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PSD direct drives

for automatic format changeover

DIRECT DRIVES – SMALLER, FASTER, FURTHER

The new direct drives from halstrup-walcher close the gap on servo systems

PSD direct drives are mechatronic systems with integrated control, bus interface and absolute measurement system without battery. They are ideal for automatic format changeover.

The stepper motor with integrated control and bus communication permits higher velocities at lower torques. This closes the gap on servo drives with regulators. PSD direct drives offer a significantly more compact design and simpler wiring as they eliminate the need for an external controller – a cost-effective solution for format changeovers.

Why you need a direct drive

Your machine has to do a quick format changeover and reduce down times. With automatic format changeover you benefit from significant time savings, improved quality, and a self-monitoring system which accurately detects unwanted changes in position. These are major advantages over manual adjustment using hand wheels.

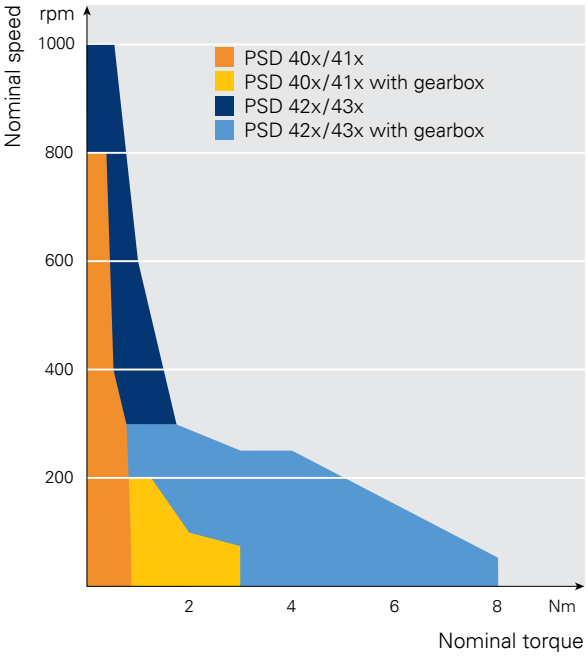
What we offer

halstrup-walcher already has over 20 years of experience in the field of automatic format changeover with positioning systems. No other manufacturer supplies such a wide range of bus interfaces. PSD direct drives are built according to a modular design to offer you maximum flexibility.

The direct drive also offers many of the advantages of halstrup-walcher's successful positioning systems. It achieves higher speeds and is ideal for setting up in the application gap. Discover the perfect drive for your requirements in our extensive product range.

We will be happy to advise you!

PERFORMANCE CURVE OF DIRECT DRIVES FROM HALSTRUP-WALCHER



Find the right positioning system

PSD direct drives from halstrup-walcher cover a performance range which is ideal for frequent format changes, such as when setting up in the application gap.

Example

You need a drive which operates at approx. 800 rpm with a torque of 0.5 Nm. In that case, you can use a direct drive without a gearbox or attached housing.

Do you need a higher torque at lower speed? You can achieve this with an additional gearbox from our range of module kits.

WHAT MAKES OUR DIRECT DRIVES SPECIAL

- ✓ **Compact design:** Direct drives from halstrup-walcher are exceptionally compact
  → Ideal for your slim machine design
- ✓ **Maximum flexibility:** The variable alignment of the connectors and optional rotatable attachment housing allow you to attach the direct drives to the machine in any position (see below)
  → **No angle plugs** are required
- ✓ **Simple assembly:** The **optional hollow shaft** with torque support allows the direct drive to be mounted on the spindle without a coupling
- ✓ **No reference run:** Optimum position feedback thanks to an **absolute measurement system** without battery with a positioning range of 977 .. 4026 rotations
- ✓ **Powerful know-how:** halstrup-walcher can supply its direct drives with **all commonly used bus systems**[1]:

CANopen IO-Link

On request:

PROFIBUS DeviceNet Modbus sercos the automation bus EtherCAT PROFINET EtherNet/IP ETHERNET POWERLINK

[1] All these buses have been available with our positioning system PSx 3 series for a number of years. The implementation for the PSD family is performed in accordance with customer specifications.

FULLY INTEGRATED DRIVE WITH MANY FUNCTIONS

- ✓ Rotary switch for easy addressing of the device (not for IO-Link)
- ✓ Fail-safe due to galvanic isolation of power and control
- ✓ Status LEDs visible from the outside
- ✓ No brake required (depending on the application)
- ✓ Available in company colour on request
- ✓ Also available as 1-connector solution (IO-Link)
- ✓ Protection features: Protection of internal electronics against manual operation up to 250 rpm
- ✓ Self-monitoring functions: Current and voltage monitoring, temperature monitoring, step monitoring with correction for second positioning
- ✓ Software features: spindle offset run, increased breakaway torque, synchronised run

FLEXIBILITY THROUGH VARIABLE DESIGN

Direct drive	without attached housing (solid shaft)	with attached housing (hollow shaft and gearbox)			
Rotation of attached housing	-	0°	90°	180°	270°
Vertical design					
Horizontal desgin					

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PSD 40_/41_

PSD 40_/41_	Nominal torque	Self-holding torque [1] (currented)	Nominal rated speed [2]	Positioning range
1-5V	0.8 Nm	0.4 Nm	200 rpm	4026 rot.
1-8H	0.8 Nm	0.4 Nm	200 rpm	4026 rot.
1-14H	0.8 Nm	0.4 Nm	200 rpm	4026 rot.
3-8H	3 Nm	1.5 Nm	50 rpm	986 rot.
3-14H	3 Nm	1.5 Nm	50 rpm	986 rot.

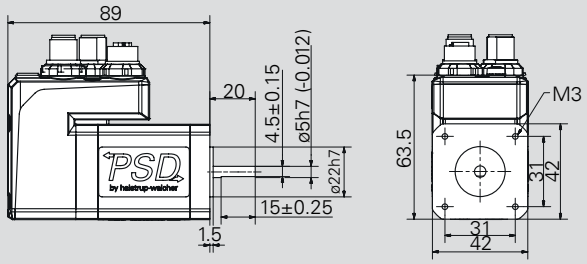
[1] at approx. 60 mA supply current and 0.5 A phase current, currentless 0 Nm
[2] at rated torque, speed limitation see characteristic curve

Bus communication
CANopen, IO-Link

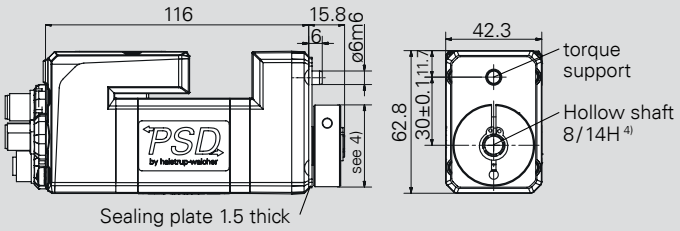
Start-up duration	20 % (basis time 300 s) at ambient temperature, 200 rpm and maximum current consumption
Mode of operation	S3
Supply voltage	24 V DC ± 10 % galvanically separated between motor and control
Power consumption	max. 48 W
Nominal current	2.0 A
Power consumption (control unit)	0.1 A
Positioning accuracy	± 1.8 °
Absolute measurement system	magnetic, without reference run, without buffer battery
Shock resistance in accordance with IEC/DIN EN 60068-2-27	Half sinus (3 axes) 50 g 11 ms ± 3 shocks/axle
Vibration resistance in accordance with IEC/DIN EN 60068-2-6	sliding sinus (1 octave/min, 3 axles) 10..2000 Hz 50 m/s² (approx. 5 g) 10 frequency cycles
Output shaft	5 mm solid shaft with flattening or 8/14 mm hollow shaft [4] with torque support
Maximum axial force	15 N, 20 N with attached housing
Maximum radial force	40 N
Ambient temperature	0..40 °C
Storage temperature	-10..70 °C
Protection class	IP 5X or IP 65 [3]
Weight	max. 1.1 kg
Certificates	CE

[3] IP 65 installed (motor shaft IP 5X)

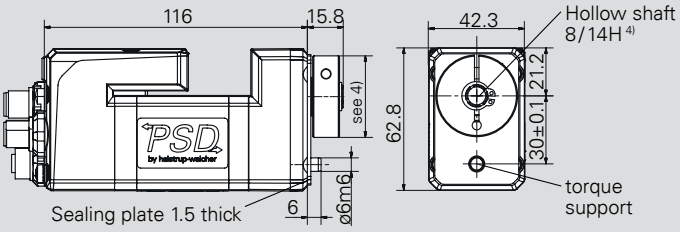
PSD 401-5V (solid shaft)

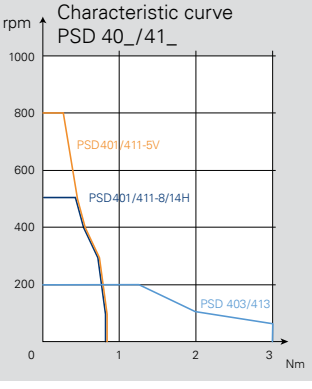


PSD 411-8 / 14H (hollow shaft, 1 Nm)



PSD 413-8 / 14H (hollow shaft, 3 Nm)





[4] Hollow shaft	ø8	ø14
Tolerance	H9	H7
Plug depth	20	
ø Clamp ring	36	35
Cylinder screw	DIN 912 M4 x 16	

Dimensions in mm

PSD 42_/43_

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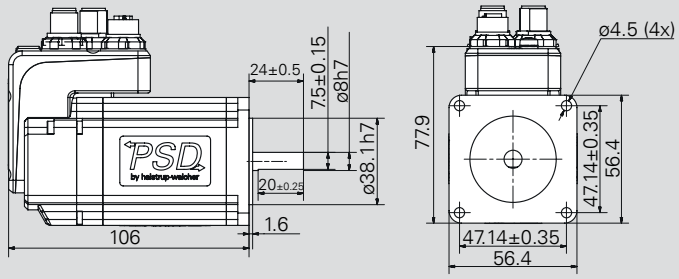
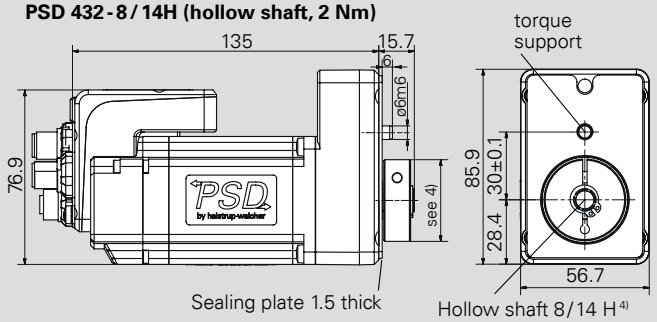
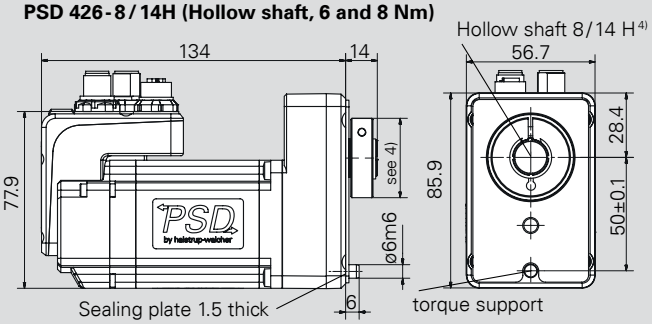
PSD 422-8V (solid shaft)



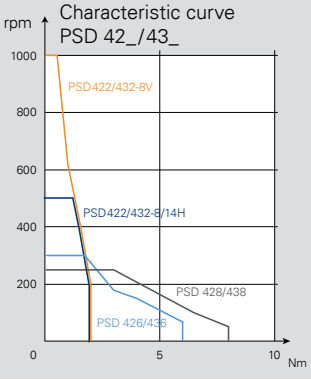
PSD 432-8/14H (hollow shaft, 2 Nm)



PSD 426-8/14H (Hollow shaft, 6 and 8 Nm)



Characteristic curve PSD 42_/43_



4) Hollow shaft	ø8 5)	ø14
Tolerance	H9	H7
Plug depth	20	
ø Clamp ring	36	35
Cylinder screw	DIN 912 M4 x 16	

5) only up to 5 Nm possible

Dimensions in mm

PSD 42_/43_	Nominal torque	Self-holding torque 1) (currented)	Nominal rated speed 2)	Positioning range
2-8V	2 Nm	1 Nm	200 rpm	4026 rot.
2-8H	2 Nm	1 Nm	200 rpm	4026 rot.
2-14H	2 Nm	1 Nm	200 rpm	4026 rot.
6-14H	6 Nm	3 Nm	66 rpm	1274 rot.
8-14H	8 Nm	4 Nm	50 rpm	977 rot.

1) at approx. 100 mA supply current and 1,2 A phase current, currentless 0 Nm
2) at rated torque, speed limitation see characteristic curve

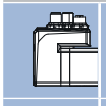
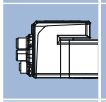
Bus communication
CANopen, IO-Link

Start-up duration	20 % (basis time 300 s) at ambient temperature, 200 rpm and maximum current consumption
Mode of operation	S3
Supply voltage	24 V DC ± 10 % galvanically separated between motor and control
Power consumption	max. 96 W
Nominal current	4.0 A
Power consumption (control unit)	0.1 A
Positioning accuracy	± 1.8 °
Absolute measurement system	magnetic, without reference run, without buffer battery
Shock resistance in accordance with IEC/DIN EN 60068-2-27	Half sinus (3 axes) 50 g 11 ms ± 3 shocks/axle
Vibration resistance in accordance with IEC/DIN EN 60068-2-6	sliding sinus (1 octave/min, 3 axles) 10..2000 Hz 50 m/s² (approx. 5 g) 10 frequency cycles
Output shaft	8 mm solid shaft with flattening or 8/14 mm hollow shaft 4) with torque support
Maximum axial force	30 N, 20 N with attached housing
Maximum radial force	90 N, 40 N with attached housing
Ambient temperature	0..40 °C
Storage temperature	-10..70 °C
Protection class	IP 5X or IP 65 3)
Weight	max. 2 kg
Certificates	CE

3) IP 65 installed (motor shaft IP 5X)

ORDER KEY DIRECT DRIVES PSD

Order key	A	B	C	D	E	F	G
PSD	–	–	–	–	–	–	–

	A Type	B Torque/ Output shaft	C Rotation shaft/ Housing	D Bus communication	E Electical connections [1]	F Protection class	G Measurement system
	40: horizontal	1-5V 1-8H 1-14H 3-8H 3-14H	S: direct or 0° 1: 90° 2: 180° 3: 270°	CA: CANopen IO: IO-Link	0: standard	40: IP 5X 65: IP 65 [2]	1: absolute
	41: vertical						
	42: horizontal	2-8V 2-8H 2-14H 6-14H 8-14H					
	43: vertical						

[1] **Standard equipment**
3 plugs/sockets
with IO-Link: 1 plug

[2] IP 65 installed
(motor shaft IP 5X)

B Key	Torque	Output shaft	C Rotation shaft/Housing			
B1-B2	B1	B2	S	1	2	3
1-5V	1: 0.8 Nm	5V: 5 mm solid shaft		-	-	-
1-8H 1-14H	1: 0.8 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
3-8H 3-14H	3: 3 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
2-8V	2: 2 Nm	8V: 8 mm solid shaft		-	-	-
2-8H 2-14H	2: 2 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
6-14H	6: 6 Nm	14H: 14 mm hollow shaft				
8-14H	8: 8 Nm						

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