

## PAL series

Pneumatically driven rotary actuators



Double acting	Spring-closed	Spring-opening	ISO 5211 Flange	Square type [mm]	Distance of mounting holes on the top (NAMUR) [mm]	Air connection (thread)	Air connection (NAMUR)	Size
PALD-001-03-09*			F 03	9	50 x 25	G 1/8"	1/4"	1
PALD-002-04-11	PALC-002-04-11	PALO-002-04-11	F 04	11	50 x 25	G 1/8"	1/4"	2
PALD-002-03-09	PALC-002-03-09	PALO-002-03-09	F 03	9	50 x 25	G 1/8"	1/4"	2
PALD-002-04-09	PALC-002-04-09	PALO-002-04-09	F 04	9	50 x 25	G 1/8"	1/4"	2
PALD-006-05-14	PALC-006-05-14	PALO-006-05-14	F 05	14	80 x 30	G 1/8"	1/4"	6
PALD-006-04-09	PALC-006-04-09	PALO-006-04-09	F 04	9	80 x 30	G 1/8"	1/4"	6
PALD-006-04-11	PALC-006-04-11	PALO-006-04-11	F 04	11	80 x 30	G 1/8"	1/4"	6
PALD-006-05-09	PALC-006-05-09	PALO-006-05-09	F 05	9	80 x 30	G 1/8"	1/4"	6
PALD-006-05-11	PALC-006-05-11	PALO-006-05-11	F 05	11	80 x 30	G 1/8"	1/4"	6
PALD-012-05-14	PALC-012-05-14	PALO-012-05-14*	F 05	14	80 x 30	G 1/4"	1/4"	12
PALD-012-05-11	PALC-012-05-11	PALO-012-05-11	F 05	11	80 x 30	G 1/4"	1/4"	12
PALD-012-07-11	PALC-012-07-11	PALO-012-07-11	F 07	11	80 x 30	G 1/4"	1/4"	12
PALD-012-07-14	PALC-012-07-14	PALO-012-07-14	F 07	14	80 x 30	G 1/4"	1/4"	12
PALD-012-07-17	PALC-012-07-17	PALO-012-07-17	F 07	17	80 x 30	G 1/4"	1/4"	12
PALD-025-05-14	PALC-025-05-14	PALO-025-05-14	F 05	14	80 x 30	G 1/4"	1/4"	25
PALD-025-05-11	PALC-025-05-11	PALO-025-05-11	F 05	11	80 x 30	G 1/4"	1/4"	25
PALD-025-07-11	PALC-025-07-11	PALO-025-07-11	F 07	11	80 x 30	G 1/4"	1/4"	25
PALD-025-07-14	PALC-025-07-14	PALO-025-07-14	F 07	14	80 x 30	G 1/4"	1/4"	25
PALD-025-07-17	PALC-025-07-17	PALO-025-07-17	F 07	17	80 x 30	G 1/4"	1/4"	25
PALD-050-07-17	PALC-050-07-17	PALO-050-07-17	F 07	17	80 x 30	G 1/4"	1/4"	50
PALD-050-07-22	PALC-050-07-22	PALO-050-07-22	F 07	22	80 x 30	G 1/4"	1/4"	50
PALD-050-10-22	PALC-050-10-22	PALO-050-10-22	F 10	22	80 x 30	G 1/4"	1/4"	50
PALD-090-10-22	PALC-090-10-22	PALO-090-10-22	F 10	22	80/130 x 30	G 1/4"	1/4"	90
PALD-090-10-27	PALC-090-10-27	PALO-090-10-27	F 10	27	80/130 x 30	G 1/4"	1/4"	90
PALD-090-12-22	PALC-090-12-22	PALO-090-12-22	F 12	22	80/130 x 30	G 1/4"	1/4"	90
PALD-090-12-27	PALC-090-12-27	PALO-090-12-27	F 12	27	80/130 x 30	G 1/4"	1/4"	90
PALD-130-10-22	PALC-130-10-22	PALO-130-10-22	F 10	22	80/130 x 30	G 1/4"	1/4"	130
PALD-130-12-22	PALC-130-12-22	PALO-130-12-22	F 12	22	80/130 x 30	G 1/4"	1/4"	130
PALD-130-12-27	PALC-130-12-27	PALO-130-12-27	F 12	27	80/130 x 30	G 1/4"	1/4"	130

\* PALD-001-03-09-F and PALO-012-05-14-F – with FKM seal

### ENGLISH

#### Materials:

Housing: Anodized aluminium, gear rack and piston: Aluminium, cover: Acetal resin (from size 12: aluminium), seals: NBR, optional: FKM

#### Temperature range:

-20°C to max. +80°C, FKM seals (-20°C to max. +120°C, as of size 12 to 130: to max. +150°C) -F

#### Control pressure:

6 - 10 bar (lower pressures upon request)

#### Properties:

- mounting flange according to ISO 5211,
- actuator connection with polygon

### NEDERLANDS

#### Materialen

Behuizing: Geanodiseerd aluminium, rek en zuiger: Aluminium, deksel: Acetaalharz (vanaf grootte 12: Aluminium), afdichtingen: NBR, optioneel FKM

#### Temperatuurbereik:

-20 °C tot max. +80 °C, FKM-afdichtingen (-20°C tot max. +120°C, vanaf grootte 12 tot 130: tot max. +150°C) -F

#### Besturingsdruk:

6 - 10 bar (lagere drukken op aanvraag)

#### Eigenschappen:

- aansluitflens conform ISO 5211,
- aandrijfverbinding met veelkant

### DEUTSCH

#### Werkstoffe:

Gehäuse: Aluminium eloxiert, Zahnstange und Kolben: Aluminium, Deckel: Acetalharz (ab Baugröße 12: Aluminium), dichtungen: NBR, optional FKM

#### Temperaturbereich:

-20°C bis max. +80°C, FKM-Dichtung (-20°C bis max. +120°C, ab Baugröße 12 bis 130: bis max. +150°C) -F

#### Steuerdruck:

6 - 10 bar (geringere Drücke auf Anfrage)

#### Eigenschaften:

- anbauflansch gemäß ISO 5211,
- antriebsanschluss mit Vielkant gem.

### FRANÇAIS

#### Matériaux:

Boîtier: aluminium anodisé, crémaillère et piston: aluminium, couvercle: résine acétale (à partir de la taille 12: aluminium), joints: NBR, en option FKM

#### Plage de température:

-20°C à +80°C max., Joints en FKM (-20°C à max. +120°C, dimensions 12 à 130 : jusqu'à +150°C) -F

#### Pression de commande:

6 - 10 bar (pressions plus faibles sur demande)

#### Caractéristiques:

- bride de montage conforme à ISO 5211
- connexion d'entraînement avec un

according to DIN 3337,  
 •connection for solenoid valve according to VDI/VDE 3845 (NAMUR) or using a thread,  
 •connection for position controller or limit switch box according to VDI/VDE 3847 (NAMUR),  
 •visual display according to NAMUR,  
 •construction ATEX-compliant Ex II 2GD c

Commodity Code: 8412390090

conform DIN 3337,  
 •aansluiting voor magneetklep conform VDI/VDE 3845 (NAMUR) of via schroefdraad,  
 •aansluiting voor positieregelaar of eindschakelaarkast conform VDI/VDE 3847 (NAMUR),  
 •visuele weergave conform NAMUR,  
 •vorm ATEX-compatibel Ex II 2GD c

HS Code: 8412390090

DIN 3337,  
 •anschluss für Magnetventil nach VDI/VDE 3845 (NAMUR) oder über Gewinde,  
 •anschluss für Stellungsregler oder Endschalterbox nach VDI/VDE 3847 (NAMUR),  
 •sichtanzeige nach NAMUR,  
 •bauweise ATEX-konform Ex II 2GD c 85°C (Antriebe ab Größe 12: Ex II 2GD c 110°C)

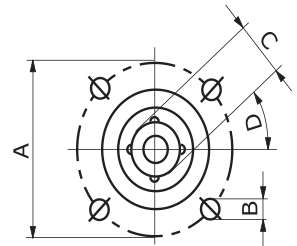
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carré conf. à DIN 3337  
 •raccord pour électrovanne selon VDI/VDE 3845 (NAMUR) ou par filetage  
 •raccord pour régulateur de position ou boîtier de fin de course selon VDI/VDE 3847 (NAMUR),  
 •écran selon NAMUR  
 •construction conforme à ATEX Ex II 2GD c

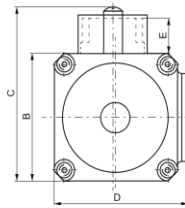
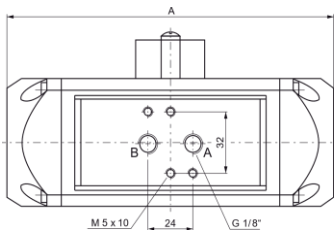
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### Standard dimensions ISO 5211

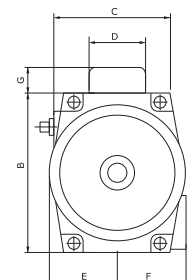
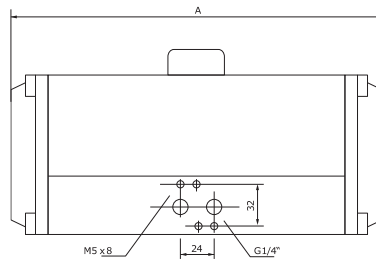
ISO 5211	A	B	C	D
F 03	36	M 5	9	45°
F 04	42	M 5	11	45°
F 05	50	M 6	14	45°
F 07	70	M 8	17	45°
F 10	102	M 10	22	45°
F 12	125	M 12	27	45°



### PAL 001-006



### PAL 012-180



	A	B	C	D	E		A	B	C	D	E	F	G
<b>001</b>	88	45	68.9	45	20	<b>012</b>	184	100	71.5	17	41.5	53	20
<b>002</b>	132	56	79.9	61	20	<b>025</b>	260	120	86.0	17	52.0	55	20
<b>006</b>	165	66	89.9	72	20	<b>050</b>	298	155	113.3	22	70.0	71	20
						<b>090</b>	390	172	119.5	27	76.0	77	30
						<b>130</b>	458	197	140.0	27	88.0	88	30
						<b>180</b>	528	230	153.5	36	103.0	101	30

### Torques (Nm) for double-acting actuators

Pressure Size	2bar	3bar	4bar	5bar	6bar	7bar	8bar	9bar	10bar
001	2.5	3.7	4.9	6.2	7.4	8.6	9.9	11	12
002	5.4	8.1	11	14	16	19	22	24	27
006	12	19	25	31	37	43	50	56	62
012	25	37	49	62	74	86	99	110	122
025	47	71	95	119	143	167	190	213	236
050	89	133	177	222	266	310	354	398	441
090	175	263	351	439	526	614	702	789	876
130	267	401	535	668	802	936	1069	1203	1335

## Torques (Nm) for single-acting actuators

Size	Pressure	2.5-2.9bar		3-3.9bar		4-4.9bar		5-5.9bar (Standard)		6-6.9bar		7-7.9bar		8-9.9bar	
		Nm	Springs	Nm	Springs	Nm	Springs	Nm	Springs	Nm	Springs	Nm	Springs	Nm	Springs
002		1	1	2.2	1	3.6	2	4.5	2	6.0	2	6.9	2	7.9	2
006		2.3	1	5.2	1	9.1	2	10	2	12	2	14	2	16	2
012		10	4	12	6	16	8	20	10	24	12	28	12	30	12
025		21	4	24	6	31	8	39	10	47	12	55	12	59	12
050		37	4	44	6	59	8	74	10	88	12	103	12	111	12
090		90	5	108	6	145	8	181	10	216	12	304	12	328	12
130		126	5	151	6	202	8	251	10	302	12	436	12	470	12

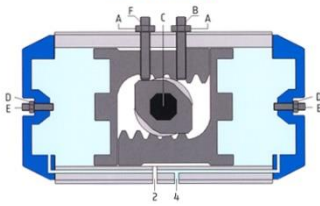
## End position adjustment (only type 012-180)



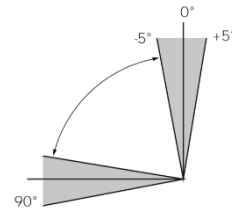
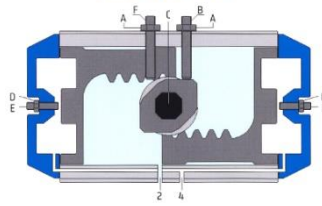
Disconnect the rotary actuator from the air supply before setting the end positions. Never adjust the adjusting screws against the effect of pressure.

The pivoting angle can be adjusted in both end positions with the adjustment screws "F" (Basic position 0°) and "B" (Switch position 90°) in a pressure free condition by between +5° and -5°. The lock-nuts "A" ensure that the new position is secured.

Basic position 0°



Switch position 90°



## Stroke limiting (Only type 012-180)



Disconnect the rotary actuator from the air supply before adjusting the stroke limiter. Never adjust the adjusting screws against the effect of pressure.

The rated pivoting angle can be set in the switch position with the setting screws "E" in a pressure-free condition by between +5° and -30°. The lock-nuts "D" ensures that the new position is secured.

