



Key features

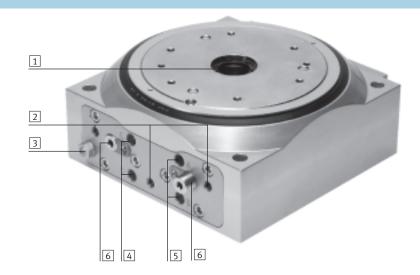
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At a glance

- · Robust mechanics
- Simple planning and commissioning
- Number of stations: 2, 3, 4, 6, 8, 12, 24
- Smooth motion sequence, almost sinusoidal acceleration behaviour
- · Control options:
- Anti-clockwise
- Clockwise
- Reciprocating motion
- Integrated functions:
 - Overload protection
 - Sensor function
 - Cushioning adjustment
- Speed setting
- Changing the direction of rotation

The technology in detail

- 1 Through-hole for energy throughfeed
- 2 Thread for position sensing
- 3 One-way flow control valve for regulating speed
- 4 Supply port for reciprocating operation
- 5 Supply port for clockwise or anti-clockwise rotation
- 6 Adjusting screw for cushioning adjustment

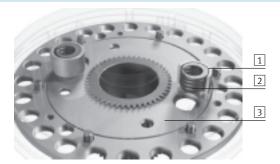


Overload protection

To prevent the rotary indexing table from being damaged by an excessive mass moment of inertia, e.g. during setting operation or in the event of shock absorber failure, sizes 140 and 220 feature overload protection. If the mass moment of inertia is too large, the securing pin is pressed against the spring force by the resulting radial force. It then slides forward on the toothed segment. This shift in

position between the index plate and toothed segment means that the securing pin can no longer engage and the rotary indexing table does not move. The table can be made ready for use again by turning it back.

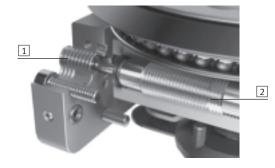
- Securing pin
- 2 Spring
- 3 Toothed segment

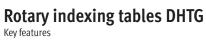


Cushioning adjustment

The rotary indexing tables are equipped with a hydraulic shock absorber. The cushioning characteristics can be adjusted using the stop. This is carried out on the front side.

- 1 Stop screw
- 2 Shock absorber

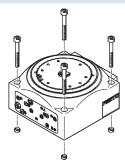




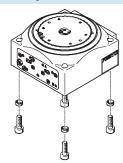


Mounting options

Direct mounting from above



Direct mounting from below



Typical applications

Basic rotary table

• Handling with minimum space requirement



Rotary table with rotary distributor

 $\bullet\;$ For the transfer of compressed air and vacuum to the rotary table

• With 1 or 2 separate ducts



Rotary table with stationary centre section

• For the mounting of handling units or other devices in the centre of the rotary indexing table





Note

The rotary indexing tables are not designed for the following or similar sample applications:

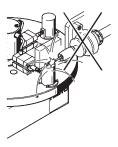
- Machining
- Aggressive media



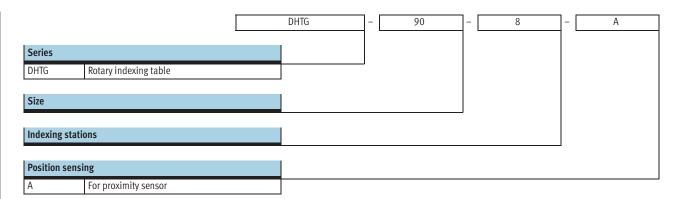
• Grinding dust



• Welding spatter

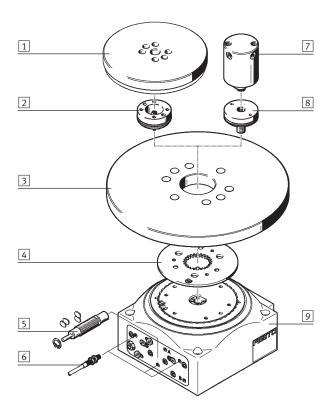


7.2





4.Rotary indexing tables DHTG Peripherals overview



Varia	ints and accessories		
	Туре	Brief description	→ Page/Internet
1	Unmachined plate, fixed DADG-UPF	For the mounting of handling units or other devices in the centre of the rotary indexing table	14
2	Adapter kit DADG-AK	For mounting the unmachined plate DADG-UPF on the rotary table	15
3	Unmachined plate, rotating DADG-UPT	Actuators can, depending on the application, be mounted on the unmachined rotating plate	14
4	Indexing conversion kit DADM-CK	The indexing steps can be adjusted at any time using the kit	18
5	Reciprocating motion kit DADM-TK	Allows conversion from movement in one direction to reciprocating movement	18
6	Proximity sensors SIEN	For sensing the switching position of the rotary indexing table	18
7	Rotary distributor GF	Distributes the compressed air conducted through the centre of the rotary indexing table to the actuators on the unmachined rotating plate. Cannot be used in combination with the fixed unmachined plate DADG-UPF	16
8	Adapter kit DADG-AKG	For mounting the rotary distributor on the rotary indexing table	17
9	Rotary indexing table DHTG	Flexible range of applications: Anti-clockwise and clockwise rotation or reciprocating motion	6

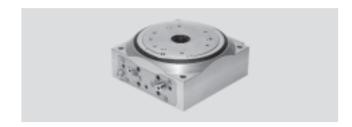


Rotary indexing tables DHTG Technical data

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Indexing stations 2, 3, 4, 6, 8, 12, 24



General technical data								
Size		65	90	140	220			
Pneumatic connection		M5		G1/8				
Design		Gear coupling						
		Rack and pinion						
		Force-guided motion sequence						
Mode of operation		Double-acting						
Type of mounting		Via through-holes and cer	tring sleeve					
Mounting position		Any						
Cushioning		Adjustable shock absorbe	r stroke, hard characteristic cu	irve				
Indexing stations		2, 3, 4, 6, 8, 12, 24		3, 4, 6, 8, 12, 24				
Torque at 6 bar	[Nm]	2.1	4.4	18.1	58.9			
Parallelism of plate ¹⁾	[mm]	≤ 0.04						
Axial eccentricity of plate ²⁾	[mm]	≤ 0.02						
Concentricity of plate ³⁾	[mm]	≤ 0.02						
Repetition accuracy of swivel angle	[°]	≤ 0.03						
Max. mass moment of inertia	[kgm ²]	0.016	0.03	0.3	2.5			
without flow control								
Cycle time		→ 8						
Position sensing		For inductive proximity se	nsors					
Product weight	[kg]	2.0	4.5	10	24			

- 1) Parallelism of the upper plate surface relative to the housing support
- Measured on the upper surface of the plate at the plate edge relative to the housing support
- 3) Measured on the internal diameter of the plate relative to the housing

Operating and environmental conditions							
Operating medium		Filtered compressed air, grade of filtration 40 μm, lubricated or unlubricated					
Operating pressure	[bar]	48					
Ambient temperature	[°C]	5 60					
Storage temperature	[°C]	-20 +80					
Protection class		IP54					
Corrosion resistance class CRC ¹⁾		2					

1) Corrosion resistance class 2 to Festo standard 940 070 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents



Note

In order to be able to operate a large $mass \ moment \ of \ inertia \ with \ the$ rotary indexing tables, they must be equipped with an exhaust air flow control valve.

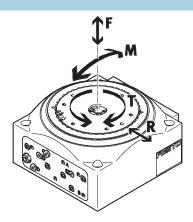


Rotary indexing tables DHTG Technical data



Static characteristic load values

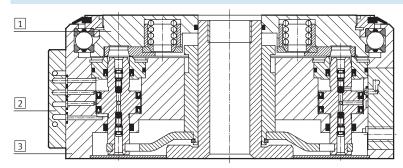
The indicated forces and torques refer to the locked table and can also act $\,$ on the table plate.



Size		65	90	140	220
Forces					
Max. axial force F	[N]	1,000	2,000	4,000	5,000
Max. radial force R	[N]	2,000	5,000	6,000	8,000
Torques					
Max. tilting moment M	[Nm]	100	150	300	500
Max. tangential moment T	[Nm]	100	150	200	500

Materials

Sectional view



Rota	Rotary indexing table							
1	1 Plate Galvanised steel							
2	Cover	Wrought aluminium alloy						
3	Housing	Wrought aluminium alloy						
-	Stops	Galvanised steel						
-	Seals	Nitrile rubber, polyurethane						
	Note on material	Free of copper and PTFE						
		Conforms to RoHS						



Technical data

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Calculation of the cycle time

The rotary indexing tables are equipped with a hydraulic shock absorber, which means that the max. frequency of the shock absorber must also be taken into account when calculating the cycle time.

The switching time comprises: Switching time = Unlock, rotate, lock and return stroke of working piston. The cycle time is calculated as follows:

Cycle time = Switching time + Processing time + Dwell time. In the switching frequency graph, the max. achievable switching frequency is read in relation to the mass moment of inertia. From this the switching time can be calculated using T = 60/f. The processing time is calculated from the time required by

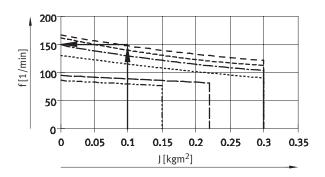
the respective customer application (e.g. time for component removal, press-in time, etc.). A dwell time may be necessary if the cycle time is shorter than the min. possible cycle

Calculation example

DHTG-140 with 8 stations and a mass moment of inertia of 0.1 kgm².

The customer application requires 300 ms per step for the insertion and removal of parts.

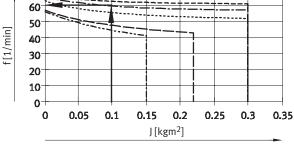
Switching frequency in rpm



$$T_{\text{switching time}} = \frac{1}{f} = \frac{60s}{130} = 0.461s = 461 \text{ms}$$

0.1

Max. permissible cycle frequency



$$T_{\text{min. perm. cycle time}} = \frac{60s}{59} = 1.017s = 1017ms$$

Dwell time = Min. permissible cycle time - Switching time - Processing time Dwell time = 1017 ms - 461 ms - 300 ms = 256 ms.

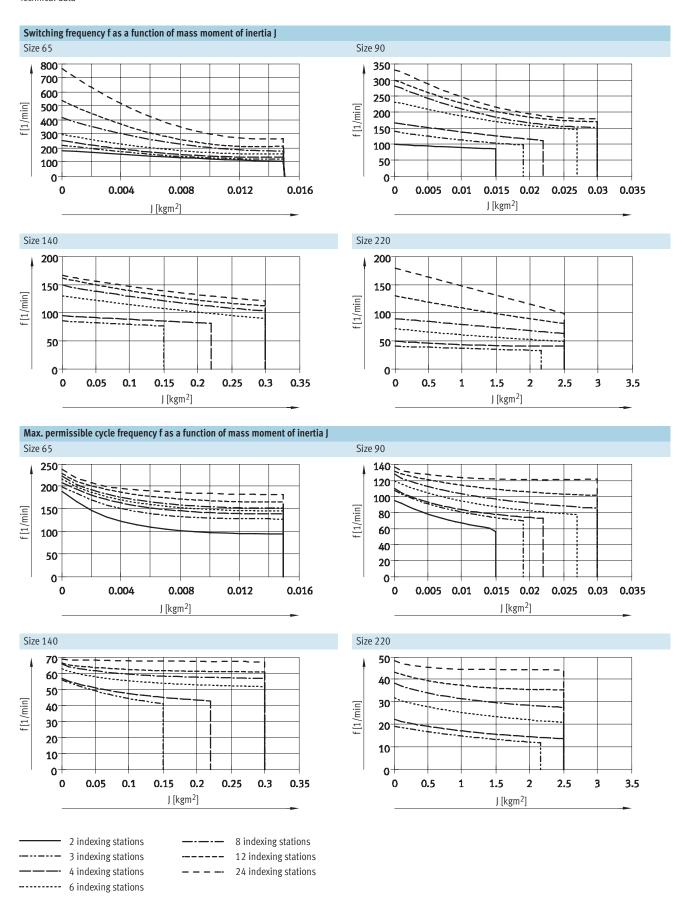
Given the fact that the switching time + processing time is smaller than the min. permissible cycle time, the rotary indexing table must stay in the end position

before the next step is performed. In other words, between the switching an additional dwell time of 256 ms must be allowed for in the control sequence.



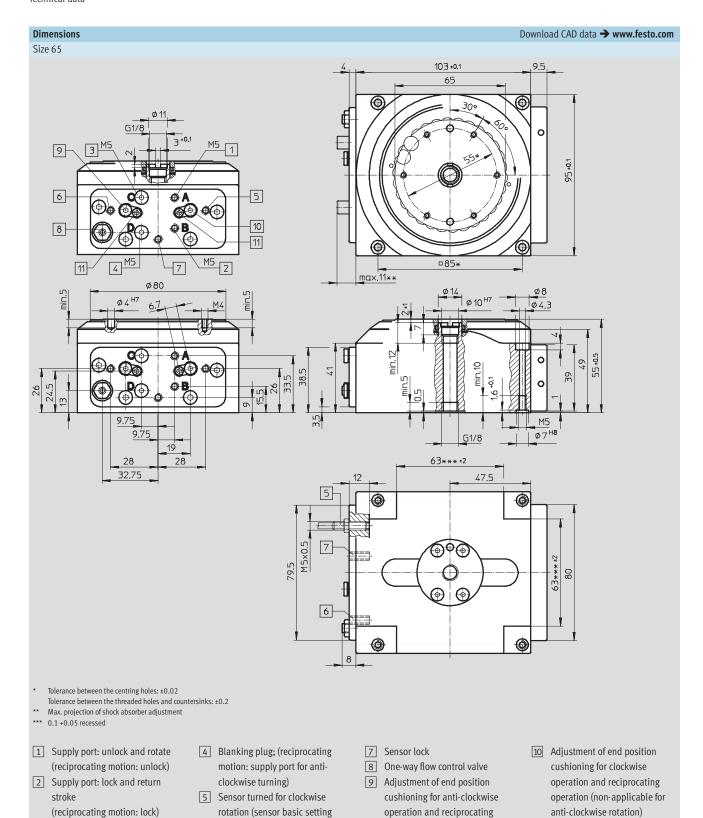
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Technical data



Technical data





3 Blanking plug; (reciprocating

motion: supply port for

clockwise turning)

for anti-clockwise rotation)

wise rotation (sensor turned for anti-clockwise rotation)

6 Sensor basic setting for clock-

operation (non-applicable for

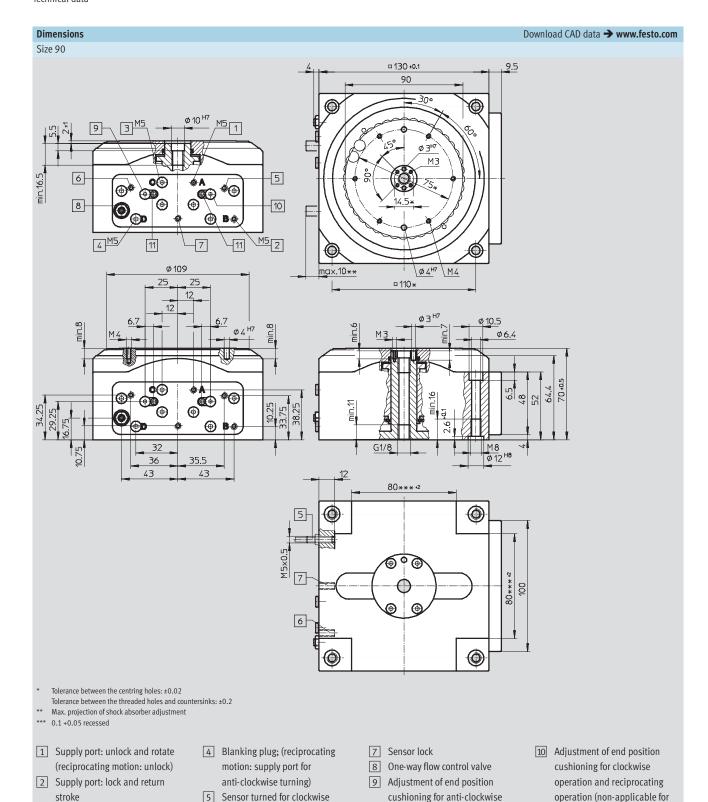
clockwise rotation)

11 Tightening of end position

cushioning 2.5 Nm







5 Sensor turned for clockwise

rotation (sensor basic setting

wise rotation (sensor turned for anti-clockwise rotation)

for anti-clockwise rotation)

6 Sensor basic setting for clock-

(reciprocating motion: lock)

3 Blanking plug; (reciprocating

motion: supply port for

clockwise turning)

cushioning for anti-clockwise

operation and reciprocating

operation (non-applicable for

clockwise rotation)

operation (non-applicable for

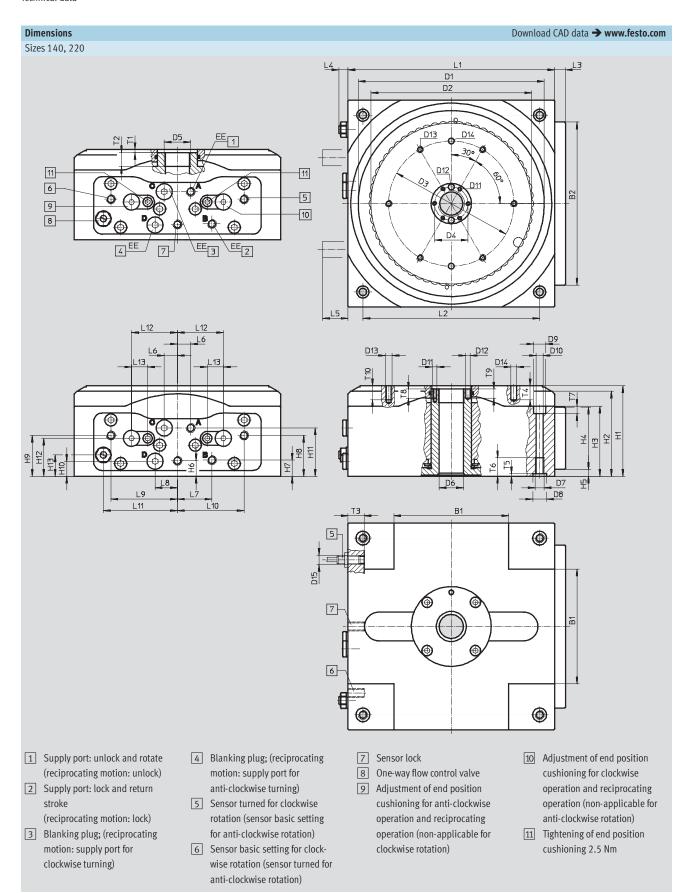
anti-clockwise rotation)

11 Tightening of end position

cushioning 2.5 Nm

Technical data







Rotary indexing tables DHTG Technical data



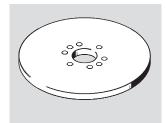
Ø	B1 ¹⁾	B2	D1 Ø	D2 Ø	D3 ²⁾ Ø	D4		05	D6 Ø	D7	D8 Ø H8	D9 Ø	D10 Ø	D11
140	100	142	159	140	109	29		23x1	22	M8	12	10.5	6.4	M4
220	100	212	239	220	165	67	7	-	58.4	M10	15	13.5	8.4	M5
Ø	D12 Ø H7	D13	D14 Ø H7	D15	EE	H1 ±0.		H2	НЗ	H4	Н5	Н6	H7	Н8
140	4	M6	5	M8x1	G1/8	79		74	61	54	6	13.5	14	35.5
220	5	M8	6	M8x1	G ¹ /8	89	8	3.5	68.5	64	4.5	13.5	24.5	15
Ø	Н9	H10	H11	H12	H13	L1 □ ±0.1	L2 ²⁾	L3	L4	L5 ³⁾ max.	L6	L7	L8	L9
140	35.5	13	42	33	18.5	180	154	9.5	8.2	5 22	11.5	30	19.5	58
220	15	24.5	50.5	36.5	24	270	228	12	4.6	22	41	41	41	61
Ø	L10	L11	L12	L13	T1 ±1	T2	T3	T4	. +0.		T7	T8	T9	T10
140	57.5	64.5	40	14	3	12	14	12	2.1		6.5	8	8	12
220	61	99.5	68	14	4	-	19	12	3.1		8.5	10	10	13

Ordering data				
	Size	Indexing stations	Part No.	Туре
	65	2	548 076	DHTG-65-2-A
		3	555 448	DHTG-65-3-A
		4	548 077	DHTG-65-4-A
		6	548 078	DHTG-65-6-A
		8	548 079	DHTG-65-8-A
		12	548 080	DHTG-65-12-A
		24	548 081	DHTG-65-24-A
	90	2	548 082	DHTG-90-2-A
		3	555 449	DHTG-90-3-A
		4	548 083	DHTG-90-4-A
		6	548 084	DHTG-90-6-A
		8	548 085	DHTG-90-8-A
		12	548 086	DHTG-90-12-A
		24	548 087	DHTG-90-24-A
	140	3	555 450	DHTG-140-3-A
		4	548 088	DHTG-140-4-A
		6	548 089	DHTG-140-6-A
		8	548 090	DHTG-140-8-A DHTG-140-12-A
		24	548 091 548 092	DHTG-140-12-A DHTG-140-24-A
	220	3	555 451	DHTG-220-3-A
	220	4	548 093	DHTG-220-4-A
		6	548 094	DHTG-220-6-A
		8	548 095	DHTG-220-8-A
		12	548 096	DHTG-220-12-A
		24	548 097	DHTG-220-24-A
		²⁴	J40 071	DIIIQ-220-24-N

 ^{1) 0.1 +0.05} recessed
 2) Tolerance between the centring holes: ±0.02
 Tolerance between the threaded holes and countersinks: ±0.2
 3) Max. projection of shock absorber adjustment

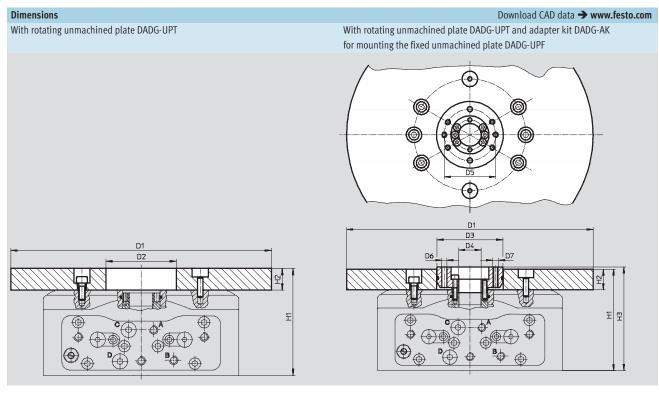


15.Unmachined table DADG-UPT, rotating DADG-UPF, fixed





You can order unmachined plates with a standard hole pattern or individual interface via your local contact.



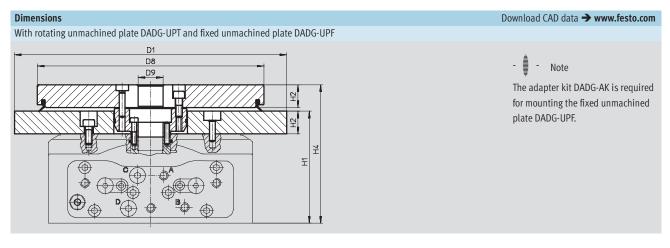
Size	D1 ¹⁾ ∅	D2 ∅	H1	H2 ²⁾
	±0.3	+0.1	±0.5	±0.1
With rotating unmachined p	late			
DADG-UPT-65	90 170	30.3	70	15
DADG-UPT-90	120 210	40.4	85	15
DADG-UPT-140	170 350	65.3	99	20
DADG-UPT-220	250 550	105.4	103	20

Size	D1 ¹⁾ Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D7	H1	H2 ²⁾	Н3
	±0.3	+0.2	+0.2		H7		±0.5	±0.1	±0.5
With rotating unmachined p	late and adapte	er kit							
DADG-UPT-65	90 170	29	5	20	4	M4	70	15	72
DADG-AK-65	90 1/0	2)	,	20	,	711-7	, 0	1,5	72
DADG-UPT-90	120 210	39	9	30	4	M4	85	15	87
DADG-AK-90	120 210	37	,	50	4	1414	0,5	17	07
DADG-UPT-140	170 350	64	22	50	5	M6	99	20	101
DADG-AK-140	170 550	04	22	50	J	IVIO	99	20	101
DADG-UPT-220	250 550	104	58.4	90	6	M8	109	20	111
DADG-AK-220	230 330	104	70.4	70	U	IVIO	109	20	111

¹⁾ Plate diameter as required

²⁾ Plate thickness can be reduced by up to 5 mm





Size	D1 ¹⁾	D8	D9	H1	H2 ²⁾	H4
	Ø	Ø	Ø			
	±0.3	±0.3	+0.2	±0.5	±0.1	±0.5
DADG-UPT-65						
DADG-UPF-65	90 170	50 90	5	70	15	87
DADG-AK-65						
DADG-UPT-90						
DADG-UPF-90	120 210	60 120	10	85	15	102
DADG-AK-90						
DADG-UPT-140						
DADG-UPF-140	170 350	100 200	22	99	20	121
DADG-AK-140						
DADG-UPT-220						
DADG-UPF-220	250 550	140 300	60	109	20	131
DADG-AK-220						

¹⁾ Plate diameter as required

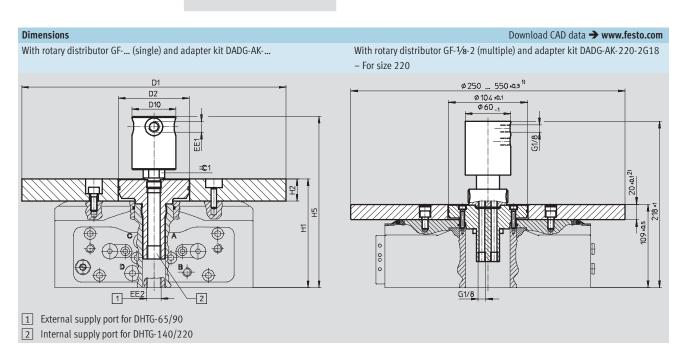
²⁾ Plate thickness can be reduced by up to 5 mm

17.Ordering data – Adapter kit DADG-AK								
	For size	Part No.	Туре					
600	65	555 424	DADG-AK-65					
(())	90	555 425	DADG-AK-90					
	140	555 426	DADG-AK-140					
	220	555 427	DADG-AK-220					



19.Rotary distributor GF-..., single GF-...-2, multiple





Size	D1 ¹⁾ Ø ±0.3	D2	D10 ∅ +0.2	EE1	EE2	H1 ±0.5	H2 ²⁾ ±0.1	H5 ±1	=©1
DADG-UPT-65 DADG-AK-65-1G18 GF-1/8-M5	90 170	29	40	M5	G½	70	15	127.5	17
DADG-UPT-90 DADG-AK-90-1G18 GF-1/8-M5	120 210	39	40	M5	G½8	85	15	142.5	17
DADG-UPT-140 DADG-AK-140-1G14 GF-1/4-1/8	170 350	64	40	G½8	G1⁄4	99	20	155.5	17
DADG-UPT-220 DADG-AK-220-1G12 GF-1/2-1/4	250 550	104	60	G ¹ / ₄	G ¹ / ₂	109	20	187.5	27

- 1) Plate diameter as required
- 2) Plate thickness can be reduced by up to 5 mm



Ordering data – Rotary distributor GF						
	For size	Part No. Type				
	Single	Single				
	65,90	539 290 GF-½-M5				
	140	539 291 GF-¼-½				
	220	539 292 GF-½-¼				
	Multiple					
	220	539 287 GF-½-2				

21.Ordering data – Adapter kit DADG-AK					
	For size	Part No. Type			
	Single				
	65	555 428 DADG-AK-65-1G18			
	90	555 429 DADG-AK-90-1G18			
	140	555 430 DADG-AK-140-1G14			
	220	555 431 DADG-AK-220-1G12			
	Multiple				
	220	555 432 DADG-AK-220-2G18			



Ordering data					
	For size	Indexing stations	Part No.	Туре	
23.Indexing conversion kit D	ADM-CK				
ē	65	2	548 098	DADM-CK-65-2	
e e mm e		3	554 389	DADM-CK-65-3	
		4	548 099	DADM-CK-65-4	
		6	548 100	DADM-CK-65-6	
		8	548 101	DADM-CK-65-8	
		12	548 102	DADM-CK-65-12	
		24	548 103	DADM-CK-65-24	
	90	2	548 104	DADM-CK-90-2	
		3	555 445	DADM-CK-90-3	
		4	548 105	DADM-CK-90-4	
		6	548 106	DADM-CK-90-6	
		8	548 107	DADM-CK-90-8	
		12	548 108	DADM-CK-90-12	
		24	548 109	DADM-CK-90-24	
	140	3	555 446	DADM-CK-140-3	
		4	548 110	DADM-CK-140-4	
		6	548 111	DADM-CK-140-6	
		8	548 112	DADM-CK-140-8	
		12	548 113	DADM-CK-140-12	
		24	548 114	DADM-CK-140-24	
	220	3	555 447	DADM-CK-220-3	
		4	548 115	DADM-CK-220-4	
		6	548 116	DADM-CK-220-6	
		8	548 117	DADM-CK-220-8	
		12	548 118	DADM-CK-220-12	
		24	548 119	DADM-CK-220-24	
24.Reciprocating motion kit					
	65	_	548 120	DADM-TK-65	
8	90		548 121	DADM-TK-90	
0 8	140		563 304	DADM-TK-140	
3	220	1	563 305	DADM-TK-220	
			202 203		

25.Ordering data – Proximity sensors, inductive					Technical data → Internet: sien
	For size	Contact	Connection	Part No.	Type
	65,90	N/O contact	Cable	150 370	SIEN-M5B-PS-K-L
			Plug	150 371	SIEN-M5B-PS-S-L
		N/C contact	Cable	150 374	SIEN-M5B-PO-K-L
			Plug	150 375	SIEN-M5B-PO-S-L
	140, 220	N/O contact	Cable	150 386	SIEN-M8B-PS-K-L
			Plug	150 387	SIEN-M8B-PS-S-L
		N/C contact	Cable	150 390	SIEN-M8B-PO-K-L
			Plug	150 391	SIEN-M8B-PO-S-L

26.Ordering data - Connecting	Technical data → Internet: nebu				
	Electrical connection, left	Electrical connection, right	Cable length	Part No.	Туре
			[m]		
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 333	NEBU-M8G3-K-2.5-LE3
			5	541 334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541 338	NEBU-M8W3-K-2.5-LE3
			5	541 341	NEBU-M8W3-K-5-LE3

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation ComponentsComplete custom engineered solutions



Custom Control CabinetsComprehensive engineering support and on-site services



Complete SystemsShipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



ElectromechanicalElectromechanical actuators, motors, controllers & drives



PneumaticsPneumatic linear and rotary actuators, valves, and air supply



PLC's and I/O Devices
PLC's, operator interfaces, sensors
and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



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