

Machine Building Components



SCREWDRIVER FUNCTION MODULES
for the automated screw assembly



ADVANTAGES

➤ Wide product variety for all applications

- Large torque range
- Single- and multi-spindle execution
- Different standard designs



1 Standard execution

A slender design for horizontal or vertical screwdriving.

2 Short execution

For limited space access.

3 Underfloor execution

For a vertical, inverted assembly.

4 Vacuum execution

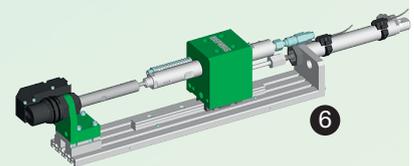
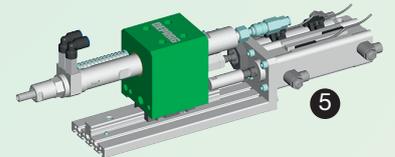
For difficult to access or recessed screw locations in any assembly-direction.

5 Pick & Place execution

For fasteners presented to a defined pick position.

6 Nut execution

For the automatic feeding and assembly of nuts.



➤ Maximum ease of integration

- Compact, robust design with simple connection ports
- Easy integration into your assembly system

➤ Service optimised

- Quick change chuck for a fast bit-exchange within seconds
- Standard bits and sockets reduce follow-up costs and downtimes
- It only takes a minute to exchange a screwdriver spindle to perform a calibration or maintenance: Simply loosen one nut!

➤ Suitable for a complete process documentation of all screwdriving parameter

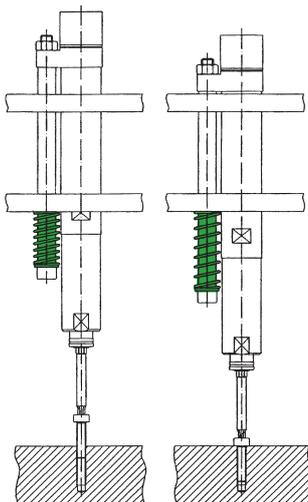
- Screwdriver function modules can be equipped with any DEPRAG screwdriver
- Complete acquisition of the processing-data is possible
- Display of torque and angle values
- Display of status on screw-depth and screw-reloading for the next cycle

➤ Standard modules allow for short delivery times

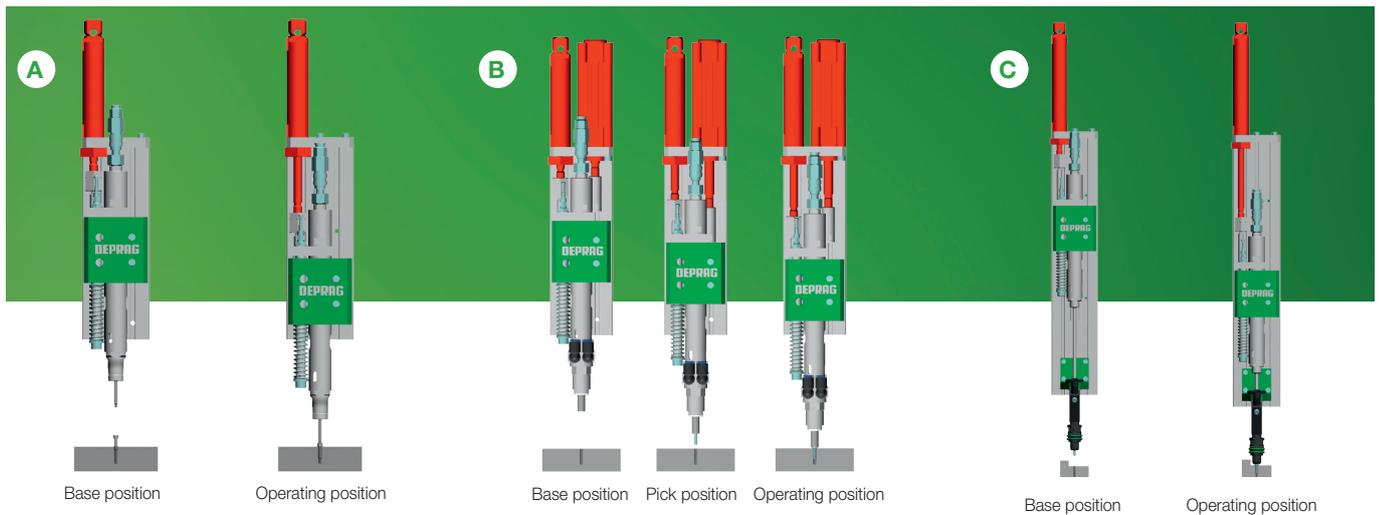
- Due to the modular design and the use of many standard components, the screwdriver function module can easily and individually be adapted to fit your application.
- High level of availability and short delivery times

➤ Axial spring load without the need for special "Inline" bit shaft adapters

Screwdriver spindles always require a stroke compensation. All of our screwdriver spindles are therefore equipped with a lateral guide bolt and spring to regulate the "end load pressure" of each drive spindle. We do not use custom made and/or spring loaded bits or sockets. Internationally available and "standard" bits and sockets are compatible.



Stroke variants



Without feeding

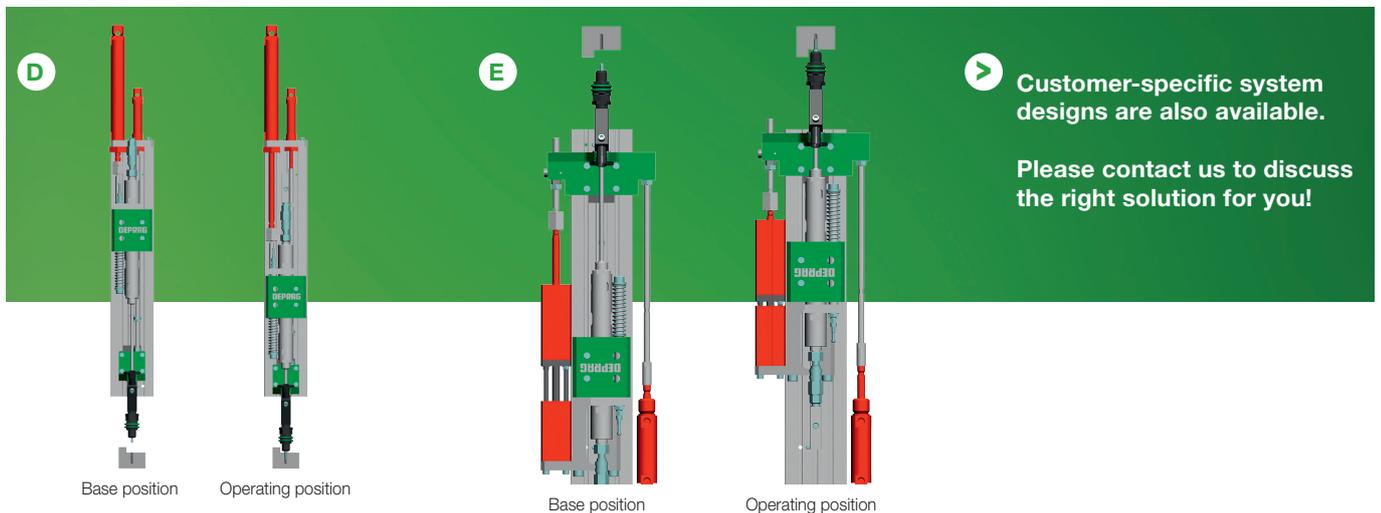
- for applications with pre-positioned screws

With feeding

- for automatic screw presenting through a defined pick position
- spindle-stroke and pick-stroke for lifting the fastener from a pick position

With feeding

- for robotic applications with automatic screw feeding through a feedhose
- mouthpiece, guide sleeve and only one actuating cylinder for the spindle-stroke



▶ Customer-specific system designs are also available.

Please contact us to discuss the right solution for you!

Stationary use with feeding

- with automatic screw feeding through a feedhose
- integration into your system
- actuating cylinder for the mouthpiece-stroke
- actuating cylinder for the spindle-stroke

Underfloor (inverted) use with feeding

- with automatic screw feeding through a feedhose
- for vertical, inverted assemblies; the screwdriver function module is equipped with an additional actuating cylinder
- an additional locking-stroke is applied to the forward-positioned bit to avoid the dropping-back of the screw

Technical data

Screwdriver function module SFM-L - Light-weight and compact single-spindle design for low torque ranges

		without feeding	with feeding
Max. screw head-Ø	mm/in.	no limit	10 / 0.39
Max. number of screwdriver spindles		1	1
Torque	Nm/n.lbs	0.008 - 0.8 / 0.07 - 7.08	0.008 - 0.8 / 0.07 - 7.08
Mouthpiece stroke	mm/in.	-	25, 80 / 0.98, 3.1
Spindle stroke	mm/in.	50, 100 / 1.95, 3.9	depends on mouthpiece stroke
Stroke vacuum finder (only with vacuum execution)	mm/in.	-	50, 100 / 1.95, 3.9
Stroke socket (only with nut execution)	mm/in.	-	50, 100 / 1.95, 3.9
Split-jaw nosepiece / ball-type nosepiece length	mm/in.	-	40, 80 / 1.56, 3.1
Operating modes		pneumatic	pneumatic
		electric	electric
Possible stroke variants		A / B	C / D / E
Distance from mounting surface to screw axis (a)	mm/in.	61 / 2.38	61 / 2.38
Weight	kg/lbs.	2 / 4.4	5 / 11

Additional strokes and other types of nosepieces are available on request.

Screwdriver function module SFM-N - Compact single-spindle design for a wide torque range

		without feeding	with feeding
Max. screw head-Ø	mm/in.	no limit	14 / 0.55
Max. number of screwdriver spindles		1	1
Torque	Nm/n.lbs	0.06 - 20 / 0.53 - 177	0.06 - 20 / 0.53 - 177
Mouthpiece stroke	mm/in.	-	25, 80 / 0.98, 3.1
Spindle stroke	mm/in.	50, 100 / 1.95, 3.9	depends on mouthpiece stroke
Stroke vacuum finder (only with vacuum execution)	mm/in.	-	50, 100 / 1.95, 3.9
Stroke socket (only with nut execution)	mm/in.	-	50, 100 / 1.95, 3.9
Split-jaw nosepiece / ball-type nosepiece length	mm/in.	-	40, 80 / 1.56, 3.1
Operating modes		pneumatic	pneumatic
		electric	electric
Possible stroke variants		A / B	C / D / E
Distance from mounting surface to screw axis (a)	mm/in.	94 / 3.67	94 / 3.67
Weight	kg/lbs.	5 / 11	8 / 17.6

Additional strokes and other types of nosepieces are available on request.

Technical data

Screwdriver function module SFM-S - Robust multi-spindle design for the use of multiple screwdrivers and high down-load forces			
		without feeding	with feeding
Max. screw head-Ø	mm/in.	no limit	14 / 0.55
Max. number of screwdriver spindles		10 *)	10 *)
Torque	Nm/n.lbs	adapted to application	adapted to application
Mouthpiece stroke	mm/in.	-	25, 80 / 0.98, 3.1
Spindle stroke	mm/in.	50, 100 / 1.95, 3.9	depends on mouthpiece stroke
Stroke vacuum finder (only with vacuum execution)	mm/in.	-	50, 100 / 1.95, 3.9
Stroke socket (only with nut execution)	mm/in.	-	50, 100 / 1.95, 3.9
Split-jaw nosepiece / ball-type nosepiece length	mm/in.	-	40, 80 / 1.56, 3.1
Operating modes		pneumatic	pneumatic
		electric	electric
Possible stroke variants		as customer's requirement	as customer's requirement
Distance from mounting surface to screw axis (a)		adapted to application	adapted to application
Weight		depends on application	depends on application

Additional strokes and other types of nosepieces are available on request.

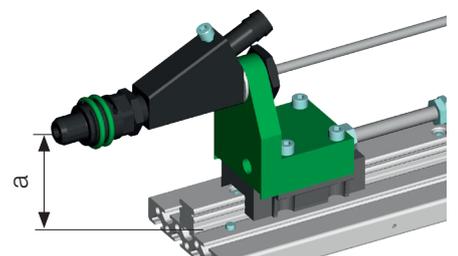
*) It is possible to use more than 10 screwdriver spindles. Please contact us.

Optional Control- and Add-On Functions

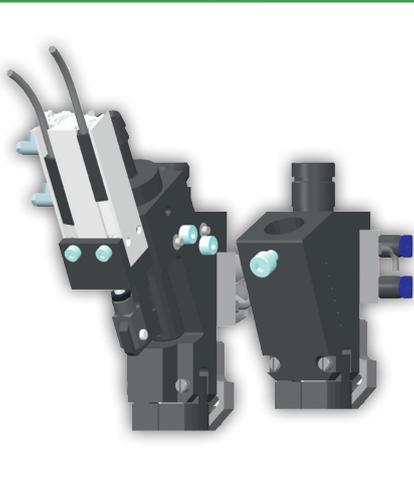
Screwdriver Shut-Off Control - for pneumatic spindle by PE-Switch Depth Control		
	Type	Control Function
digital	single	- Screw-head is seated and assembly is OK - Screw-head is not seated – screw is not completely assembled
	double	- Screw-head is seated and assembly is OK - Screw-head is not seated– screw is not completely assembled - Screw is over-tightened – part is damaged
analog	absolute	- Screw-head is seated and assembly is OK - Screw-head is not seated – screw is not completely assembled - Screw is over-tightened – part is damaged - Depth control for different levels of screw-locations
	relative	- Screw-head is seated and assembly is OK - Screw-head is not seated– screw is not completely assembled - Screw is over-tightened – part is damaged - Depth control relative to the screw-head surface of the part

To support your design efforts, we can supply you with CAD data.

Please contact us.



MAS-SYSTEM - Increase Process Reliability, Reduce Down-time, Save costs!



Difficult accessibility to the screw position? Space is too restricted for any kind of nosepiece or jaw type tooling?

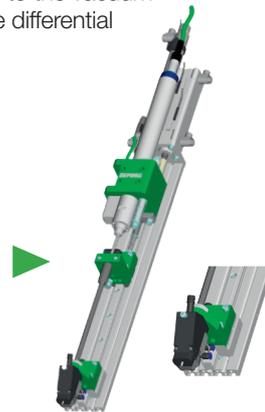
The MAS-System from DEPRAG in combination with a Vacuum-SFM offers the highest process reliability for restricted access screw positions. The screw is blown through a feed tube to the MAS-system where the screw is loaded onto a pick finder which is, in many cases, no larger in diameter than the head of the screw. The screw is held securely in the vertical plane (no tilting) and the "active" two piece jaws allow the screw finder to pass through with zero friction.

Advantage

- Defined transfer of the screw to the vacuum finder (controlled via pressure differential sensor)



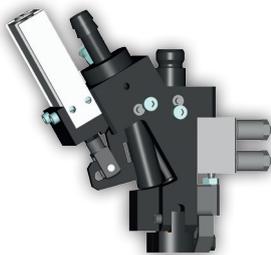
Feeding system



Screwdriver function module with MAS

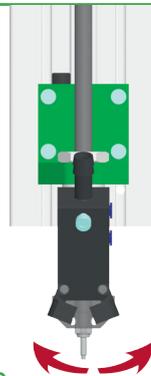


Pressure sensor



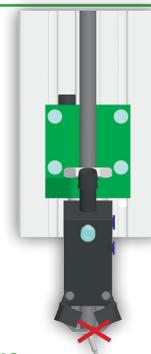
Advantage

- Pre-feeding of the screw during a screw assembly cycle is possible = cycle time optimisation
- Actively controlled pre-feeding tube tooling minimizes friction contact = reduced wear



Advantage

- Actively controlled jaw tooling
- Longer service life of the slim line vacuum finder because there is no friction between the vacuum finder and the jaw tooling



Advantage

- No tilting of the screw on the end tooling due to the active transfer of the screw to the finder via the MAS tooling

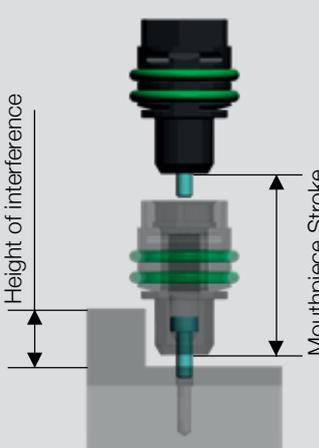
Function

The screw is blow fed through a feed-tube to the MAS-System where the screw is actively controlled onto the vacuum finder. The vacuum SFM positions the vacuum finder and the correct positioning of the screw on the finder is determined by inspection of the pressure differential. After the successful screw-to-finder transfer the active jaws are opened. Friction between the vacuum finder and the jaw tooling is completely avoided. Additionally the active jaws allow contact free passage of the screw on the vacuum finder and the screw is controlled on plane with the vacuum finder (even for horizontal or inverted applications).

After a successful screw assembly cycle the complete system returns to the home position, the active jaws are closed and the process starts again.

Inquiry form Screwdriver Function Module

Please submit your application requirements; our application consultants are standing by:

Automatic Screwfeeding	<input type="checkbox"/> yes	<input type="checkbox"/> no	
Operating Mode of Screwdriver	<input type="checkbox"/> pneumatic	<input type="checkbox"/> electric	
Fastener	<input type="checkbox"/> Screw	<input type="checkbox"/> Nut	<input type="checkbox"/> Threaded Insert
	Type: <input type="text"/>	Type: <input type="text"/>	Type: <input type="text"/>
	Size: <input type="text"/>	Size: <input type="text"/>	Size: <input type="text"/>
Screwdriver Data			
	Speed	<input type="text"/>	rpm
	Torque	<input type="text"/>	Nm
	Screw Depth	<input type="text"/>	mm
	Feed Stroke	<input type="text"/>	mm
	Height of interference	<input type="text"/>	mm
Type of Assembly	<input type="checkbox"/> To Depth	<input type="checkbox"/> To Torque	
	<input type="checkbox"/> To Angle	electronic Screwdriver	
Screwdriving Direction	<input type="checkbox"/> vertical from above	<input type="checkbox"/> vertical from below	<input type="checkbox"/> horizontal
Number of screw-locations:	<input type="text"/>		
Desired Cycle time:	<input type="text"/>		s
Description of your Application	<input style="width: 100%; height: 100%;" type="text"/>		

DEPRAG

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