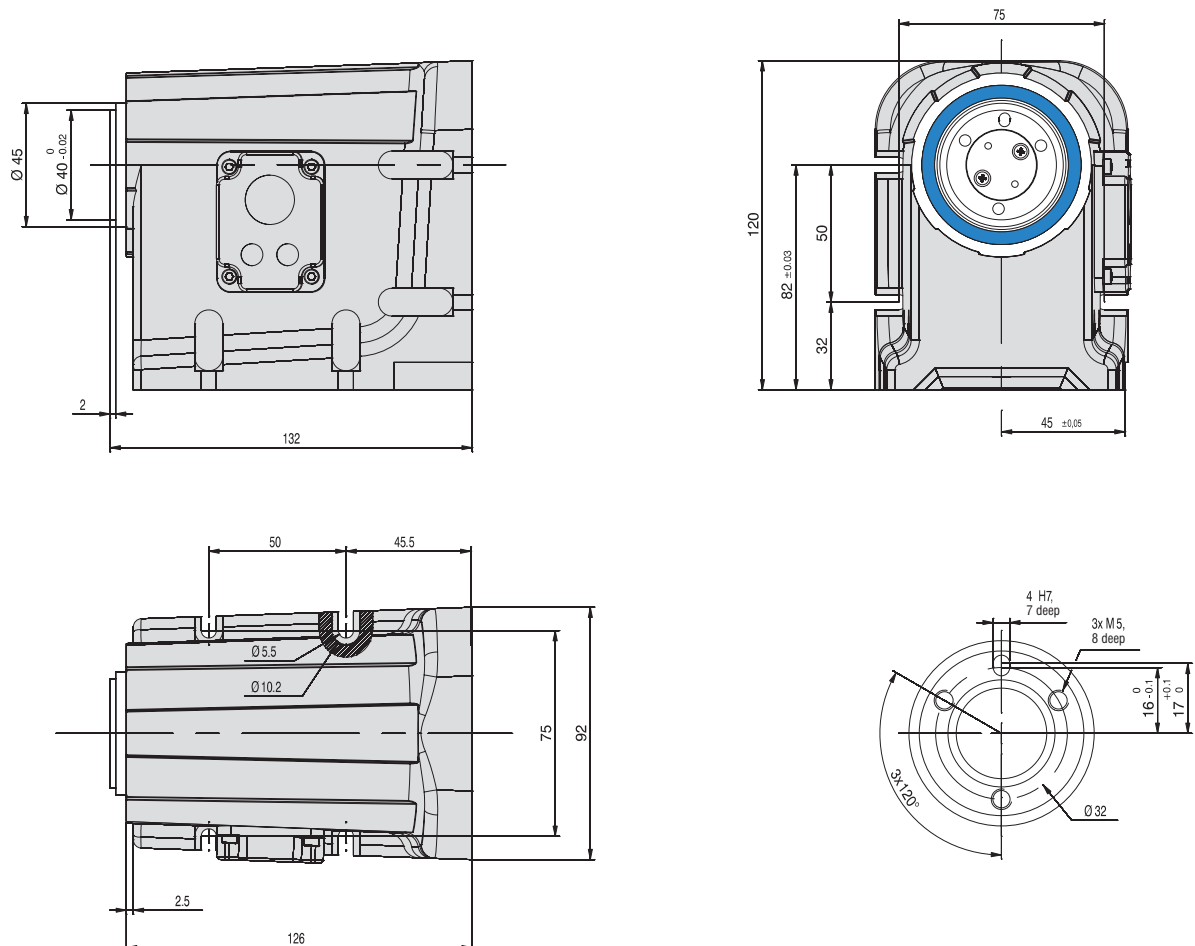
RDH-XS

Technical Data

	Stepping Motor MS 045 HT *		EC Servo Motor MD 100		DC Servo Motor RE 40	
Reduction ratio	1:50	1:100	1:50	1:100	1:50	1:100
Nominal drive revolution [1/min]	5	2	60	30	60	30
	at 1500 Hz (225 1/min)		at 1100 1/min		at 1100 1/min	
Max. drive revolution [1/min]	24	12	70	35	70	35
	at 8000 Hz (1200 1/min)					
Nominal torque [Nm]	5	7	5	7	5	7
	at 1500 Hz (225 1/min)					
Max. torque (temporary) [Nm]	--	--	5	7	5	7
Nominal holding torque (static load) [Nm]	5	7	5	7	5	7
Max. load capacity of the gear [Nm]	9	14	9	14	9	14
	Limit for repeatable peak torque					
Dynamic load rate C [N]	392					
Static load rate C ₀ [N]	392					

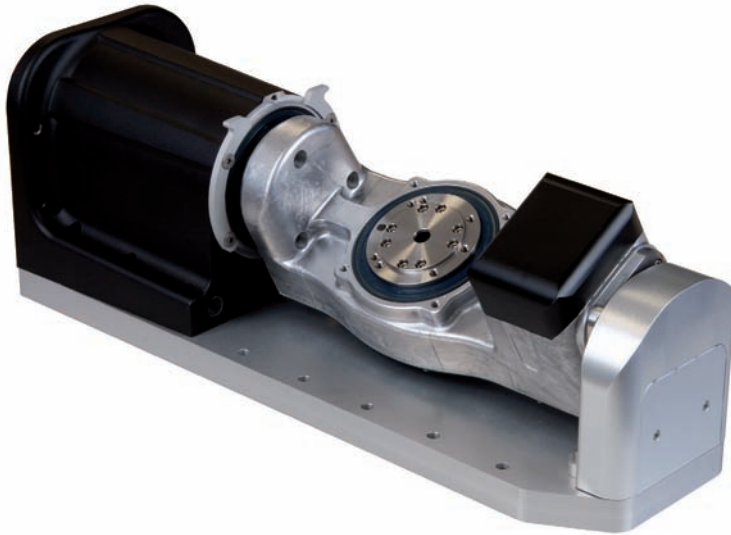
* Values at half-step operation

Scale Drawings



Rotary Swivelling Unit

DSH-S



Features

- with precision gear
 - extremely loadable and stiff drive bearing
 - zero backlash and high torsion stiffness
- with rotary axis RDH-S
- reduction 1:51 or 1:101
- Servo motor
- protection type IP 65
- rust-proof design
- transmission accuracy < 1.5 arcmin
- repeatability < ± 6 arcmin
- maintenance-free
- swivelling area stepless adjustable

Options:

- Stepping motor
- Hollow shaft design
(prepared with pneumatic and signal circuit)

Order Key

26541X X000

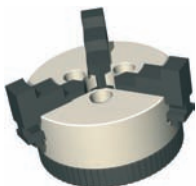
Motors

- 0 = Stepping motor
- 1 = DC servo (brushless)
- 2 = DC servo (brush-type)

Gear reduction

- 0 = 1 : 101
- 1 = 1 : 51

Accessories



Clamping Chuck

3-jaw chuck Ø 65

Item no.: 269 060 3065



T-groove plate

Ø 150

Item no.: 269 060 0150

Rotary Swivelling Unit

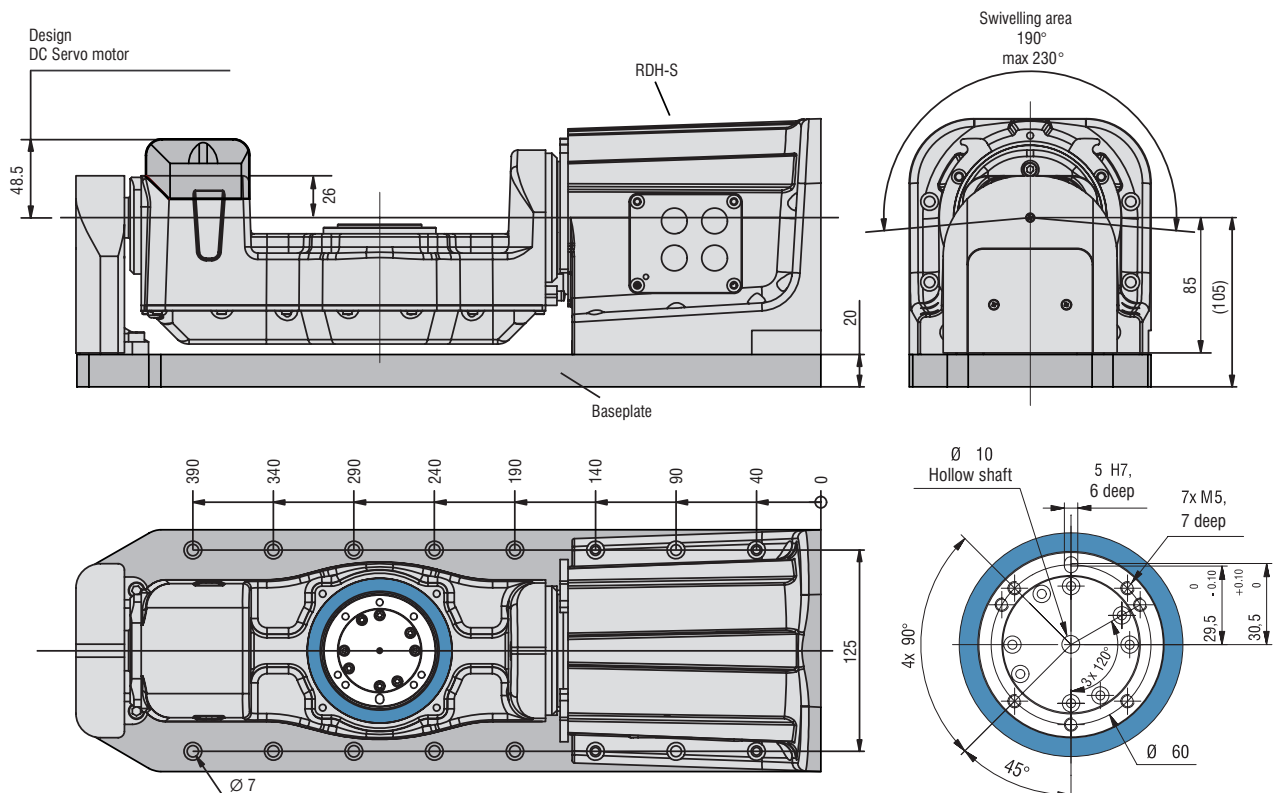
DSH-S

Technical Data

	Stepping Motor MS 045 HT *		DC Servo Motor MD 100		DC Servo Motor RE 40	
Reduction ratio	1:51	1:101	1:51	1:101	1:51	1:101
Nominal drive revolution [1/min]	4	2	22	11	22	11
	at 1500 Hz (225 1/min)		at 1100 1/min		at 1100 1/min	
Max. drive revolution [1/min]	24	12	59	30	69	35
	at 8000 Hz		--		--	
Nominal torque [Nm]	7	11	7	11	4.6	9
	at 1500 Hz		--		--	
Max. torque (temporary) [Nm]	--	--	7	11	7	11
Nominal holding torque (static load) [Nm]	7	7	7	11	7	11
Max. load capacity of the gear [Nm]	18	28	18	28	18	28
	Limit for repeatable peak torque					
Dynamic load rate C [N]	5800					
Static load rate C ₀ [N]	8600					

* Values at half-step operation

Scale Drawings



Indexing Table

RF 1



Features

- Clearance-free timing belt feed axis with stepping or DC servo motor
- reduction 1:24 (standard)
- weight: 14.6 kg

Options:

- reduction assembly kit 1:52 and/or 1:100
- electromagnetic brake [60 Nm]
- stepping motor drive with encoder
- CNC control via amphenol

Order Key

2 6 0 2 4 X X 0 0 0

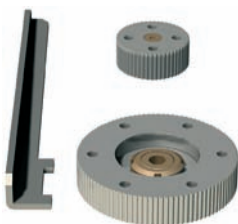
Motors

- 1 = Stepping motor
2 = DC servo motor

Brake

- 0 = Without brake
1 = Permanent magnetic

Accessory



Assembly Kit

For reduction 1:52

Item no.: 269077 0001

For reduction 1:100

Item no.: 269077 0002



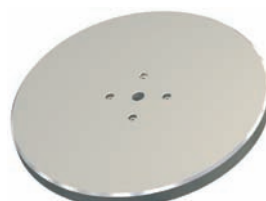
Aluminium T-Groove Plate

Ø240 mm / PT 25

Item no.: 269050 0240

Ø365 mm / PT 25

Item no.: 269050 0365



Aluminium Rotary Plate

Ø490 mm, customer-specific
Fixing holes are possible at extra charge

Item no.: 269051 0500



Chuck

3-jaw chuck Ø 125

Item no.: 269060 1125

Indexing Table

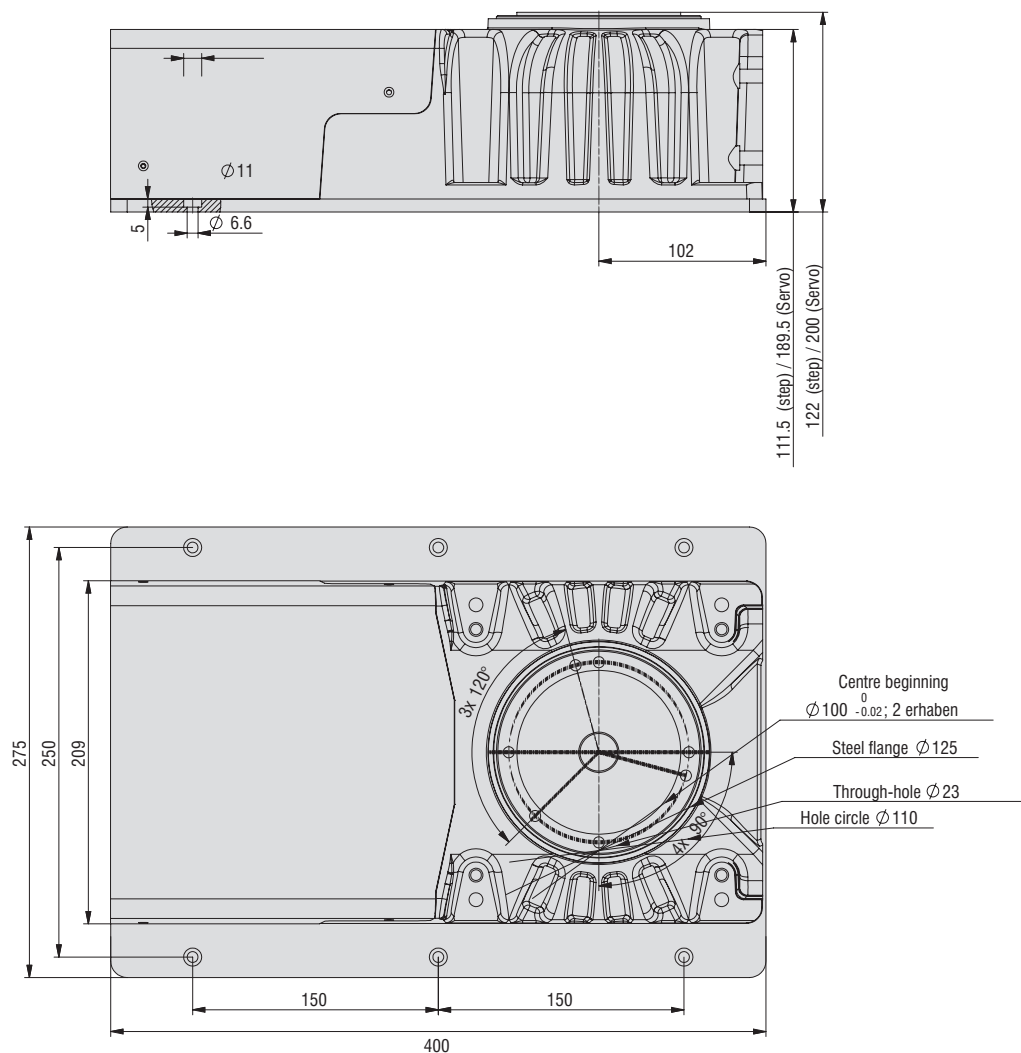
RF 1

Technical Data

	Stepping Motor MS 200 HT *			DC Servo Motor MV 120		
Reduction ratio	1:24	1:52	1:100	1:24	1:52	1:100
Drive revolution [1/min]	0 - 50	0 - 23	0 - 12	0 - 100	0 - 46	0 - 24
Operating moment (0 to 500 Hz) [Nm]	20	42	75	--		
Operating moment (500 to 1000 Hz) [Nm]	18	38	75	--		
Nominal torque [Nm]	--			8	17	32
Nominal holding torque (static load) [Nm]	37	75	75	10	23	44
Min. increment (positioning accuracy) [arcmin]	2.5	2	2	2	2	2

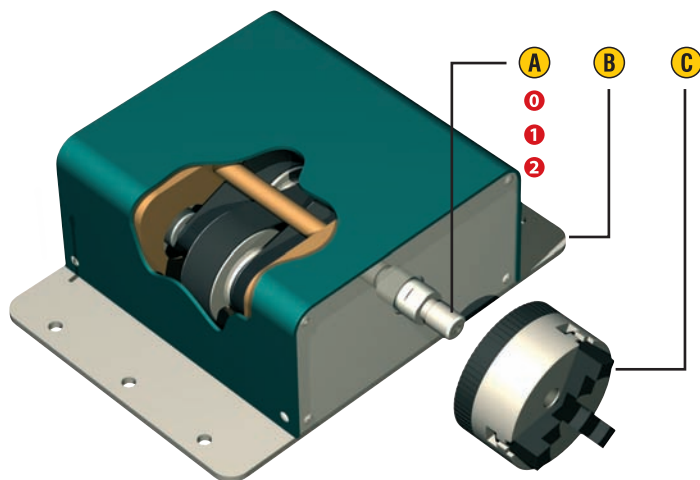
* Values at half-step operation

Scale Drawings



Rotary Axis

D 1



Features

- play-less timing belt drive with stepping, or DC servo motor
- reduction 1:16 and/or 1:50
- weight: 2.6 kg
- **3 different shaft designs**

Options:

- mounting plate
- tailstock unit
- stepping motor drive with encoder
- CNC control via Sub D

Order Key

2 6 3 X X X 0 0 0 1

Stub shaft

- 0 = Standard shaft
1 = shaft 2
2 = shaft 3

Motors

- 0 = Stepping motor
1 = DC servo motor

Gear reduction

- 2 = 50
3 = 16

A 3 Different Shafts!
See scale drawing

0 1 2

B Mounting Plate
(including fastening)
Item no.: 277023

C 3-Jaw Chuck Ø 65 (see accessory)

Accessory

- 0 = for standard shaft
1 = for shaft 2
2 = for shaft 3



Shaft Coupling

Shaft coupling WK 40/60 for a clearance-free power transmission/in order to compensate a small shaft offset

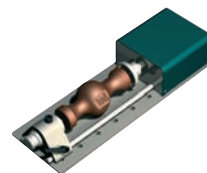
Item no.: 218003 9999



Adjusting Aid D 1

to exactly bring the rotary axis D 1 into line with machines

Item no.: 280110 9005



Tailstock Unit RE 1

Length 350 mm; further designs up to a length of 650 mm upon request

Item no.: 269071



Quick-Change Chuck

for tools Ø 1.5-13 mm

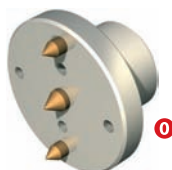
Item no.: 269073



Tangential Knife

to cut any contours (sharp angles) out of foils (up to 4 mm thick)

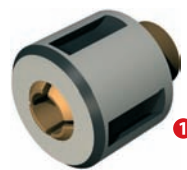
Item no.: 259010



Lathe Plate

Lathe plate Ø 60 mm to clamp wood and plastics

Item no.: 269075



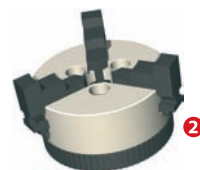
Clamping Nut

Clamping nut SK 11

Item no.: 239111

Matching collets for tools Ø 1-6.35 mm

Item no.: 239110 XXXX



Chuck

3-jaw chuck Ø 65

Item no.: 269060 1065

Rotary Axis

D 1

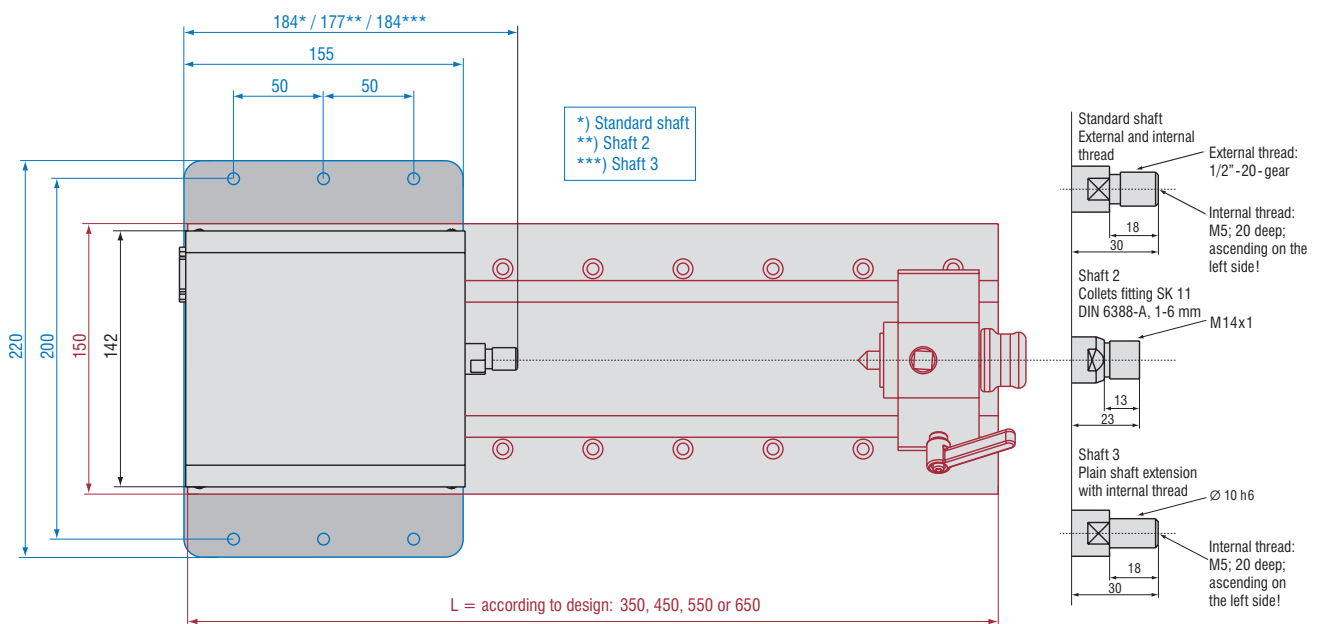
Technical Data

	Stepping Motor MS 045 HT *		DC-Servo Motor MV 030	
Reduction ratio	1:16**	1:50**	1:16**	1:50**
Drive revolution [1/min]	0 - 75	0 - 24	0 - 150	0 - 48
Operating moment (0 - 1600 Hz) [Nm]	6	16	--	--
Nominal torque [Nm]	--	--	1,5	4
Nominal holding torque (static load) [Nm]	12	38	1,8	6
Min. increment (positioning accuracy) [arcmin]	3,5	2	2	2

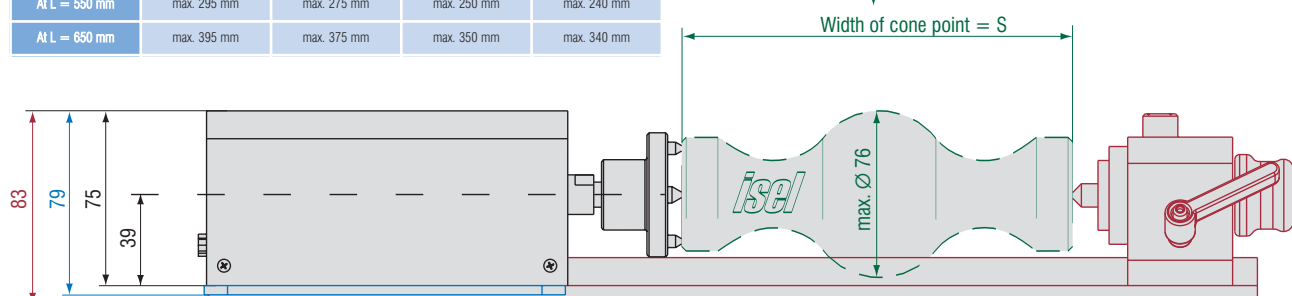
* Values at half-step operation

** exact data: $16 \frac{3}{7} \approx 16,429$
 $49 \frac{113}{315} \approx 49,359$

Scale Drawings

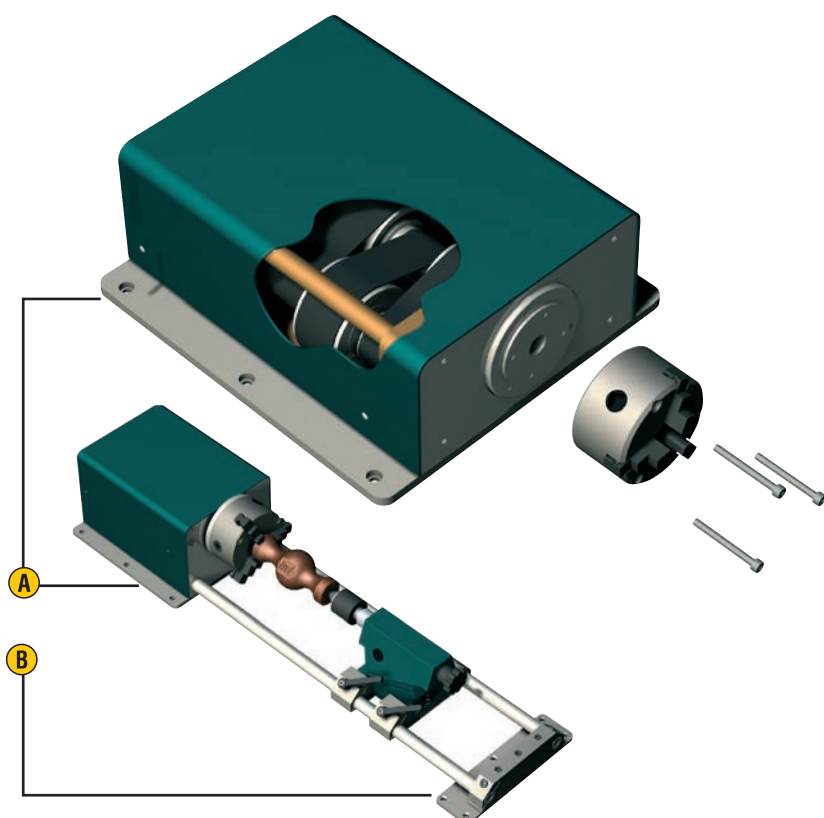


Width of cone point = S	with collets SK 11	with lathe plate	with quick-change chuck	with chuck Ø 65
At L = 350 mm	max. 95 mm	max. 75 mm	max. 50 mm	max. 40 mm
At L = 450 mm	max. 195 mm	max. 175 mm	max. 150 mm	max. 140 mm
At L = 550 mm	max. 295 mm	max. 275 mm	max. 250 mm	max. 240 mm
At L = 650 mm	max. 395 mm	max. 375 mm	max. 350 mm	max. 340 mm



Rotary Axis

D 2



Features

- play-less timing belt drive with stepping, DC or AC servo motor
- reduction 1:40
- steel flange Ø 86 mm, 56 ± 3 HRC
- weight: 10.6 kg

Options:

- mounting plate, set 1 or set 2
- tailstock unit
- permanent magnetic brake 24 V [10 Nm] (locked in zero-current state)
- electromagnetic brake 24 V [15 Nm] (locked at impressed voltage)
- stepping motor drive with encoder
- CNC control via amphenol

A Mounting Plate, Set 1
(including fastening)
Item no.: 277024

B Mounting Plate, Set 2
(including fastening)
Item no.: 277024 1000

Order Key

2 6 4 0 X 0 X 0 X 1

Motors

- 0 = Stepping motor
- 1 = DC servo motor
- 2 = AC servo motor

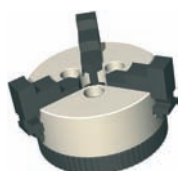
Brake

- 0 = Without brake
- 1 = Permanent magnet
- 2 = Electro magnet

Tailstock

- 0 = Without tailstock
- 1 = RE 2, L=1000 mm
- 2 = RE 2, L=1500 mm
- 3 = RE 2, L=2000 mm

Accessory



Chuck

3-jaw chuck Ø 80

Item no.: 269060 0080



Chuck

3-jaw chuck Ø 125

(only for D 2 + tailstock RE 2)

Item no.: 269060 1125

no Image

Adjusting Aid D 2

to exactly bring the rotary axis D 2 into line with machines
- setting of parallelism/workpiece zero points
(reproducible alignment by demountable fittings)

Item no.: 269076 0002

Rotary Axis

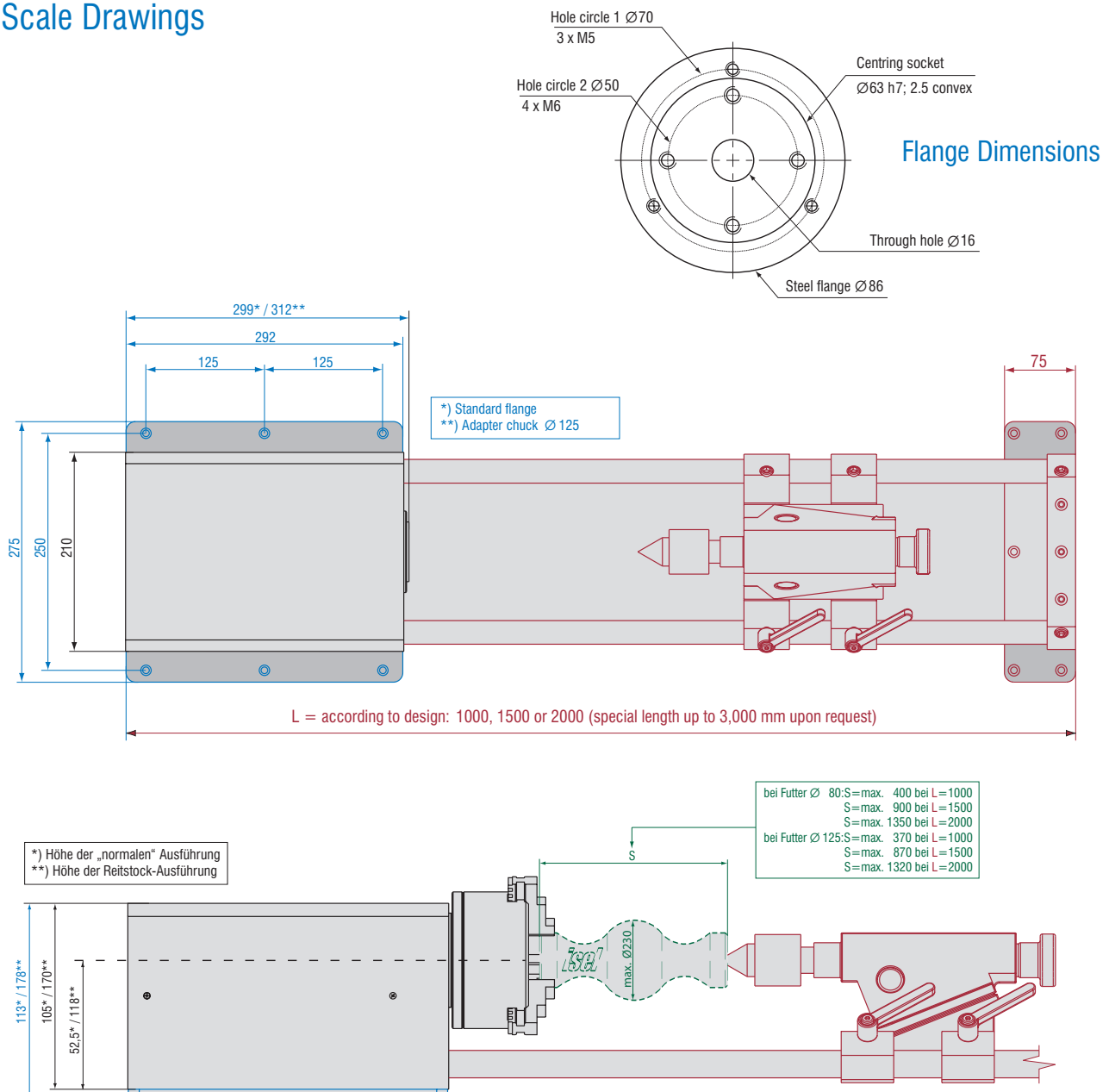
D 2

Technical Data

	Stepping Motor MS 200 HT *	DC Servo Motor MV 120
Reduction ratio	1:40	1:40
Drive revolution [1/min] [1/min]	0 - 30	0 - 60
Operating moment (0 to 500/500 to 1,000 Hz) [Nm]	35 / 30	--
Nominal torque [Nm]	--	12
Nominal holding torque (static load) [Nm]	55	18
Min. increment (positioning accuracy) [arcmin]	2	2

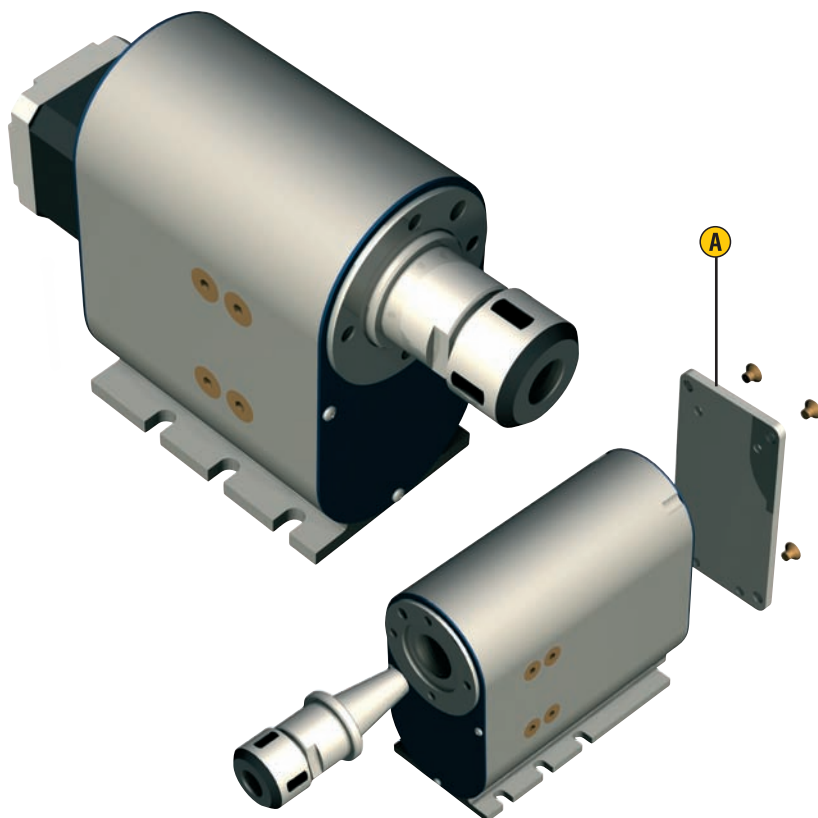
* Values at half-step operation

Scale Drawings



Midget Rotary Axis

MD 1



Features

- play-less timing belt drive with stepping, or DC servo motor
- reduction 1:20
- shaft with through hole Ø 9
- reception flange with internal cone SK 20
- weight: according to design from 1.35 kg upwards

Options:

- "closed" design
- additional mounting plate (vertical mounting possible)
- CNC control via Sub D

- A** **Mounting Plate**
(vertical mounting of the closed design)
Item no.: 277 026

Order Key

261010 0XX0

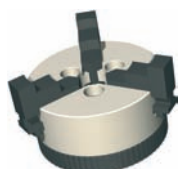
Motors

- 0 = Stepping motor
1 = DC servo motor
(only in closed design)

Design

- 0 = "open" design
1 = "closed" design

Accessory



Chuck

3-jaw chuck Ø 65
Item no.: 269060 2065



Collets Fitting

Collets SK 20
for tools Ø 3-10 mm,
with mounting ring
Item no.: 239122 0001

for tools Ø 3-12.7 mm,
with mounting ring
Item no.: 239122 9001

Midget Rotary Axis

MD 1

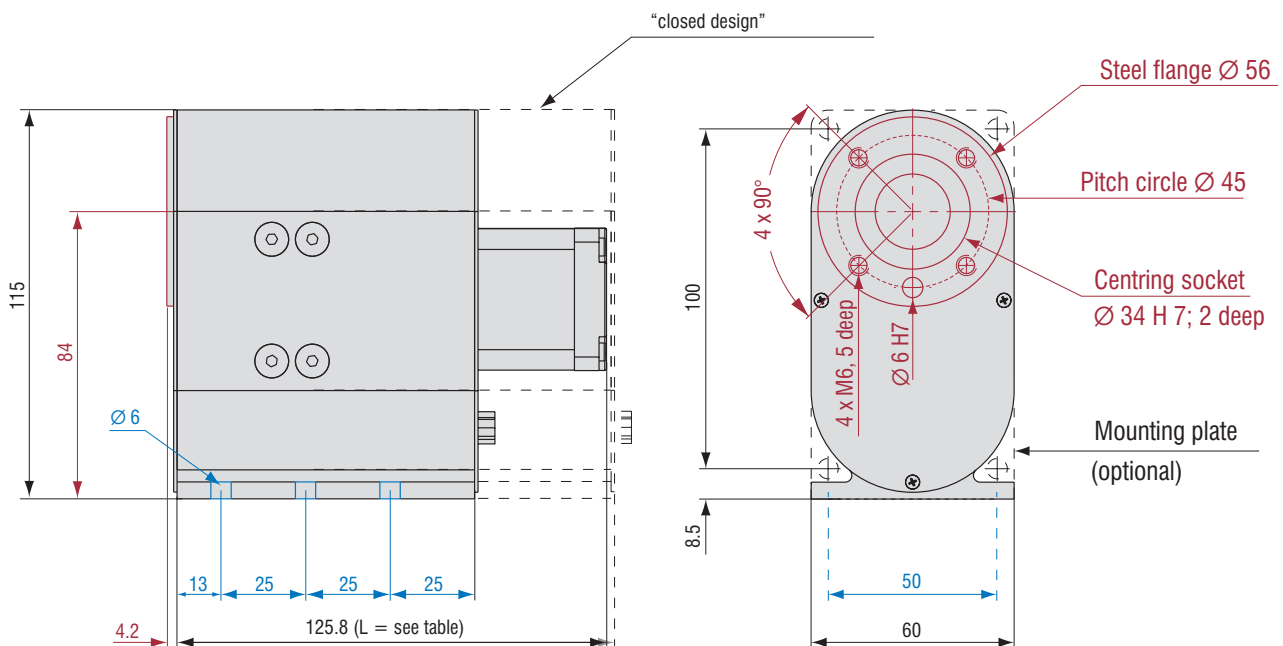
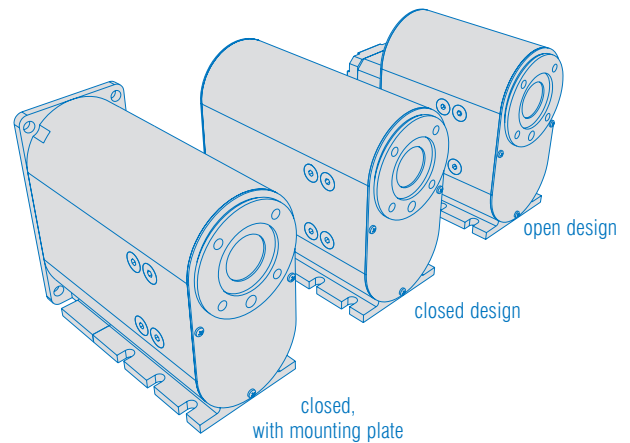
Technical Data

		Stepping Motor MS 045 HT *	DC Servo Motor MV 030
Reduction ratio		1:20	1:20
Drive revolution	[1/min]	0 - 60	0 - 120
Operating moment (0 - 1600 Hz)	[Nm]	8	--
Nominal torque	[Nm]	--	2
Nominal holding torque (static load)	[Nm]	14	3
Min. increment (positioning accuracy)	[arcmin]	3,5	2

* Values at half-step operation

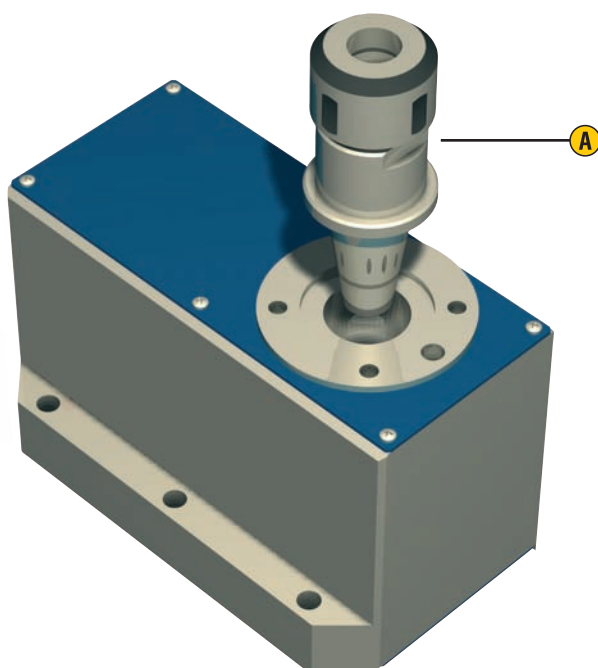
Scale Drawings

	Length L at Step	Length L at DC Servo
open design	125,8 mm	-
closed design	129 mm	180 mm
closed, with mounting plate	133 mm	184 mm



Indexing Table

ZR 20



Features

- play-less timing belt drive with stepping motor
- reduction 1:20
- shaft with through hole Ø 15
- reception flange with internal cone SK 20
- weight: 2,1 kg

Options:

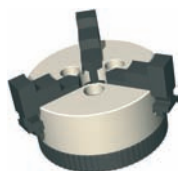
- CNC control via Sub D

A Collets Fitting SK 20
(Accessory)

Ordering Data

Indexing table ZR 20
Item no.: 260300 0000

Accessory



Chuck

3-jaw chuck Ø 65

Item no.: 269060 2065



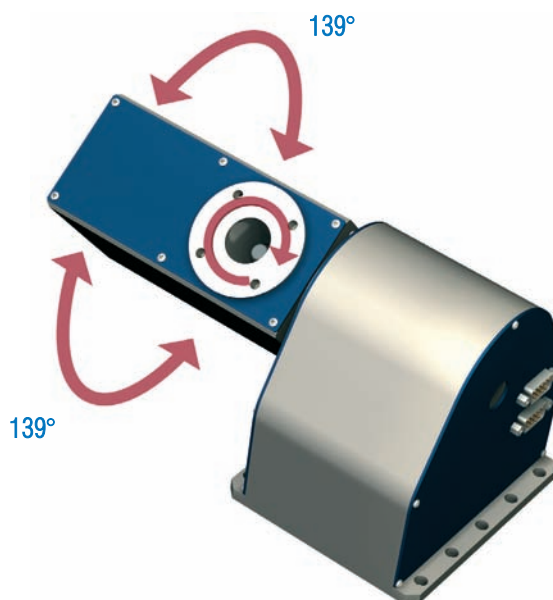
Collets Fitting

Collets fitting SK 20
for tools Ø 3-10 mm,
with mounting ring

Item no.: 239122 0001

for tools Ø 3-12.7 mm,
with mounting ring

Item no.: 239122 9001



The rotary/swivelling unit ZDS 2030 can be used as fourth/fifth axis in CNC machines in the fields of precision engineering or handling. It is a combination of ZD 30 and the modified version of ZR 20.

The ZDS 2030 enables a conventional 3-axis plant to treat five sides and/or free-form surfaces of easy to machine materials (e.g. plastics). The pivoting angle is 139° in both directions.

Rotary/swivelling unit ZDS 2030
Item no.: 265 000 0000

Indexing Table

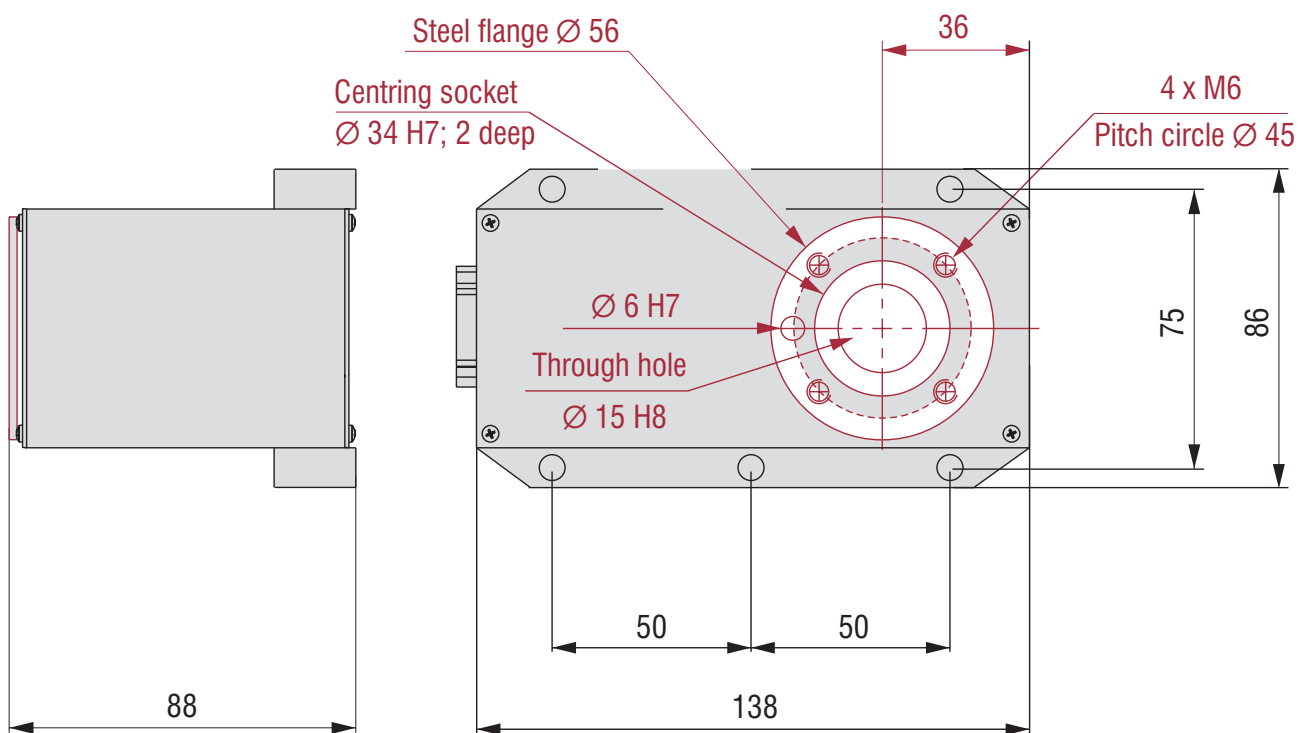
ZR 20

Technical Data

		Stepping Motor MS 045 HT *
Reduction ratio		1:20
Drive revolution	[1/min]	0 - 60
Operating moment (0 - 1600 Hz)	[Nm]	8
Nominal holding torque (static load)	[Nm]	14
Min. increment (positioning accuracy)	[arcmin]	3,5

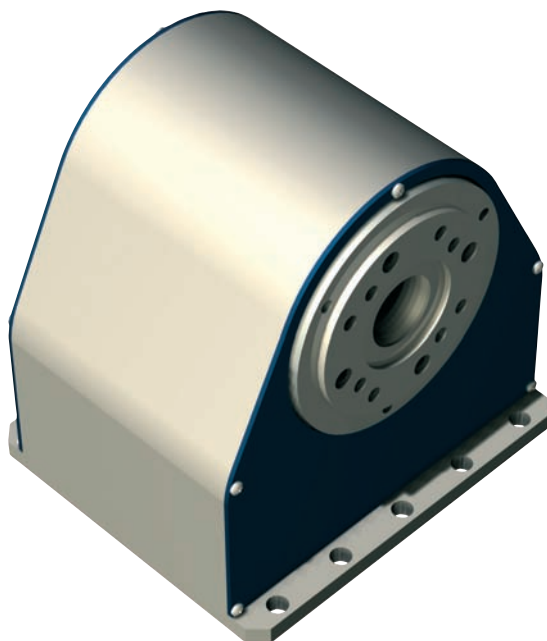
* Values at half-step operation

Scale Drawing



Rotary Axis

ZD 30



Features

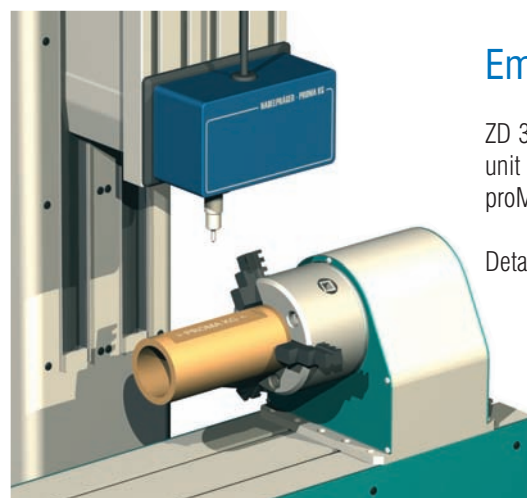
- play-less timing belt drive with stepping motor
- reduction 1:30
- shaft with through hole Ø 15
- reception flange with internal cone SK 20
- weight: 2,9 kg

Options:

- CNC control via Sub D

Ordering Data

Rotary axis ZD 30
Item no.: **261100 0000**

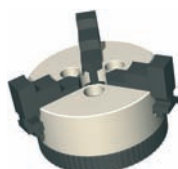


Embossing

ZD 30 combined with the pin marking unit from the company proMA Technologie GmbH.

Details upon request

Accessory



Chuck

3-jaw chuck Ø 65

Item no.: **269060 2065**



Chuck

3-jaw chuck Ø 80

Item no.: **269060 0080**



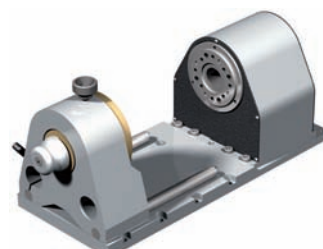
Collets Fitting

Collets fitting SK 20
for tools Ø 3-10 mm,
with mounting ring

Item no.: **239122 0001**

for tools Ø 3-12.7 mm,
with mounting ring

Item no.: **239122 9001**



Tailstock Unit RE-ZD 30

200 mm	Item no.: 269 100 1060	L 331
300 mm	Item no.: 269 100 1070	L 431
400 mm	Item no.: 269 100 1080	L 531
500 mm	Item no.: 269 100 1090	L 631

Rotary Axis

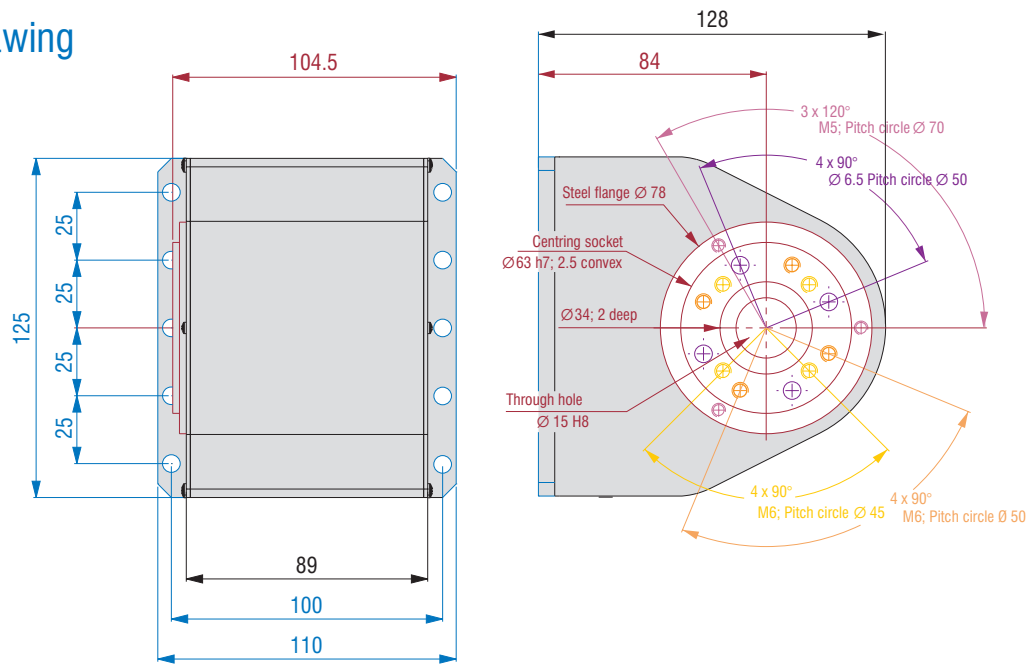
ZD 30

Technical Data

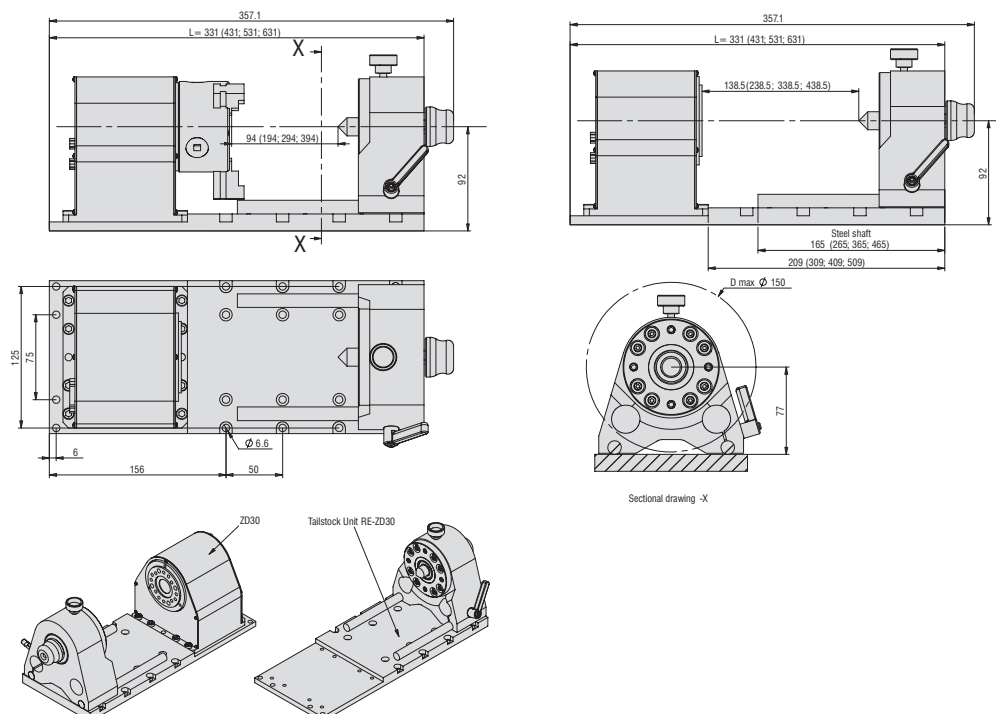
Stepping Motor MS 045 HT*	
Reduction ratio	1:30
Drive revolution [1/min]	0 - 40
Operating moment (0 - 1600 Hz) [Nm]	12
Nominal holding torque (static forces) [Nm]	20
Min. increment (positioning accuracy) [arcmin]	2.5

* Values at half-step operation

Scale Drawing

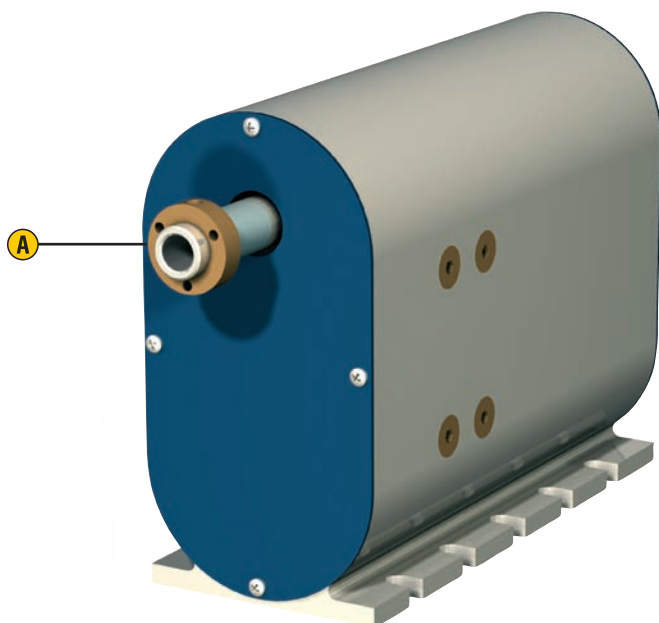


Tailstock Unit RE-ZD 30



Midget Lifting Unit

MH 1



Features

- play-less ball screw drive with stepping or DC servo motor
- spindle pitch: (pitch of 10 only with 90 mm stroke and stepping motor MS 050 HT)
- lift pivot with through hole $\varnothing 8$
- demountable reception flange
- weight: according to design from 1.9 kg upwards

Options:

- different stroke lengths, 30, 60 and 90 mm
- CNC control via Sub D

- A** Demountable Reception Flange
(see Scale Drawing)

Order Key

230012 X1XX

Motors

- 0 = stepping motor
1 = DC servo motor

Spindle Pitch

- 2 = 2,5 mm
5 = 5 mm

Stroke Length

- 0 = 30 mm
2 = 60 mm
4 = 90 mm

Midget Lifting Unit

MH 1

Technical Data

Stepping Motor MS 045 HT *

Spindle pitch [mm]	2,5	5	10 **
Pick & place cycle [s]	1,4	0,8	0,5
Feed force (0 - 1600 Hz) [N]	500	275	150
Positioning accuracy [mm]	0,05	0,07	0,15
Repeatability [mm]	0,025	0,05	0,1

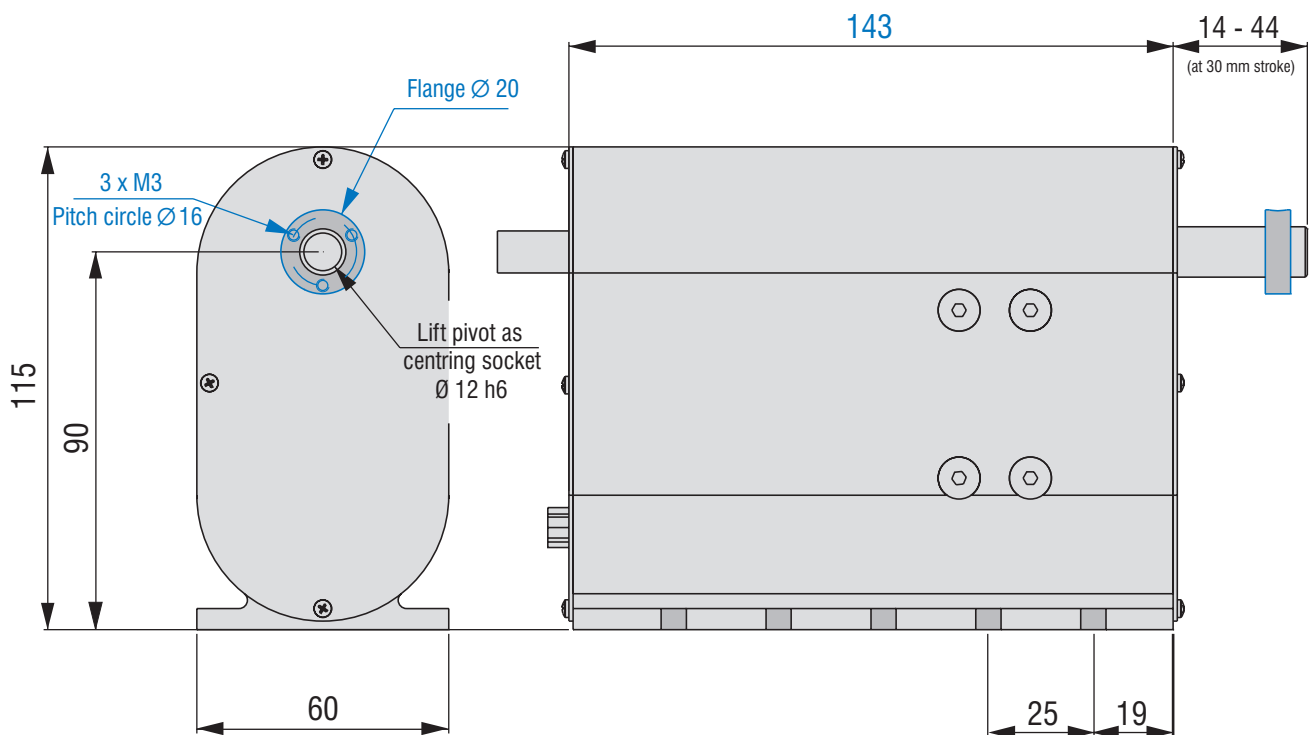
* Values at half-step operation

** Please, pay attention to the information provided under "order key".

Servo Motor MV 030

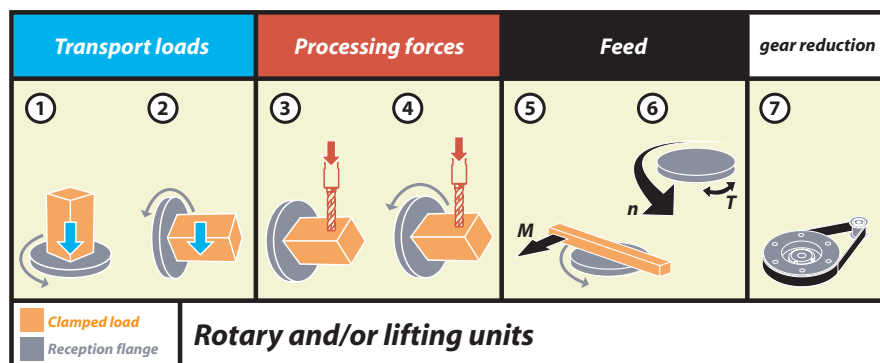
Spindle pitch [mm]	2,5	5
Pick & place cycle [s]	0,8	0,6
Feed force [N]	125	75
Positioning accuracy [mm]	0,04	0,06
Repeatability [mm]	0,02	0,03

Scale Drawing



Rotary and Lifting Units:

Transport Loads, Processing Forces, Feed

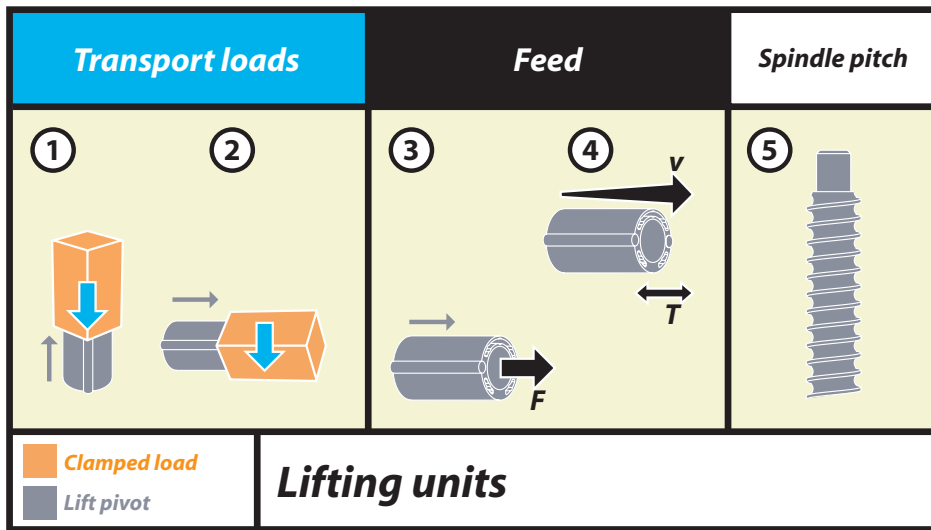


Rotary and/or lifting units	1*	2*	3	4	5	6	7
RDH-M (step)	100 kg	45 kg	55 Nm	24 Nm	24 Nm	4 rpm	1:51
RDH-M (step)	160 kg	70 kg	108 Nm	45 Nm	45 Nm	2 rpm	1:101
RDH-M (DC servo without brushes)	110 kg	50 kg	32 Nm	15 Nm	15 Nm	22 rpm	1:51
RDH-M (DC servo without brushes)	180 kg	80 kg	64 Nm	29 Nm	29 Nm	11 rpm	1:101
RDH-S (step)	30 kg	15 kg	6.9 Nm	6.9 Nm	6.9 Nm	4 rpm	1:51
RDH-S (step)	48 kg	24 kg	11 Nm	11 Nm	11 Nm	2 rpm	1:101
RDH-S (DC servo without brushes)	30 kg	15 kg	6.9 Nm	6.9 Nm	6.9 Nm	22 rpm	1:51
RDH-S (DC servo without brushes)	48 kg	24 kg	11 Nm	11 Nm	11 Nm	11 rpm	1:101
RDH-S (DC servo)	25 kg	13 kg	6.9 Nm	4.6 Nm	4.6 Nm	22 rpm	1:51
RDH-S (DC servo)	40 kg	20 kg	11 Nm	8.7 Nm	8.7 Nm	11 rpm	1:101
RDH-XS (step)	30 kg	10 kg	5 Nm	5 Nm	5 Nm	24 rpm	1:50
RDH-XS (step)	30 kg	10 kg	7 Nm	7 Nm	7 Nm	12 rpm	1:100
RDH-XS (DC servo without brushes)	30 kg	10 kg	5 Nm	5 Nm	5 Nm	70 rpm	1:50
RDH-XS (DC servo without brushes)	30 kg	10 kg	7 Nm	7 Nm	7 Nm	35 rpm	1:100
RDH-XS (DC servo)	30 kg	10 kg	5 Nm	5 Nm	5 Nm	70 rpm	1:50
RDH-XS (DC servo)	30 kg	10 kg	7 Nm	7 Nm	7 Nm	35 rpm	1:100
RF 1 (step)	60 kg	30 kg	37 Nm	17.5 Nm	17.5 Nm	50 rpm	1:24
RF 1 (step)	100 kg	50 kg	75 Nm	38 Nm	38 Nm	23 rpm	1:52
RF 1 (step)	150 kg	75 kg	75 Nm	75 Nm	75 Nm	12 rpm	1:100
RF 1 (DC servo)	70 kg	35 kg	10 Nm	7.5 Nm	7.5 Nm	100 rpm	1:24
RF 1 (DC servo)	110 kg	55 kg	23 Nm	17 Nm	17 Nm	46 rpm	1:52
RF 1 (DC servo)	160 kg	80 kg	44 Nm	32 Nm	32 Nm	24 rpm	1:100
D 1 (step)	8 kg	4 kg	12 Nm	6 Nm	6 Nm	75 rpm	1:16
D 1 (step)	10 kg	5 kg	38 Nm	16 Nm	16 Nm	24 rpm	1:50
D 1 (DC servo)	8 kg	4 kg	1.8 Nm	1.5 Nm	1.5 Nm	150 rpm	1:16
D 1 (DC servo)	10 kg	5 kg	6 Nm	4 Nm	4 Nm	48 rpm	1:50
D 2 (step)	40 kg	20 kg	55 Nm	30 Nm	30 Nm	30 rpm	1:40
D 2 (DC servo)	60 kg	30 kg	18 Nm	12 Nm	12 Nm	60 rpm	1:40
D 2 (DC servo)	80 kg	40 kg	40 Nm	25 Nm	25 Nm	150 rpm	1:40
MD 1 (step)	5 kg	2,5 kg	14 Nm	8 Nm	8 Nm	60 rpm	1:20
MD 1 (DC servo)	6 kg	3 kg	2 Nm	3 Nm	3 Nm	120 rpm	1:20
ZR 20 (step)	10 kg	5 kg	14 Nm	8 Nm	8 Nm	60 rpm	1:20
ZD 30 (step)	14 kg	8 kg	20 Nm	12 Nm	12 Nm	40 rpm	1:30

*)Guide values that vary according to application!! **) Pick & place cycle

Lifting Units:

Transport Loads and Feed



Lifting units	1*	2*	3	4	5
MH 1 (step)	7 kg	2 kg	500 N	1.4 s**	2.5 mm
MH 1 (step)	3.5 kg	2 kg	300 N	0.8 s**	5 mm
MH 1 (step)	2 kg	2 kg	150 N	0.5 s**	10 mm
MH 1 (servo)	8 kg	2 kg	125 N	0.8 s**	2.5 mm
MH 1 (servo)	4 kg	2 kg	75 N	0.6 s**	5 mm

*) Guide values that vary according to application !! **) Pick & place cycle

Notes and Sketches

Permissible Moment of Inertia J_z

Calculation

It is important to calculate the permissible moment of inertia J_z in order to ensure the desired values also at "external load" (rotary table and accessory) - e.g. the stepping motor should not lose steps.

In this connection, it is important the calculated moment of inertia of the "external load" [J_e] does not exceed the permissible moment of inertia.

T-Groove Plate ø 240: 43.9 kgcm²

T-Groove Plate ø 365: 262.9 kgcm²

Aluminium Rotary Plate ø 490: 662.9 kgcm²

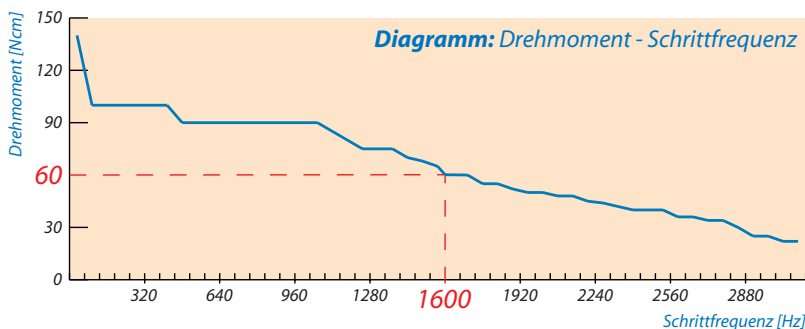
Moments of Inertia of the Plates

The Calculation Example refers to the Indexing Table RF 1 with Stepping Motor!

J_z [kgcm ²]	Max. permissible moment of inertia
J_e [kgcm ²]	Moment of inertia of the "external load"
t_b [s]	Acceleration and/or braking time
f [Hz]	Operating frequency
M [Ncm]	Torque
i	reduction factor
G_f	Specific gear factor: for RF 1 = 0.5

$$J_z \approx G_f \cdot M \cdot \frac{t_b}{f} \cdot 6366 \cdot i$$

Only for 2-phase stepping motors



Now, we calculate the permissible moment of inertia at a stepping frequency of 1,600 Hz. We learn the torque (60 Ncm) from the line graph (see above) and set the acceleration time [t_b] for 0.5 seconds.

The reduction ratio is 1: 24, and thus the reduction factor [i] is 24.

Please keep in mind that the rotary plate is an "external load" and that its moment of inertia must be included in the calculation!

$$J_z \approx 0,5 \cdot 60 \cdot \frac{0,5}{1600} \cdot 6366 \cdot 24$$

$$J_z \approx 1432 \text{ kgcm}^2$$