



Screwdriving technology

Automation

Air motors

Air tools

DEPRAG

**Handheld Screwdriver
pneumatic**

MICROMAT-F / MINIMAT-F SCREWDRIVING SYSTEM

- Handheld screwdriver
- Multi function control
- Pneumatic control

to guarantee production quality.

The **screwdriver function controller fc10** with the handheld screwdrivers series MICROMAT-F/MINIMAT-F provide the intelligent solution for your process security. The fc10 screwdriving system counts your assembled screws, monitors their screwdriving time, insures that the preset torque is achieved (mechanical clutch) and counts up only when the screwdrive cycle meets the required parameters. In addition it can recognize and control the exchange of assembled parts in process. Test it for yourself and reduce your post inspection by 100%.

The **fc20** can also monitor your complex assembly processes using programmable sequences. The controller can also manage up to 3 different screwdriver model connections for complex multi layer assemblies which may require different screws and torques. The fc20 offers a high flexibility of different screwdriving parameters to help achieve a quality assembly.



fc10



fc20



After detecting the start signal from the screwdriver (operator push down or start trigger), the air supply to the driver is enabled via the new multi function control combined with the pneumatic control. When reaching the preset torque value, the screwdriver stops by way of the extremely accurate shut-off clutch. In connection with the pneumatic control and a sensor in the screwdriver (MICROMAT-F/ MINIMAT-F) the multi function control is able to confirm the correct screw assembly sequence. The screw tightening time is compared to a minimum/maximum pre-programmed time window. If the screw tightening time is too short (cross thread) or too long (stripped screw) the operator is alerted by a failure message. In addition an onboard sensor confirms that the screwdriver is enabled until the clutch mechanism is disengaged insuring that the cycle was not terminated as a result of the operator lifting the screwdriver prematurely. This confirms that the tightening process was carried out properly without material failures or influence by the operator. In addition, the number of screw assembly operations per part can be controlled. No screw will be forgotten!

Reliable pass/fail process monitoring is only guaranteed with the use of a non reversible screwdriver. In order to assure best possible process quality, we recommend to apply right-hand rotation drivers wherever possible.

In short, the screwdriver with multi function control monitors itself and assures a 100% integrity of your assembly.

The MICROMAT-F/MINIMAT-F screwdriver incorporates the well-known advantages of the DEPRAG MICROMAT/MINIMAT screwdriver series and also oilfree operation is possible.

When connected to an automatic screwfeeder, the feeding of the screw is controlled by the multi function control. The controller is connected to the screwfeeder using an optionally available SZG-connection set.

Additional functions of the fc20 controller:

The fc20's documentation features are especially versatile. Each respective screwdriving process can be attributed to a specific workpiece. Optionally, a barcode scanner can be connected to the fc20, the end values are stored along with the respective screwdriving process on the component's barcode. These end values are stored for seven days and can be transferred to a PC via a serial interface for process traceability. The number of good/bad screwdriving processes as well as the average screwdriving duration allow for control and optimization of the assembly process. An extensive range of diagnostic possibilities round off the wide spectrum of the new screwdriver controller's application options. Using a transducer, the worker can control the preset torque directly at the workpiece, making it much easier for maintenance and quality management. Integrated diagnostic features are able to test all of the controller's inputs and outputs and display the current states. Furthermore, an internal voltage monitor ensures fc20's continuous functional reliability.



It is necessary to use a torque reaction support (e.g. stand, handgrip) for maximum torque: over 4 Nm for straight design, over 10 Nm for pistol grip and over 60 Nm for angle design. Suitable torque reaction supports can be found in our brochure D 3340 E.

TECHNICAL DATA

DEPRAG-MICROMAT-F Screwdriver straight

Screwdriver Style		Motor Size 0			
Driver right rotation	Type part no.	345F-308 399400 A	345F-408 399400 B	345F-708 399400 C	345F-508 399400 D
Screws	up to	M3	M3	M3	M3
Torque min.	Ncm / in.oz	2 / 3	2 / 3	2 / 3	2 / 3
Torque max. (soft pull-up)	Ncm / in.oz	50 / 70	55 / 78	70 / 97	70 / 97
Torque max. (hard pull-up)	Ncm / in.oz	60 / 83	55 / 78	70 / 97	70 / 97
Speed, idling	rpm	1600	1100	600	350
Internal hex. drive DIN 3126		B 3 (3 mm/.118")	B 3 (3 mm/.118")	B 3 (3 mm/.118")	B 3 (3 mm/.118")

Suitable tool inserts and connecting components with a drive as per DIN 3126 - A 3 (3 mm), see also in our brochure D 3320 E. Further technical details see leaflet D 3420 E.

DEPRAG-MINIMAT-F Screwdriver straight

Screwdriver Style		Motor Size 1				Motor Size 2			
Driver right rotation	Type part no.	347F-218 397061 A	347F-318 397061 B	347F-518 397061 C	347F-618 397061 D	347F-228 386365 A	347F-328 386365 B	347F-428 386365 D	347F-528 386365 C
Screws	up to	M3	M3	M3	M3	M4	M4	M4	M5
Torque min.	Nm / in.lbs	0.3 / 3	0.3 / 3	0.2 / 2	0.2 / 2	0.5 / 5	0.4 / 4	0.4 / 4	0.3 / 3
Torque max. (soft pull-up)	Nm / in.lbs	1 / 9	1.4 / 12	2 / 18	2 / 18	1.8 / 16	3 / 26	4 / 35	5 / 44
Torque max. (hard pull-up)	Nm / in.lbs	1 / 9	1.4 / 12	2 / 18	2 / 18	2 / 18	3.2 / 28	4.5 / 40	5 / 44
Speed, idling	rpm	1900	1300	900	600	4000	1550	1000	680
Internal hex. drive DIN 3126		F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")
Screwdriver Style		Motor Size 2.5			Motor Size 3				
Driver right rotation	Type part no.	345F-7258 401537 A	345F-3258 401537 B	345F-4258 401537 C	346F-238 396359 B	346F-738 396359 C	346F-338 396359 D	346F-438 396359 E	
Screws	up to	M5	M6	M6	M5	M6	M6	M8	
Torque min.	Nm / in.lbs	1 / 9	1 / 9	1 / 9	2 / 18	2 / 18	2 / 18	2 / 18	
Torque max. (soft pull-up)	Nm / in.lbs	5 / 44	10 / 88	12 / 106	5 / 44	8 / 71	14 / 123	20 / 177	
Torque max. (hard pull-up)	Nm / in.lbs	6 / 53	10 / 88	12 / 106	6 / 53	9 / 80	14 / 123	20 / 177	
Speed, idling	rpm	1100	680	310	2500	1400	750	400	
Internal hex. drive DIN 3126		F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	

Incl. 3 m / 10 ft. air supply hose (lengths up to 5 m / 16.4 ft. available). Further technical details see leaflet D 3430 E.

TECHNICAL DATA

DEPRAG-MINIMAT-F Screwdriver pistol-grip

Screwdriver Style		Motor Size 2					
Driver right rotation lower air-inlet	Type part no.	347F-227 391735 A	347F-327 391735 B	347F-427 391735 D	347F-527 391735 C		
Driver right rotation upper air-inlet	Type part no.	347F-227O 391473 A	347F-327O 391473 B	347F-427O 391473 D	347F-527O 391473 C		
Screws	up to	M3	M4	M4	M5		
Torque min.	Nm / in.lbs	0.4 / 4	0.4 / 4	0.4 / 4	0.3 / 3		
Torque max. (soft pull-up)	Nm / in.lbs	1.5 / 13	3 / 26	3.5 / 31	5 / 44		
Torque max. (hard pull-up)	Nm / in.lbs	1.8 / 16	3.2 / 28	4 / 35	5 / 44		
Speed, idling	rpm	4000	1550	1000	680		
Internal hex. drive DIN 3126		F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")		
Driver reversible lower air-inlet	Type part no.	347F-227U 395047 A	347F-327U 395047 B	347F-427U 395047 D	347F-527U 395047 C		
Driver reversible upper air-inlet	Type part no.	347F-227OU 395052 A	347F-327OU 395052 B	347F-427OU 395052 D	347F-527OU 395052 C		
Screws	up to	M3	M4	M4	M5		
Torque min.	Nm / in.lbs	0.4 / 4	0.4 / 4	0.4 / 4	0.3 / 3		
Torque max. (soft pull-up)	Nm / in.lbs	1.5 / 13	3 / 26	3.5 / 31	5 / 44		
Torque max. (hard pull-up)	Nm / in.lbs	1.8 / 16	3.2 / 28	4 / 35	5 / 44		
Speed, idling	rpm	3000	1100	750	500		
Internal hex. drive DIN 3126		F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")		
Screwdriver Style		Motor Size 2.5			Motor Size 3 *)		
Driver right rotation	Type part no.	345F-7257 394625 A	345F-3257 394625 B	345F-4257 394625 C	346F-737 400561 C	346F-337 400561 D	346F-437 400561 E
Screws	up to	M5	M6	M6	M6	M6	M8
Torque min.	Nm / in.lbs	1 / 9	1 / 9	1 / 9	2 / 18	2 / 18	2 / 18
Torque max. (soft pull-up)	Nm / in.lbs	5 / 44	10 / 88	12 / 106	8 / 71	14 / 124	20 / 177
Torque max. (hard pull-up)	Nm / in.lbs	6 / 53	10 / 88	12 / 106	9 / 80	14 / 124	20 / 177
Speed, idling	rpm	1025	525	270	1400	750	400
Internal hex. drive DIN 3126		F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")
Driver reversible	Type part no.				346F-737U 402845 C	346F-337U 402845 D	346F-437U 402845 E
Screws	up to				M6	M6	M8
Torque min.	Nm / in.lbs				2 / 18	2 / 18	2 / 18
Torque max. (soft pull-up)	Nm / in.lbs				7 / 62	12 / 106	20 / 177
Torque max. (hard pull-up)	Nm / in.lbs				8 / 71	12 / 106	20 / 177
Speed, idling	rpm				1200	650	320
Internal hex. drive DIN 3126					F 6.3 (1/4")	F 6.3 (1/4")	F 6.3 (1/4")

Incl. 3 m / 10 ft. air supply hose (lengths up to 5 m / 16.4 ft. available). Further technical details see leaflet D 3435 E.

*) lower air-inlet and upper air-inlet

Suitable tool inserts and connecting components with a drive as per DIN 3126 – E 6.3 (1/4"), see also in our brochure D 3320 E.

DEPRAG-MINIMAT-F Screwdriver angle-head design

Screwdriver Style		Motor Size 2			Motor Size 2.5		
Driver right rotation	Type part no.	377F-321 389689 B	377F-421 389689 D	377F-521 389689 C	376F-7251 392061 A	376F-3251 392061 B	
Screws	up to	M4	M5	M5	M6	M6	
Torque min.	Nm / in.lbs	0.4 / 4	0.4 / 4	0.3 / 3	1.5 / 13	1.5 / 13	
Torque max.	Nm / in.lbs	3.5 / 31	4.5 / 40	6.5 / 57	8 / 70	15 / 132	
Speed, idling	rpm	820	530	380	810	410	
External square drive DIN 3121		E 6.3 (1/4")	E 6.3 (1/4")	E 6.3 (1/4")	E 6.3 (1/4")	E 6.3 (1/4")	
Screwdriver Style		Motor Size 3			Motor Size 4		
Driver right rotation	Type part no.	377F-731 404085 C	377F-331 404085 D	377F-431 404085 E	377F-941-E12.5 204209 B	377F-741-E12.5 204209 C	377F-841-E12.5 204209 D
Screws	up to	M6	M8	M10	M10	M10	M12
Torque min.	Nm / in.lbs	4 / 35	4 / 35	4 / 35	8 / 70	8 / 70	8 / 70
Torque max.	Nm / in.lbs	13 / 115	23 / 204	33 / 292	32 / 283	46 / 408	65 / 575
Speed, idling	rpm	840	450	240	410	270	185
External square drive DIN 3121		E 12.5 (1/2")	E 12.5 (1/2")	E 12.5 (1/2")	E 12.5 (1/2")	E 12.5 (1/2")	E 12.5 (1/2")

Incl. 3 m / 10 ft. air supply hose (lengths up to 5 m / 16.4 ft. available). Further technical details see leaflet D 3450 E.

Suitable tool inserts and connecting components with a drive as per DIN 3121 – G 6.3 (1/4"), G 10 (3/8"), G 12.5 (1/2"), see also in our brochure D 3320 E.

TECHNICAL DATA

Multi Function Controllers

Function control	Type	fc20	fc10
	part no.	385523 A	398883 A (230 V)
	part no.	–	398883 B (115 V)
Amount of connectable drivers		3	1
Voltage	V / Hz	100 - 240 AC / 50 - 60	230/50 (115/60)
Power consumption	VA	18	30
Display and operation		TFT - graphic display 4.3" (480x272 pixel) with touch screen	LCD-display alphanumeric 4-lines, 16 digits per line
Operation via		touch screen	keypad
RS232 interface		yes	no
PLC interface		yes	yes
Power output		yes (5 pieces)	–
Connection for part sensor		yes (3 pieces)	–
Connection for in-line torque transducer		yes	–
Dimensions (W x H x D)	mm / in.	243 x 200 x 90 / 9.5 x 7.8 x 3.5	120 x 120 x 60 / 4.7 x 4.7 x 2.35
Weight	kg / lbs	2.9 / 6.4	0.52 / 1.1

The multi function controllers can also be used in combination with DEPRAG pneumatic screwdrivers: MICROMAT-F, MINIMAT-F and DEPRAG electronic handheld screwdrivers of the 341 series (leaflet D 3480 E).

Pneumatic Controllers

Pneumatic control	Type	pc20	pc10
	part no.	3875512A	387551 A
Supply air connection		1/4 " (Plugs nominal size 7.8)	1/4 " (Plugs nominal size 7.2)
Operation pressure	bar / PSI	5 - 6.3 / 71 - 90	5 - 6.3 / 71 - 90
Air flow	m ³ /min / cfm	0.1 - 0.96 / 3.5 - 33.9	0.1 - 0.45 / 3.5 - 16
Connection for screw feeder *)		yes	yes
Connection for part sensor		directly on fc20	yes
Connection for signal break		yes	no
Dimensions (W x H x D)	mm / in.	160 x 90 x 160 / 6.2 x 3.5 x 6.2	160 x 90 x 160 / 6.2 x 3.5 x 6.2
Weight	kg / lbs.	1.2 / 2.6	1.2 / 2.6

*) In combination with FZ screwdrivers see leaflet D 3820 E.

OPTIONAL EQUIPMENT

Suitable for	Type	fc20 / pc20	fc10 / pc10
Proximity switch for parts control			
capacitive M18	part no.	354841 F	354841 E
capacitive M12	part no.	354841 D	–
inductive M18	part no.	354906 D	354906 A
Screwfeeder connection set			
cable length 1m (3.3 ft.) / 2m (6.6 ft.)	part no.	3568501C / 3568501D	3568501C / 3568501D
Touch Pen	part no.	832190	–
Printer type ND100	part no.	823476	–
Connection cable (fc20-ND100)	part no.	349938 A	–
Table stand (Set)	part no.	414701 A	–
In-line torque transducer (for torque measurement)	part no.	385481 B/C/D/E	–
Connection cable for in-line torque transducer			
2m (6.6 ft.) / 4m (13.2 ft.) / 6m (19.8 ft.)	part no.	385486 A/B/C	–
Power cord with integrated switch for fc10	part no.	–	385475 A
Mounting angle for control fc10	part no.	–	388249 B
Mounting angle for control fc10 and pc10	part no.	–	388249 A

DEPRAG

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