My sketches

drylin® accessories – Control elements

Accessories for manual positioning and format adjustment

Stepper and DC motors for electrical drive

Couplings and motor flanges

Cables and proximity switches

Assembly and fastening options

Secure, reproduce and turn

Accessories for drylin® drive technology – manual positioning

An extensive range of accessories is available for many drylin® drive units to perform manual adjustments quickly and conveniently. When directly configuring the linear unit with the order, the units are shipped completely assembled. Any subsequent reconfiguration may result in the lead screw having to be exchanged because the lead screw ends may be too short.

- Fast and precise positioning
- Ergonomic operation
- Provides a mechanical brake

Available from stock
Detailed information about delivery time online.

Price breaks online
No minimum order value. No minimum order quantity.

Manual operation, manual positioning

Angular drive
- 360° continuously adjustable
- Fixing of setting angle with clamp
- Small flange saves installation space

▶ Page 1506

Position indicator
- Direct read-out of the carriage position for the lead screw drive
- Bore reducers included to enable fitting to the entire product

▶ Page 1508

Lead screw clamp
- For clamping of the lead screw
- Provides a mechanical brake to the lead screw
- Material: Plastic housing with aluminium shaft clamp

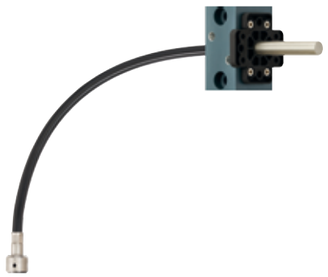
▶ Page 1510

Adapter plate
- Position indicator and/or lead screw clamp
- Suitable for linear modules of SHT/SLW/SHTP series
- Material: plastic igumid G

▶ Page 1540

Hand wheels
- Rotary knob: Defined standard for complete units
- Different outer diameters available
- Different handles available

▶ Page 1511



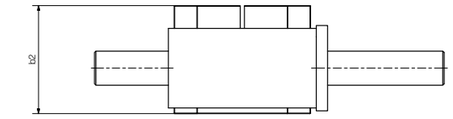
Flexshaft incl. remote control unit
- Optional offset operation of the drylin® linear modules
- Controls can be positioned independently
- Available in length 300, 500 and 1,000mm
- Can be combined with other accessories

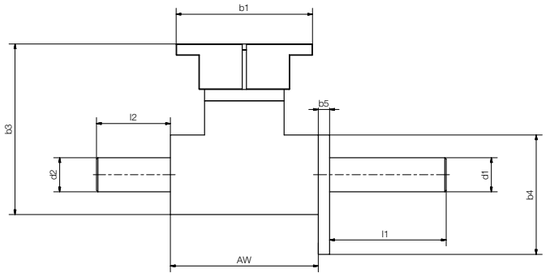
▶ Page 1513

drylin® drive technology | Accessories | Product range

Angular drives – flexible and adjustable

In addition to safety technology aspects, limited operating space requires drylin® drives to be operated with flexibility and ease. We provide a product range of continuously adjustable angular drives for adjustment options from a defined direction. For manual adjustments, the angular drives can also be configured with position indicator, clamp and hand wheel, and are shipped pre-assembled. Angular drives with keyed/grooved shafts are available for motor interfaces with increased torque transfers.





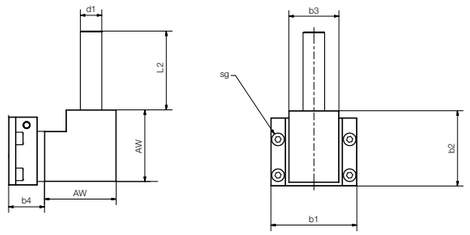
- Double-side shaft output for angular drives WT-3 and WT-4
- For rotary transmissions of 90°
- Configuration with lead screw clamping/position indicator/hand wheel possible
- Position indicator, lead screw clamp and hand wheel available ▶ **Page 1508**

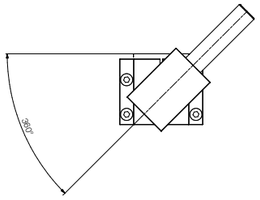
Dimensions [mm]

Part No.	M max. [N]	l[105)]	AW	d1	d2	l1	l2	b1	b2	b3	b4	b5
WT-3000-T	3	01:01	52	12	12	26 / 41 / 59 / 74	26	48	38	60	42	4
WT-4000-T	6	01:01	60	14	14	26 / 47 / 65 / 80	26	56	46	83	50	10

[105)] Gear ratio

- Flexible adjusting to your installation with continuously variable adjustment (can be oscillated 360°)
- Max. drive torque 3Nm
- Clamping using set screw
- Ø 12mm h7 output shaft





Depending on the design, an adapter plate is used for connection to the linear system

Dimensions [mm]

Part No.	l[105)]	AW	b1	b2	b3	b4	L2	d1	sg
WT-3000 | 3100 | 3500	1:1	40	48	42	28	20	26	12	M4
WT-3600 | 3700	1:1	40	48	42	28	30	26	12	M4

[105)] Gear ratio

drylin® drive technology | Accessories | Product range

Angular drives for heavy duty and hygienic design

drylin® angular drives provide for a maximum of positioning flexibility. The form fitting connection can give a maximum torque of up to 6Nm.

- Flexible adjusting to your installation with continuously variable adjustment (can be oscillated 360°)
- Max. drive torque 6Nm through coupling
- Fixed using feather key groove
- Input shaft Ø 14mm h7 with size
- Compatible with drylin® SHT/SHTC/SLW (sizes 16, 20 and 30)
- Position indicator, lead screw clamp and hand wheel available ▶ **Page 1508**

Dimensions [mm]

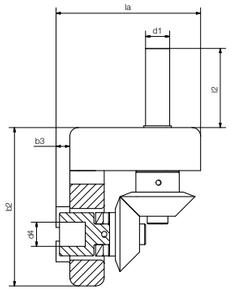
Part No.	l[105)]	AW	b1	b2	b3	b4	L2	d1	sg
WT-4000 | 4100 | 4200 | 4700	1:1	60	52	51	40	23	26	14	M4
WT-4600	1:1	60	52	51	40	33	26	14	M4

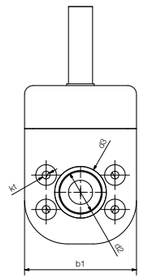
[105)] Gear ratio

Angular drive with hand wheel (optional)

Following the idea of "Hygienic Design" the angular drive is available as maintenance-free and washable stainless steel/polymer system.

- Max. drive torque 3Nm
- Single parts made of stainless steel
- Easy to clean/rinse with water
- Compatible with drylin® SHTC-20-EWM-HYD ▶ **Page 1379**
- Position indicator, lead screw clamp and hand wheel available ▶ **Page 1508**





Dimensions [mm]

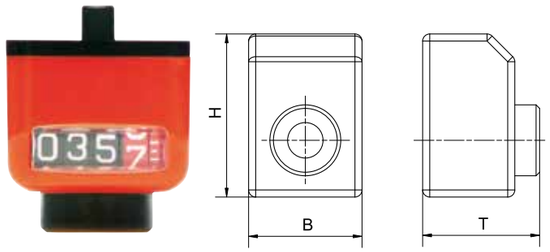
Part No.	l[105)]	la	kt	b1	b2	b3	d4	l2	d1	d2	d3	sg
WT-1100	1:1	84	4.5	65	92	8	12	26	14	25	30	M4

[105)] Gear ratio

drylin® drive technology | Accessories | Product range

Position indicator – safe reproducibility

To keep downtime to a minimum and make adjustments quickly and precisely, the indicator is used to create repeatable values. These can be shipped from stock for almost any linear unit in the matching pitch, in the required counting and viewing direction and in a variety of colours.



- Plastic analogue indicator for adjustment and direct reading of carriage position
- 3- (P1), 4- (P3) or 5- (P6) digit counter (red digit indicates tenths)
- Can be combined with manual clamps and hand wheels
- Reduction sleeves included
- Suitable adapter plate available ▶ **Page 1540**

Installation options

0 degrees | **90 degrees** | **180 degrees** | **270 degrees**

Display orientation

A
Standard

B (optional)
for vertical fitting position: display turned 180°

Technical data [mm]

Position indicator	Digits	Decimal places	ID hollow shaft ø	Reduction sleeves ø
SHT-P1	3	1	8	6 + 6.35
SHT-P3	4	1	14	10 + 12.00
SHT-P6	5	1	20	14 + 16.00

Dimensions [mm]

Position indicator	H	B	T
SHT-P1	33	22	26.0
SHT-P3	46	32	33.0
SHT-P6	66	48	50.5

Order key

Order example

SHT-P3-A-1.50-1-DX-O-F-ES

Standard	Installation size	Display orientation	Pitch	Decimal places	Direction of rotation	Housing colour	Material	Material

Options:

Display orientation
A = Display orientation 0°
B = Display orientation 180° (optional)

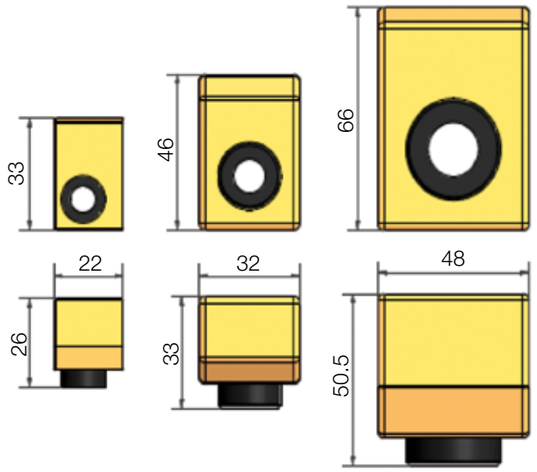
Pitch
< 10.00 = One decimal place
> 10.00 = No decimal place

Decimal places
1 = One decimal place (red digit)
0 = No decimal place (red digit)

Direction of rotation
DX = Clockwise
SX = Anti clockwise

Housing colour
O = Orange

Material
ES = Hollow stainless steel shaft (optional)



P1
SLW-0630
SHTP-01-06

P3
all other linear systems

P6
SHTC-40
SHTC-50

drylin® drive technology accessories

drylin® drive technology | Accessories | Product range

Digital position indicator for even more exact settings

The electronic position indicator (battery operated) for drylin® linear modules can be programmed by the factory for the individual thread pitch. Ideal for use with dryspin® high helix lead screws. LCD display with 5 digits and special characters, long battery life and easy battery change without removal of the device.

- Electronic digital display
- 5-digit LCD display
- Features such as incremental adjustment, offset and reset, operated via keys on the position indicator
- Battery life 8 years
- Battery change without any tools
- Increase counting in either direction, clockwise or anti-clockwise
- Display orientation standard or through 180°

Note: reduction sleeves included in delivery

Order key

Order example

SHT-P3-E02-2.00-1-DX-O-S

Standard	Installation size	Display orientation	Pitch	Decimal places	Direction of rotation	Housing colour	Material

Options:

Display orientation
E02 = Standard: Display orientation 0°
E04 = Display orientation rotated by 180°

Technical data

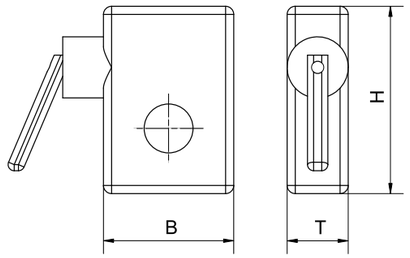
Part No.	Speed [rpm]	Weight [g]	Temperature [°C]	Protection class
SHT-P3-E02-2.00-1-DX-O-S	600	60	–10 ... +60	IP51

drylin® drive technology | Accessories | Product range

Lead screw clamp

Linear modules with trapezoidal threads are equipped with a self-locking mechanism. Many applications call for an additional clamping option as an additional safeguard against unintentional movement.

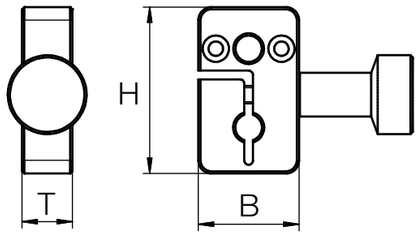
- Shaft clamping flange for attachment to the position indicator and subsequent mounting on the lead screw
- Provides a mechanical brake to the lead screw
- Material: plastic housing with aluminium shaft clamp
- Reduction sleeves for further diameters available



Assembly and positioning with adapter plate
▶ Page 1540

Dimensions [mm]

Part No.	SHT-HK-12	SHT-HK-16	SHT-HK-20	SHT-HK-30
Lead screw size	10	14	12	14
Dimensions (B x H x T)	32 x 46 x 15	32 x 46 x 15	32 x 46 x 15	32 x 46 x 15



Dimensions [mm]

Part No.	SHT-HK-06	SHT-HK-06,35	SHT-HK-08
Lead screw size	6	6.35	8
Dimensions (B x H x T)	23 x 38 x 11.5	23 x 38 x 11.5	23 x 38 x 11.5

drylin® drive technology accessories

drylin® drive technology | Accessories | Product range

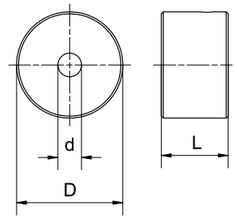
Hand wheels for drylin® linear modules

We have an extensive selection of hand wheels available to ship from stock for the most varied requirements. These range from small compact sizes up to Ø 125 with/without handle, and in various configurations.

Standard

With handle (optional)

- Rotary knob: Defined standard for complete units
- Different outer diameters available
- Different handles available



Order key

Order example

SHT-HR- 8 -27-17-OG

Standard	Hand wheel	Inner diameter	Outer diameter	Length	Handle (optional)

Options:

Handle (optional)

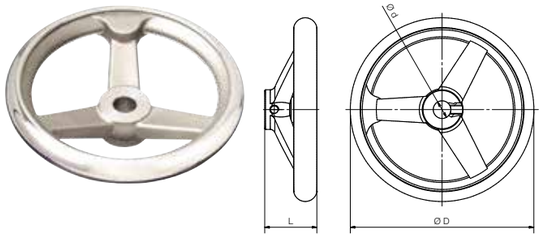
OG = Without handle
FG = Fixed handle
UG = Folding handle
SG = Security handle

Dimensions [mm]

d	D	L	OG	FG	UG	SG[104)]
4	22	15	●	–	–	–
5	22	15	●	–	–	–
8	27	17	●	–	–	–
10	27	17	●	–	–	–
12	42	23	●	–	–	–
14	42	23	●	–	–	–
6	50	52	–	●	–	–
8	80	75	–	●	●	●

d	D	L	OG	FG	UG	SG[104)]
10	80	75	–	●	●	●
12	80	75	–	●	●	●
12	125	109	–	●	●	●
14	125	109	–	●	●	●
16	125	109	–	●	●	●
20	198	141	–	●	–	–

[104)] The automatic panning will return on release



Stainless steel hand wheel

- Designed for application in food and pharmaceutical industries
- Corrosion-free stainless steel

Dimensions [mm]

Part No.	d	D	L	OG	Weight [g]
SHT-HR-12-125-36-OG-ES	12	125	36	●	625

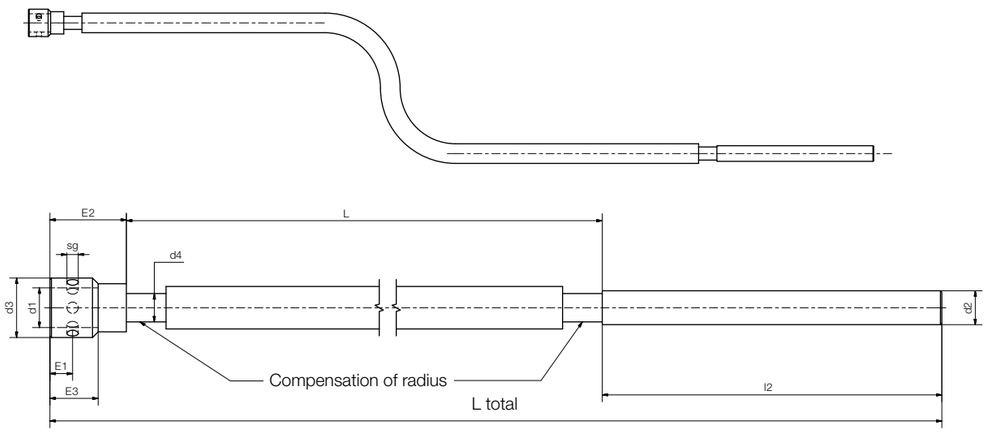
drylin® drive technology | Accessories | Product range

Flexshaft – separately located control of linear modules

The ideal complement to drylin® linear modules. The flexshaft enables the positioning of the hand wheel independent of the installation position of the linear unit. Distance up to 500mm and offset by 85°.

- Lengths: 300mm, 500mm und 1,000mm (flexible area)
- Flexible shaft: Burnished steel
- Plastic coated: Rilsan
- Connection piece: Stainless steel AISI 303
- For all journal diameters (10, 12 and 14mm)
- Flexible installation
- Space-saving
- Can be combined with a lead screw support block ▶ **Page 1342**
- Position indicator, lead screw clamp and hand wheel available ▶ **Page 1508**

Example of the function of an offset operating unit



Dimensions [mm]

Part No.	d1	d2	d3	d4	l2	sg	E1	E2	E3	L	L Total	L max.	T max. [Nm]	Min. bend radius
FS-06-500-Z12X120-AA	14h7	12h7	21	6	120	M4	8.5	36.5	14.5	500	657	1,000	3	70
FS-08-1000-Z12X120-AA	14h7	12h7	21	8	120	M4	8.5	36.5	14.5	1,000	1,157	1,000	4.5	90

More dimensions upon request

drylin® | Linear axes with motor | SHT-ROU

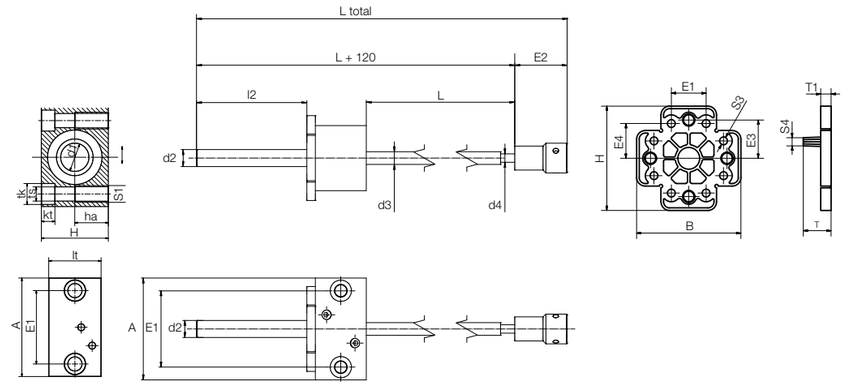
With the drylin® Remote Operation Unit ROU, linear modules can be controlled remotely

With the Remote Operation Unit, hazards such as chemicals or heat can be avoided. Thanks to the flexshaft, they can also be easily manipulated.

- Use e.g. of chemicals, heat, places that are hazardous for people working in them
- Enables manual remote control of linear modules
- Ergonomic operation via flexshaft
- Safe control of linear modules outside the work area
- Available with flexshaft with Ø 6 and 8mm in different lengths
- Thanks to the adapter plate, position indicators as well as lead screw clamps can be fitted in 4 operating directions (0°, 90°,180°, 270°)
- Reduction sleeves for quick and simple connection to lead screw size Ø 8/10/12 available AK-0047 (Ø 14 -> 8mm); AK-0048 (Ø 14 -> 10mm), AK-0049 (Ø 14 -> 12mm)

Typical application areas:

- Format adjustment
- Cabin construction
- Hazard areas

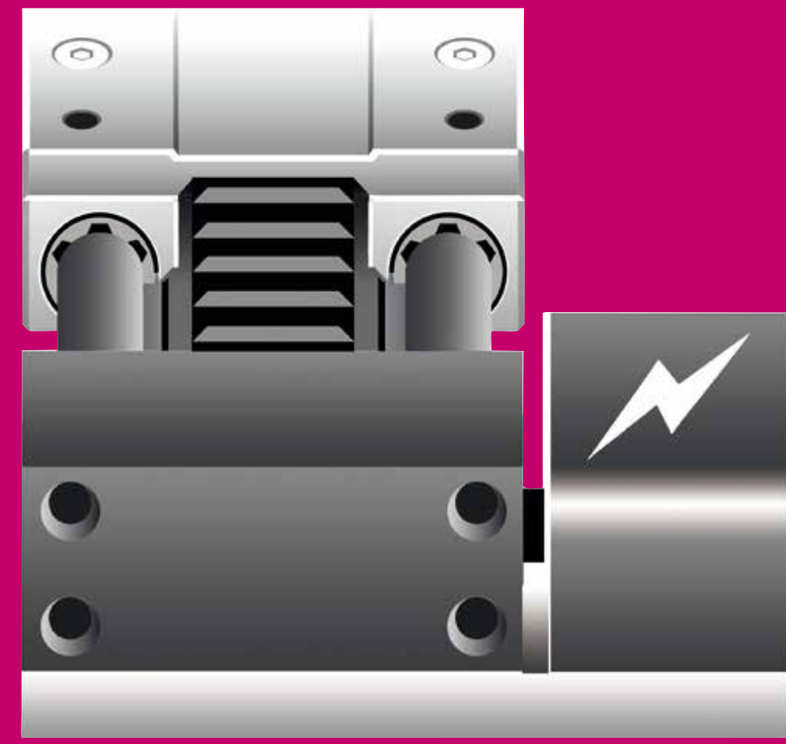


Dimensions [mm]

Part No.	L	L Total	l2	d2	d3	d4	E1	E2	E3	E4	S3	H
SHT-ROU-06-300	300	457	78	12	9	6	20	37	22	20	4.5	60
SHT-ROU-06-500	500	657	78	12	9	6	20	37	22	20	4.5	60
SHT-ROU-08-500	500	657	78	12	11	8	20	37	22	20	4.5	60
SHT-ROU-08-1000	1,000	1157	78	12	11	8	20	37	22	20	4.5	60

Part No.	B	T1	A	E5	lt	tk	ts	kt	ha	S1	d1
SHT-ROU-06-300	60	6	72	54	36	15	9	8.6	23	M10	14H7
SHT-ROU-06-500	60	6	72	54	36	15	9	8.6	23	M11	14H7
SHT-ROU-08-500	60	6	72	54	36	15	9	8.6	23	M12	14H7
SHT-ROU-08-1000	60	6	72	54	36	15	9	8.6	23	M13	14H7

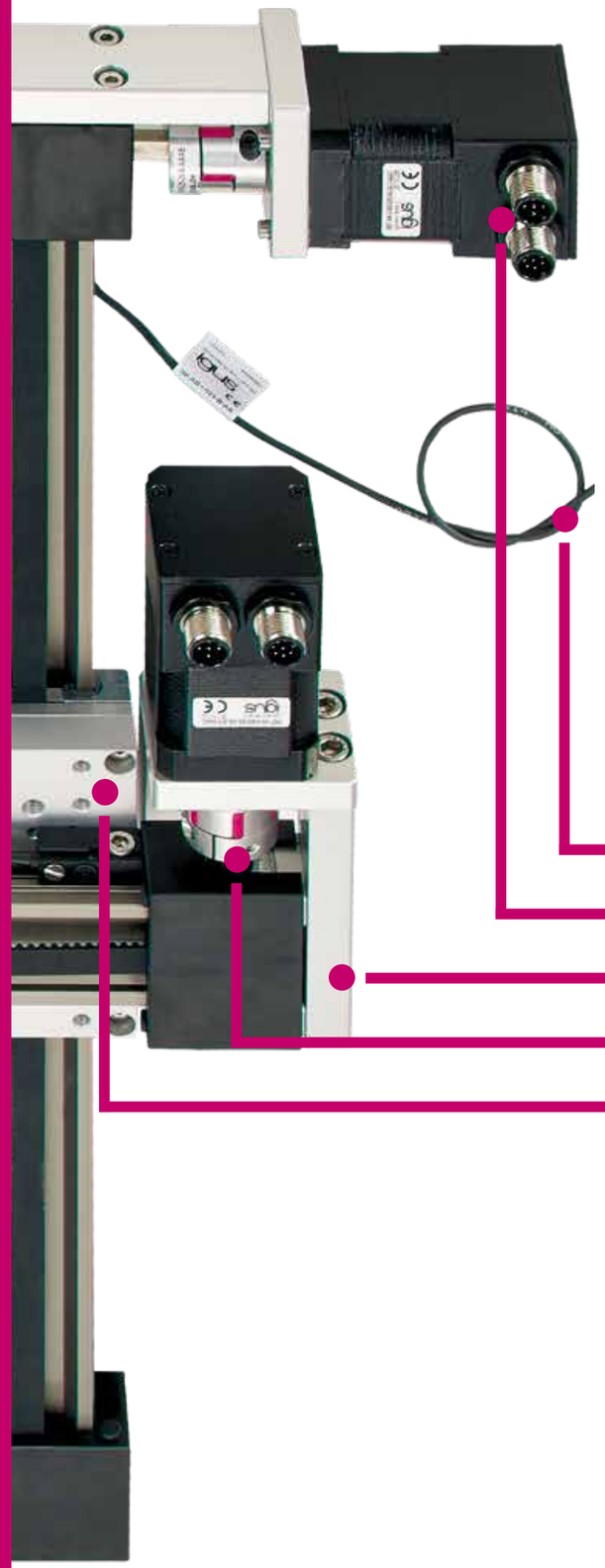
My sketches



drylin® accessories – electrical

- Motor control systems
- Stepper motors
- DC motors
- Motor flanges
- Cables and proximity switches
- Mounting accessories

Automation from stock



Accessories for drylin® linear axes

Almost every drylin® linear axis can be retrofitted with a corresponding motor and accessories such as initiators (proximity switches). igus® offers a large modular system of motors, matching couplings and motor flanges plus many practical components for the combination of linear axes as well as fastening material.

- Connection of stepper motors and DC motors
- Linear robot structures
- Fastening options

chainflex® motor and encoder cables

drylin® stepper and DC motors

Motor flange made of aluminium

Couplings for motor and shaft connection

Adapter plates for linear robot structures

Available from stock
Detailed information about delivery time online.

Electric traversing, manual installation

Stepper motors

- Powerful in 5 installation sizes
- Motors with connector or stranded wire
- With encoder and brake
- Increased torque resistance due to machined flat motor shaft (D-cut)

▶ **Page 1518**

DC motors

- 3 sizes
- Torque from 0.1 – 1.8Nm
- Up to 440rpm
- Increased torque resistance due to machined flat motor shaft (D-cut)

▶ **Page 1524**

Motor flanges

- Motor connection for drylin® linear axes
- For stepper and DC motors
- Suitable for igus® couplings

▶ **Page 1529**

Cables and proximity switches

- chainflex® connection cables with straight or angled connectors
- Proximity switches: Limit and reference switches
- For drylin® linear modules and toothed belt axes

▶ **Page 1530**

Mounting accessories

- Adapter plates for linear robot structures
- Spacer for height adjustment of SHT/SLW linear modules
- Mounting material

▶ **Page 1534**

Motor control systems

- For DC, EC and stepper motors
- Intuitive user interface
- Quick and easy set up
- Compatible with many industrial control systems
- For all drylin® linear axes

▶ **Page 1544**

drylin® | Stepper motors | Product overview

Various NEMA stepper motor options

Motor with stranded wires

Motors with stranded wires are the least expensive and the most common stepper motors. The connecting wires (length 30cm) for this type exit from the housing and will be configured with a JST connector. They are usually installed in machines and equipment that have an additional housing or are used in clean environments.

Motor with connector

The connector interface provides a high IP65 protection level (IP: International Protection). The higher the IP rating, the better the motor is protected from the ingress of dirt and water.

Motor with connector and encoder

The encoder (for increased machine reliability) sends signals from the motor to the motor control. The encoder verifies that the required linear motion has occurred precisely.

Motor with connector, encoder and brake

The brake can hold the payload in position when the motor is not under power. This is used as a safety feature during power failures – recommended for vertically mounted systems.

All motors are delivered with a machined flat motor shaft (D-cut) for increased torque resistance.

Installation sizes of NEMA stepper motors

NEMA11: Tiny but with plenty of power

This motor has very compact dimensions. Even so, heavy loads can be moved with the suitable lead screw pitch. This motor is typically used on small test and analysis equipment and miniature adjustments.

NEMA17: Small, but lots of power

This little motor has impressive torque and high RPMs. Reliable operation at fast travel with low loads.

NEMA23: The best known stepper motor size

Versatile choice due to the high torque and rotational speed. This motor is the best choice for most applications with medium loads.

NEMA23XL: The power motor in the medium installation size

A development extension of the typical NEMA23 with nearly twice the torque. The assembly dimensions are identical to the NEMA23, allowing many applications.

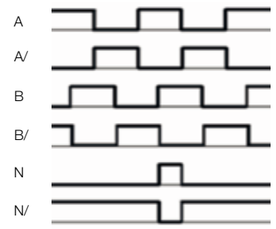
NEMA34: The power pack in the large installation size

Applications with higher loads are implemented using the largest installation size. Heavy-duty format adjustments or parallel dual axis setups are among its primary duties.

drylin® | Stepper motors | Technical data

Technical data

Distance over hubs		28	42	56	60	86
Motor		**NEMA11**	**NEMA17**	**NEMA23**	**NEMA23XL**	**NEMA34**
Connection dimensions	[mm]	28 x 28	42 x 42	56 x 56	60 x 60	86 x 86
Maximum voltage	[VDC]	60	60	60	60	60
Nominal voltage	[VDC]	24-48	24-48	24-48	24-48	24-48
Nominal current	[A]	1.0	1.8	4.2	4.2	6.4
Holding torque	[Nm]	0.13	0.5	2.0	3.5	5.9
Ratchet torque	[Nm]	0.004	0.022	0.068	0.075	0.210
Step angle	[°]	1.8	1.8	1.8	1.8	1.8
Resistance/phase	[Ω]	2.30 ±10%	1.75 ±10%	0.5 ±10%	0.65 ±10%	0.33 ±10%
Inductivity/phase	[mH]	1.40 ±20%	3.30 ±20%	1.90 ±20%	3.20 ±20%	3.00 ±20%
Moment of inertia – rotor	[kgcm²]	0.02	0.08	0.48	0.84	2.70
Shaft load, axial	[N]	7	7	15	15	65
Shaft load, radial	[N]	20	20	52	63	200

Encoder		
Operating voltage	[VDC]	5
Signals/rotation		500
Zero signal/index		yes
Line driver		RS422 Protocol
Signal shape (Clockwise motor rotation)	[CW]	

Technical data

Plate size brake		28	42	56	60	86
		NEMA11	**NEMA17**	**NEMA23**	**NEMA23XL**	**NEMA34**
Operating voltage	[VDC]	–	24 ±10%	24 ±10%	24 ±10%	24 ±10%
Output rating	[W]	–	8	10	10	11
Holding torque	[Nm]	–	0.4	1.0	1.0	2.0
Mass moment of inertia	[kgcm²]	–	0.01	0.02	0.02	0.07

Mass moment of inertia		28	42	56	60	86
		NEMA11	**NEMA17**	**NEMA23**	**NEMA23XL**	**NEMA34**
Product weight	[kg]	0.25	0.32	1.12	1.56	3.20
With encoder	[kg]	0.27	0.34	1.14	1.58	3.30
With encoder and brake	[kg]	–	0.58	1.36	1.82	3.60

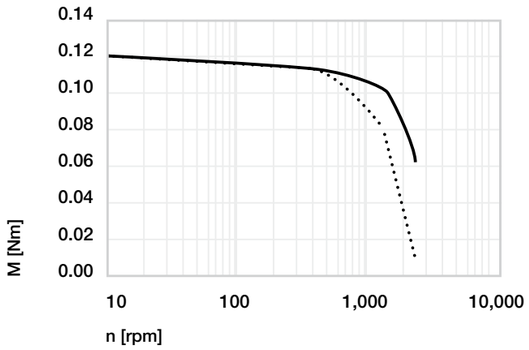
Operating data		
Ambient temperature	[°C]	–10 to +50
Max. allowable temperature increase	[°C]	80
Insulation class		B
Air humidity (non condensing)	[%]	85
IP rating – motor housing		IP65 (shaft seal IP52, motor with stranded wires IP40)
CE conformity		EMC directive

drylin® | Stepper motors | Characteristic curves

Characteristic curves

Flange size 28 (NEMA11)

MOT-AN-S-060-001-028-…



Flange size 42 (NEMA17)

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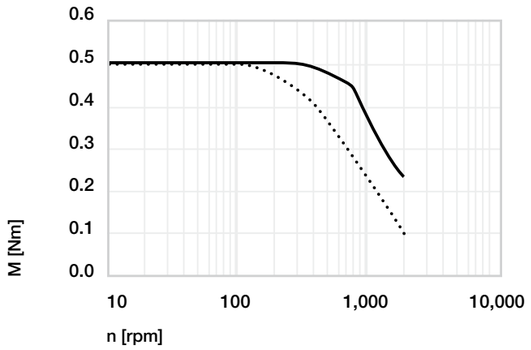

Flange size 56 (NEMA23)

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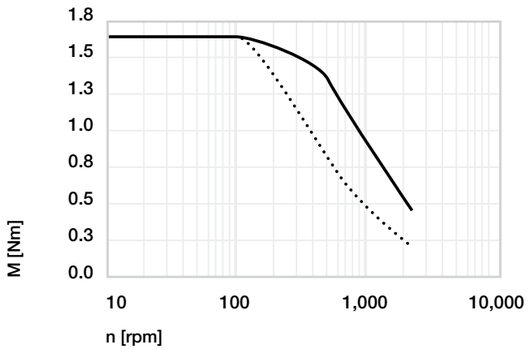

Flange size 60 (NEMA23XL)

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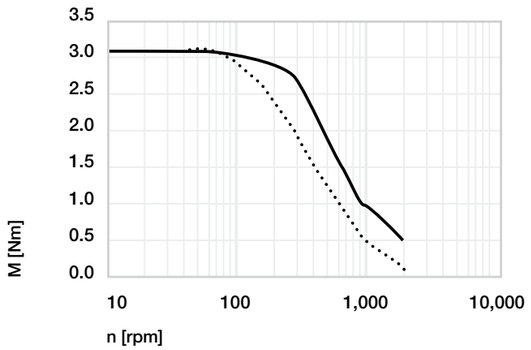
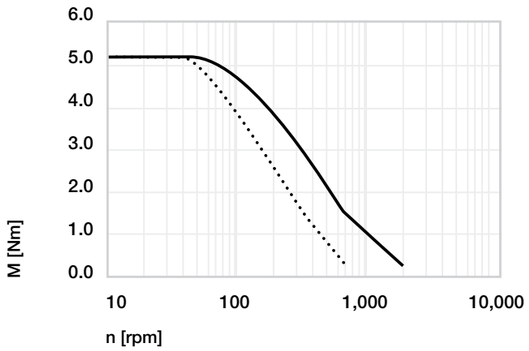


Flange size 86 (NEMA34)

MOT-AN-S-060-059-086-…



------- 24VDC —— 48VDC

The characteristic curves are determined in quarter step mode

drylin® automation

Order key

Order example

MOT - AN - S - 060 - 020 - 056 - M - A - AAAA

Product type	Type	Motor type	Maximum voltage	Holding torque	Distance over hubs	Motor connection	Options	Specification
MOT	AN	S	060	020	056	M	A	AAAA

Options:

Product type
MOT = Motor

Type
AN = Design

Motor type
S = Stepper motor

Maximum voltage
060 = 60V/DC

Holding torque
001 = 0.1Nm
005 = 0.5Nm
020 = 2.0Nm
035 = 3.5Nm
059 = 5.9Nm

Distance over hubs
028 = 28mm (NEMA11)
042 = 42mm (NEMA17)
056 = 56mm (NEMA23)
060 = 60mm (NEMA23XL)
086 = 86mm (NEMA34)

Motor connection
M = Metric connector
L = Stranded wires

Options
A = Without
C = Incremental encoder
D = Incremental encoder & brake

Specification
AAAA = Standard
AAAC = Encoder
AAAD = Encoder & brake

More information ▶ www.igus.eu/drylinE

drylin® | Stepper motors | Product range

EC motors with Hall and encoder

The brushless DC motors have a high speed and allow quick positioning. The motor encoder enables precise positioning.

- Lubrication and maintenance-free
- More cost-effective than conventional servomotors
- Installation sizes NEMA 17, 23, 24, 34 are available
- Improved performance for drylin® E single axes, linear robots and delta robots

Technical data

Part No.	Number of phases	Number of poles	Nominal voltage [VDC]	Nominal speed [rpm]	Rated torque [Nm]	Nominal power [W]	Nominal current [A]	Peak current [A]	Maximum torque [Nm]
MOT-EC-42-C-H-A	3	8	48	3,000	0.3	90	2.61	7.8	0.9
MOT-EC-56-C-H-A	3	8	48	3,000	0.6	188	5.00	15.0	1.8
MOT-EC-60-C-H-A	3	8	48	3,000	0.8	250	7.50	22.5	2.4
MOT-EC-86-C-H-A	3	8	48	3,000	1.0	314	8.70	26.1	3.0
MOT-EC-42-C-I-A	3	8	48	3,000	0.3	90	2.61	7.8	0.9
MOT-EC-56-C-I-A	3	8	48	3,000	0.6	188	5.00	15.0	1.8
MOT-EC-60-C-I-A	3	8	48	3,000	0.8	250	7.50	22.5	2.4
MOT-EC-86-C-I-A	3	8	48	3,000	1.0	314	8.70	26.1	3.0

Part No.	Resistance [Ω]	Inductivity [mH]	Torque constant [Nm/A]	Voltage constant [V/krpm]	Weight [kg]	Distance over hubs [mm]	Encoder [Pulse/rotation]	Encoder voltage [V]	Index [VDC]
MOT-EC-42-C-H-A	1.65	1.00	0.115	12.0	0.75	42	–	–	No
MOT-EC-56-C-H-A	0.50	0.70	0.120	12.0	1.30	56	–	–	No
MOT-EC-60-C-H-A	0.47	0.65	0.110	11.0	1.35	60	–	–	No
MOT-EC-86-C-H-A	1.08	1.27	0.115	11.5	2.30	86	–	–	No
MOT-EC-42-C-I-A	1.65	1.00	0.115	12.0	0.75	42	1,000	5	Yes
MOT-EC-56-C-I-A	0.50	0.70	0.120	12.0	1.30	56	1,000	5	Yes
MOT-EC-60-C-I-A	0.47	0.65	0.110	11.0	1.35	60	1,000	5	Yes
MOT-EC-86-C-I-A	1.08	1.27	0.115	11.5	2.30	86	1,000	5	Yes

drylin® | Gearboxes | Product range

Planetary gear for stepper motors

Suitable for stepper motors and EC/BLDC motors with flange sizes 56, 60, 86, new gearboxes with a gear reduction of 10 and 15 can be supplied. In the case of slow rotating stepper motors, torque of up to 44Nm can be generated permanently. In the case of EC/BLDC, up to 35Nm at 200rpm (short-term).

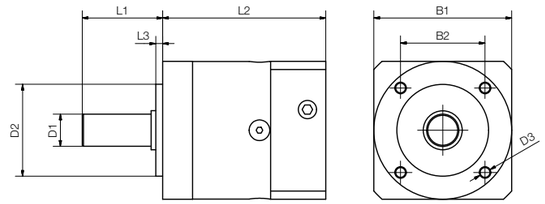
- For igus® stepper motors with flange sizes NEMA 23, 23XL, 34
- Available gear reductions: 3, 5, 10, 15
- Higher motor torque for heavy loads

Order key

Order example

GEA - 60 - 3 - 60 - ST - 063

Gearbox	Distance over hubs	Gear reduction	Width B1	Stepper motor	Shaft [mm]



Technical data and dimensions [mm]

Part No.	Motor size	B1	B2	D1 Ø h7	D2 Ø h7	D3 Ø	L1 ±1.0	L2	L3
GEA-60-3-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-3-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-3-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	86.0	3.0
GEA-60-5-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-5-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-5-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	86.0	3.0
GEA-60-10-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-10-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-10-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	86.0	3.0
GEA-60-15-60-ST-063	NEMA23	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-15-60-ST-080	NEMA23XL	60.0	36.7	14.0	40.0	M5	35.0	71.0	3.0
GEA-60-15-90-ST-140	NEMA34	90.0	36.7	14.0	40.0	M5	35.0	86.0	3.0

drylin® | DC motors | Product range

DC motors with spur gear

This small DC motor can be powered directly from a power source, such as a battery. It reverses direction by changing the polarity. Typical applications are sensor/camera travel and light-duty format adjustments with drylin® lead screw or toothed belt axes.

- Torque [Nm] from 0.1Nm to 1.5Nm
- Up to 440rpm
- Can be operated at 12 & 24VDC

1. **MOT-AE-B-024-001-037-F-A-AAAA**
2. **MOT-AE-B-024-003-037-F-A-AAAA**
3. **MOT-AE-B-024-005-036-F-A-AAAA**
4. **MOT-AE-B-024-007-037-F-A-AAAA**
5. **MOT-AE-B-024-010-042-F-A-AAAA**
6. **MOT-AE-B-024-015-037-F-A-AAAA**
7. **MOT-AE-B-024-018-042-F-A-AAAA**

Technical data

Motor		1	2	3	4	5	6	7
Maximum voltage	[VDC]	24	24	24	24	24	24	24
Nominal voltage	[VDC]	24	24	24	24	24	24	24
Nominal current	[A]	0.5	0.5	0.9	0.5	2.3	0.5	2.0
Nominal torque	[Nm]	0.1	0.3	0.5	0.7	1.0	1.5	1.8
Start up torque	[Nm]	0.3	0.5	1.0	1.0	3.0	1.8	6.0
Idling speed	[1/min]	440	146	223	58	290	22	115
Rated speed	[1/min]	350	112	190	47	252	17	101
Shaft load, axial	[N]	6.8	6.8	25	6.8	30	6.8	30
Shaft load, radial	[N]	9.8	9.8	30	9.8	50	9.8	50
Reduction gearing	[N]	10	30	27	75	24	200	61
Product weight								
MOT-AE	[kg]	0.207	0.213	0.450	0.221	0.650	0.270	0.690
MOT-DC	[kg]	0.280	0.280	0.420	0.280	0.580	0.280	0.580
Operating data		MOT-AE | MOT-DC						
Ambient temperature	[°C]	–10 to +60 | –10 to +50						
Max. allowable temperature increase	[°C]	60						
Air humidity (non condensing)	[%]	85						
IP rating – motor housing		IP30|IP41	IP30|IP41	IP20|IP41	IP30|IP41	IP20|IP41	IP30|IP41	IP20|IP41
Operating mode		S2 (short-term operation)						
Motor connection low-profile connector								
Length	[mm]	6.5	6.5	6.0	6.5	9.0	6.5	9.0
Width	[mm]	4.0	4.0	3.8	4.0	4.8	4.0	4.8
Strength	[mm]	0.4	0.4	0.5	0.4	0.5	0.4	0.5
Can be combined with motor flange		–	–	–	–	MF-1040	–	MF-1040

drylin® | DC motors | Product range

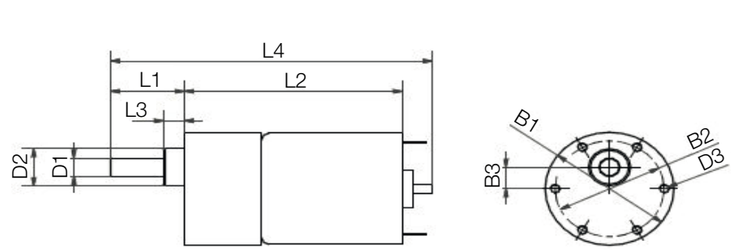
DC motors with spur gear and "protect" protection housing

Users benefit from protected DC motors in two ways. A motor housing prevents the ingress of particles of any kind. At the same time, the housing contains the appropriate motor connector for easy connection, with protection against occasional contact with water.

- Delivered ready to install with DC motor
- Increased operation reliability
- Quick connection with M12 connector
- For all drylin® linear axes

1. **MOT-DC-37-M-A-A**
2. **MOT-DC-37-M-A-B**
3. **MOT-DC-36-M-A-D**
4. **MOT-DC-37-M-A-D**
5. **MOT-DC-42-M-A-D**
6. **MOT-DC-37-M-A-H**
7. **MOT-DC-42-M-A-F**

Technical data ▶ Page 1526



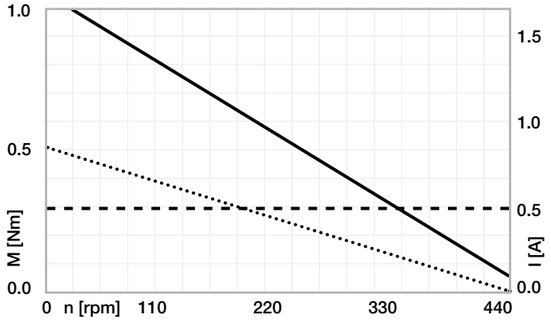
Dimensions [mm]

Part No.	B1 ±0.3	B2 ±0.2	B3 ±0.1	D1 –0.013	D2 ±0.025	D3 Ø	L1 ±1	L2 ±1	L3	L4
MOT-AE-B-024-001-037-F-A-AAAA	37.0	31.0	7.0	6.0	12.0	M3	21.0	59.5	6.0	92.5
MOT-AE-B-024-003-037-F-A-AAAA	37.0	31.0	7.0	6.0	12.0	M3	21.0	62.0	6.0	95.0
MOT-AE-B-024-005-036-F-A-AAAA	36.0	26.0	6.0	6.0	20.0	M3	19.3	85.6	3.0	104.9
MOT-AE-B-024-007-037-F-A-AAAA	37.0	31.0	7.0	6.0	12.0	M3	21.0	64.5	6.0	97.5
MOT-AE-B-024-010-042-F-A-AAAA	42.4	35.0	0	8.0	25.0	M4	22.0	105.2	2.0	127.2
MOT-AE-B-024-015-037-F-A-AAAA	37.0	31.0	7.0	6.0	12.0	M3	21.0	67.0	6.0	100.0
MOT-AE-B-024-018-042-F-A-AAAA	42.4	35.0	0	8.0	25.0	M4	22.0	111.9	2.0	142.4
MOT-DC-37-M-A-A	42.0	31.0	7.0	6.0	12.0	M3	21.0	100.0	6.0	134.0
MOT-DC-37-M-A-B	42.0	31.0	7.0	6.0	12.0	M3	21.0	100.0	6.0	134.0
MOT-DC-36-M-A-D	41.0	26.0	0	6.0	20.0	M3	19.3	126.0	3.0	158.3
MOT-DC-37-M-A-D	42.0	31.0	7.0	6.0	12.0	M3	21.0	100.0	6.0	134.0
MOT-DC-42-M-A-D	47.3	35.0	0	8.0	25.0	M4	22.0	146.0	2.0	181.0
MOT-DC-37-M-A-H	42.0	31.0	7.0	6.0	12.0	M3	21.0	100.0	6.0	134.0
MOT-DC-42-M-A-F	47.3	35.0	0	8.0	25.0	M4	22.0	146.0	2.0	181.0

drylin® | DC motors | Characteristic curves

Characteristic curves 24VDC

MOT-AE-B-024-001-037-F-A-AAAA / MOT-DC-37-M-A-A



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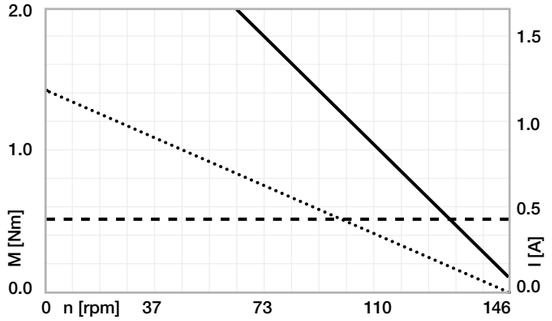
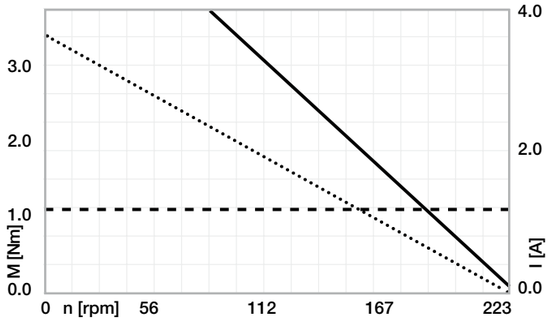


MOT-AE-B-024-005-036-F-A-AAAA / MOT-DC-36-M-A-D



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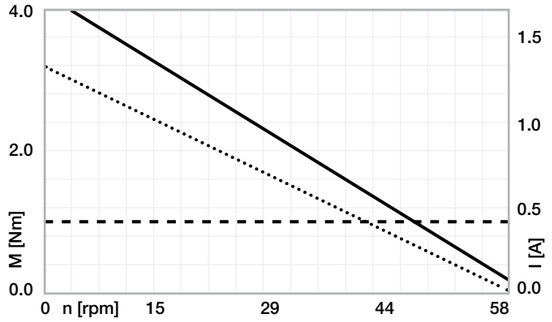
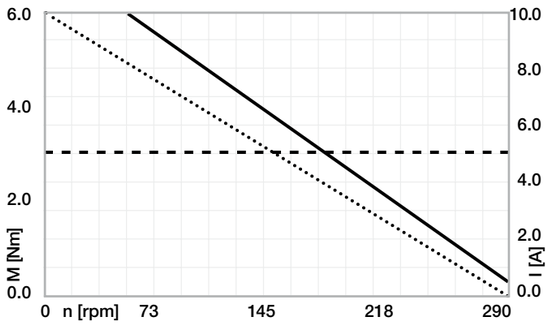
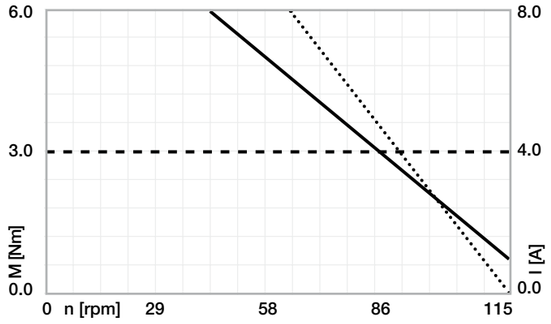


MOT-AE-B-024-010-042-F-A-AAAA / MOT-DC-42-M-A-D



MOT-AE-B-024-015-037-F-A-AAAA / MOT-DC-37-M-A-H

MOT-AE-B-024-018-042-F-A-AAAA / MOT-DC-42-M-A-F



Order key

Order example

MOT-AE-B-024-015-037-F-A-AAAA

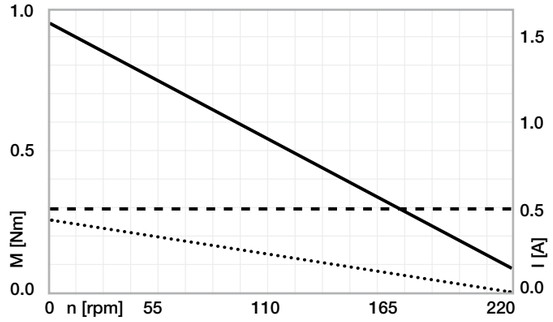
Product type: Motor	AE: Design	Motor type B: DC motor	Operating voltage: 24VDC	Nominal torque [Nm]	Outer diameter [mm]	F = Low-profile connector	Options: A: Without	AAAA: Standard
MOT	AE	B	024	015	037	F	A	AAAA

------- Torque ------- Max. continuous torque —— Motor current

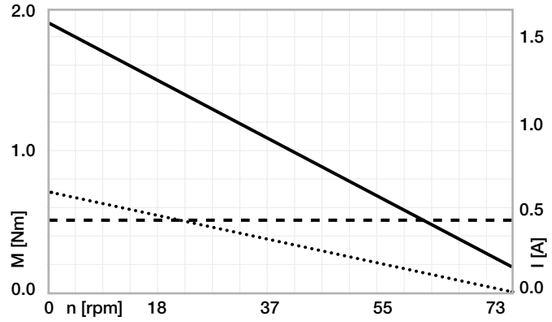
drylin® | DC motors | Characteristic curves

Characteristic curves 12VDC

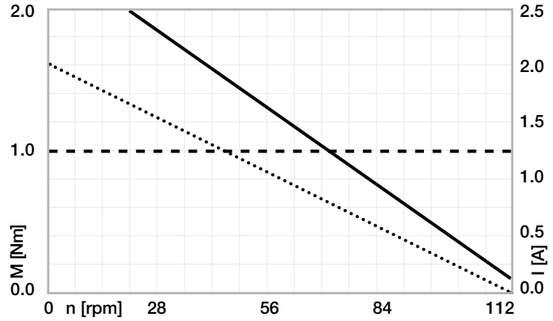
MOT-AE-B-024-001-037-F-A-AAAA / MOT-DC-37-M-A-A



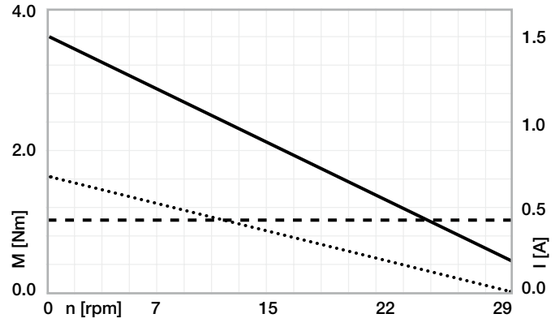
MOT-AE-B-024-003-037-F-A-AAAA / MOT-DC-37-M-A-B



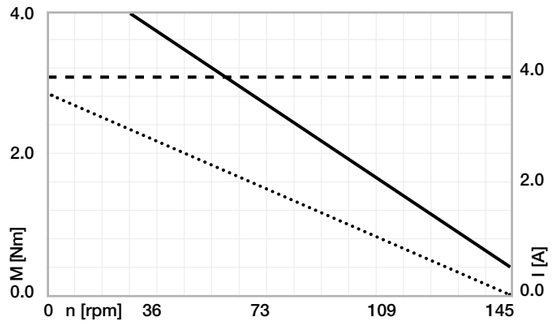
MOT-AE-B-024-005-036-F-A-AAAA / MOT-DC-36-M-A-D



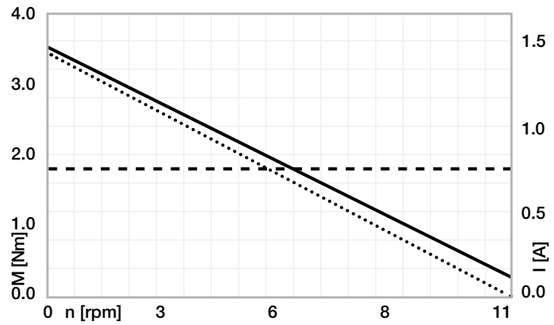
MOT-AE-B-024-007-037-F-A-AAAA / MOT-DC-37-M-A-D



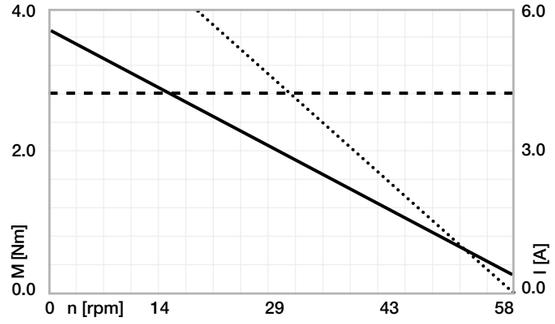
MOT-AE-B-024-010-042-F-A-AAAA / MOT-DC-42-M-A-D



MOT-AE-B-024-015-037-F-A-AAAA / MOT-DC-37-M-A-H



MOT-AE-B-024-018-042-F-A-AAAA / MOT-DC-42-M-A-F



Order key

Order example

MOT-DC-36-M-A-D

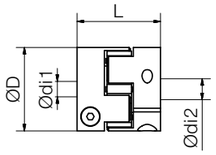
Product type: Motor	Motor type B: DC motor	Outer diameter [mm]	M: Metric connectors M12	Options: A: Without	Rated speed [rpm]
MOT	B	036	M	A	D

Rated speeds
A: Ø 37 = 350
B: Ø 37 = 112
D: Ø 36 = 190
Ø 37 = 47
Ø 42 = 252
F: Ø 42 = 96
H: Ø 37 = 17

------- Torque ------- Max. continuous torque —— Motor current

drylin® | Accessories | Product range

Coupling – vibration dampening and easy fitting



The coupling connects the drive pin of the axis to the motor. An elastic polymer insert in the centre of the coupling transfers the motor torque. This damping element compensates for radial and axial clearance.

- 20 versions from stock
- Vibration dampening and easy fitting

Coupling material: Aluminium. TPU elastomeric centre. Shore hardness: 98 Sh A. Temperature range –30°C to +100°C.

Toothed belt axis	Motor type	Coupling	Techn. data – coupling D	di1 [mm]	di2 [mm]	L [mm]	Weight [kg]
ZLW-0630-B	NEMA17	COU-AR-K-050-000-25-26-B-AAAB	25.00	5.00	□6.00	26.00	0.02
	NEMA23	COU-AR-K-063-000-25-26-B-AAAB	25.00	6.35	□6.00	26.00	0.02
	DC motor31	COU-AR-K-060-000-25-26-B-AAAB	25.00	6.00	□6.00	26.00	0.02
ZLW-0630-S	NEMA17	COU-AR-K-050-080-25-26-B-AAAA	25.00	5.00	8.00	26.00	0.02
	NEMA23	COU-AR-K-063-080-25-26-B-AAAA	25.00	6.35	8.00	26.00	0.02
	DC motor31	COU-AR-K-060-080-25-26-B-AAAA	25.00	6.00	8.00	26.00	0.02
ZLW-1040-B / ZAW	NEMA17	COU-AR-K-050-000-25-26-B-AAAB	25.00	5.00	□6.00	26.00	0.02
	NEMA23	COU-AR-K-063-000-25-26-B-AAAB	25.00	6.35	□6.00	26.00	0.02
	NEMA23XL	COU-AR-K-080-000-25-26-B-AAAB	25.00	8.00	□6.00	26.00	0.02
	DC motor31	COU-AR-K-060-000-25-26-B-AAAB	25.00	6.00	□6.00	26.00	0.02
ZLW-1040-S / ZAW	NEMA23	COU-AR-K-063-100-32-32-B-AAAA	32.00	6.35	10.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-100-32-32-B-AAAA	32.00	8.00	10.00	32.00	0.05
	NEMA34	COU-AR-K-140-100-32-32-B-AAAA	32.00	14.00	10.00	32.00	0.05
	DC motor31	COU-AR-K-060-100-32-32-B-AAAA	32.00	6.00	10.00	32.00	0.05
ZLW-1660-S	NEMA 34	COU-AR-K-140-140-32-32-B-AAAA	32.00	14.00	14.00	32.00	0.05

Lead screw axis	Motor type	Coupling	D	di1 [mm]	di2 [mm]	L [mm]	Weight [kg]
SAW-0630 / SLW-BB-0630	NEMA17	COU-AR-K-050-080-25-26-B-AAAA	25.00	5.00	8.00	26.00	0.02
	DC motor31	COU-AR-K-060-080-25-26-B-AAAA	25.00	6.00	8.00	26.00	0.02
SAW-1040 / SLW-(BB)-1040	NEMA17	COU-AR-K-050-100-32-32-B-AAAA	32.00	5.00	10.00	32.00	0.05
	NEMA23	COU-AR-K-063-100-32-32-B-AAAA	32.00	6.35	10.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-100-32-32-B-AAAA	32.00	8.00	10.00	32.00	0.05
	DC motor31	COU-AR-K-060-100-32-32-B-AAAA	32.00	6.00	10.00	32.00	0.05
SLW-(BB)-1660	NEMA23	COU-AR-K-063-140-32-32-B-AAAA	32.00	6.35	14.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-140-32-32-B-AAAA	32.00	8.00	14.00	32.00	0.05
SLW-(BB)-2080	NEMA23	COU-AR-K-063-120-32-32-B-AAAA	32.00	6.35	12.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-120-32-32-B-AAAA	32.00	8.00	12.00	32.00	0.05
	NEMA34	COU-AR-K-140-120-32-32-B-AAAA	32.00	14.00	12.00	32.00	0.05
SHT-(BB)-12	NEMA17	COU-AR-K-050-100-32-32-B-AAAA	32.00	5.00	10.00	32.00	0.05
	NEMA23	COU-AR-K-063-100-32-32-B-AAAA	32.00	6.35	10.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-100-32-32-B-AAAA	32.00	8.00	10.00	32.00	0.05
	DC motor31	COU-AR-K-060-100-32-32-B-AAAA	32.00	6.00	10.00	32.00	0.05
SHT-(BB)-20	NEMA23	COU-AR-K-063-120-32-32-B-AAAA	32.00	6.35	12.00	32.00	0.05
	NEMA23XL	COU-AR-K-080-120-32-32-B-AAAA	32.00	8.00	12.00	32.00	0.05
	NEMA34	COU-AR-K-140-120-32-32-B-AAAA	32.00	14.00	12.00	32.00	0.05
SHT-(BB)-30	NEMA34	COU-AR-K-140-140-32-32-B-AAAA	32.00	14.00	14.00	32.00	0.05

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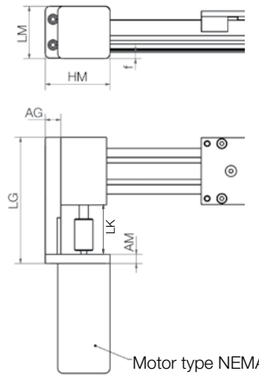
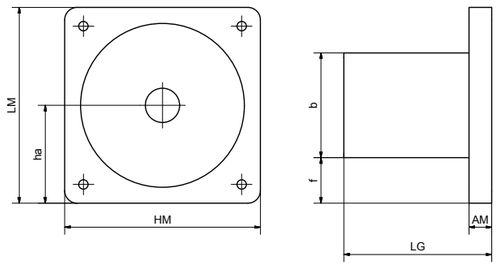
Using motor flange for stepper and DC motors



- 2 base plate lengths for each NEMA motor flange; others upon request
- Matches the drylin® coupling ▶ **Page 1528**

Dimensions [mm]

Part No.	Matching linear modules	Base plate AG	LG	LK	AM	Motor flange HM	LM	f
MF-0630-NEMA17-S	ZLW-0630	12	99.5	35.5	10	53	42	7
MF-0630-NEMA23-S	ZLW-0630	12	99.5	35.5	10	59	56	14
MF-1040-NEMA17-S	ZLW-1040	17	119	35	10	63	44	–
MF-1040-NEMA23-S	ZLW-1040	17	119	35	10	70.7	56.4	7
MF-1040-NEMA34-L	ZLW-1040	17	138	54	10	85	85	20.5
MF-1660-NEMA34-S	ZLW-1660	15	166	52	10	86	86	–
MF-2260-NEMA23-S	ZAW-1040	10	108	35	10	70.7	56.4	–
MF-0630-DC0310	ZLW-0630	12	99.5	35.5	10	53	42	7
MF-1040-DC0310	ZLW-1040	17	119	35	10	63	44	–
MF-1040-DC0350	ZLW-1040	17	119	35	10	63	44	–



The motor flange, sometimes called motor enclosure, encloses and protects the coupling and provides the matching mounting dimensions for your NEMA motor.

- Matches the drylin® coupling ▶ **Page 1528**

Dimensions [mm]

Part No.	Matching linear modules	LG	AM	HM	LM	b	f	ha
MF-1123-NEMA17	SAW/SLW-BB-0630	45	–	43	43	43	–	21.5
MF-2040-NEMA17	SAW/SLW-1040-AL, SHT-12	47	12	56	56	56	–	21.5
MF-2040-NEMA23-S	SAW/SLW-1040-AL, SHT-12/20	48	13	56	56	56	–	28
MF-3648-NEMA23	SHT-20, SHT-BB-20	56	13	56	56	56	–	28
MF-3648-NEMA34	SLW-1660/2080, SLW-BB-1660/2080	65	10	86	86	46	20	43
MF-3648-NEMA34-XL	SHT-30, SHT-BB-30	76	10	86	86	56	15	43
MF-1123-DC0310	SAW/SLW-BB-0630	45	–	43	43	43	–	21.5
MF-2040-DC0310	SAW/SLW-1040-AL, SHT12	47	12	43	43	43	–	21.5
MF-2040-DC0350	SAW/SLW-1040-AL, SHT12	47	12	43	43	43	–	21.5

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Connecting cables for NEMA stepper motors

The ideal complement to the drylin® product range provides chainflex® connection cables.

- Suitable for energy chains
- Shielded and oil-resistant
- Straight and angled connectors

Flange size 42 (NEMA17), 56 (NEMA23), 60 (NEMA23XL)

Part No.	Jacket	Type	Cable length [m]	Connectors
Motor cable (overmoulded)				
MAT9043737	TPE	CF9-CF.INI	3.0	straight
MAT9043738	TPE	CF9-CF.INI	5.0	straight
MAT9043740	TPE	CF9-CF.INI	10.0	straight
MAT9043742	TPE	CF9-CF.INI	3.0	angled
MAT9043743	TPE	CF9-CF.INI	5.0	angled
MAT9043745	TPE	CF9-CF.INI	10.0	angled
Encoder (harnessed)				
MAT90432594-3	PVC	CF240	3.0	straight
MAT90432594-5	PVC	CF240	5.0	straight
MAT90432594-10	PVC	CF240	10.0	straight
MAT90436430-3	PVC	CF240	3.0	angled
MAT90436430-5	PVC	CF240	5.0	angled
MAT90436430-10	PVC	CF240	10.0	angled

Flange size 86 (NEMA34)

Part No.	Jacket	Type	Cable length [m]	Connectors
Motor cable (harnessed)				
MAT90439520-3	PUR	CF78.UL	3.0	straight
MAT90439520-5	PUR	CF78.UL	5.0	straight
MAT90439520-10	PUR	CF78.UL	10.0	straight
Encoder (harnessed)				
MAT90439519-3	PVC	CF211	3.0	straight
MAT90439519-5	PVC	CF211	5.0	straight
MAT90439519-10	PVC	CF211	10.0	straight

Flange size 42 (NEMA17), 56 (NEMA23), 60 (NEMA23XL)

Part No.	Jacket	Type	Cable length [m]	Connectors
Brake cable				
MAT9043716	TPE	CF9-CF.INI	3.0	straight
MAT9043717	TPE	CF9-CF.INI	5.0	straight
MAT9043719	TPE	CF9-CF.INI	10.0	straight
MAT9043724	TPE	CF9-CF.INI	3.0	angled
MAT9043725	TPE	CF9-CF.INI	5.0	angled
MAT9043727	TPE	CF9-CF.INI	10.0	angled

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Proximity switches – limit and reference switches

The compact and easy assembly of the proximity switches represent a logical extension of the kit approach for the drylin® range. The plastic housing makes the proximity switches, which can be used as limit, position or reference switches, particularly light and tough.

Technical data

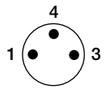
Proximity switches	Unit	
Operating voltage	[VDC]	10...30
Max. trigger current	[mA]	100
Ambient temperature	[°C]	–25...+70
Trigger distance	[SN]	2.5
Protection class		IP67
Connectors		M8

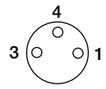
20–30mm of extra stroke length is required for each limit reference switch.

Axis	Part No. Proximity switch kit	
	N.C./normally closed	N.O./normally open
SAW-0630	IK-0001	IK-0002
SAW-1040	IK-0001	IK-0002
SAW-1660	IK-0003	IK-0004
SLW-BB-0630	–	–
SLW-BB-1040	IK-0006	IK-0017
SLW-BB-1080	IK-0007	IK-0018
SLW-BB-1660	IK-0008	IK-0019
SLW-BB-2080	IK-0009	IK-0020
SHT-BB-12	IK-0011	IK-0022
SHT-BB-20	IK-0012	IK-0023
SHT-BB-30	–	–
SLW-1040-AL	IK-0006	IK-0017
SLW-1080	IK-0007	IK-0018
SLW-1660	IK-0008	IK-0019
SLW-2080	IK-0009	IK-0020
SHT-12	IK-0011	IK-0022
SHT-20	IK-0012	IK-0023
SHT-30	–	–
ZLW-0630-B	IK-0001	IK-0002
ZLW-0630-S	IK-0001	IK-0002
ZLW-1040-B	IK-0001	IK-0002
ZLW-1040-S	IK-0001	IK-0002
ZAW-1040-B	IK-0001	IK-0002
ZAW-1040-S	IK-0001	IK-0002
ZLW-1660-S	IK-0003	IK-0004

Pin assignment

Proximity switch	M8 3-pin	Proximity switch cable	
PIN	Signal	PIN	Colour
1	+	1	brown
3	–	3	blue
4	Load	4	black





Matching cables are added by including the following attachments:

Order key

Order example

IK-0010-BG-3

Proximity switch kit	Assignment number	Connector description	Cable length

Options:
Connector description
BG = Straight socket
Cable length
3m, 5m, 10m

A proximity switch kit for SAW & ZLW includes a proximity switch, a bracket and mounting screws

A proximity switch kit for SLW & SHT includes a proximity switch, two spacers and mounting screws.

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Proximity switches – kit with support

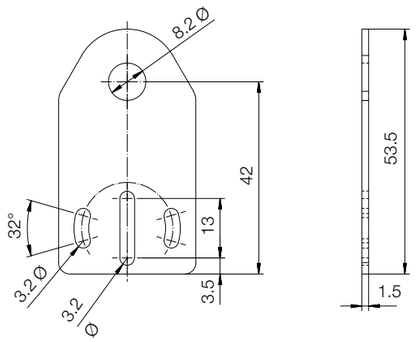
Part No.
IK-0201-2
Proximity PNP NC kit with straight support

Part No.
IK-0200-2
Proximity PNP NC kit with angled support

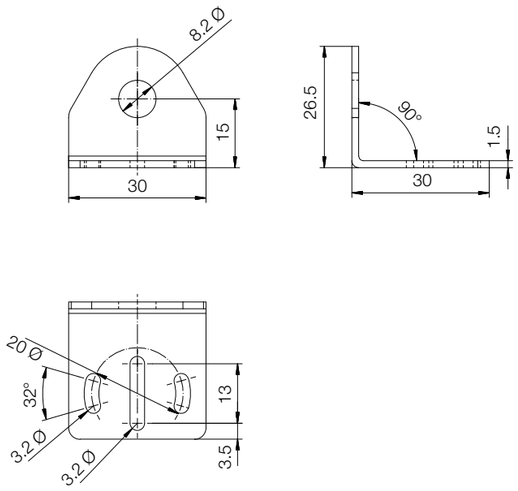
Reposition and adjustment is possible using a bracket with the proximity switch

- Cable length: 2m
- Material holder: steel

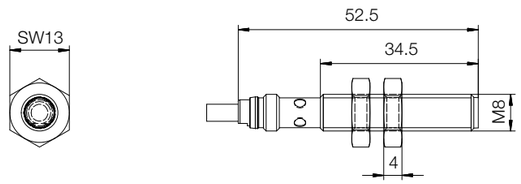
ZSY-INI-AS-B



ZSY-INI-AS-A



INI-AS-I-015-B-AA



My sketches