

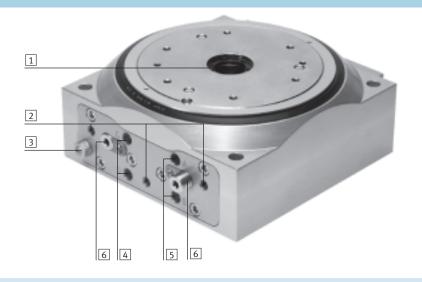


Key features

#### 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

### 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.

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.

1 Securing pin

2 Spring 3 Toothed segment

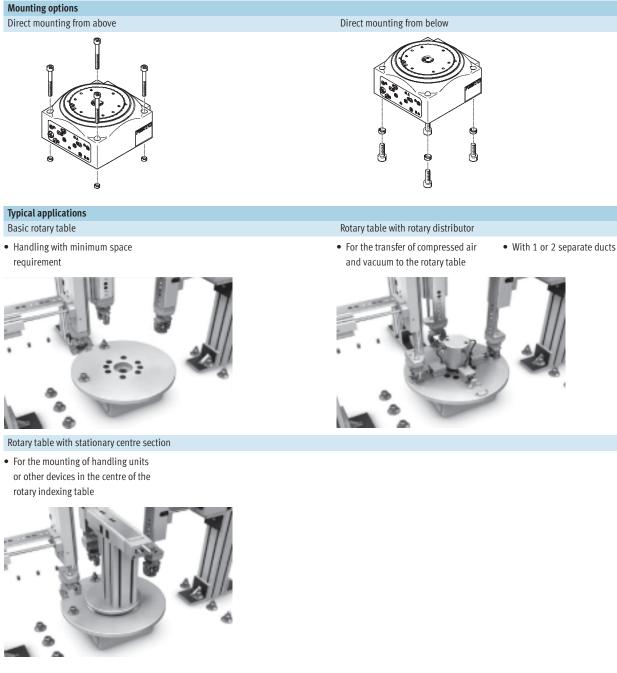






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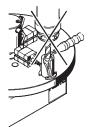
# Rotary indexing tables DHTG Key features



-Note

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

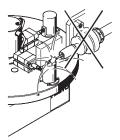
- Machining
- Aggressive media

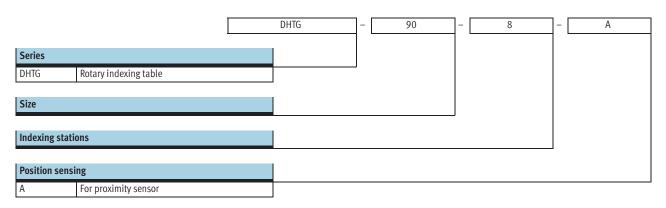


• Grinding dust

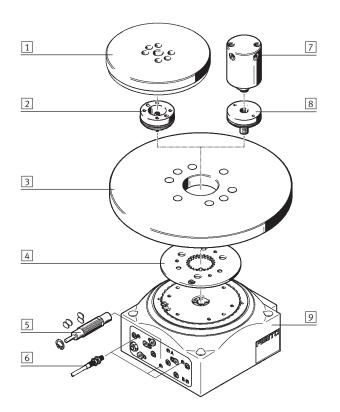


• Welding spatter





# **4.Rotary indexing tables DHTG** Peripherals overview

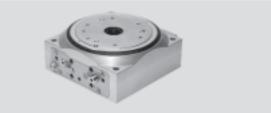


Varia	ints and accessories		
	Туре	Brief description	→ Page/Internet
1	Unmachined plate, fixed DADG-UPF	For the mounting of handling units or other devices in the centre of the rotary indexing table	14
2	Adapter kit DADG-AK	For mounting the unmachined plate DADG-UPF on the rotary table	15
3	Unmachined 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

- **Ø** -Size 65,90,140,220

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



General technical data									
Size	Size		90	140	220				
Pneumatic connection		M5		G1⁄8					
Design		Gear coupling							
		Rack and pinion							
		Force-guided motion seque	ence						
Mode of operation		Double-acting							
Type of mounting		Via through-holes and cent	tring sleeve						
Mounting position		Any	Any						
Cushioning		Adjustable shock absorber stroke, hard characteristic curve							
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 <sup>1)</sup>	[mm]	≤ 0.04							
Axial eccentricity of plate <sup>2)</sup>	[mm]	≤ 0.02							
Concentricity of plate <sup>3)</sup>	[mm]	≤ 0.02							
Repetition accuracy of swivel angle	[°]	≤ 0.03							
Max. mass moment of inertia	[kgm <sup>2</sup> ]	0.016	0.03	0.3	2.5				
without flow control									
Cycle time		→ 8							
Position sensing		For inductive proximity ser	ISOTS						
Product weight	[kg]	2.0	4.5	10	24				

1) Parallelism of the upper plate surface relative to the housing support

2) 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 cond	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 <sup>1)</sup>		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 -

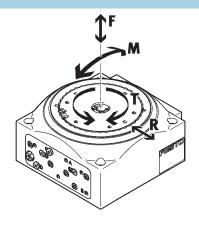
In order to be able to operate a large mass moment of inertia with the rotary indexing tables, they must be equipped with an exhaust air flow control valve.

# Rotary indexing tables DHTG Technical data

# **FESTO**

### Static characteristic load values

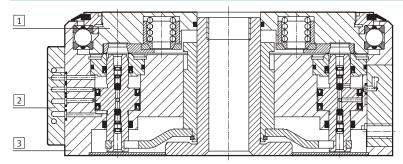
The indicated forces and torques refer to the locked table and can also act on the table plate.



	65	90	140	220	
[N]	1,000	2,000	4,000	5,000	
[N]	2,000	5,000	6,000	8,000	
	•	•	•	•	
[Nm]	100	150	300	500	
[Nm]	100	150	200	500	
	[N] [Nm]	[N] 1,000 [N] 2,000 [Nm] 100	[N] 1,000 2,000 [N] 2,000 5,000	[N] 1,000 2,000 4,000 [N] 2,000 5,000 6,000	[N]     1,000     2,000     4,000     5,000       [N]     2,000     5,000     6,000     8,000

# Materials

Sectional view



Rota	Rotary indexing table						
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

## 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.

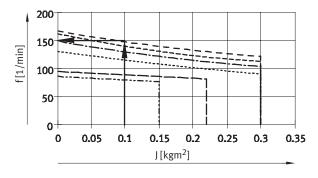
In the switching frequency graph, the max. achievable switching frequency is read in relation to the mass moment of inertia. From this the switching time can be calculated using T = 60/f. The processing time is calculated from the time required by the respective customer application (e.g. time for component removal, press-in time, etc.). A dwell time may be necessary if the cycle time is shorter than the min. possible cycle time.

### Calculation example

DHTG-140 with 8 stations and a mass moment of inertia of 0.1  $\rm kgm^2.$ 

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

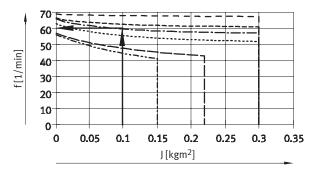




$$T_{switching time} = \frac{1}{f} = \frac{60s}{130} = 0.461s = 461ms$$

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. Max. permissible cycle frequency



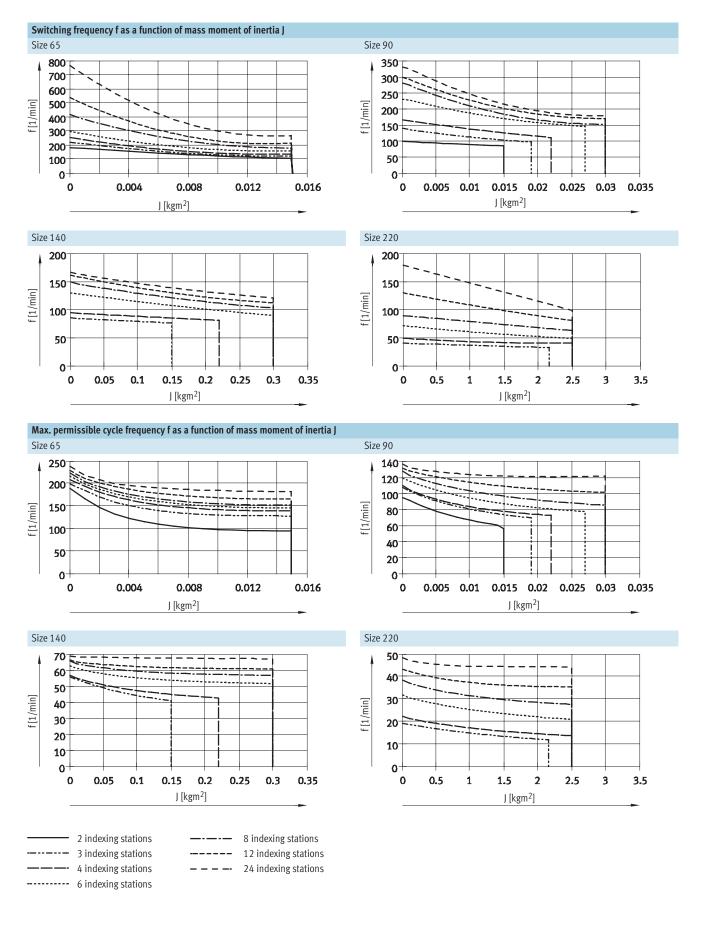
$$T_{min. perm. cycle time} = \frac{60s}{59} = 1.017s = 1017ms$$

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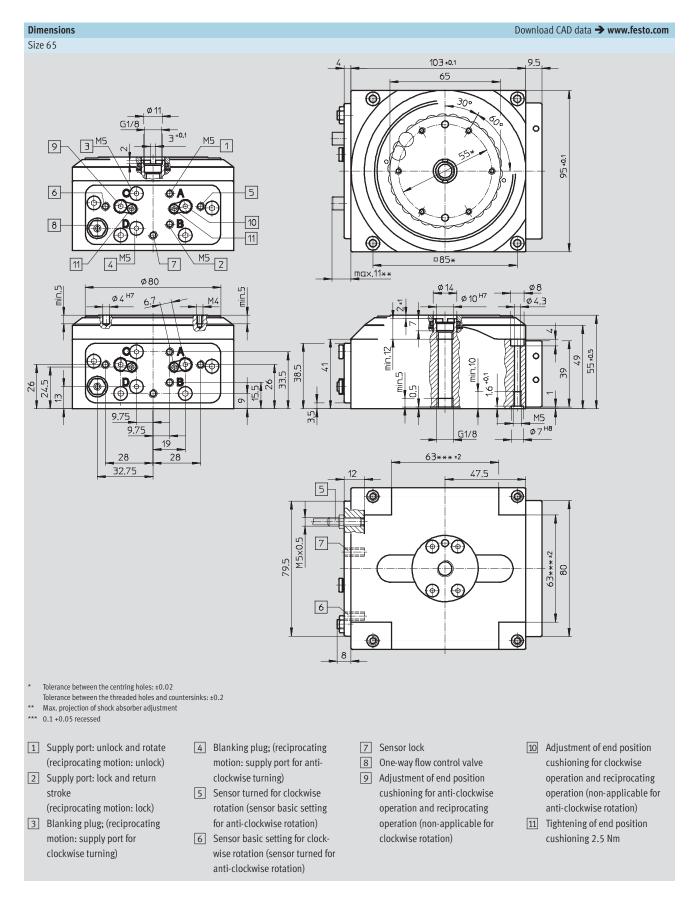
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# **Rotary indexing tables DHTG**

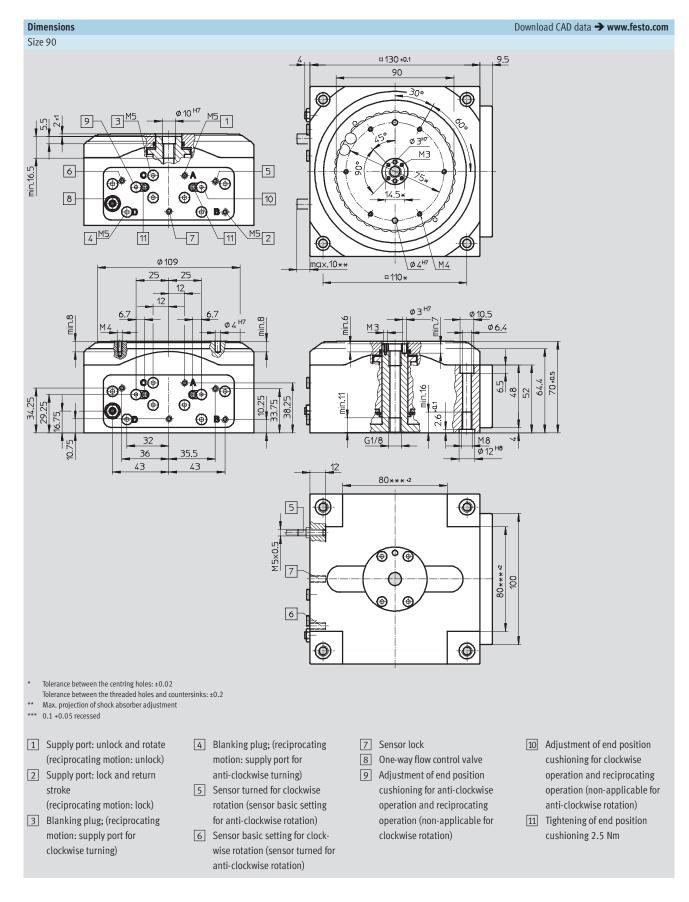
Technical data



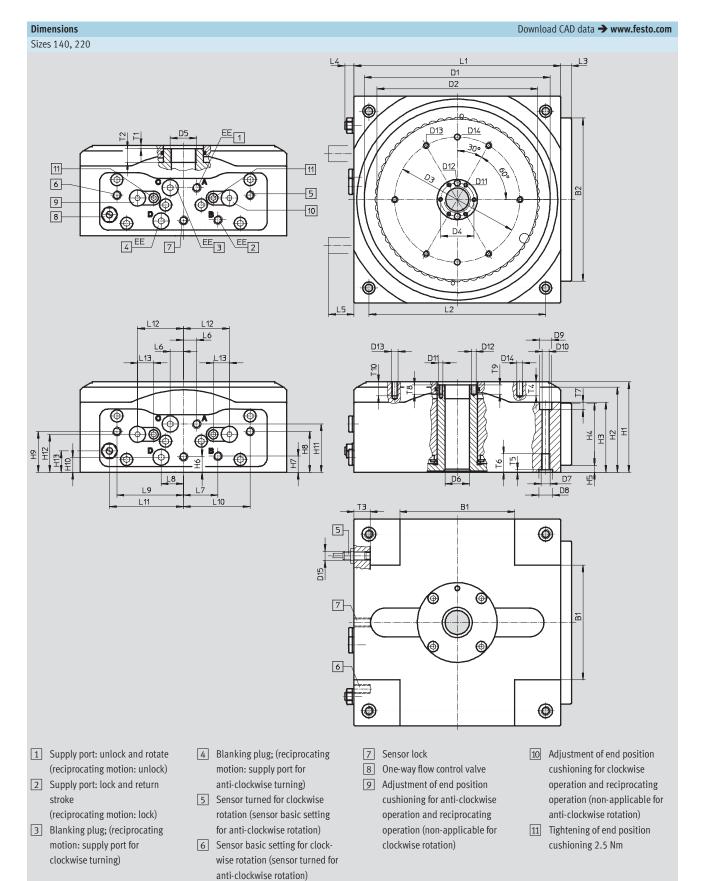
Technical data



Technical data



Technical data



# Rotary indexing tables DHTG Technical data

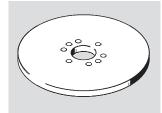
Ø	B1 <sup>1)</sup> ±2	B2	D1 Ø	D2 Ø	D3 <sup>2)</sup> Ø	D4 Ø		D5	D6 Ø	D7	D8 Ø H8	5	D9 Ø	D10 Ø	D11
140 220	100 100	142 212	159 239	140 220	109 165	29 67		123x1	22 58.4	M8 M10	12		10.5 13.5	6.4 8.4	M4 M5
220	100	212	239	220	105	07		-	50.4	MIO	1.	)	1).)	0.4	MU
Ø	D12 Ø H7	D13	D14 Ø H7	D15	EE	H1 ±0.		H2	H3	H4	H	5	H6	H7	H8
140	4	M6	5	M8x1	G1⁄8	79		74	61	54	6		13.5	14	35.5
220	5	M8	6	M8x1	G1⁄8	89	)	83.5	68.5	64	4.	5	13.5	24.5	15
Ø	H9	H10	H11	H12	H13	L1 □ ±0.1	L2 <sup>2)</sup>	L3	L		5 <sup>3)</sup> ax.	L6	L7	L8	L9
140	35.5	13	42	33	18.5	180	154	9.5	i 8.	25 2	2	11.5	30	19.5	58
220	15	24.5	50.5	36.5	24	270	228	12	4	.6 2	2	41	41	41	61
Ø	L10	L11	L12	L13	T1 ±1	T2 min.	T3 min.	T4 mir			in.	T7	T8 min.	T9 min.	T10 min.
140	57.5	64.5	40	14	3	12	14	12			6	6.5	8	8	12
220	61	99.5	68	14	4	-	19	12	3	.1 2	0	8.5	10	10	13

0.1 +0.05 recessed
Tolerance between the centring holes: ±0.02 Tolerance between the threaded holes and countersinks: ±0.2
Max. projection of shock absorber adjustment

Ordering data			
	Size	Indexing stations	Part No. Type
	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
		12	548 091 DHTG-140-12-A
		24	548 092 DHTG-140-24-A
	220	3	555 451 DHTG-220-3-A
		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

# **14.Rotary indexing tables DHTG** Accessories

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



Note

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

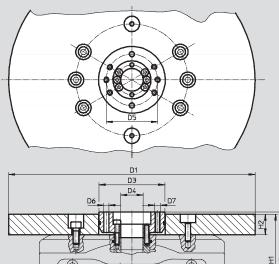
## Dimensions

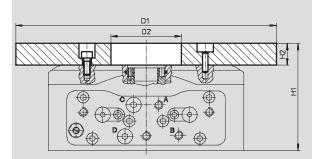
With rotating unmachined plate DADG-UPT

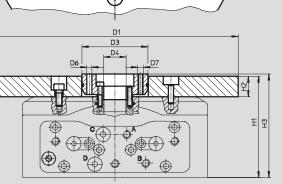
Download CAD data → www.festo.com

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With rotating unmachined plate DADG-UPT and adapter kit DADG-AK for mounting the fixed unmachined plate DADG-UPF







Size	[	D1 <sup>1)</sup>		D2		H1		H2 <sup>2)</sup>		
		Ø		Ø						
	ź	±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 <sup>1)</sup>	D3	D4	D5	D6	D7	H1	H2 <sup>2)</sup>	H3	
	Ø	Ø	Ø	Ø	Ø					
	±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	90 170	29	J	20	4	11/14	70	15	12	
DADG-UPT-90	120 210	39	9	30	4	M4	85	15	87	
DADG-AK-90	120 210			50	4	1414	0.5	15	07	
DADG-UPT-140	170 350	64	22	50	5	M6	99	20	101	
DADG-AK-140	1/0 ) )0	04	22	50	J	1410	77	20	101	
DADG-UPT-220	250 550	104	58.4	90	6	M8	109	20	111	
DADG-AK-220	250 550	104	50.4	20	0	1410	107	20	111	

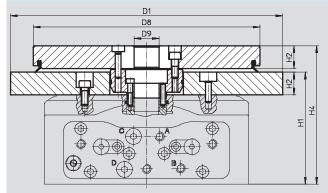
1) Plate diameter as required

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

Accessories

### Dimensions

## With rotating unmachined plate DADG-UPT and fixed unmachined plate DADG-UPF



Download CAD data → www.festo.com

**FESTO** 

- 🗍 - Note

The adapter kit DADG-AK is required for mounting the fixed unmachined plate DADG-UPF.

Size	D1 <sup>1)</sup>	D8	D9	H1	H2 <sup>2)</sup>	H4
	Ø ±0.3	Ø ±0.3	Ø +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				
( ) e e	65	555 424	DADG-AK-65				
(° (B-O) c)	90	555 425	DADG-AK-90				
	140	555 426	DADG-AK-140				
	220	555 427	DADG-AK-220				



# **18.Rotary indexing tables DHTG** Accessories

Dimensions

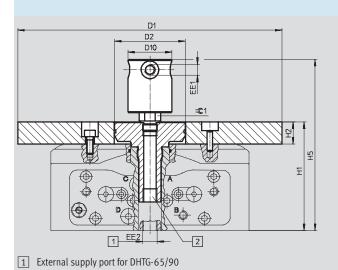
19.Rotary distributor GF-..., single GF-...-2, multiple



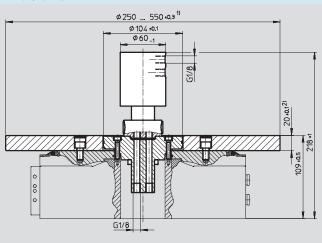
### Download CAD data → www.festo.com

**FESTO** 

With rotary distributor GF-1/8-2 (multiple) and adapter kit DADG-AK-220-2G18 – For size 220



With rotary distributor GF-... (single) and adapter kit DADG-AK-...



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

1) Plate diameter as required

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

2 Internal supply port for DHTG-140/220

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# **20.Rotary indexing tables DHTG** Accessories

Ordering data – Rotary distri	rdering data – Rotary distributor GF								
	For size	Part No. Type							
	Single								
	65,90	539 290 GF-1/8-M5							
	140	539 291 GF-1/4-1/8							
	220	539 292 GF-1/2-1/4							
	Multiple								
	220	539 287 GF-1/8-2							

#### 21.Ordering data – Adapter kit DADG-AK Part No. For size Туре Single 555 428 DADG-AK-65-1G18 65 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

2008/05 - Subject to change

.

	For size	Indexing stations	Part No. Type
ndexing conversion k	it DADM-CK		
	65	2	548 098 DADM-CK-65-2
		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
Reciprocating motion.			
	65	-	548 120 DADM-TK-65
8	90		548 121 DADM-TK-90
08	140		563 304 DADM-TK-140
d l	220		563 305 DADM-TK-220

25.Ordering data – Proximity sensors, inductive Technical data → Internet: s							
	For size	Contact	Connection	Part No.	Туре		
	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 cables Technical data → Internet: nebu							
	Electrical connection, left	Electrical connection, right		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 Components** Complete custom engineered solutions



**Custom Control Cabinets** Comprehensive engineering support and on-site services



**Complete Systems** Shipment, 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.



Electromechanical Electromechanical actuators, motors, controllers & drives



**Pneumatics** Pneumatic linear and rotary actuators, valves, and air supply



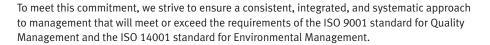
PLC's and I/O Devices PLC's, operator interfaces, sensors and I/O devices

### 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.

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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.





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