

# DA-H – series



## HKS Unternehmensgruppe

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# Technical informations DA-H 40

## Hydraulic rotary actuator

### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

Fig. 1

### Technical data Type DA-H 40

Max. nominal torque at 210 bars	Nm	200
Max. nominal torque at 210 bars with camshaft	Nm	160
Nominal torque	Nm/bar	0,96
Max. working pressure *	bar	210
Max. radial load	N	1567
Max. axial load	N	8 000
Absorption volume	Angle 90°	dm <sup>3</sup> 0,020
	Angle 180°	dm <sup>3</sup> 0,040
	Angle 270°	dm <sup>3</sup> 0,060
	Angle 360°	dm <sup>3</sup> 0,080
Weight	Angle 90°	kg approx 4,3
	Angle 180°	kg approx 4,8
	Angle 270°	kg approx 5,8
	Angle 360°	kg approx 6,2

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 40

## Hydraulic rotary actuator

Standard version with feather key

Special version hollow shaft DIN 5463

Special version angle adjustment

Special version with female thread

Special version hollow shaft with feather key grooves (DIN 6885)

Special version threaded camshaft

Special version camshaft with cog

### Dimension table

Typ	DA-H 40	
A <sub>k 6</sub>	22	
DIN 5480*)	W 22x1,25x16x8f	
B	∅ 98	
C <sub>f 7</sub>	∅ 55	
D	43	
E	∅ 65	
F	∅ 75	
G	2,5	
H DIN 6885	45	
I DIN 6885	8	
J DIN 6885	14	
K	84	
L	50	
M	3	
N	4	
O	16	
P	90°	124
	180°	149
	270°	182
	360°	210
Q	39	
R	90°	28
	180°	41
	270°	55
	360°	68,5
S	45°	G 1/8"
T		60°
U Number		5
U		9

### Special version HW-hollow shaft to DIN 5480 on request

B	26
Spline profile DIN 5463	6x11x14

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	45
J1	7,8
C <sub>H7</sub>	∅ 12
I <sub>pg</sub>	4

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	16
W1 h6	10

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	142
	180°	167
	270°	200
	360°	228

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- Tandem seal on the actuator shaft

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### Auxiliary equipment

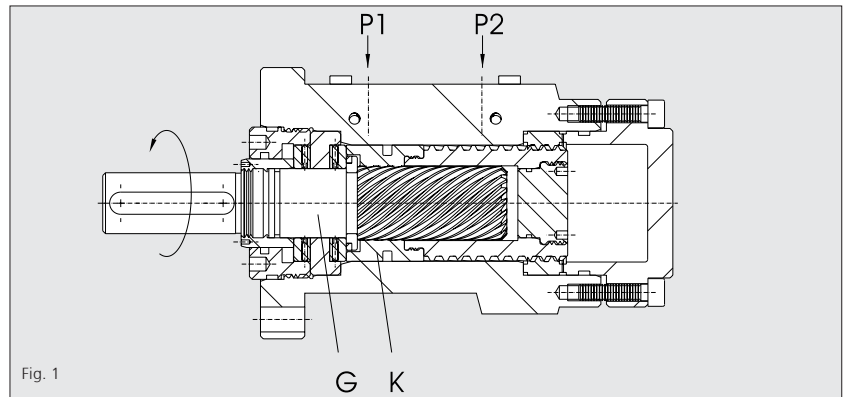
- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

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### Technical data Type DA-H 50

Max. nominal torque at 210 bars	Nm	340		
Max. nominal torque at 210 bars with camshaft	Nm	290		
Nominal torque	Nm/bar	1,62		
Max. working pressure *	bar	210		
Max. radial load	N	2976		
Max. axial load	N	10000		
Absorption volume	Angle	90°	dm <sup>3</sup>	0,028
	Angle	180°	dm <sup>3</sup>	0,056
	Angle	270°	dm <sup>3</sup>	0,084
	Angle	360°	dm <sup>3</sup>	0,113
Weight	Angle	90°	kg	ca. 6
	Angle	180°	kg	ca. 6,8
	Angle	270°	kg	ca. 7,8
	Angle	360°	kg	ca. 8,7

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

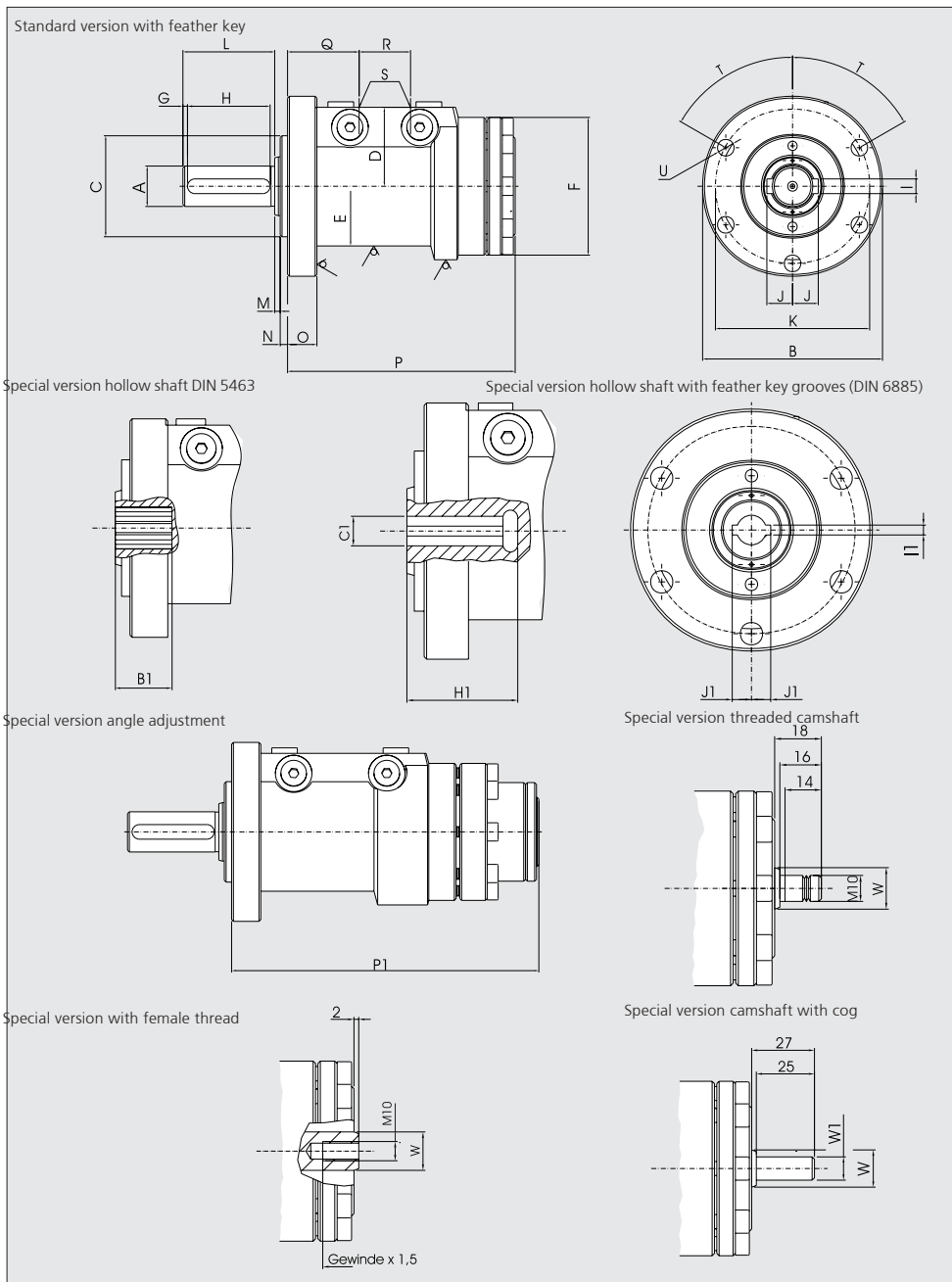
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 50

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 50	
A <sub>k6</sub>	28	
DIN 5480*)	W 28x2x12x8f	
B	∅	110
C <sub>f7</sub>	∅	68
D	49	
E	∅	72
F	∅	82
G	2	
H DIN 6885	56	
I DIN 6885	8	
J DIN 6885	17	
K	90	
L	60	
M	3	
N	4	
O	18	
P	90°	133
	180°	164
	270°	200
	360°	232
Q	39	
R	90°	31
	180°	48
	270°	65
	360°	80,5
S	45°	G 1/8"
T	60°	
U Number	5	
U	9	

### Special version HW-hollow shaft to DIN 5480 on request

B	30
Spline profile DIN 5463	6x16x20

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	55
J1	10,1
C <sub>H7</sub>	∅ 16
l <sub>pg</sub>	5

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	18
W1 h6	10

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	149
	180°	182
	270°	218
	360°	250

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HKS rotary actuators in the DA-H series offer the following standards:

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- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

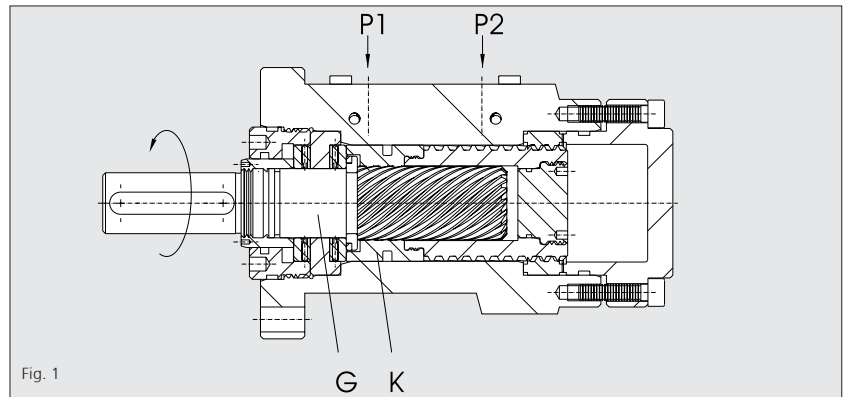
- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
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### Technical data Type DA-H 63

Max. nominal torque at 210 bars	Nm	650		
Max. nominal torque at 210 bars with camshaft	Nm	540		
Nominal torque	Nm/bar	3,10		
Max. working pressure *	bar	210		
Max. radial load	N	4364		
Max. axial load	N	14000		
Absorption volume	Angle	90°	dm <sup>3</sup>	0,058
	Angle	180°	dm <sup>3</sup>	0,117
	Angle	270°	dm <sup>3</sup>	0,176
	Angle	360°	dm <sup>3</sup>	0,235
Weight	Angle	90°	kg	ca. 8,5
	Angle	180°	kg	ca. 9,8
	Angle	270°	kg	ca. 12,9
	Angle	360°	kg	ca. 14

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

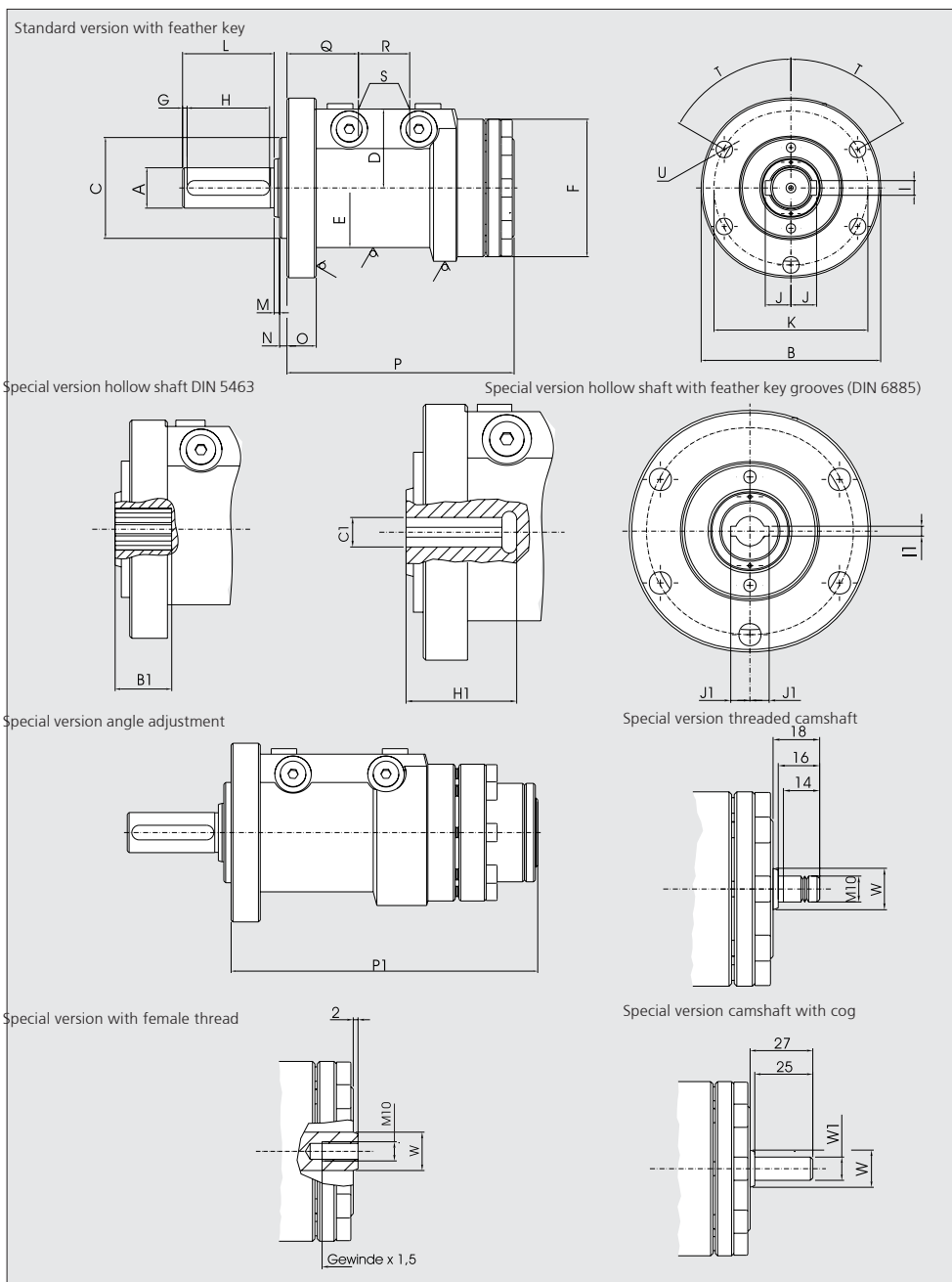
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 63

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 63
A <sub>k6</sub>	35
DIN 5480*)	W 35x2x16x8f
B	∅ 128
C <sub>f7</sub>	∅ 80
D	57
E	∅ 87
F	∅ 95
G	5
H DIN 6885	70
I DIN 6885	10
J DIN 6885	20,5
K	108
L	80
M	3,5
N	5
O	25
P	90° 152 180° 200 270° 245 360° 284
Q	48
R	90° 37 180° 57 270° 79 360° 99
S	45° G 1/4"
T	60°
U Number	5
U	11

### Special version HW-hollow shaft to DIN 5480 on request

B	35
Spline profile DIN 5463	6x21x25

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	65
J1	14,1
C <sub>H7</sub>	∅ 24
l <sub>pg</sub>	8

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	18
W1 h6	10

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90° 172
	180° 220
	270° 264,5
	360° 304,5

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- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

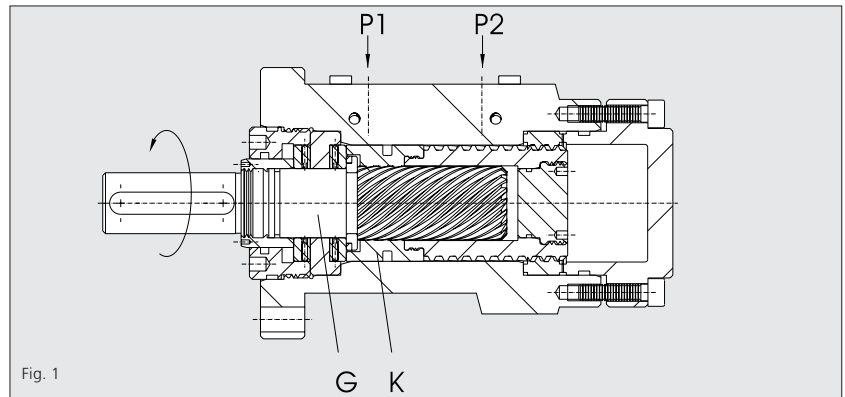
- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
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- Range of rotation exceeding 360°
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- Change of direction of rotation
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### Typical applications

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### Technical data Type DA-H 80

Max. nominal torque at 210 bars	Nm	1300
Max. nominal torque at 210 bars with camshaft	Nm	1170
Nominal torque	Nm/bar	6,20
Max. working pressure *	bar	210
Max. radial load	N	7875
Max. axial load	N	19050
Absorption volume	Angle 90°	dm <sup>3</sup> 0,131
	Angle 180°	dm <sup>3</sup> 0,262
	Angle 270°	dm <sup>3</sup> 0,391
	Angle 360°	dm <sup>3</sup> 0,521
Weight	Angle 90°	kg ca. 16,7
	Angle 180°	kg ca. 19,1
	Angle 270°	kg ca. 21,5
	Angle 360°	kg ca. 24

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

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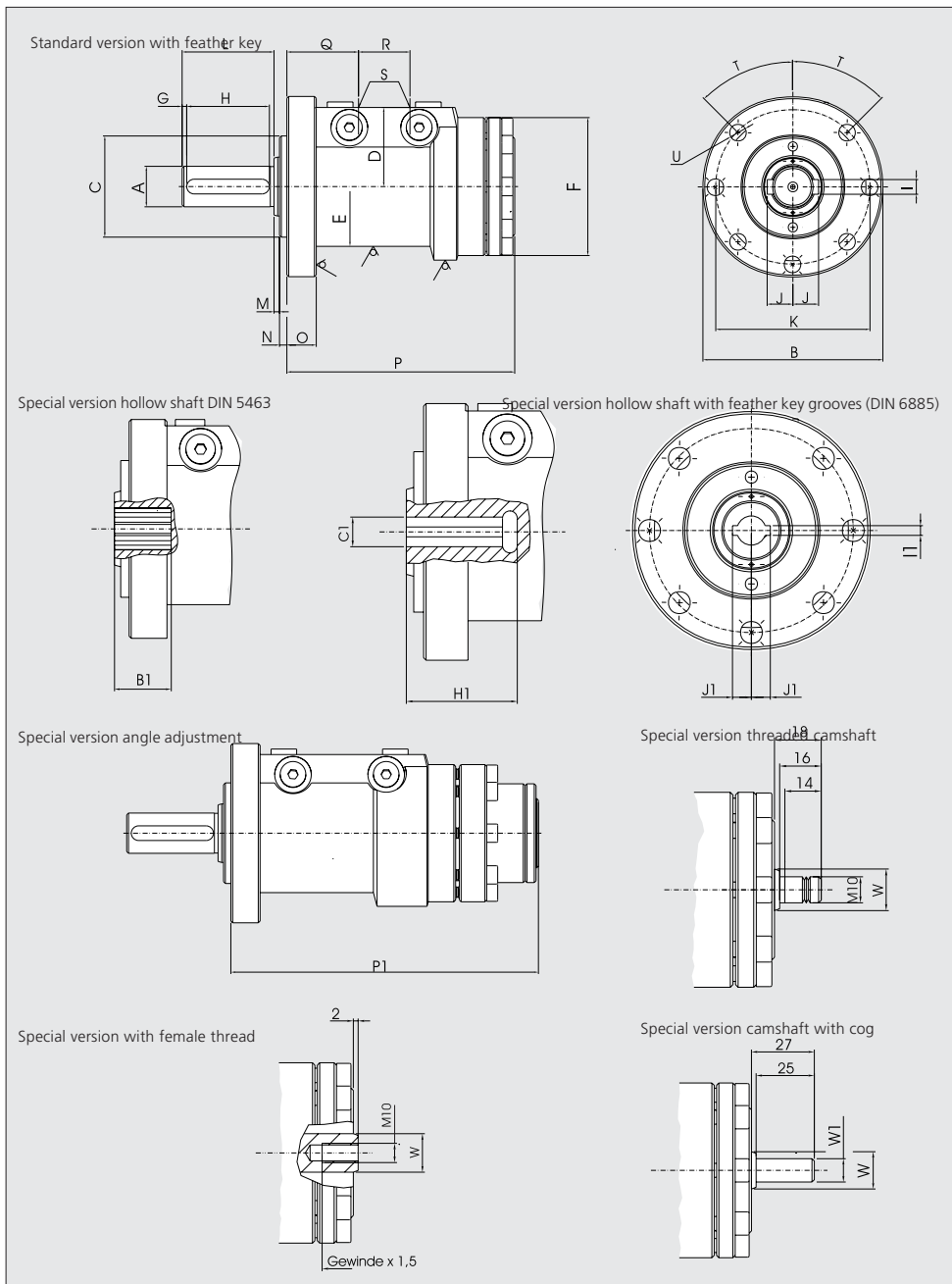
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# Technical informations DA-H 80

## Hydraulic rotary actuator



### Dimension table

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A <sub>k6</sub>	42
DIN 5480*)	W 40x2x18x8f
B	∅ 150
C <sub>f7</sub>	∅ 100
D	66
E	∅ 108
F	∅ 118
G	5
H DIN 6885	100
I DIN 6885	12
J DIN 6885	24
K	130
L	110
M	3
N	6
O	30
P	90° 187 180° 240 270° 290 360° 345
Q	57
R	90° 37 180° 74 270° 101 360° 125
S	45° G 3/8"
T	45°
U Number	7
U	11

### Special version HW-hollow shaft to DIN 5480 on request

B	40
Spline profile DIN 5463	6x26x32

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	90
J1	18,3
C <sub>H7</sub>	∅ 30
l <sub>pg</sub>	8

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	25
W1 h6	16

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	212
	180°	262
	270°	314,5
	360°	367,5

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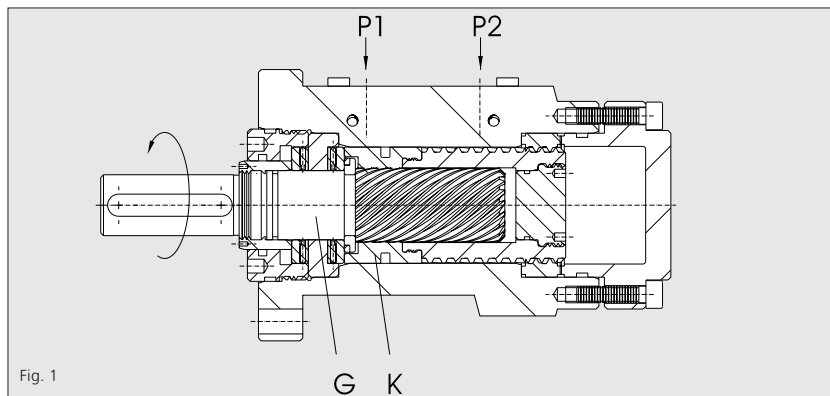
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### Technical data Type DA-H 100

Max. nominal torque at 210 bars	Nm	2500
Max. nominal torque at 210 bars with camshaft	Nm	2340
Nominal torque	Nm/bar	11,90
Max. working pressure *	bar	210
Max. radial load	N	11250
Max. axial load	N	24900
Absorption volume	Angle 90°	dm <sup>3</sup> 0,255
	Angle 180°	dm <sup>3</sup> 0,509
	Angle 270°	dm <sup>3</sup> 0,763
	Angle 360°	dm <sup>3</sup> 1,018
Weight	Angle 90°	kg ca.24,1
	Angle 180°	kg ca.29,2
	Angle 270°	kg ca.34
	Angle 360°	kg ca.38,5

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

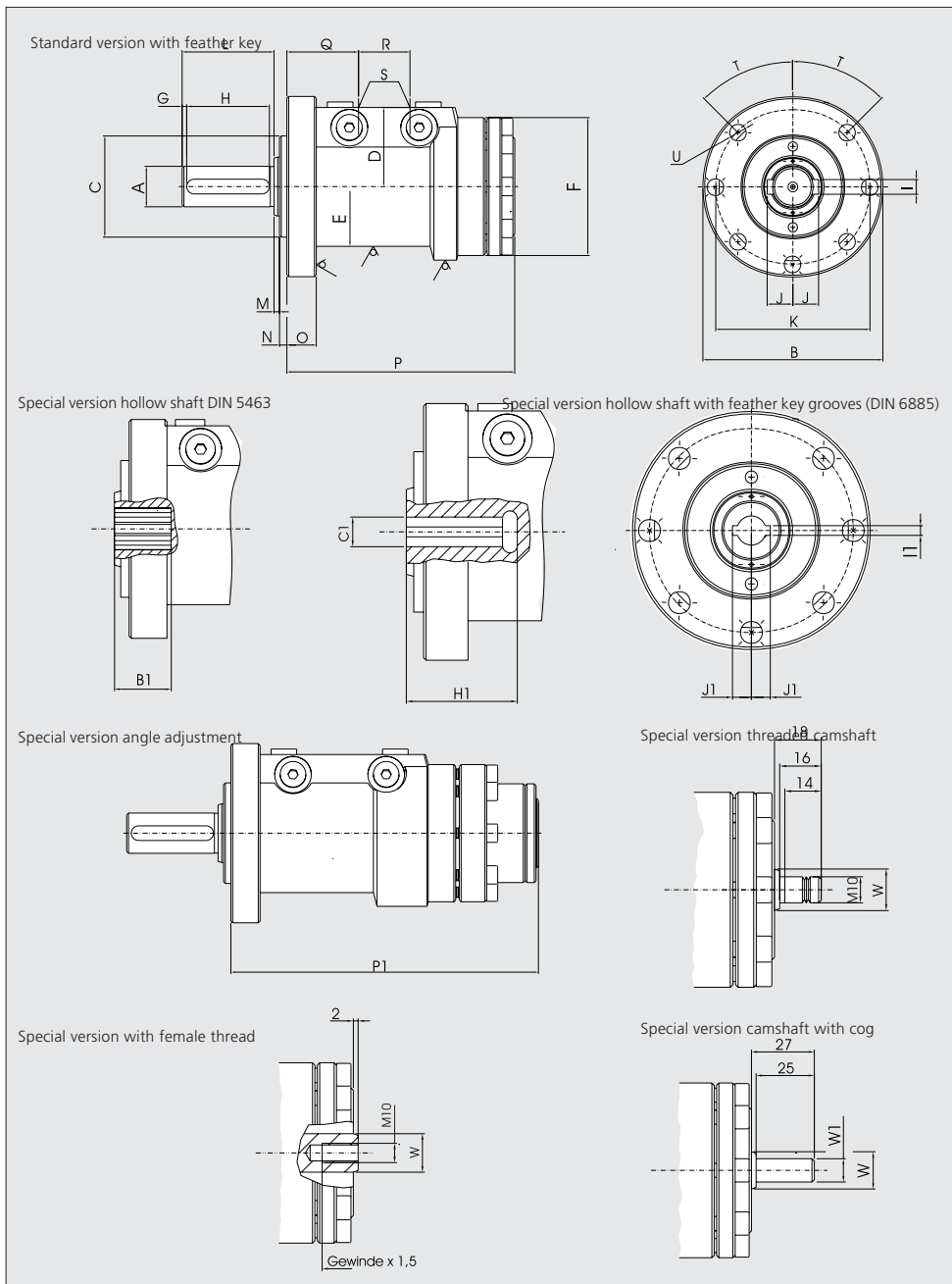
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

We reserve the right to make modifications

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# Technical informations DA-H 100

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 100	
A <sub>m6</sub>	55	
DIN 5480*)	W 55x2x26x8f	
B	∅	178
C <sub>f7</sub>	∅	115
D	80	
E	∅	130
F	∅	147
G	5	
H DIN 6885	100	
I DIN 6885	16	
J DIN 6885	31,5	
K	155	
L	110	
M	4	
N	6	
O	31	
P	90°	241
	180°	311
	270°	366
	360°	432
Q	65	
R	90°	56,5
	180°	89
	270°	121,5
	360°	154
S	45°	G 1/2"
T	45°	
U Number	7	
U	14	

### Special version HW-hollow shaft to DIN 5480 on request

B	50
Spline profile DIN 5463	8x36x42

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	105
J1	24,3
C <sub>H7</sub>	∅ 42
l <sub>pg</sub>	12

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	25
W1 h6	16

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	245
	180°	311
	270°	381
	360°	442

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### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

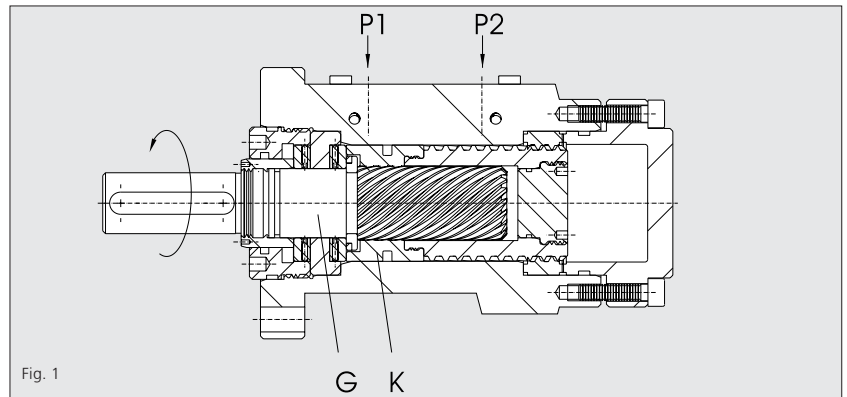


Fig. 1  
Technical data Type DA-H 125

Max. nominal torque at 210 bars	Nm	5107
Max. nominal torque at 210 bars with camshaft	Nm	4900
Nominal torque	Nm/bar	24,32
Max. working pressure *	bar	210
Max. radial load	N	17552
Max. axial load	N	34100
Absorption volume	Angle 90°	dm <sup>3</sup> 0,518
	Angle 180°	dm <sup>3</sup> 1,036
	Angle 270°	dm <sup>3</sup> 1,554
	Angle 360°	dm <sup>3</sup> 2,071
Weight	Angle 90°	kg ca. 47
	Angle 180°	kg ca. 55
	Angle 270°	kg ca. 63,5
	Angle 360°	kg ca. 72,5

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise). A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

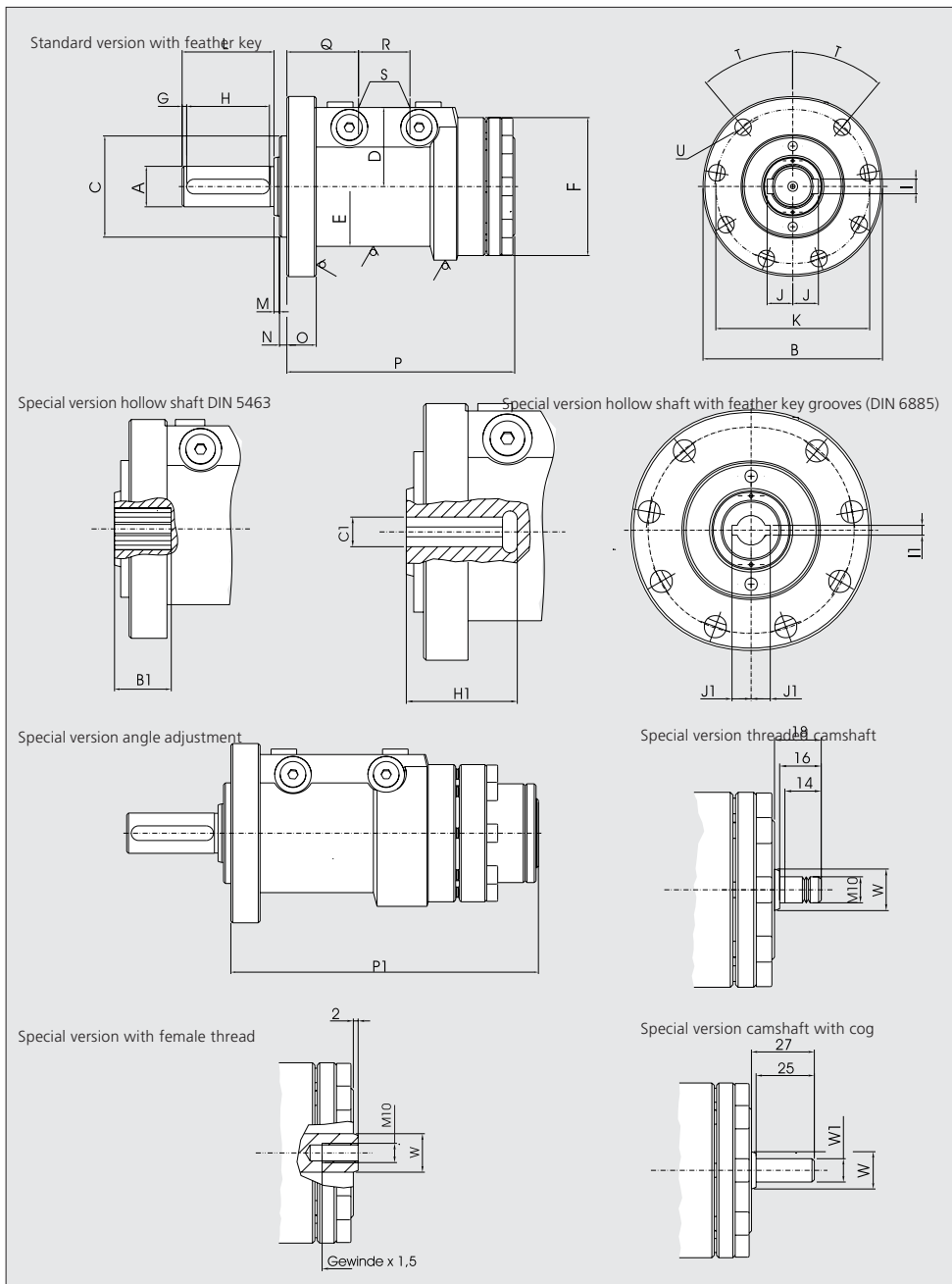
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 125

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 125	
A <sub>m6</sub>	70	
DIN 5480*)	W 70x2x34x8f	
B	∅	222
C <sub>f7</sub>	∅	150
D		94
E	∅	167
F	∅	183
G		7
H DIN 6885		125
I DIN 6885		20
J DIN 6885		39,5
K		195
L		140
M		4
N		8
O		37
P	90°	271,5
	180°	392
	270°	480
	360°	532,5
Q		74
R	90°	76,2
	180°	118,5
	270°	162,5
	360°	207
S	45°	G 1/2"
T		40°
U Number		8
U		18

### Special version HW-hollow shaft to DIN 5480 on request

B	62
Spline profile DIN 5463	8x46x54

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	120
J1	31,8
C <sub>H7</sub>	∅ 55
l <sub>pg</sub>	16

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	25
W1 h6	16

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	298
	180°	392
	270°	482
	360°	557

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# Technical informations DA-H 140

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

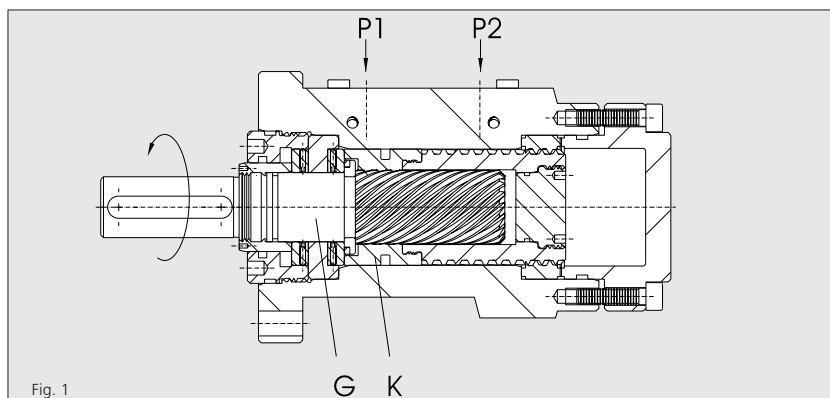


Fig. 1

### Technical data Type DA-H 140

Max. nominal torque at 210 bars	Nm	7100
Max. nominal torque at 210 bars with camshaft	Nm	6870
Nominal torque	Nm/bar	33,80
Max. working pressure *	bar	210
Max. radial load	N	17800
Max. axial load	N	34800
Absorption volume	Angle 90°	dm <sup>3</sup> 0,759
	Angle 180°	dm <sup>3</sup> 1,518
	Angle 270°	dm <sup>3</sup> 2,277
	Angle 360°	dm <sup>3</sup> 3,036
Weight	Angle 90°	kg ca. 74
	Angle 180°	kg ca. 87
	Angle 270°	kg ca. 101
	Angle 360°	kg ca. 115

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

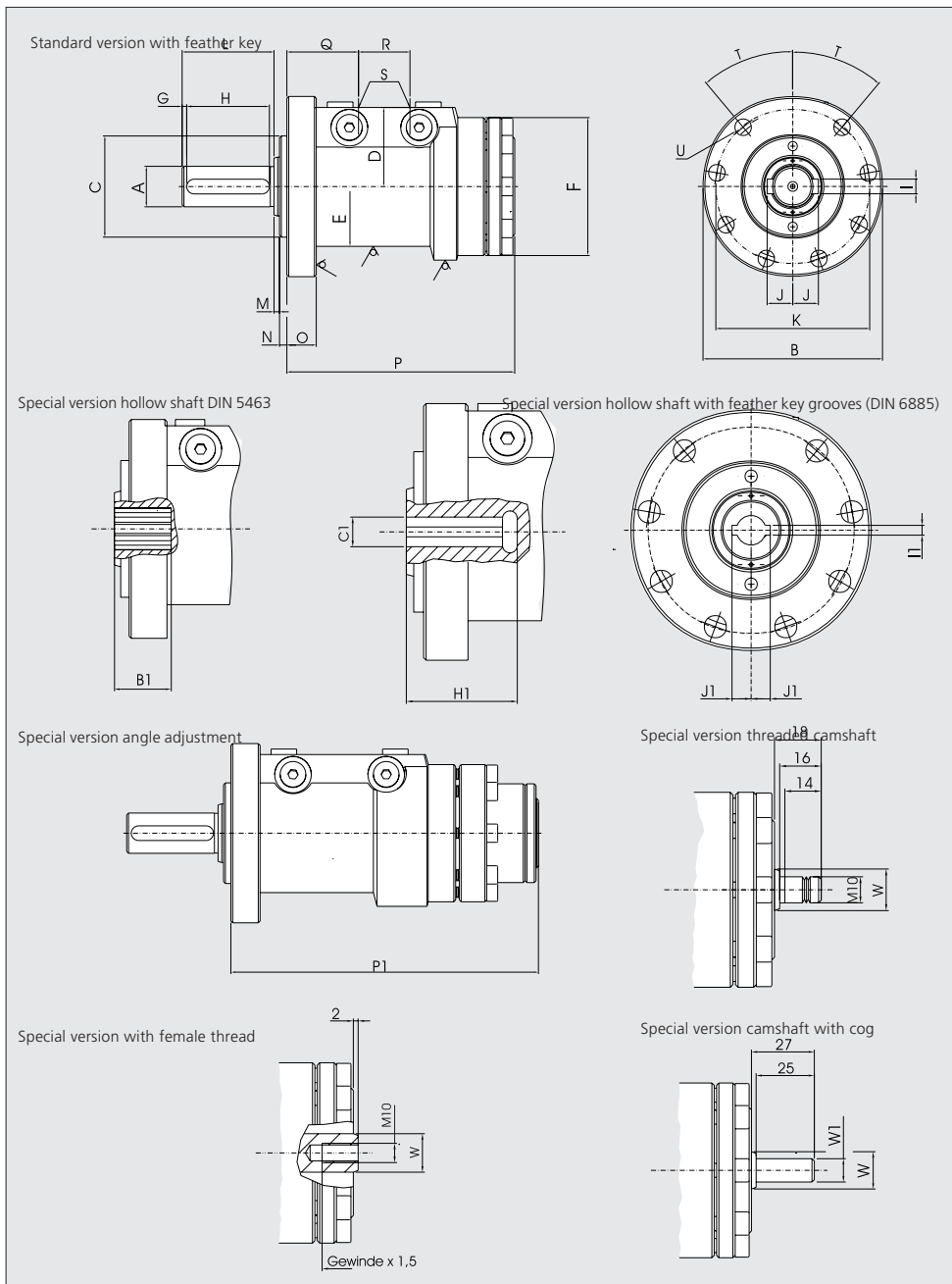
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 140

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 140	
A <sub>m6</sub>	80	
DIN 5480*)	W 80x3x25x8f	
B	∅	250
C <sub>f7</sub>	∅	160
D	105	
E	∅	187
F	∅	210
G	5	
H DIN 6885	140	
I DIN 6885	22	
J DIN 6885	45	
K	220	
L	150	
M	7	
N	10	
O	40	
P	90°	304
	180°	401
	270°	499
	360°	597
Q	78	
R	90°	82
	180°	130
	270°	180
	360°	229
S	45°	G 1/2"
T	40°	
U Number	8	
U	18	

### Special version HW-hollow shaft to DIN 5480 on request

B	62
Spline profile DIN 5463	8x52x60

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	120
J1	34,4
C <sub>H7</sub>	∅ 60
l <sub>pg</sub>	18

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	25
W1 h6	16

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	334,5
	180°	431
	270°	529
	360°	627

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# Technical informations DA-H 160

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

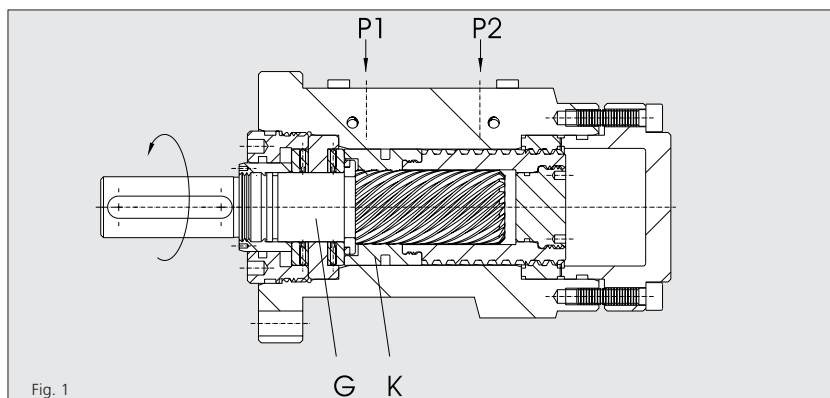


Fig. 1

### Technical data Type DA-H 160

Max. nominal torque at 210 bars	Nm	11300
Max. nominal torque at 210 bars with camshaft	Nm	10590
Nominal torque	Nm/bar	53,80
Max. working pressure *	bar	210
Max. radial load	N	36300
Max. axial load	N	46200
Absorption volume	Angle 90°	dm <sup>3</sup> 1,145
	Angle 180°	dm <sup>3</sup> 2,290
	Angle 270°	dm <sup>3</sup> 3,435
	Angle 360°	dm <sup>3</sup> 4,580
Weight	Angle 90°	kg ca. 114
	Angle 180°	kg ca. 136
	Angle 270°	kg ca. 154
	Angle 360°	kg ca. 170

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

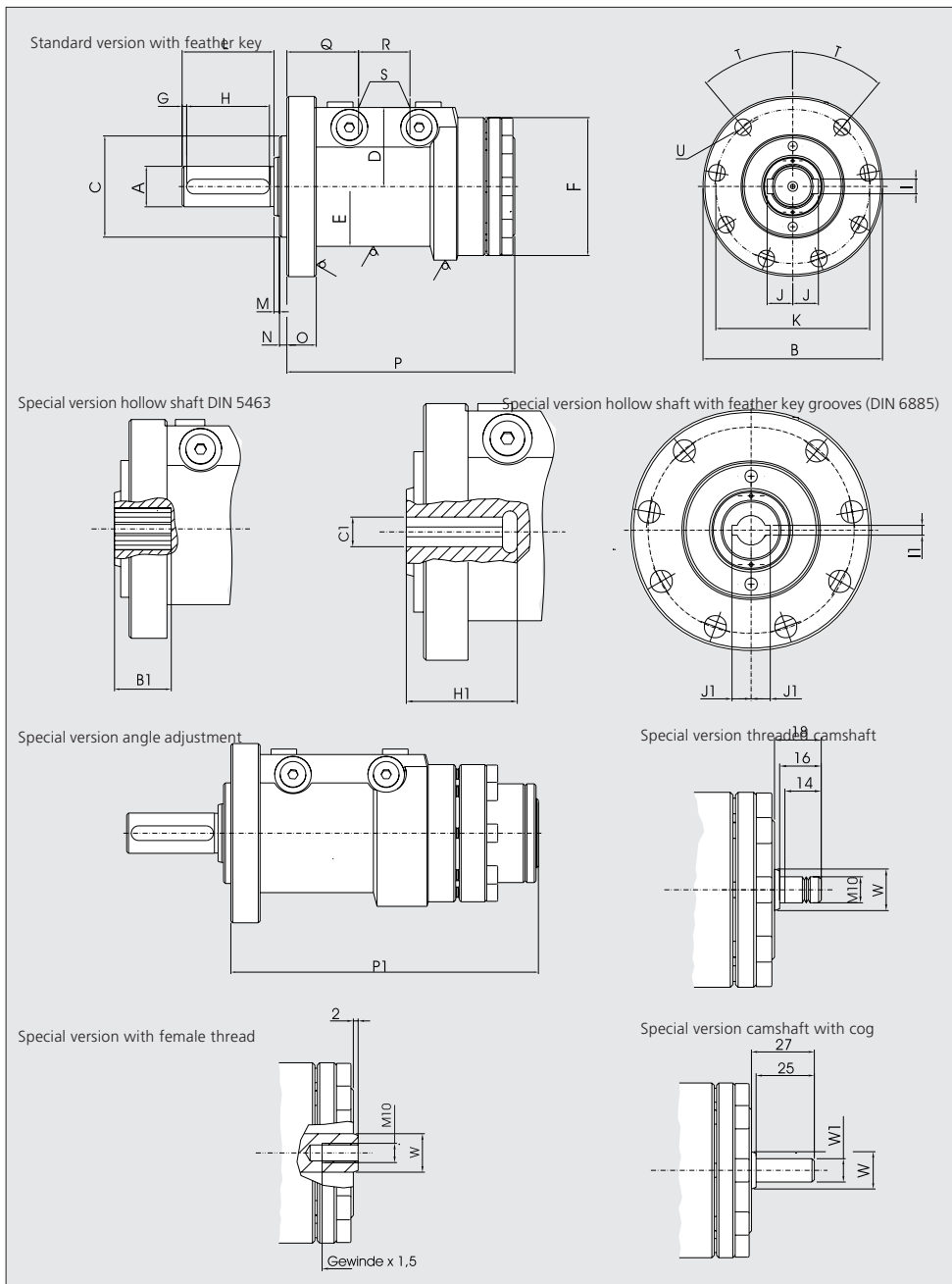
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# Technical informations DA-H 160

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 160
A <sub>m6</sub>	100
DIN 5480*)	W 100x3x32x8f
B	∅ 278
C <sub>f7</sub>	∅ 190
D	127
E	∅ 206
F	∅ 240
G	5
H DIN 6885	200
I DIN 6885	28
J DIN 6885	56
K	245
L	210
M	5
N	12
O	43
P	90° 364 180° 473,5 270° 592,5 360° 707,5
Q	94
R	90° 110 180° 168 270° 224 360° 281
S	45° G 3/4"
T	40°
U Number	8
U	22

### Special version HW-hollow shaft to DIN 5480 on request

B	82
Spline profile DIN 5463	8x62x72

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	150
J1	42,4
C <sub>H7</sub>	∅ 75
l <sub>pg</sub>	20

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	394,5
	180°	502,5
	270°	621,5
	360°	733,5

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# Technical informations DA-H 180

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

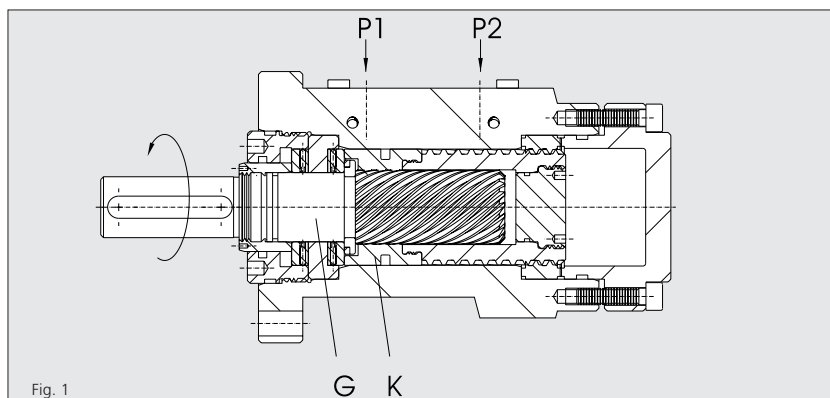


Fig. 1

### Technical data Type DA-H 180

Max. nominal torque at 210 bars	Nm	16200
Max. nominal torque at 210 bars with camshaft	Nm	15680
Nominal torque	Nm/bar	77,14
Max. working pressure *	bar	210
Max. radial load	N	37600
Max. axial load	N	47400
Absorption volume	Angle 90°	dm <sup>3</sup> 1,678
	Angle 180°	dm <sup>3</sup> 3,356
	Angle 270°	dm <sup>3</sup> 5,034
	Angle 360°	dm <sup>3</sup> 6,712
Weight	Angle 90°	kg ca. 150
	Angle 180°	kg ca. 187
	Angle 270°	kg ca. 213
	Angle 360°	kg ca. 245

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

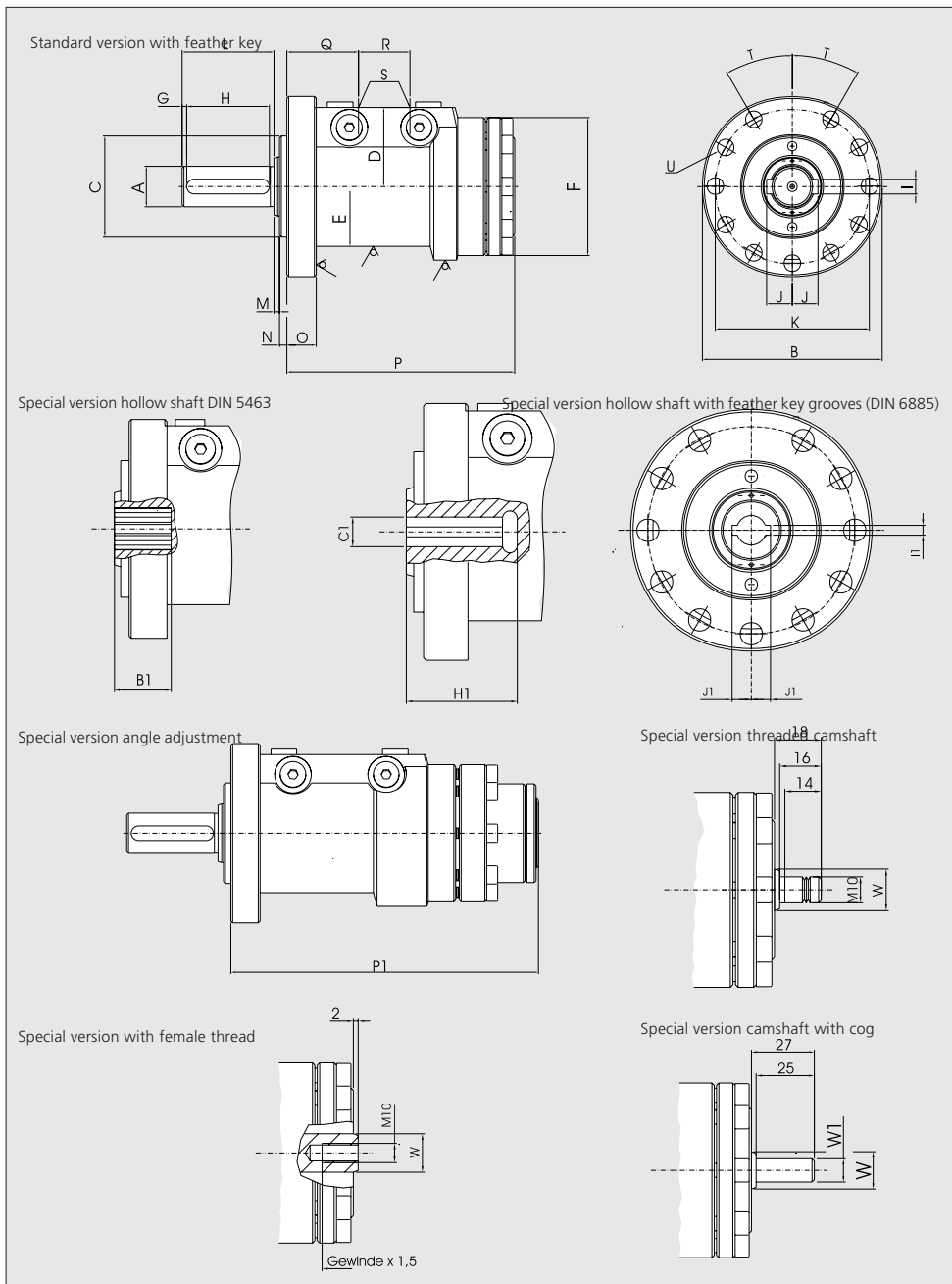
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

We reserve the right to make modifications

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# Technical informations DA-H 180

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 180	
A <sub>m6</sub>	105	
DIN 5480*)	W 105x3x34x8f	
B	∅	298
C <sub>f7</sub>	∅	210
D	138	
E	∅	226
F	∅	270
G	5	
H DIN 6885	200	
I DIN 6885	28	
J DIN 6885	58,5	
K	265	
L	210	
M	5	
N	12	
O	47	
P	90°	435
	180°	565
	270°	702
	360°	880
Q	127	
R	90°	114
	180°	186
	270°	253
	360°	321
S	45°	G 1"
T	40°	
U Number	11	
U	22	

### Special version HW-hollow shaft to DIN 5480 on request

B	100
Spline profile DIN 5463	10x72x82

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	150
J1	42,4
C <sub>H7</sub>	∅ 75
l <sub>pg</sub>	20

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	32
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	475
	180°	595
	270°	742
	360°	900

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# Technical informations DA-H 200

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

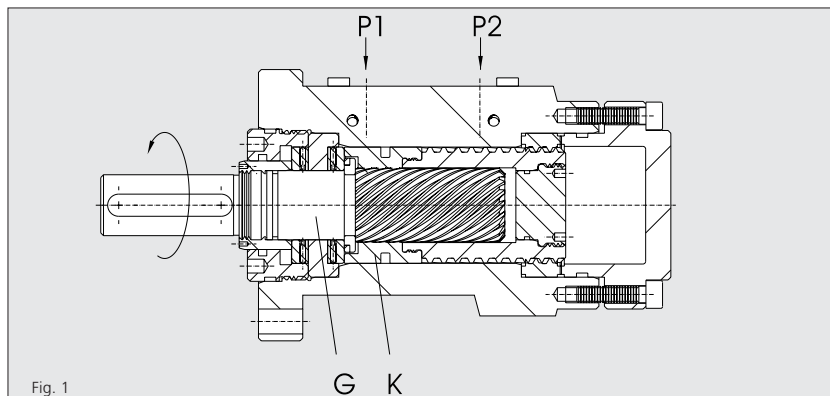


Fig. 1

### Technical data Type DA-H 200

Max. nominal torque at 210 bars	Nm	22300
Max. nominal torque at 210 bars with camshaft	Nm	21400
Nominal torque	Nm/bar	106,20
Max. working pressure *	bar	210
Max. radial load	N	67210
Max. axial load	N	62000
Absorption volume	Angle 90°	dm <sup>3</sup> 2,261
	Angle 180°	dm <sup>3</sup> 4,522
	Angle 270°	dm <sup>3</sup> 6,783
	Angle 360°	dm <sup>3</sup> 9,044
Weight	Angle 90°	kg ca. 194
	Angle 180°	kg ca. 238
	Angle 270°	kg ca. 264
	Angle 360°	kg ca. 306

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

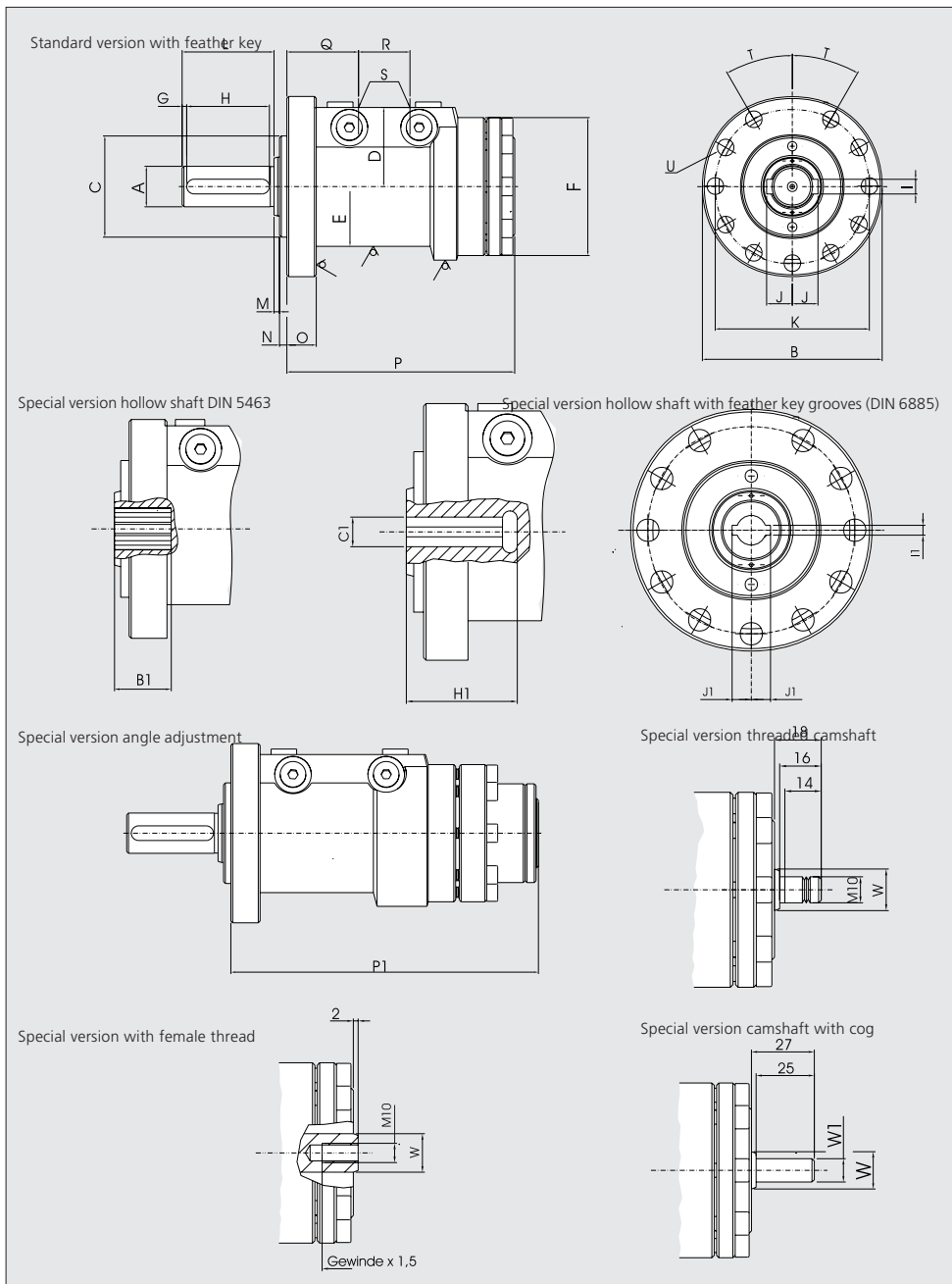
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 200

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 200	
A <sub>m6</sub>	120	
DIN 5480*)	W 120x5x22x8f	
B	∅	325
C <sub>f7</sub>	∅	235
D	150	
E	∅	255
F	∅	295
G	5	
H DIN 6885	200	
I DIN 6885	32	
J DIN 6885	67	
K	290	
L	210	
M	4	
N	10	
O	54	
P	90°	438,5
	180°	584,5
	270°	725,5
	360°	876,5
Q	125	
R	90°	125
	180°	196
	270°	265,5
	360°	340
S	45°	G 1"
T	30°	
U Number	11	
U	22	

### Special version HW-hollow shaft to DIN 5480 on request

B	100
Spline profile DIN 5463	10x82x92

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	175
J1	52,9
C <sub>H7</sub>	∅ 95
l <sub>pg</sub>	25

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	478,5
	180°	632,5
	270°	765,5
	360°	914,5

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### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons  $\varnothing$  40–  $\varnothing$  450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

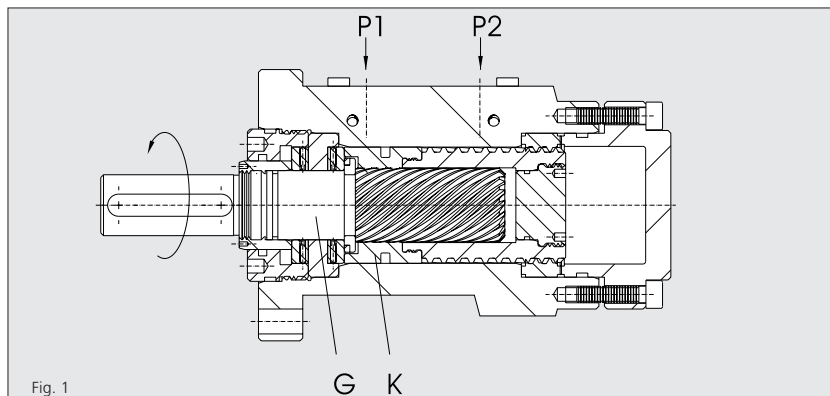
- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, where they are used as actuators for armatures.



### Technical data Type DA-H 225

Max. nominal torque at 210 bars	Nm	32000	
Max. nominal torque at 210 bars with camshaft	Nm	30980	
Nominal torque	Nm/bar	152,38	
Max. working pressure *	bar	210	
Max. radial load	N	69000	
Max. axial load	N	63100	
Absorption volume	Angle 90°	dm <sup>3</sup>	3,388
	Angle 180°	dm <sup>3</sup>	6,676
	Angle 270°	dm <sup>3</sup>	10,014
	Angle 360°	dm <sup>3</sup>	13,352
Weight	Winkel 90°	kg	ca. 404
	Angle 180°	kg	ca. 488
	Angle 270°	kg	ca. 565
	Angle 360°	kg	ca. 630

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

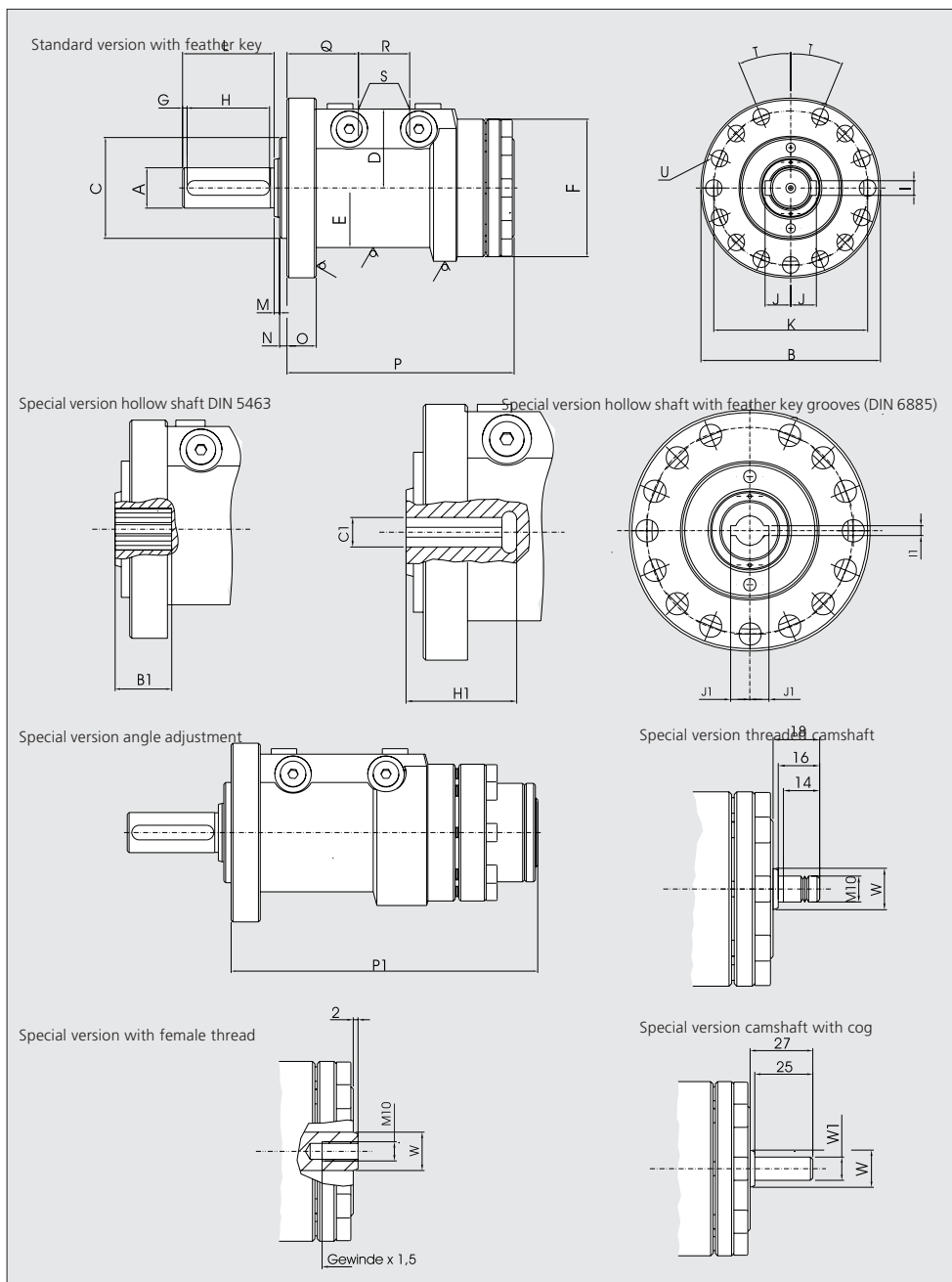
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 225

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 225	
A m 6	140	
DIN 5480*)	W 120x5x26x8f	
B	∅	385
C f 7	∅	260
D		224
E	∅	300
F	∅	350
G		5
H DIN 6885		250
I DIN 6885		36
J DIN 6885		78
K		345
L		260
M		6
N		15
O		64
P	90°	570
	180°	732
	270°	900
	360°	1069
Q		155
R	90°	159
	180°	240
	270°	321
	360°	403
S	45°	G 1"
T		22,5°
U Number		15
U		22

### Special version HW-hollow shaft to DIN 5480 on request

B	120
Spline profile DIN 5463	10x92x102

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	175
J1	56,4
C <sub>H7</sub>	∅ 100
I <sub>P9</sub>	28

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f 7	40
W1 h 6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	645
	180°	807
	270°	975
	360°	1140

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# Technical informations DA-H 225 S

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

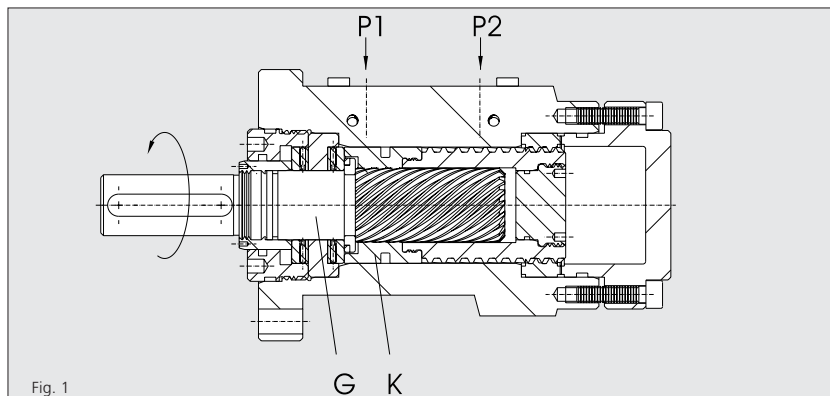


Fig. 1

### Technical data Type DA-H 225 S

Max. nominal torque at 210 bars	Nm	38920
Max. nominal torque at 210 bars with camshaft	Nm	37690
Nominal torque	Nm/bar	185,33
Max. working pressure *	bar	210
Max. radial load	N	69000
Max. axial load	N	63100
Absorption volume	Angle 90°	dm <sup>3</sup> 4,127
	Angle 180°	dm <sup>3</sup> 8,245
	Angle 270°	dm <sup>3</sup> 12,368
	Angle 360°	dm <sup>3</sup> 16,491
Weight	Angle 90°	kg ca. 487
	Angle 180°	kg ca. 543
	Angle 270°	kg ca. 637
	Angle 360°	kg ca. 684

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

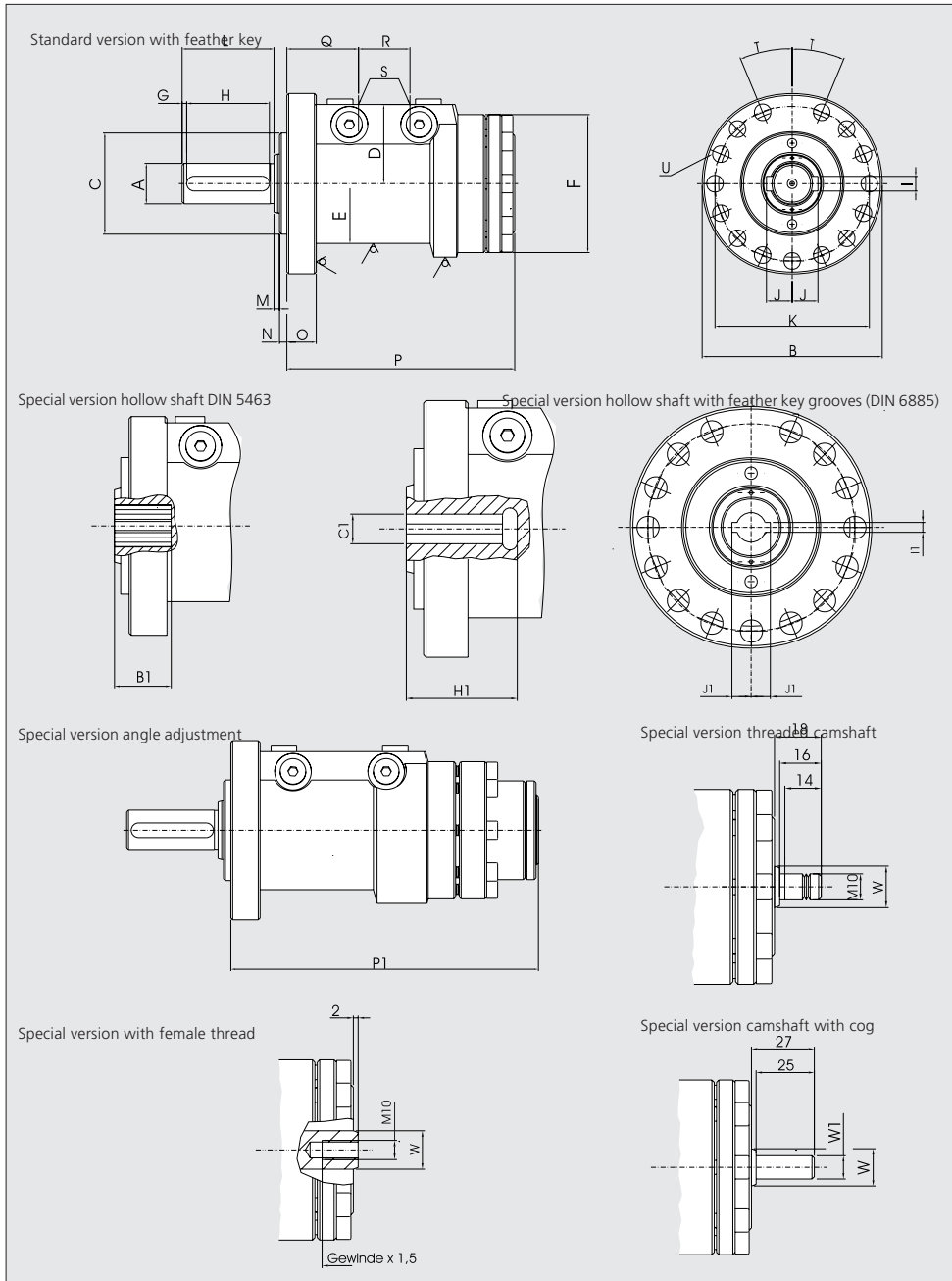
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# Technical informations DA-H 225 S

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 225 S
A <sub>m6</sub>	140
DIN 5480*)	W 140x5x26x8f
B	∅ 385
C <sub>f7</sub>	∅ 260
D	224
E	∅ 300
F	∅ 350
G	5
H DIN 6885	250
I DIN 6885	36
J DIN 6885	78
K	345
L	260
M	6
N	15
O	64
P	90° 690 180° 805 270° 995 360° 1220
Q	155
R	90° 175 180° 276 270° 381 360° 484
S	45° G 1"
T	22,5°
U Number	15
U	22

### Special version HW-hollow shaft to DIN 5480 on request

B	120
Spline profile DIN 5463	10x92x102

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	175
J1	56,4
C <sub>H7</sub>	∅ 100
l <sub>pg</sub>	28

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90° 765 180° 880 270° 1070 360° 1295
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# Technical informations DA-H 250

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

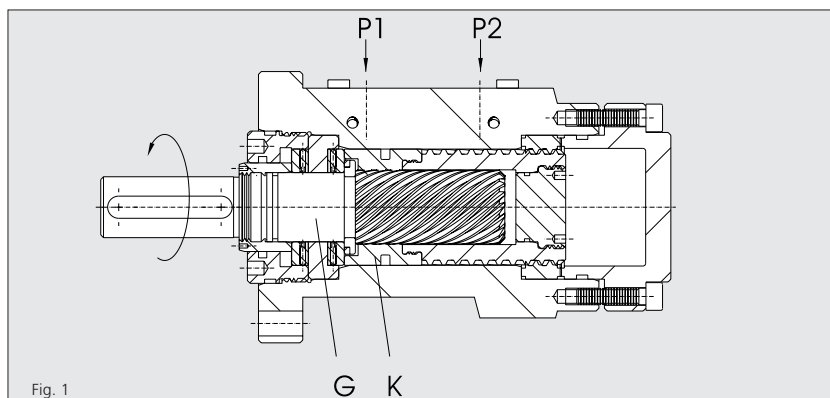


Fig. 1

### Technical data Type DA-H 250

Max. nominal torque at 210 bars	Nm	44000
Max. nominal torque at 210 bars with camshaft	Nm	42870
Nominal torque	Nm/bar	209,52
Max. working pressure *	bar	210
Max. radial load	N	78000
Max. axial load	N	66500
Absorption volume	Angle 90°	dm <sup>3</sup> 4,607
	Angle 180°	dm <sup>3</sup> 9,214
	Angle 270°	dm <sup>3</sup> 13,821
	Angle 360°	dm <sup>3</sup> 18,429
Weight	Angle 90°	kg ca. 630
	Angle 180°	kg ca. 726
	Angle 270°	kg ca. 815
	Angle 360°	kg ca. 912

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

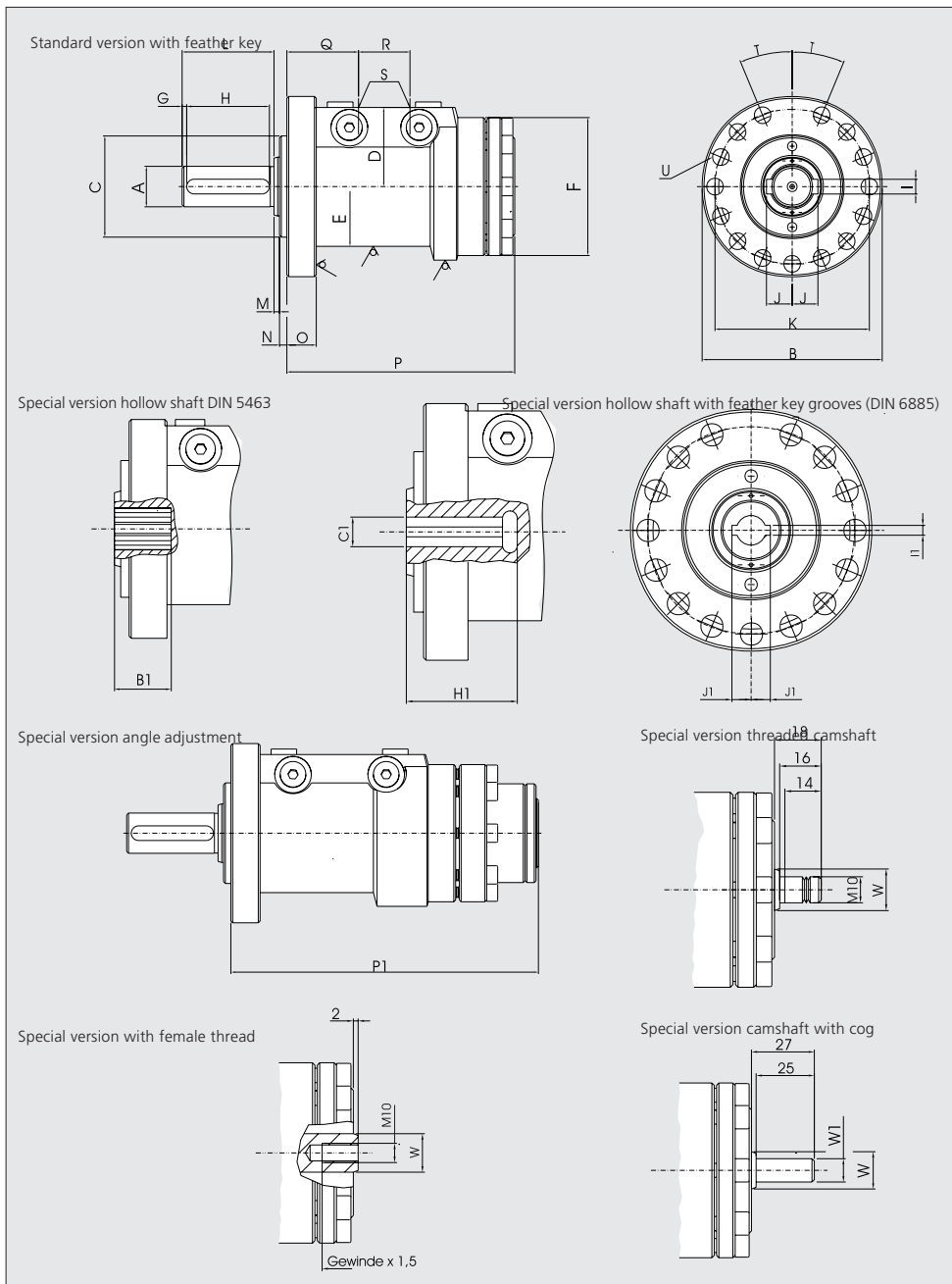
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 250

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 250	
A <sub>m6</sub>	150	
DIN 5480*)	W 150x5x28x8f	
B	∅	450
C <sub>f7</sub>	∅	300
D	240	
E	∅	346
F	∅	385
G	10	
H DIN 6885	280	
I DIN 6885	36	
J DIN 6885	83	
K	400	
L	300	
M	6	
N	20	
O	90	
P	90°	710
	180°	875
	270°	1060
	360°	1261
Q	224	
R	90°	155
	180°	248
	270°	343
	360°	437
S	45°	G 1"
T	22,5°	
U Number	15	
U	26	

### Special version HW-hollow shaft to DIN 5480 on request

B	120
Spline profile DIN 5463	10x102x112

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	175
J1	61,4
C <sub>H7</sub>	∅ 110
l <sub>pg</sub>	28

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	725
	180°	910
	270°	1095
	360°	1286

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# Technical informations DA-H 280

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.

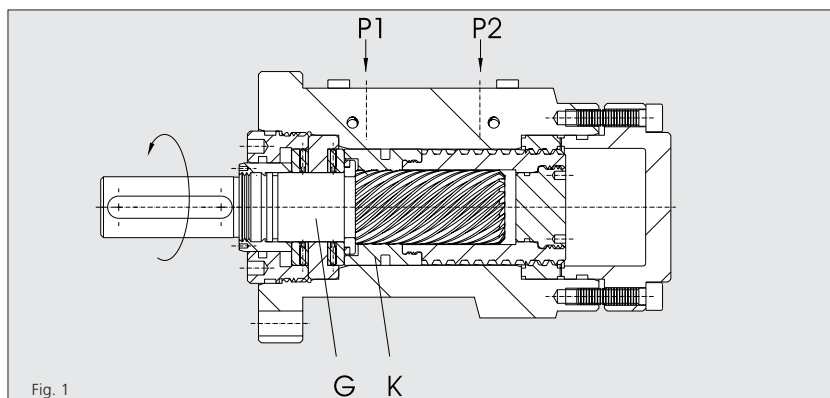


Fig. 1

### Technical data Type DA-H 280

Max. nominal torque at 210 bars	Nm	60800
Max. nominal torque at 210 bars with camshaft	Nm	59580
Nominal torque	Nm/bar	289,52
Max. working pressure *	bar	210
Max. radial load	N	84600
Max. axial load	N	71000
Absorption volume	Angle 90°	dm <sup>3</sup> 6,348
	Angle 180°	dm <sup>3</sup> 12,695
	Angle 270°	dm <sup>3</sup> 19,043
	Angle 360°	dm <sup>3</sup> 25,391
Weight	Angle 90°	kg ca. 874
	Angle 180°	kg ca. 1011
	Angle 270°	kg ca. 1164
	Angle 360°	kg ca. 1292

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

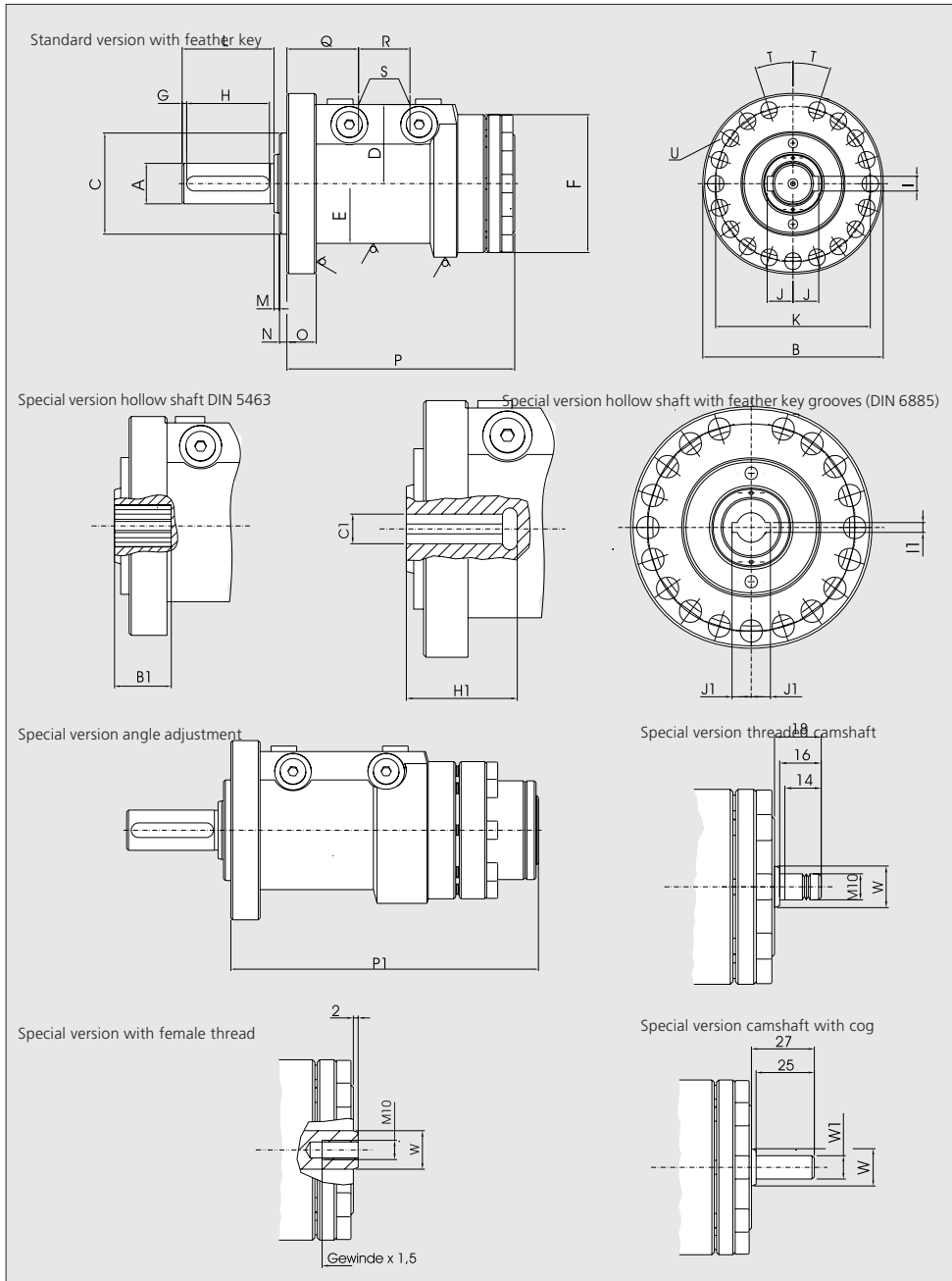
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

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# Technical informations DA-H 280

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 280	
A m 6	170	
DIN 5480*)	W 170x5x32x8f	
B	∅	490
C f 7	∅	340
D		266
E	∅	394
F	∅	435
G		10
H DIN 6885		280
I DIN 6885		40
J DIN 6885		94
K		450
L		300
M		6
N		20
O		100
P	90°	790
	180°	1000
	270°	1205
	360°	1408
Q		261
R	90°	183
	180°	287
	270°	392
	360°	493
S	45°	G 1"
T		18°
U Number		19
U		26

### Special version HW-hollow shaft to DIN 5480 on request

B	130
Spline profile DIN 5463	10x112x125

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	200
J1	67,4
C <sub>H7</sub>	∅ 120
l <sub>pg</sub>	32

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	865
	180°	1075
	270°	1280
	360°	1483

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# Technical informations DA-H 300

## Hydraulic rotary actuator



### General characteristics

Rotary actuators in the DA-H series are characterised by their performance range. At a working pressure of up to 210 bars, torques of up to 250,000 Nm are possible (higher working pressures on request). Another characteristic is the extremely low angular clearance.

HKS rotary actuators in the DA-H series offer the following standards:

- 20 sizes from 36 to 250000 Nm with pistons Ø 40– Ø 450 mm
- 4 rotary angle ranges for each size: 90°, 180°, 270° and 360°
- Actuator shaft with 2 feather keys or DIN 5480 involute spline
- Tandem seal on the actuator shaft

Because of the almost infinite design possibilities for the front face almost all connection variants can be achieved with these actuators.

### Auxiliary equipment

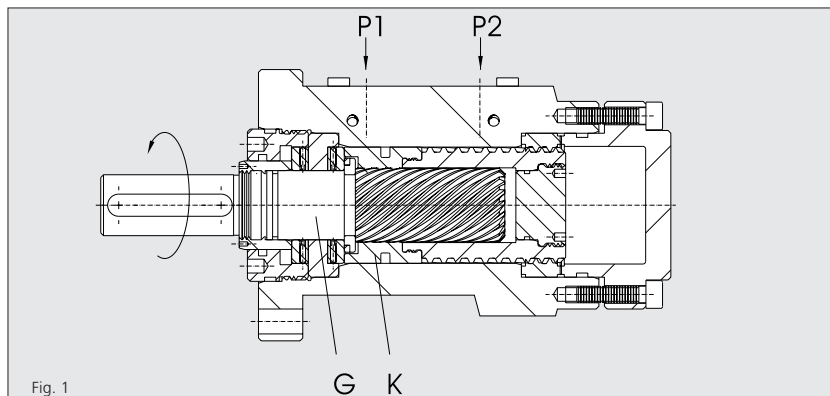
- Cushioning at both ends
- Rotary angle adjustment up to  $\pm 4^\circ$
- Camshaft
- Hollow shaft with DIN 5463, DIN 5480 or DIN 6885 profile

### Special versions

- Actuator shaft with spline profile to DIN 5463
- Actuator shaft with second drive cog
- Actuator shaft and mounting flange designed to customer's requirements
- Rotary angle adjustment throughout the range of rotation
- Limit switch equipment
- Direct valve connection, 3 mounting positions
- All intermediate rotation angles can be supplied
- Range of rotation exceeding 360°
- Sea-water resistant
- Additional bearing for high radial forces
- Change of direction of rotation
- Further special versions are available

### Typical applications

HKS rotary actuators have proved their worth throughout the industrial sector. For example, they are used in construction machinery, machine tools, bending machines, foundry, mining, agricultural and packing machines, transfer lines, manipulators, armatures, as well as in shipbuilding, motor vehicles, assembly platforms and in ventilation engineering. HKS rotary actuators are reliable and require no maintenance. This is demonstrated, for example, 2300 mm below sea-level, when they are used as actuators for armatures.



### Technical data Type DA-H 300

Max. nominal torque at 210 bars	Nm	76000	
Max. nominal torque at 210 bars with camshaft	Nm	74630	
Nominal torque	Nm/bar	361,9	
Max. working pressure *	bar	210	
Max. radial load	N	89400	
Max. axial load	N	76000	
Absorption volume	Angle 90°	dm <sup>3</sup>	7,930
	Angle 180°	dm <sup>3</sup>	15,862
	Angle 270°	dm <sup>3</sup>	23,790
	Angle 360°	dm <sup>3</sup>	31,724
Weight	Angle 90°	kg	ca. 1126
	Angle 180°	kg	ca. 1308
	Angle 270°	kg	ca. 1489
	Angle 360°	kg	ca. 1677

\*) Working pressures > 210 bar on request

### Functional description

The oil pressure supplied through connections P1 and P2 causes actuator shaft G to perform a rotary movement. The linear movement of piston K is here converted to a rotary movement by multiple helical gears in the housing, piston and shaft.

### Direction of rotation

With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).

A change in direction of rotation is possible in a special version.

### Normal position of the feather key:

Figure 1 shows the factory set position of piston K. Changes of position are possible.

### Angle of rotation and its adjustment

In the standard version the angle of rotation may be up to  $4^\circ$  in the positive range. An exact angle of rotation is achieved by means of an additional device WW.

### Cushioning

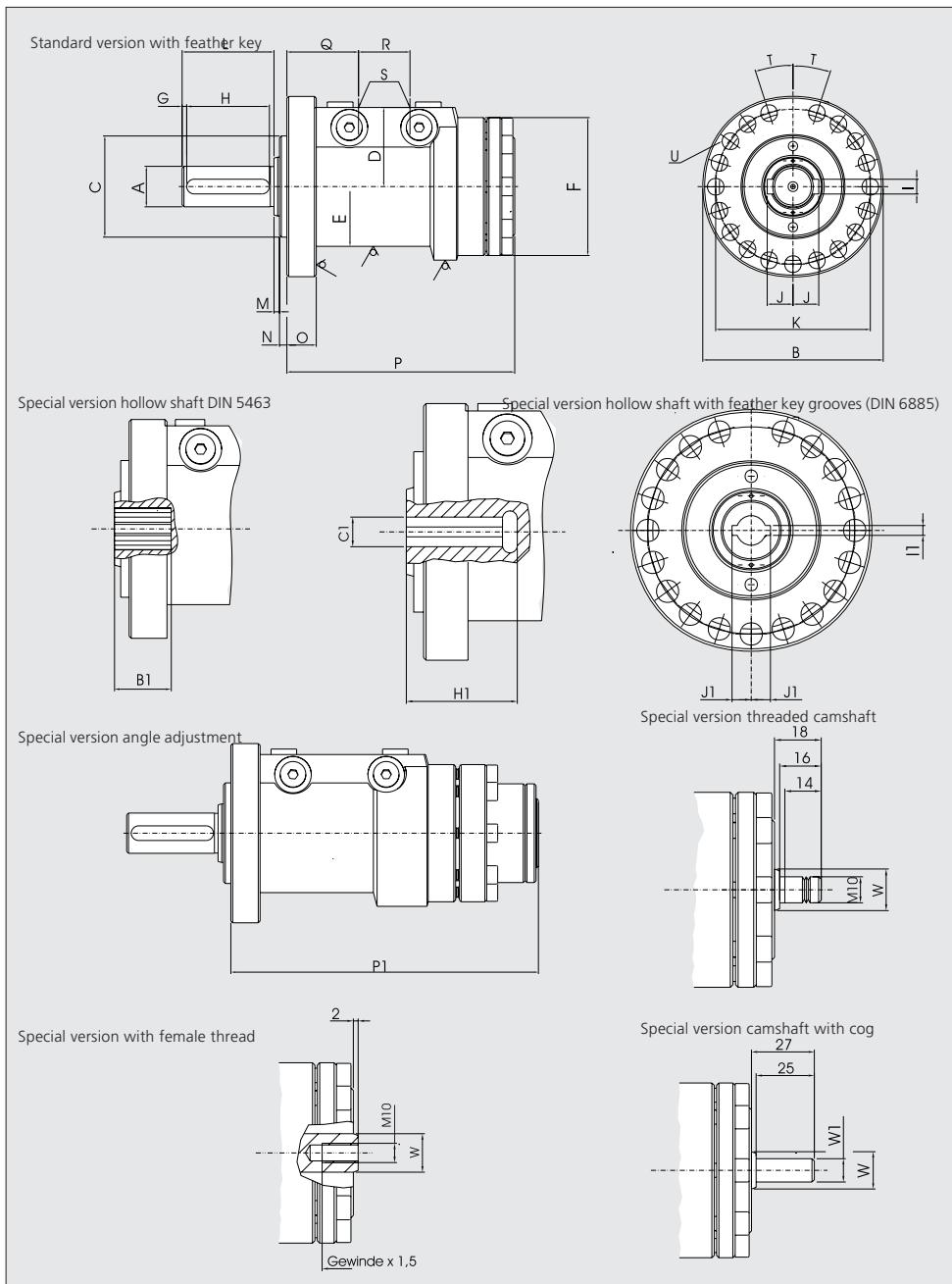
The speed of rotation of actuator shaft G can be regulated in the limit positions by throttle check valves. Further information on the subject of cushioning may be requested on an additional page.

We reserve the right to make modifications

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# Technical informations DA-H 300

## Hydraulic rotary actuator



### Dimension table

Typ	DA-H 300	
A <sub>m6</sub>	180	
DIN 5480*)	W 180x5x34x8f	
B	∅	555
C <sub>f7</sub>	∅	380
D	285	
E	∅	440
F	∅	470
G	10	
H DIN 6885	280	
I DIN 6885	45	
J DIN 6885	100	
K	500	
L	300	
M	6	
N	20	
O	110	
P	90°	840
	180°	1060
	270°	1285
	360°	1510
Q	271	
R	90°	194
	180°	302
	270°	414
	360°	528
S	45°	G 1"
T	18°	
U Number	19	
U	32	

### Special version HW-hollow shaft to DIN 5480 on request

B	140
Spline profile DIN 5472	130x145x24

### Special version HWP - Hollow shaft with key grooves (DIN 6885)

H1	200
J1	78,4
C <sub>H7</sub>	∅ 140
l <sub>pg</sub>	36

### \*) Special version KW spline shaft DIN is not shown

**N.B.:** In the hollow shaft version it is necessary to construct the shaft in a high strength material. A calculation of the shaft for torsional strength is strongly recommended.

### Special version with camshaft

W f7	40
W1 h6	25

### Special version with angle adjustment/camshaft/camshaft with tapped hole/camshaft with pivot

P1	90°	930
	180°	1150
	270°	1375
	360°	1600

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