

Feeding Technology



Feeding systems for handheld tools

Efficient and intelligent feeding with eacy feed, the new generation vibratory bowl feeder.

- **Approx. 80 % energy savings**
- **Efficiency and worldwide application - one design for all markets**

Our feeding systems consist of modules that are adapted to each other: one feeder with integrated controller, a handheld screwdriver or press-insertion devices and all other add-on components that fit the customer's application.

This proven system with an extreme high feed rate, allows a rational and process-optimized assembly.



OUR RANGE OF FEEDING SYSTEMS FOR HANDHELD TOOLS

Vibratory bowl feeder

DEPRAG feeders with a vibratory drive are particularly suitable for screws with a shaft diameter from < 1.4 mm to 6.3 mm. Shaft lengths of 4 mm to 50 mm can be processed.

For counter-sunk head screws especially, vibratory bowl feeders are a functional solution. The high output of DEPRAG vibratory bowl feeders distinguishes them from other feeding systems.

→ Technical data can be found on [page 6](#).

Sword feeder

Sword feeders or segment feeders are used when components are particularly sensitive and a more gentle feeding environment is required. They are also extremely quiet. Our sword feeders can be used for screws with a shaft diameter from 2 mm to 6.3 mm. They are ideal for screws up to 25 mm in shaft length. Balls with a diameter of 1 to 12 mm can also be fed.

→ Technical data can be found on [page 7](#).

Pick-and-Place feeding system

If feeding via a hose system is not possible e.g. if the screw has a non favourable ratio in relation to the head diameter vs overall length, then we offer special solutions such as a pick-and-place procedure with vacuum pick or gripper pick devices.

→ Please contact us if you are interested in this individual solution.

Screw presenters / Screw dispenser

Screw presenters

→ [Catalog D3840](#)

Screw dispenser

→ [Catalog D0066](#)

Screwdrivers for the feeding system

Our feeders can be used in combination with almost any electric or pneumatic screwdriver of the MICROMAT/MINIMAT range. Additionally we also offer screwdrivers with ESD compliance.

→ Technical data can be found on [page 8](#).

More feeding systems from our range

Step feeder

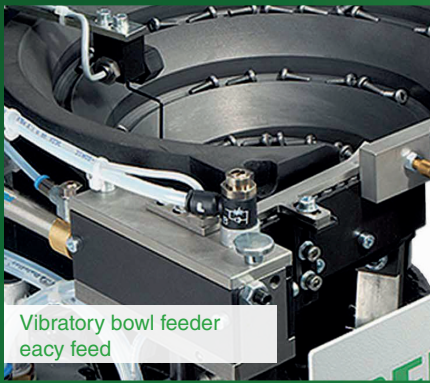
→ [Catalog D3835](#)

Mini Screw Feeder

→ [Catalog D3836](#)

Storage devices

→ [Catalog D3850](#)



Vibratory bowl feeder
easy feed



Sword feeder



Pick-and-Place
feeding system



Screw dispenser



Screwdrivers for the
feeding system

CLEAN FEED – THE DEPRAG CONCEPT FOR TECHNICAL CLEANLINESS

In particular with the handling of small, sensitive components, the subject of Technical Cleanliness is becoming more in demand, for example in the manufacturing of light electronic or hydraulic products. In response to the rising trend of Technical Cleanliness we now offer a program of specifically designed solutions.

The assembly of critical parts, components and systems in conjunction with Technical Cleanliness is done in the so-called clean production environment. DEPRAG offers proven components that meet the requirements of Technical Cleanliness in automatic parts feeding and assembly. Particles are minimised using friction and/or vacuum with the help of a range of methods and components.

Your Advantage: Integrated concept for Technical Cleanliness! The complete program of all required components from a single source.

Application of the following equipment can help to produce the optimal results:

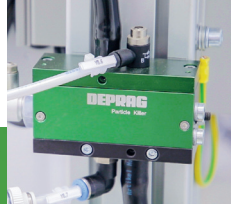
- Pre-cleaned assembly components (e.g. Arnold Cleancon® screws) - fewer particulates due to an additional cleaning process
- DEPRAG HSF Sword Feeder - vibration free part feeding and therefore less particle generation
- DEPRAG-inverted screw assembly unit - use gravity to your advantage – inverted screwdriving with the DEPRAG-inverted screw assembly unit
- DEPRAG Particle Killer - debris in the autofeed process is reduced selectively
- DEPRAG BitCleaner - suction of metallic abrasion
Say goodbye to annoying particles during the fully automatic tightening process!
The DEPRAG BitCleaner is the latest addition to our CleanFeed concept and removes unwanted particles that occur during the engagement process (connection of the bit with the screw drive) and can stick to the bit. Through a cyclical cleaning process, this innovative tool significantly improves Technical Cleanliness.
- DEPRAG SFM-V vacuum screwdriving module - debris created during the assembly process is extracted using vacuum sources

AVOID ABRASION



Low abrasion, component friendly feeding of connection elements with a DEPRAG sword feeder.

REDUCE ABRASION



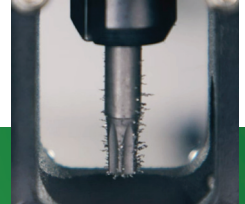
Particle Killer

REMOVE ABRASION



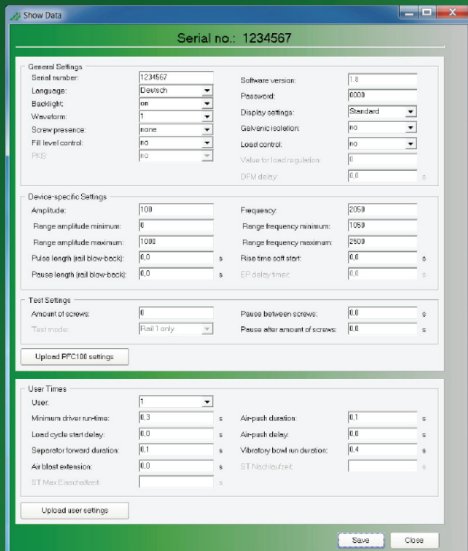
Vacuum suction

SUCK OFF ABRASION



DEPRAG BitCleaner

Technical data	Inline Variant	Pick&Place Variant
Required control components	Pneumatic Valve/Vacuum Generator	Pneumatic Valve/Vacuum Generator
Connections	24VDC PNP	24VDC PNP
Dimensions mm (LxWxH)	170 x 30 x 120 (without hoses)	540 (due to 160 mm load stroke) x 50 x 125 (without hoses)
		<p>Pick to light</p>



SOFTWARE SOLUTIONS

PFC100 Manager – the parameterisation software for PFC100 controllers

The PFC100 Manager facilitates the reading and saving of parameters as text files for every PFC100 controller. Saved parameters can be transferred to any PFC100 controller quickly and simply using the PFC100 Manager.

The connection cable 385520B required to connect the PC and PFC100 must be ordered separately.

The software download is available from the myDEPRAG customer portal (my.deprag.com). Registered users can activate the activation code and manage licences in MY ACCOUNT > DEPRAG Apps.

Available languages: German and English

Part number:
PFC100 Manager, activation key, part no. 122000

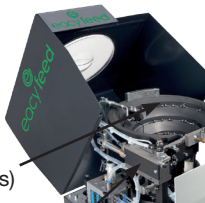
Further information can be found in our catalog D3900E or on our website www.deprag.com

STRUCTURE OF A DEPRAG FEEDING SYSTEM

DEPRAG feeding systems consist of the feed bowl unit, screw separator, an air connection and air maintenance unit, a mains power switch and electronic controller, 2 m standard length hose set, the mouthpiece guide and the mouthpiece as well as an appropriate screwdriver receiver (adapter) and a sound enclosure cover.

With either vibratory bowl feeder or sword feeder

With single or double spiral bowl (for one or two screwdrivers)



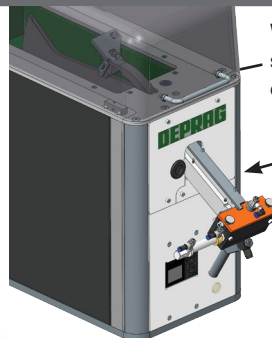
With single or double separator system

Can be combined with any screwdriver model
Hose set
Mouthpiece guide
Mouthpiece
Nosepiece single/split type or ball type

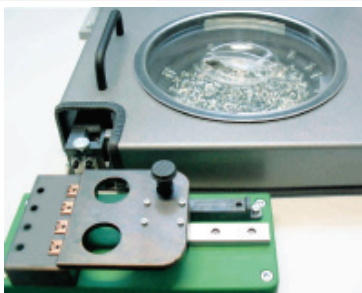


With hopper and sort segment for one feed rail

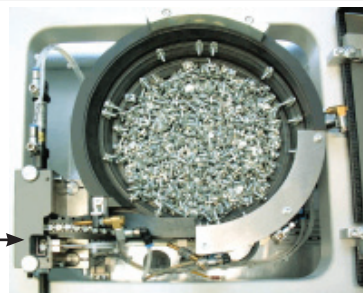
Sword feeder with separator



If feeding with a hose system is not possible, we offer special solutions, such as the pick-and-place procedure



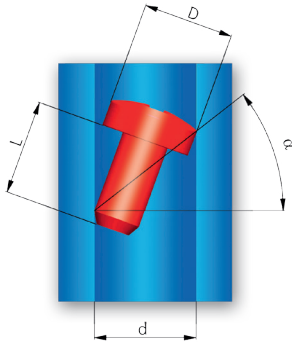
Defined pick position with integrated screw pick control option



GUIDELINE FOR THE SELECTION OF A SUITABLE FEEDER

STEP 1: Feeding criteria

Basically all "shaft-heavy" screws with a head which fulfils the following criteria are suitable for processing with our feed systems:



Feeding criteria:
 $\alpha > 30^\circ$

$d \sim D + 0.5 \text{ mm}$

Approximate formula:
 $L > D + 2 \text{ mm}$

d = Internal diameter feed hose
D = Screw head diameter
L = Screw shaft length

STEP 2: Screw quality

For reliable feeding machines a DIN quality standard (allowable 3% bad parts) is not always sufficient.

Higher levels of screw/fastener quality improve the feeder's reliability.

The goal should be a quality grade of 10 ppm ("parts per million"). I.e. in every 100,000 screws there can be 1 bad part.

STEP 3: Which feeding principle is best suited to your application?

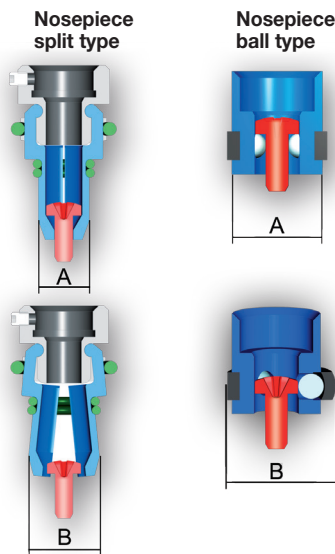
A vibratory spiral bowl is particularly suited to screws with awkward dimensions or those with special feed rate requirements.

The sword feeder is applied when extremely gentle handling of the parts is required or when very low noise level is a must.

If feeding with a hose system is not possible we also offer pick-and-place procedure.

STEP 4: Determining the screw receiver

At the end of the mouthpiece there is a nosepiece ball type (1 or 2 rows) or a nosepiece split type, mounted to receive and position the screw.



D = Head diameter
d = Shaft diameter
n = Space required to open

$A = D + 2.5 \text{ mm}$
 $B = A + D - d/2$

$B = 3D - 2d + 5 \text{ mm}$

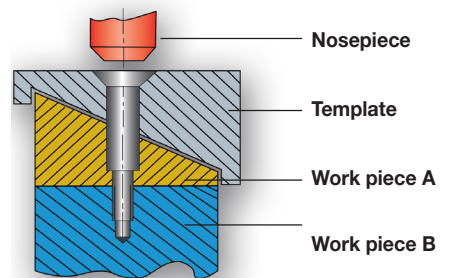
$n = A \times B$

$n = \varnothing B$

STEP 5: Space available on the component

For effective use of the handheld screw feeders the space available around the screw head on the assembled components is very important.

There is a certain space requirement for the nosepiece split type and ball type. An even surface simplifies the positioning and handling of the tool. Slanted surfaces with small diameter recessed screw-holes can only be accessed with templates which are available as optional equipment.



STEP 6: Single or multiple feeding / screwdrivers?

Using a dual spiral vibratory bowl (type 11022) one feeding machine can supply two separate screw outlet positions/screwdrivers. Compared to the investment of two single feeding machines, investment in a twin device saves approximately 25 %.

STEP 7: Specification

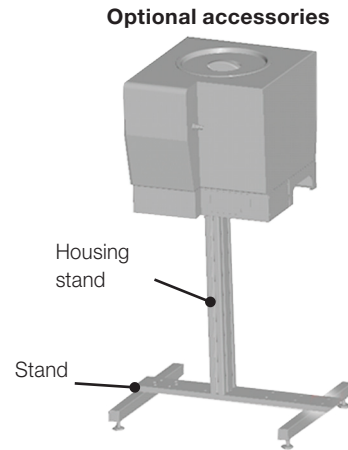
For the correct specification of your screw feeding machine the following data is required:

- Voltage / frequency
- Choice of screwdriver model (torque and speed)
- Screw dimension and screw type (if available – DIN no.)
- Torque (if known)
- Details dimensions of assembly components
- Hose length (if over the standard length of 2 m).

To process your order we require sample screws (approx. 1 feed bowl volume) and if possible some samples of the part to be assembled.

TECHNICAL DATA VIBRATORY BOWL FEEDER

eacy feed
11011-0.15 11011-1.2
11011-0.75 11011-2.5



Material to be fed		Screws or nuts						
Standard version	Type	11011-0.15	11022-0.15	11011-0.75	11022-0.75	11011-1.2	11011-2.5	11022-2.5
Control unit		PFC100 Controller						
Transport principle		Vibratory bowl feeders *)						
Amount of connectable drivers		1	2	1	2	1	1	2
Feed rate		45	2 x 45	45	2 x 45	25	30	2 x 30
Filling capacity		0.15 / 0.04	0.15 / 0.04	0.75 / 0.2	0.75 / 0.2	1.2 / 0.32	2.5 / 0.66	2.5 / 0.66
Voltage		24 Volt DC			24 Volt DC			
Power consumption		max. 50		max. 50		max. 150		
Air pressure requirement		6 / 85.2						
Air connection size		10 / ³ / ₈	10 / ³ / ₈	10 / ³ / ₈	10 / ³ / ₈	10 / ³ / ₈	10 / ³ / ₈	10 / ³ / ₈
Dimensions W x D x H		296 x 360 x 289		360 x 414 x 368			547 x 600 x 294	
		11 ²¹ / ₃₂ x 14 ³ / ₁₆ x 11 ³ / ₈		14 ³ / ₁₆ x 16 ³ / ₁₆ x 14 ¹ / ₂			21 ¹⁷ / ₃₂ x 23 ³ / ₈ x 11 ³⁷ / ₆₄	
Weight		appr. 18/39.6	appr. 20/44	appr. 32/71	appr. 34/75	appr. 40/88	appr. 60/132	
Feedhose length standard		4 / 13.2	4 / 13.2	4 / 13.2	4 / 13.2	4 / 13.2	4 / 13.2	4 / 13.2
Feedhose length max.		8 / 26.4	8 / 26.4	8 / 26.4	8 / 26.4	8 / 26.4	8 / 26.4	8 / 26.4
Technical details on screws:								
Max. head diameter		5 / ¹³ / ₆₄	4 / ⁵ / ₃₂	12 / ¹⁵ / ₃₂	8 / ⁵ / ₁₆	12 / ¹⁵ / ₃₂	16 / ⁵ / ₈	14 / ³⁵ / ₆₄
Max. shaft length		8 / ⁵ / ₁₆	8 / ⁵ / ₁₆	35 / 1 ³ / ₈	25 / ⁶³ / ₆₄	50 / 1 ³¹ / ₃₂	60 / 2 ²³ / ₆₄	60 / 2 ²³ / ₆₄
Range of shaft diameter		1.2-2.5 / 0.048-0.1	1.2-2.5 / 0.048-0.1	1.5-7/0.06-0.27	1.5-7/0.06-0.27	3-7 / 0.12-0.28	4-8 / 0.16-0.31	4-8 / 0.16-0.31
Technical details on nuts:								
max. AF		4 / ⁵ / ₃₂	3 / 0.12	10 / ³ / ₈	8 / ⁵ / ₁₆	11 / 0.43	13 / 0.5	13 / 0.5
max. height		3 / 0.12	2 / 0.08	5 / ¹³ / ₆₄	4 / ⁵ / ₃₂	6 / 0.23	8 / ⁵ / ₁₆	8 / ⁵ / ₁₆
Included in delivery:		Power unit 105535A		Power unit 105535A		Power unit 2041061		
Required accessories:		Power cable 812587 (EU) or Power cable 812295 (US)		Power cable 812587 (EU) or Power cable 812295 (US)		Power cable 812587 (EU) or Power cable 812295 (US)		
Optional accessories:								
Housing stand		102483A		3641392A		3641392A		345680A
Stand (required for housing stand)		994449		994449		994449		999309
Fill level indicator		414965J		414965A		414965A		414965D
Retaining plate		9198574		9198574		9198577		-
More optional accessories:		Hopper (see catalog D3850E)						
		Special mouthpiece for critical screw head diameter to length relation						
		Part template for positioning						

*) with plastic vibratory bowl

Our software solutions undergo continuous improvements. We recommend that you regularly update your software. In this way you will always receive the most up-to-date security updates, upgraded features and drivers. With the most current version of the software you can be sure that your device is optimally prepared for Industry 4.0.

A connecting cable is required to connect external controller with feeder. Part number will be assigned in case of an order.
Every feeding system contains all required attachments for the screwdriver such as mouthpiece guide, mouthpiece, locking sleeve and bits. Various specialised versions are available depending on application and the screwdriver in use.

TECHNICAL DATA
SWORD FEEDER

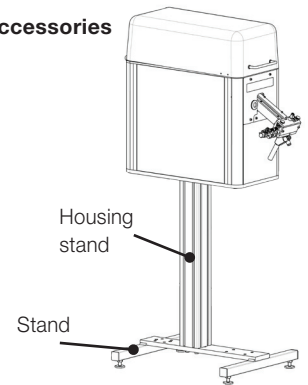


11811-1.5

Screws



Optional accessories



Material to be fed		Screws	
Sword Feeder with integrated controller	Type	1811-0.15-x*) Controller 6	11811-1.5 PFC18L Controller (insulation IP30)
Amount of connectable drivers		1	1
Feed rate	Parts/min	30	30
Filling capacity	liter/gal.	0.15 / 0.04	1.5 / 0.4
Voltage	V/Hz	230/50, 115/60	24 Volt DC
Power consumption	W	20	50
Air pressure requirement	bar/PSI	6.3 / 90	6 / 85.2
Air connection size	mm/in.	10 / ³ / ₈	10 / ³ / ₈
Dimensions W x D x H	mm	320 x 255 x 260	267 x 704 x 550
	in.	12 ¹⁹ / ₃₂ x 10 ³ / ₆₄ x 10 ¹⁵ / ₆₄	10 ³³ / ₆₄ x 27 ²³ / ₃₂ x 21 ²¹ / ₃₂
Weight	kg/lbs	12 / 26.4	approx. 30 / 66
Feedhose length standard	m/ft.	2 / 6.6	2 / 6.6
Feedhose length max	m/ft.	5 / 16.4	8 / 26.24
Technical details on screws:			
Max. head diameter	mm/in.	5 / ¹³ / ₆₄	12 / ¹⁵ / ₃₂
Max. shaft length	mm/in.	8 / ⁵ / ₁₆	25 ⁶³ / ₆₄
Range of shaft diameter	mm/in.	1-2.5 / 0.04-0.1	2 - 6.3 / 0.08 - 0.25
Included in delivery:		-	Power unit 105535A
Required accessories:		-	Power cable 812587(EU) or power cable 812295(US)

*) x = Voltage Supply (1: 230 V / 50 Hz, 2: 115 V / 60 Hz)

Optional accessories:		Hopper (see catalog D3850E)	
Additional function controls		screw presence control, inlet control, fill level height	-
Housing stand	Part no.	-	3641393A
Stand (required for housing stand)	Part no.	-	994449
Retaining plate	Part no.	-	9198574



A connecting cable is required to connect external controller with feeder. Part number will be assigned in case of an order.

Every feeding system contains all required attachments for the screwdriver such as mouthpiece guide, mouthpiece, locking sleeve and bits. Various specialised versions are available depending on application and the screwdriver in use.

SPECIAL SOLUTIONS

Please contact our sales representatives if you cannot find a screwdriving technique suitable to your application in this description of our standard solutions.

As well as our standard solutions described in this catalog we also offer customer specific and application specific solutions.

SCREWDRIVERS FOR FEEDERS

MINIMAT-EC-SERVO-SCREWDRIVER with highest processing control

MINIMAT-EC-SCREWDRIVER with processing control

ELECTRIC SCREWDRIVER with mechanical shut-off clutch

MICROMAT-Z/MINIMAT-Z - PNEUMATIC SCREWDRIVER

MICROMAT-FZ/MINIMAT-FZ - PNEUMATIC SCREWDRIVER with multi function control

SENSOMAT-Z - PNEUMATIC HANDHELD SCREWDRIVER with a mechanical clutch-function

Technical information

→ [Catalog D3161](#)

→ [Catalog D3000](#)

→ [Catalog D3480](#)

→ [Catalog D3420 and D3430](#)

→ [Catalog D3440](#)

→ [Catalog D3460](#)

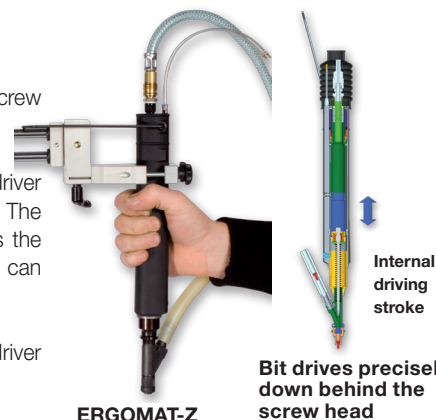
ERGOMAT-Z – THE AUTO STROKE SCREWDRIVER FOR FEEDERS

When using feeders with hand-screwdrivers, it is necessary for the bit to retract, so that a new screw can fall into the feed-channel.

With the ERGOMAT-Z driver, this stroke is performed automatically within the driver.

The two components, clutch bearing and mouthpiece guide, are already integrated in the screwdriver housing. The stroke of the driver is activated by the feeder immediately after the screw is fed. The driver with the bit is positioned immediately above the screw head. When the screwdriver starts the screw cannot be pushed back into the mouth-piece. Because of the integrated stroke, the hand can guide the driver much closer to the screw hole.

Both features simplify the positioning process and ease handling. Additionally, the ERGOMAT-Z driver has all the advantages of the MINIMAT screwdriver series.



ERGOMAT-Z

Bit drives precisely down behind the screw head

Technical data ERGOMAT-Z, motor size 1

Screwdriver right rotation, right shut-off Push-to-start	Type Part no.	347V-218 406859A	347V-318 406859B	347V-518 406859C	347V-718 406859G
Torque min.	Nm/in.lbs	0.3 / 2.7	0.3 / 2.7	0.2 / 1.8	0.2 / 1.8
Torque max.	Nm/in.lbs	1 / 8.85	1.4 / 12.4	2 / 17.7	2.5 / 22.1
Speed, idling	rpm	1900	1300	900	640
Air consumption	m ³ /min/cfm	0.23 / 8	0.23 / 8	0.23 / 8	0.23 / 8
Main body dia.	mm/in.	32/38 – 1 ¹ / ₄ / 1 ¹ / ₂	32/38 – 1 ¹ / ₄ / 1 ¹ / ₂	32/38 – 1 ¹ / ₄ / 1 ¹ / ₂	32/38 – 1 ¹ / ₄ / 1 ¹ / ₂
Length	mm/in.	250 / 9 ²⁷ / ₃₂	250 / 9 ²⁷ / ₃₂	250 / 9 ²⁷ / ₃₂	250 / 9 ²⁷ / ₃₂
Weight	kg/lbs	0.8 / 1.8	0.8 / 1.8	0.8 / 1.8	0.8 / 1.8
Noise level	dB(A)	63	63	63	66
Air hose dia.	mm/in.	6 / 1 ¹ / ₄	6 / 1 ¹ / ₄	6 / 1 ¹ / ₄	6 / 1 ¹ / ₄
Drive hex. female DIN ISO 1173		1 ¹ / ₄ "	1 ¹ / ₄ "	1 ¹ / ₄ "	1 ¹ / ₄ "
Quick change chuck, mounted		yes	yes	yes	yes
For screwfeeding: Max. head diameter	mm/in.	8 / ⁵ / ₁₆	8 / ⁵ / ₁₆	8 / ⁵ / ₁₆	8 / ⁵ / ₁₆
Included in delivery:	Set of coupler and connector plug · Set of torque adjustment tools · Set of clutch springs				
Optional Equipment:	Clamping flange with pistol grip part no. 405545A (for conversion to use as pistol grip screwdriver)				

Performance data relate to an air pressure of 6.3 bar (90 PSI)

DEPRAG

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