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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

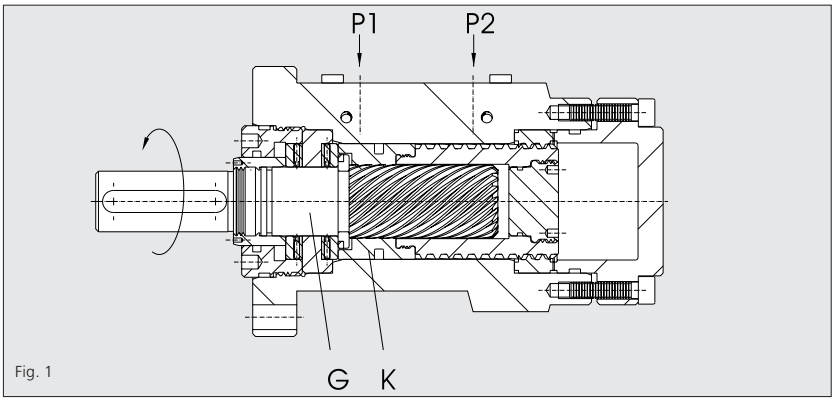


Fig. 1

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°	dm³	0,017
	Angle	180°	dm³	0,034
	Angle	270°	dm³	0,050
	Angle	360°	dm³	0,067
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

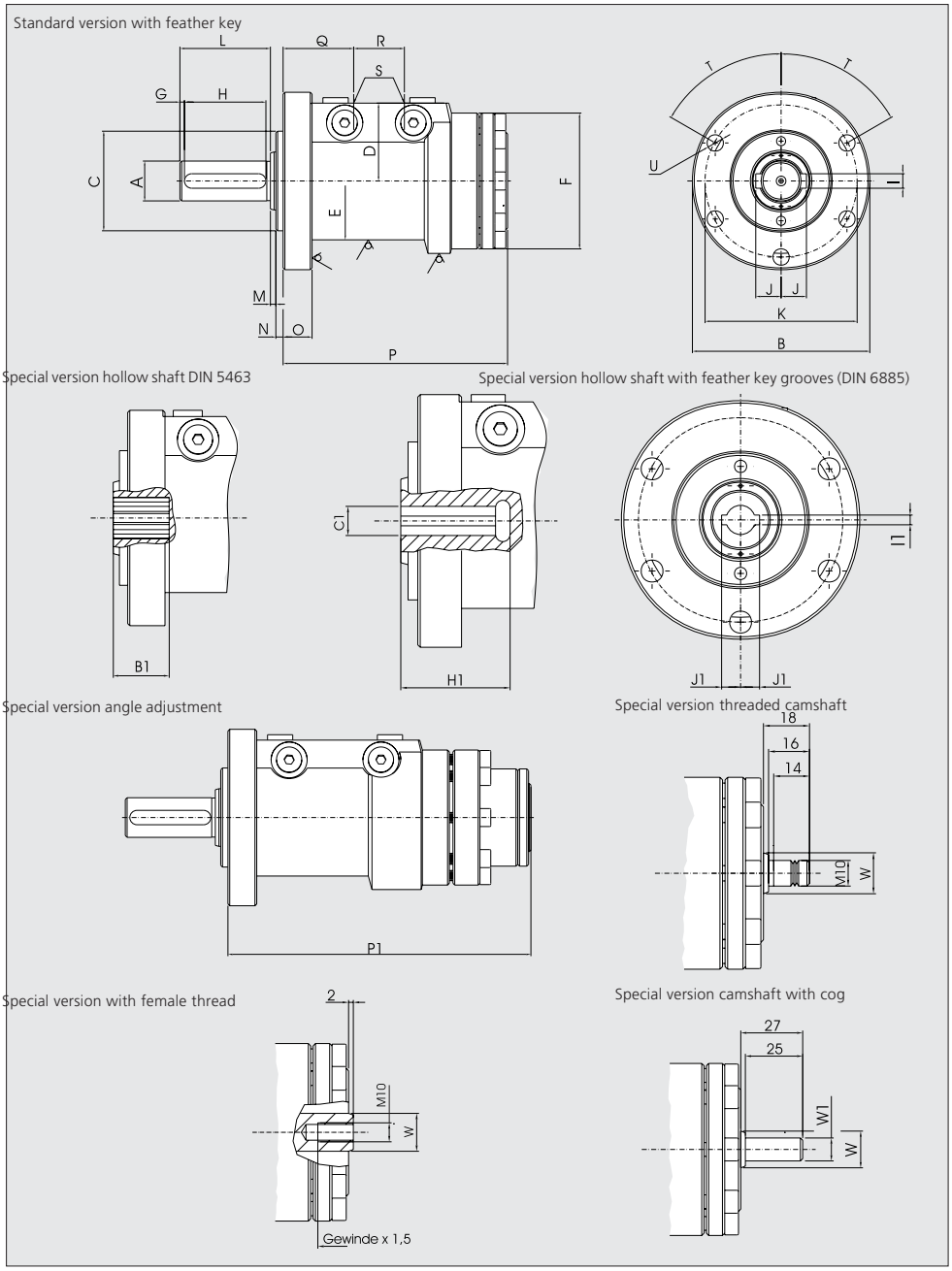
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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.

Technical informations DA-H 40

Hydraulic rotary actuator



Dimension table

Typ		DA-H 40
A k 6		22
DIN 5480*)		W 22x1,25x16x8f
B	Ø	98
C f 7	Ø	55
D		43
E	Ø	65
F	Ø	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 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

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_{H7}	Ø	12
$I1_{P9}$		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.

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Technical informations DA-H 50
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 rages 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 ± 4°
- 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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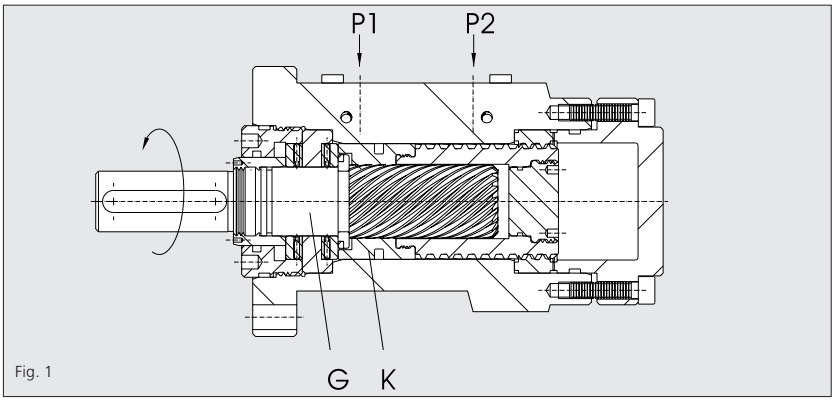


Fig. 1

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^3	0,028
	Angle 180°	dm^3	0,056
	Angle 270°	dm^3	0,084
	Angle 360°	dm^3	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

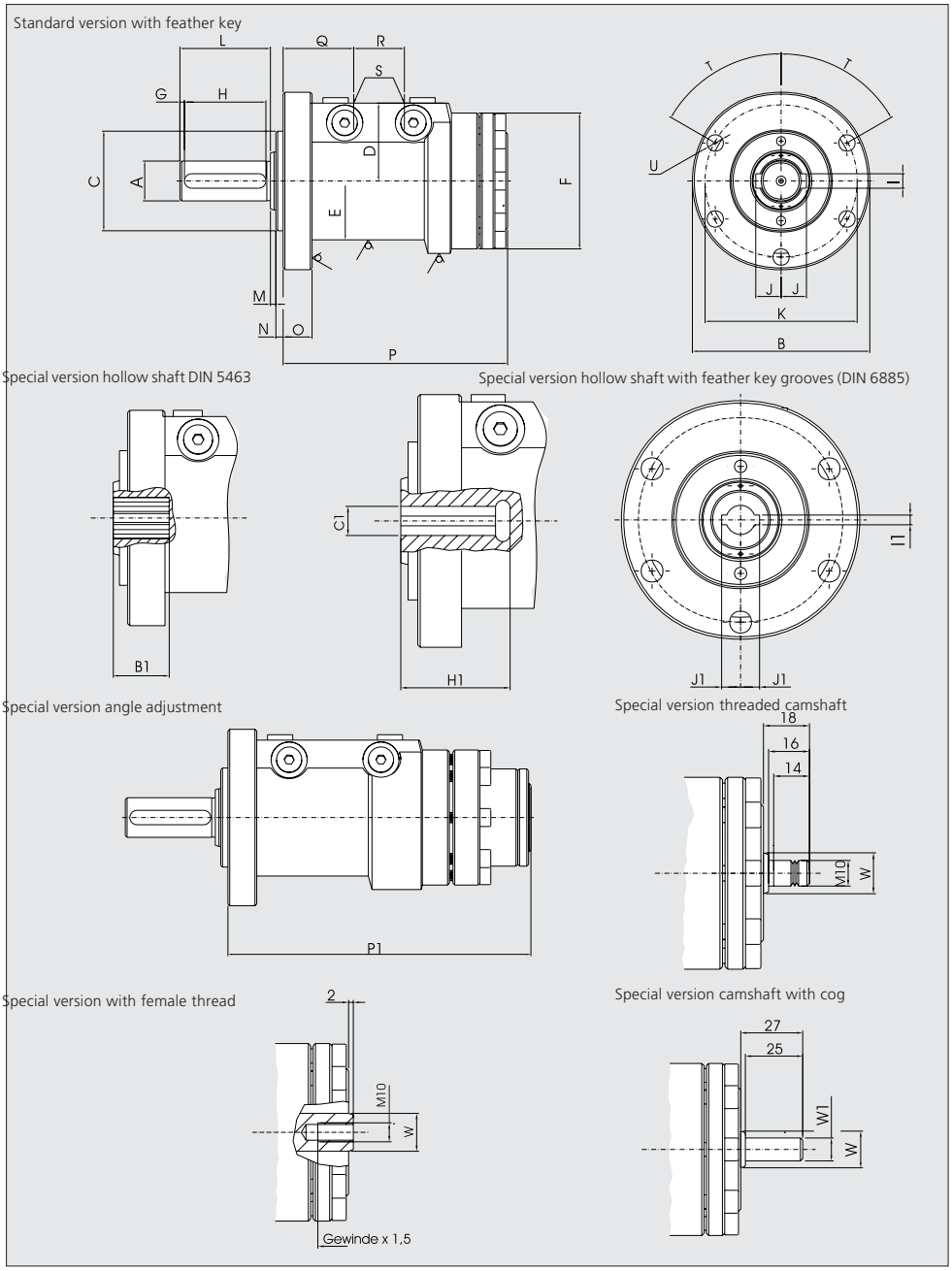
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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.

Technical informations DA-H 50

Hydraulic rotary actuator



Dimension table

Typ		DA-H 50
A k 6		28
DIN 5480*)		W 28x2x12x8f
B	ø	110
C f 7	ø	68
D		49
E	Ø	72
F	Ø	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_{H7}	Ø	16
$I1_{P9}$		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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Technical informations DA-H 63
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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

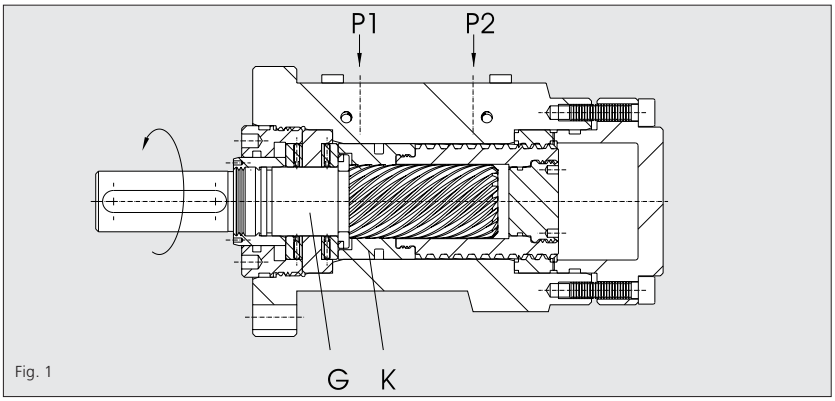


Fig. 1

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^3	0,058
	Angle 180°	dm^3	0,117
	Angle 270°	dm^3	0,176
	Angle 360°	dm^3	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.

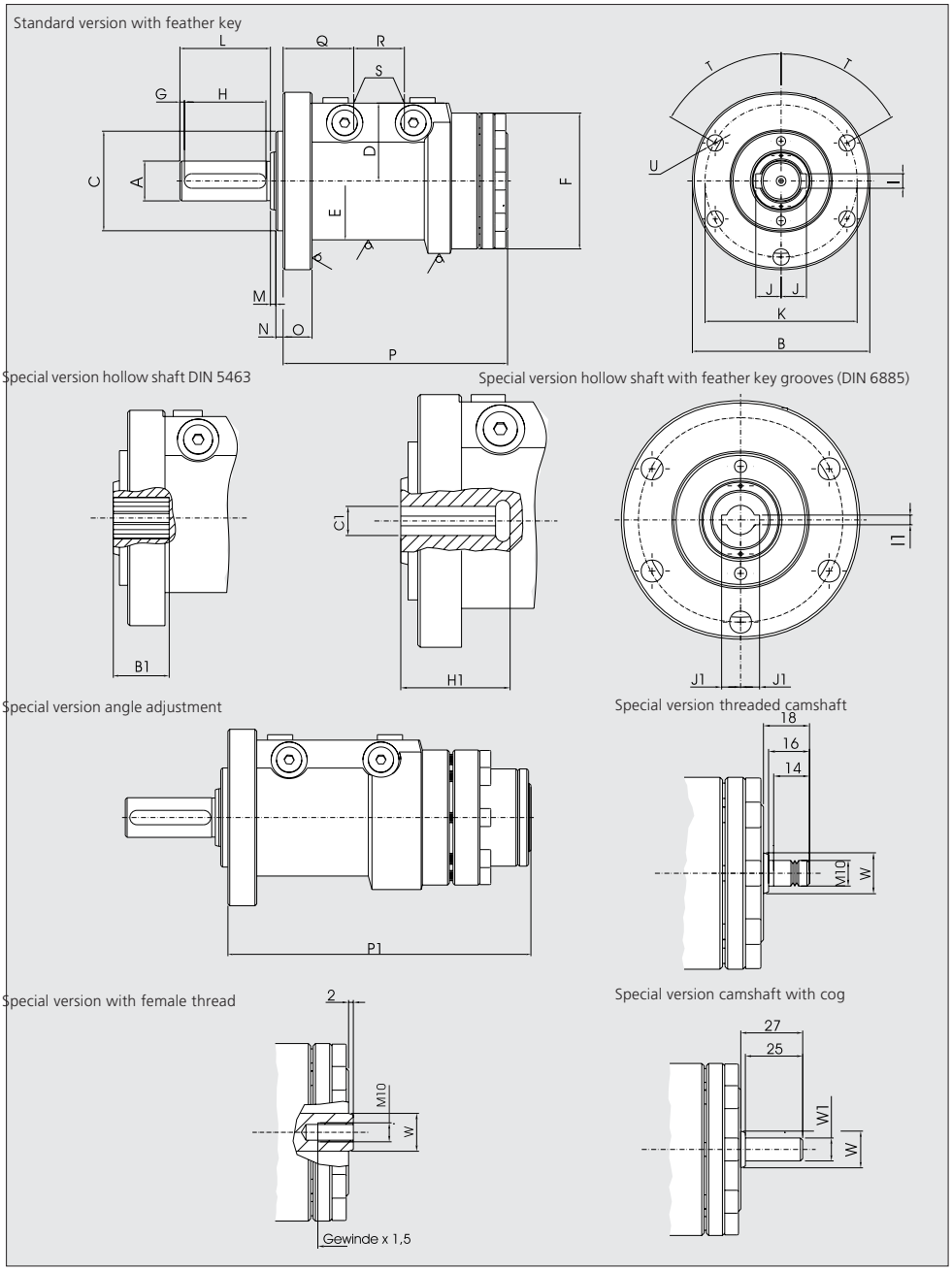
Normal position of the feather key:
Figure 1 shows the factory set position of piston *K* Changes of position are possible.

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

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.

Technical informations DA-H 63

Hydraulic rotary actuator



Dimension table

Typ		DA-H 63
A k 6		35
DIN 5480*)		W 35x2x16x8f
B	Ø	128
C f 7	Ø	80
D		57
E	Ø	87
F	Ø	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_{H7}	Ø	24
$I1_{P9}$		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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Technical informations DA-H 80
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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

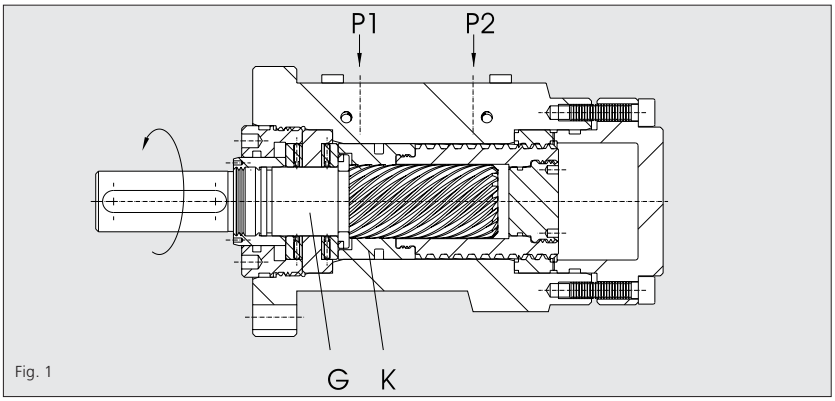


Fig. 1

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^3	0,093
	Angle 180°	dm^3	0,186
	Angle 270°	dm^3	0,279
	Angle 360°	dm^3	0,372
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.

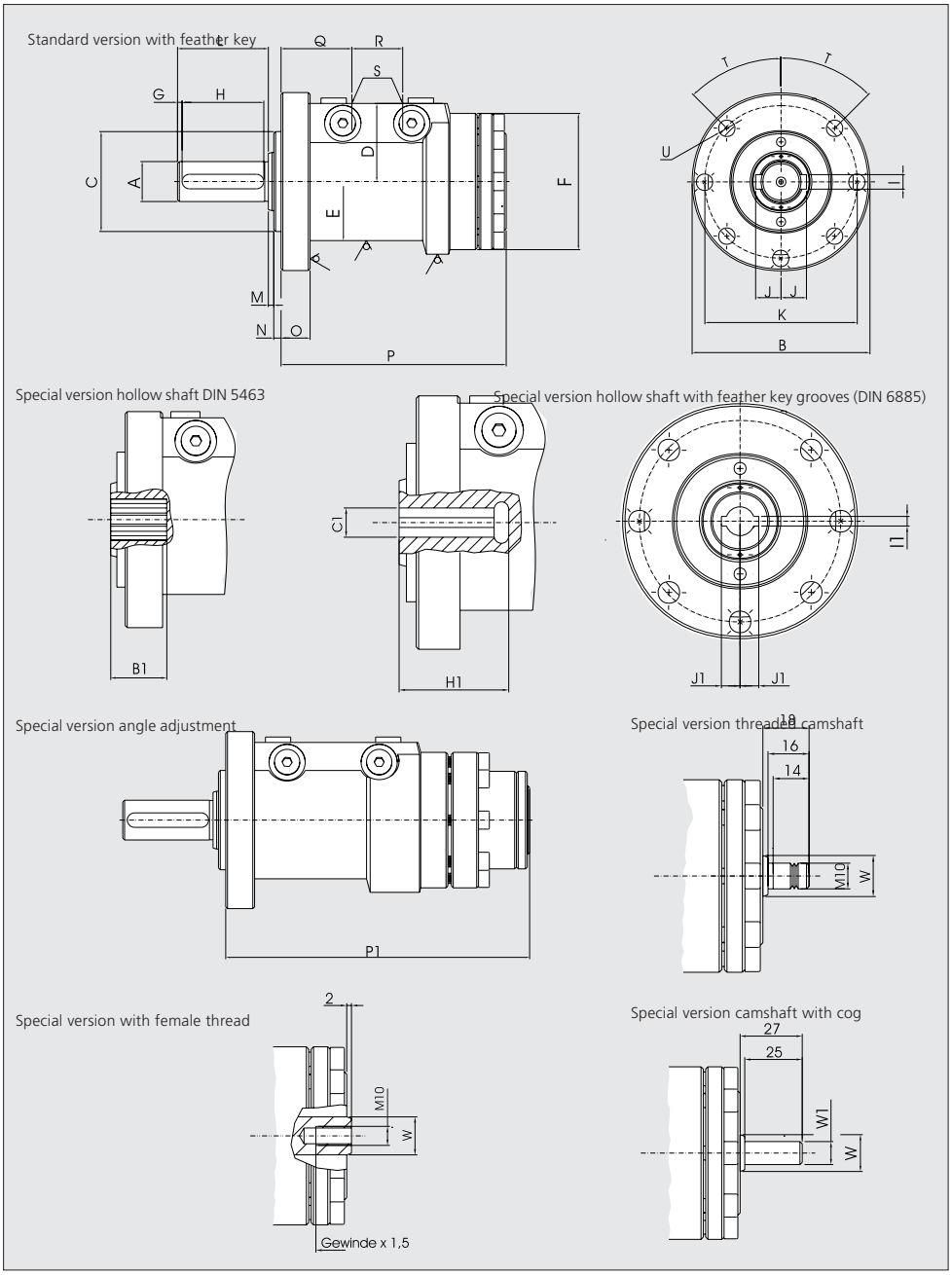
Angle of rotation and its adjustment

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

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.

Technical informations DA-H 80
Hydraulic rotary actuator



Dimension table

Typ		DA-H 80
A k 6		42
DIN 5480*)		W 40x2x18x8f
B	Ø	150
C f 7	Ø	100
D		66
E	Ø	108
F	Ø	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_{H7}	Ø	30
$I1_{P9}$		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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Technical informations DA-H 100
Hydraulic rotary actuator

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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 rages 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 ± 4°
- 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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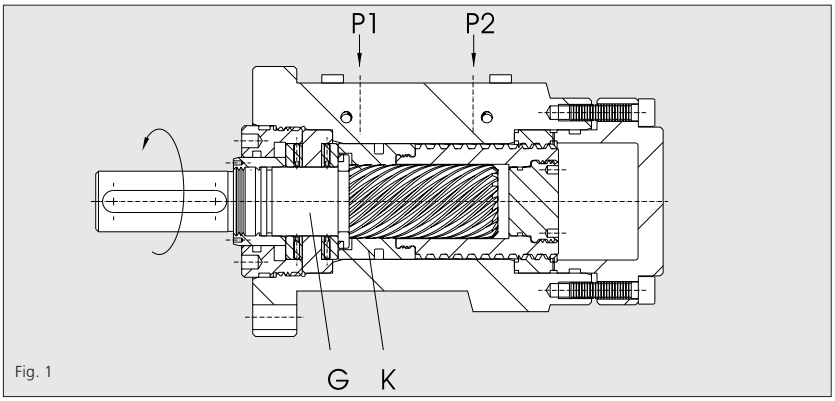


Fig. 1

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^3	0,235
	Angle 180°	dm^3	0,471
	Angle 270°	dm^3	0,706
	Angle 360°	dm^3	0,941
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.

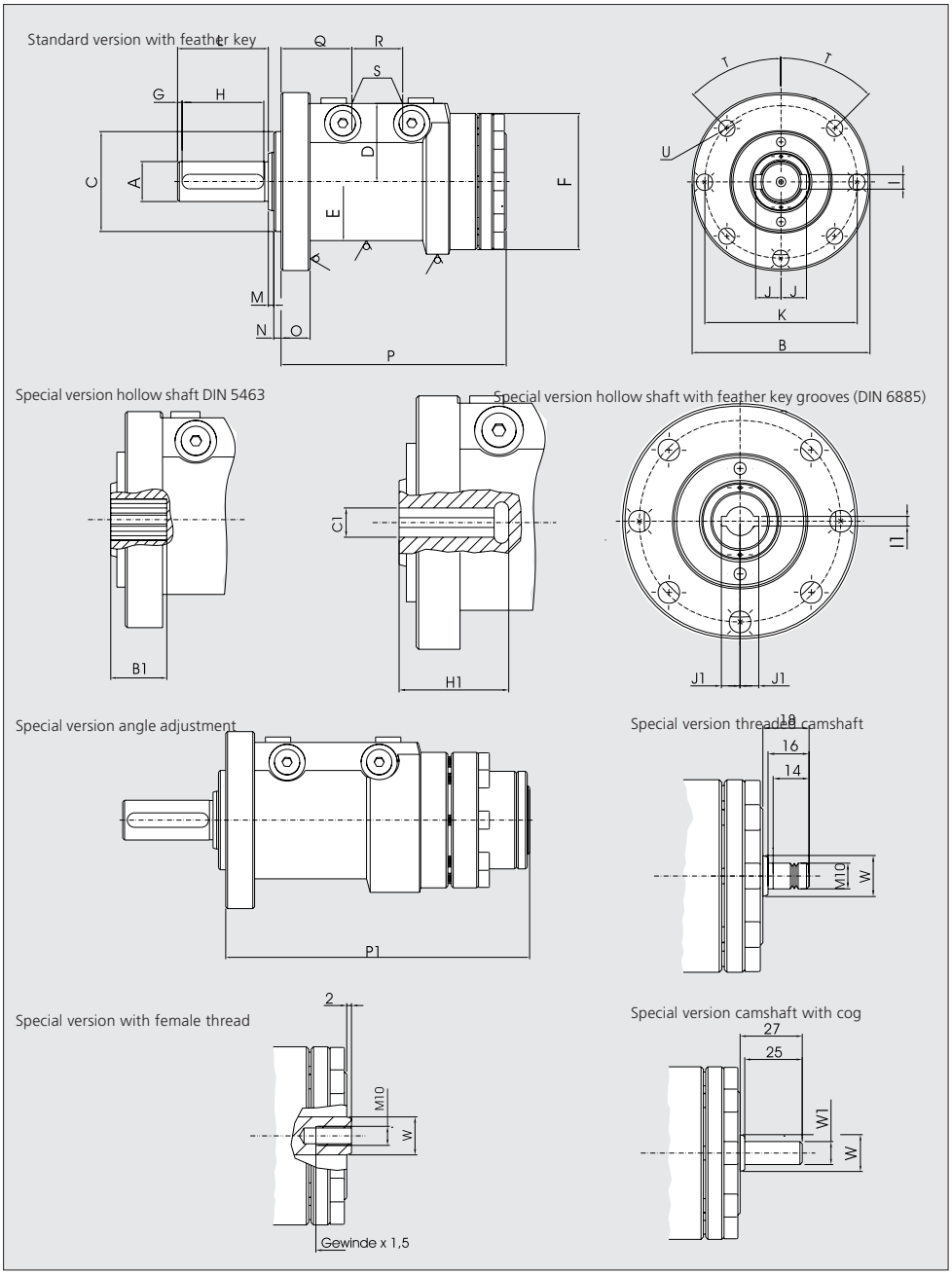
Direction of rotation
With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).
A change in direction of rotation is possible in a special version.

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° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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.

Technical informations DA-H 100
Hydraulic rotary actuator



Dimension table

Typ		DA-H 100
A m 6		55
DIN 5480*)		W 55x2x26x8f
B	Ø	178
C f 7	Ø	115
D		80
E	Ø	130
F	Ø	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_{H7}	Ø	42
$I1_{P9}$		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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Technical informations DA-H 125
Hydraulic rotary actuator

HKS

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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

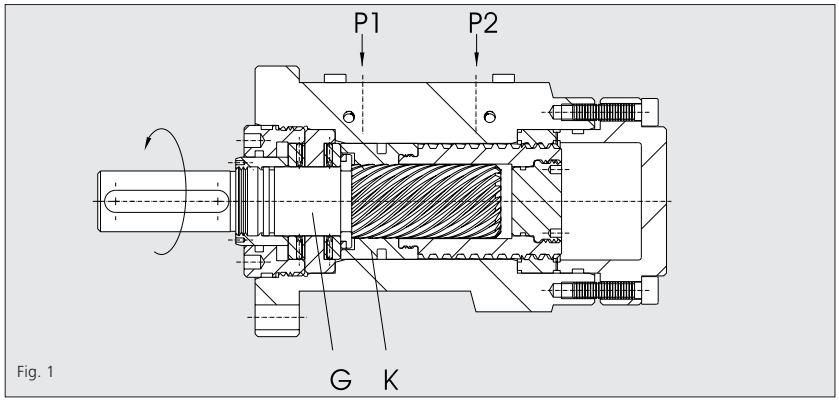


Fig. 1

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^3	0,497
	Angle 180°	dm^3	0,995
	Angle 270°	dm^3	1,492
	Angle 360°	dm^3	1,989
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.

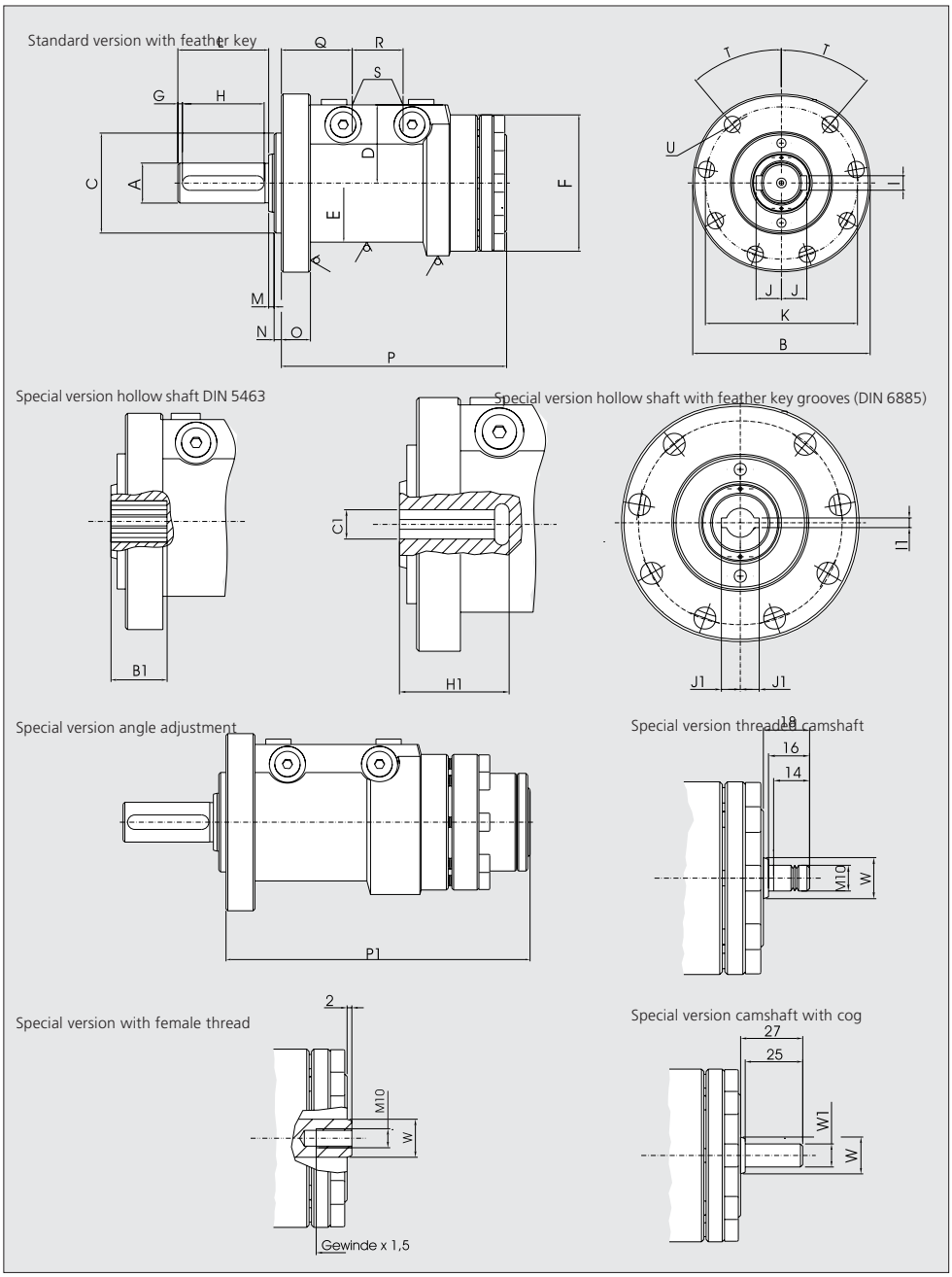
Direction of rotation
With the pressure at P1 actuator shaft G1 rotates from the initial position to the left (anticlockwise).
A change in direction of rotation is possible in a special version.

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° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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.

Technical informations DA-H 125
Hydraulic rotary actuator



Dimension table

Typ		DA-H 125
A m 6		70
DIN 5480*)		W 70x2x34x8f
B	Ø	222
C f 7	Ø	150
D		94
E	Ø	167
F	Ø	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_{H7}	Ø	55
$I1_{P9}$		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

HKS

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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

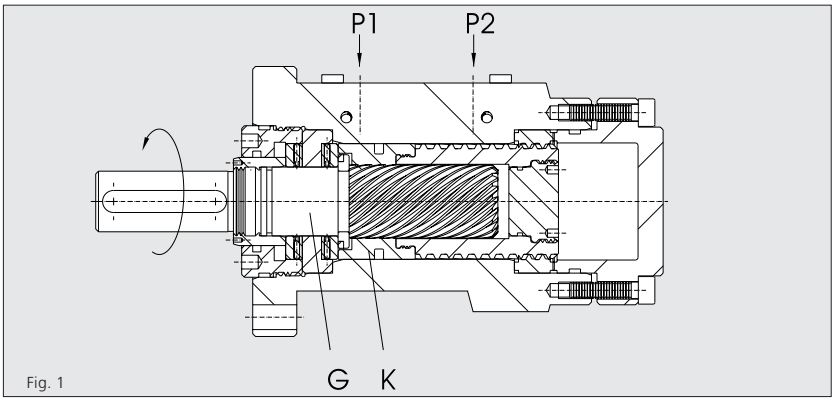


Fig. 1

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^3	0,721
	Angle 180°	dm^3	1,439
	Angle 270°	dm^3	2,159
	Angle 360°	dm^3	2,878
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

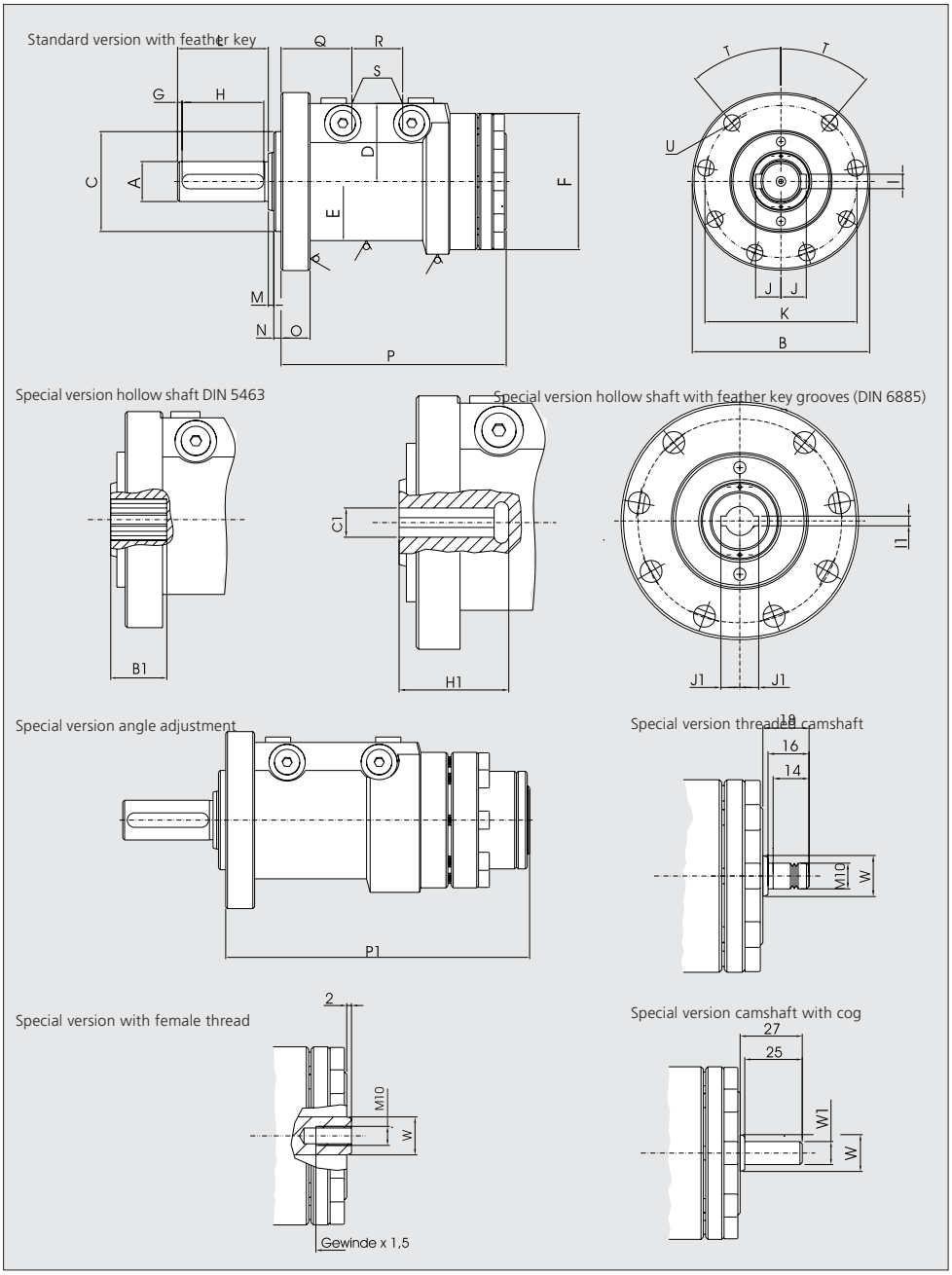
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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

Technical informations DA-H 140
Hydraulic rotary actuator



Dimension table

Typ		DA-H 140
A m 6		80
DIN 5480*)		W 80x3x25x8f
B	ø	250
C f 7	ø	160
D		105
E	Ø	187
F	Ø	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°	3021,5
	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_{H7}	Ø	60
$I1_{P9}$		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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

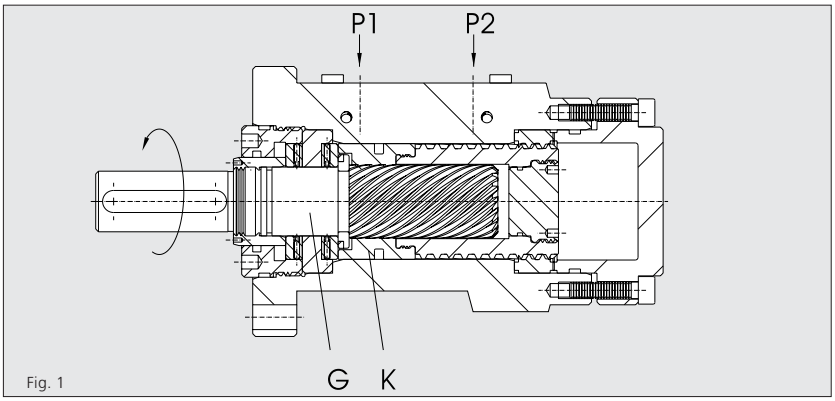


Fig. 1

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^3	1,063
	Angle 180°	dm^3	2,125
	Angle 270°	dm^3	3,188
	Angle 360°	dm^3	4,251
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.

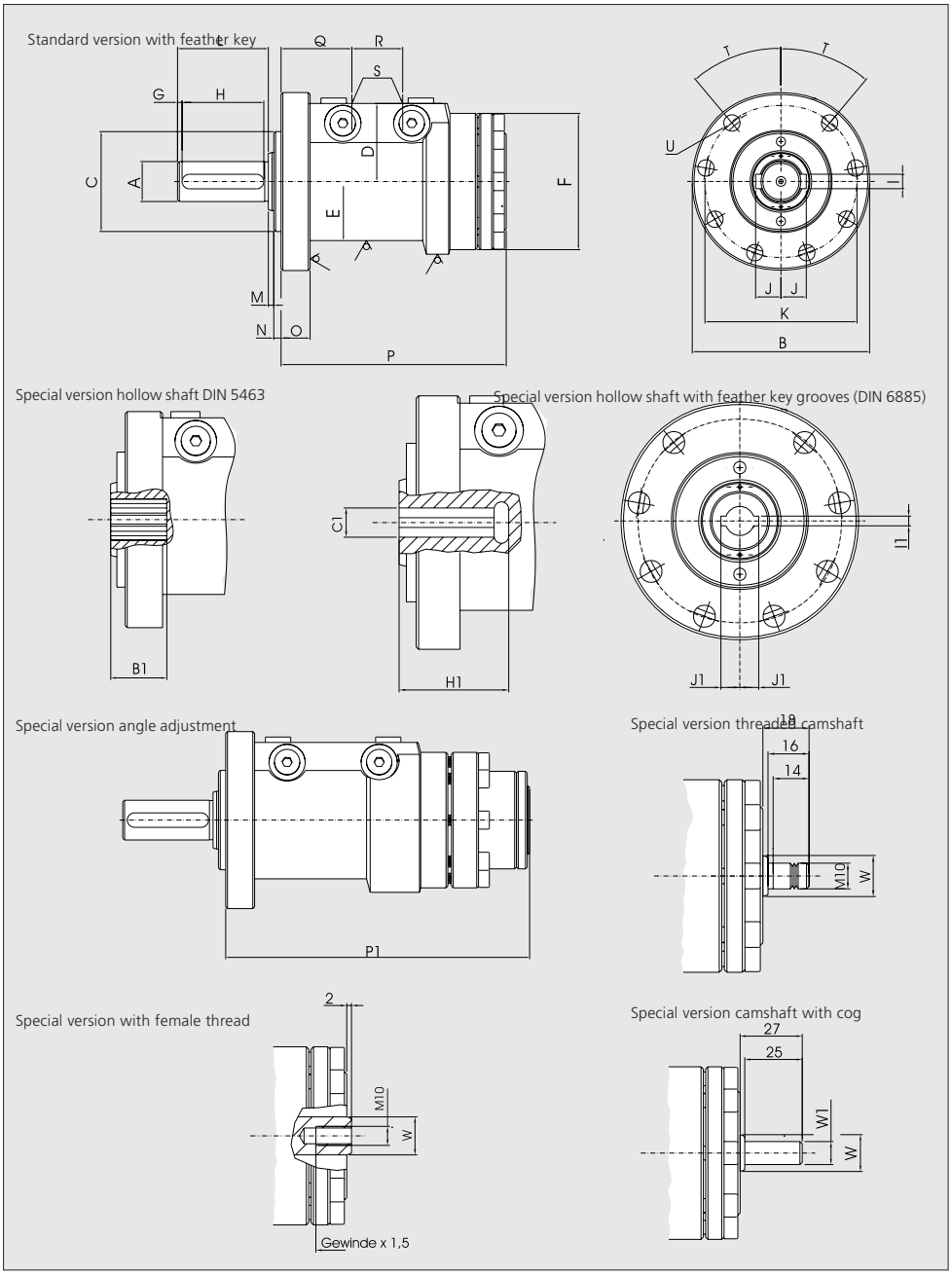
Normal position of the feather key:
Figure 1 shows the factory set position of piston *K* Changes of position are possible.

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 WV.

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

Technical informations DA-H 160
Hydraulic rotary actuator



Dimension table

Typ		DA-H 160
A m 6		100
DIN 5480*)		W 100x3x32x8f
B	Ø	278
C f 7	Ø	190
D		127
E	Ø	206
F	Ø	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 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

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_{H7}	Ø	75
$I1_{P9}$		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.

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Technical informations DA-H 180
Hydraulic rotary actuator

HKS

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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

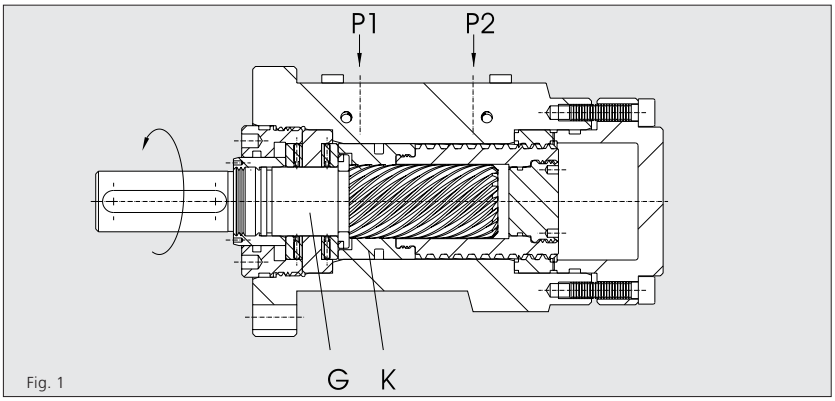


Fig. 1

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^3	1,607
	Angle 180°	dm^3	3,213
	Angle 270°	dm^3	4,820
	Angle 360°	dm^3	6,427
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

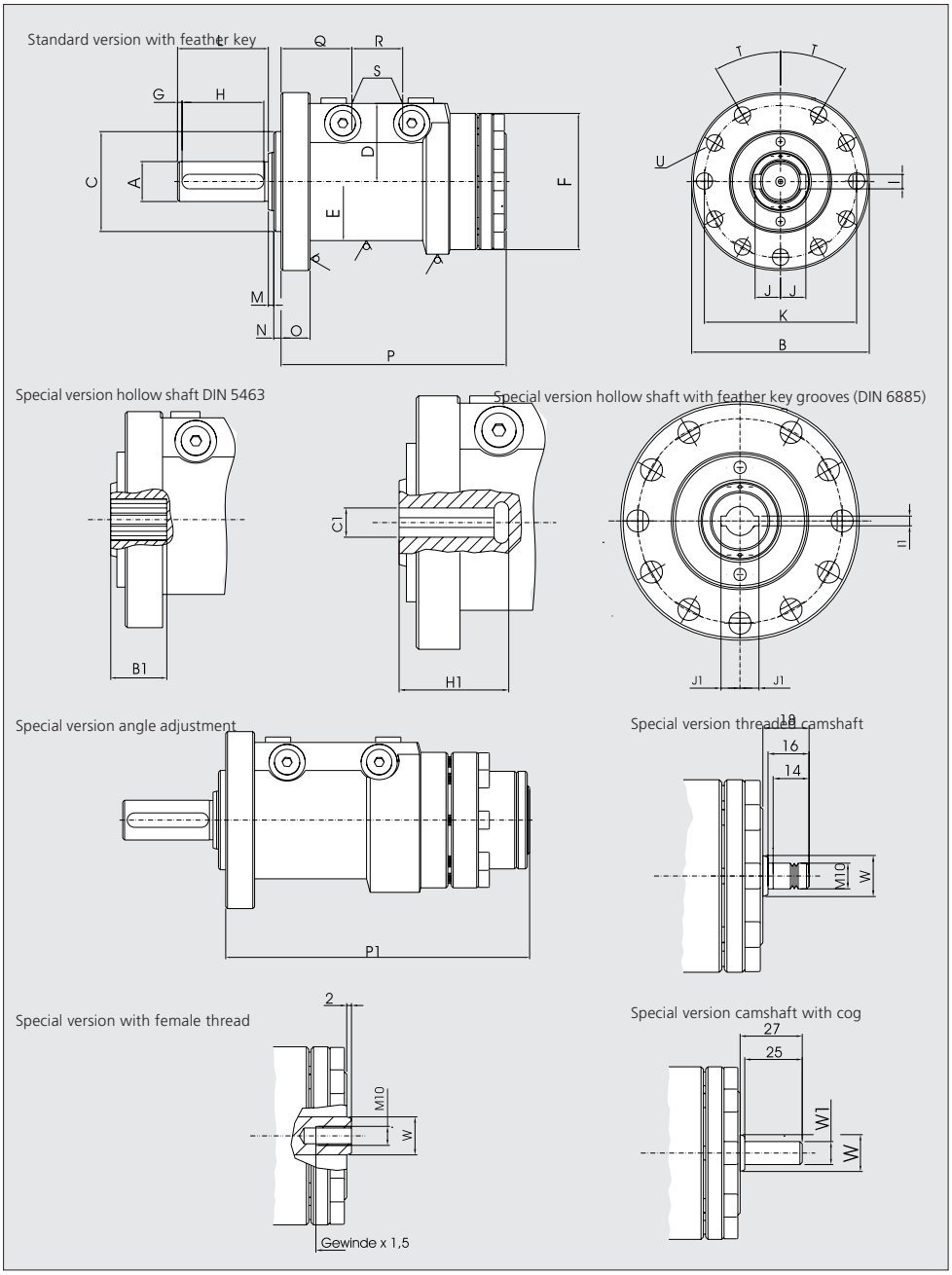
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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

Technical informations DA-H 180
Hydraulic rotary actuator



Dimension table

Typ		DA-H 180
A m 6		105
DIN 5480*)		W 105x3x34x8f
B	Ø	298
C f 7	Ø	210
D		138
E	Ø	226
F	Ø	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°	478,5
	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_{H7}	Ø	75
$I1_{P9}$		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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

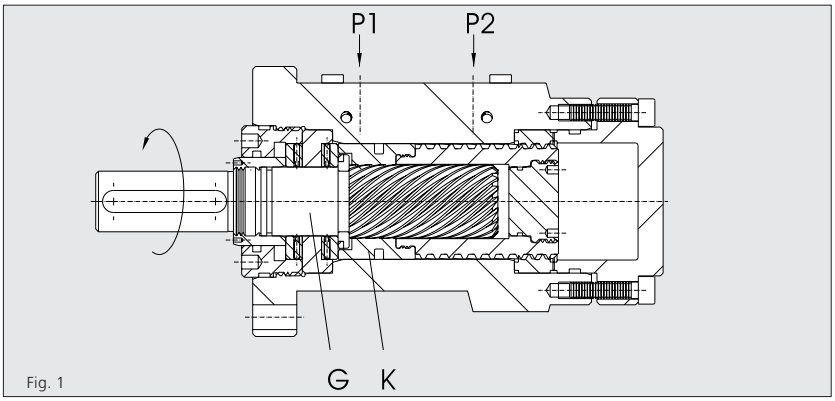


Fig. 1

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^3	2,147
	Angle 180°	dm^3	4,294
	Angle 270°	dm^3	6,441
	Angle 360°	dm^3	8,588
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.

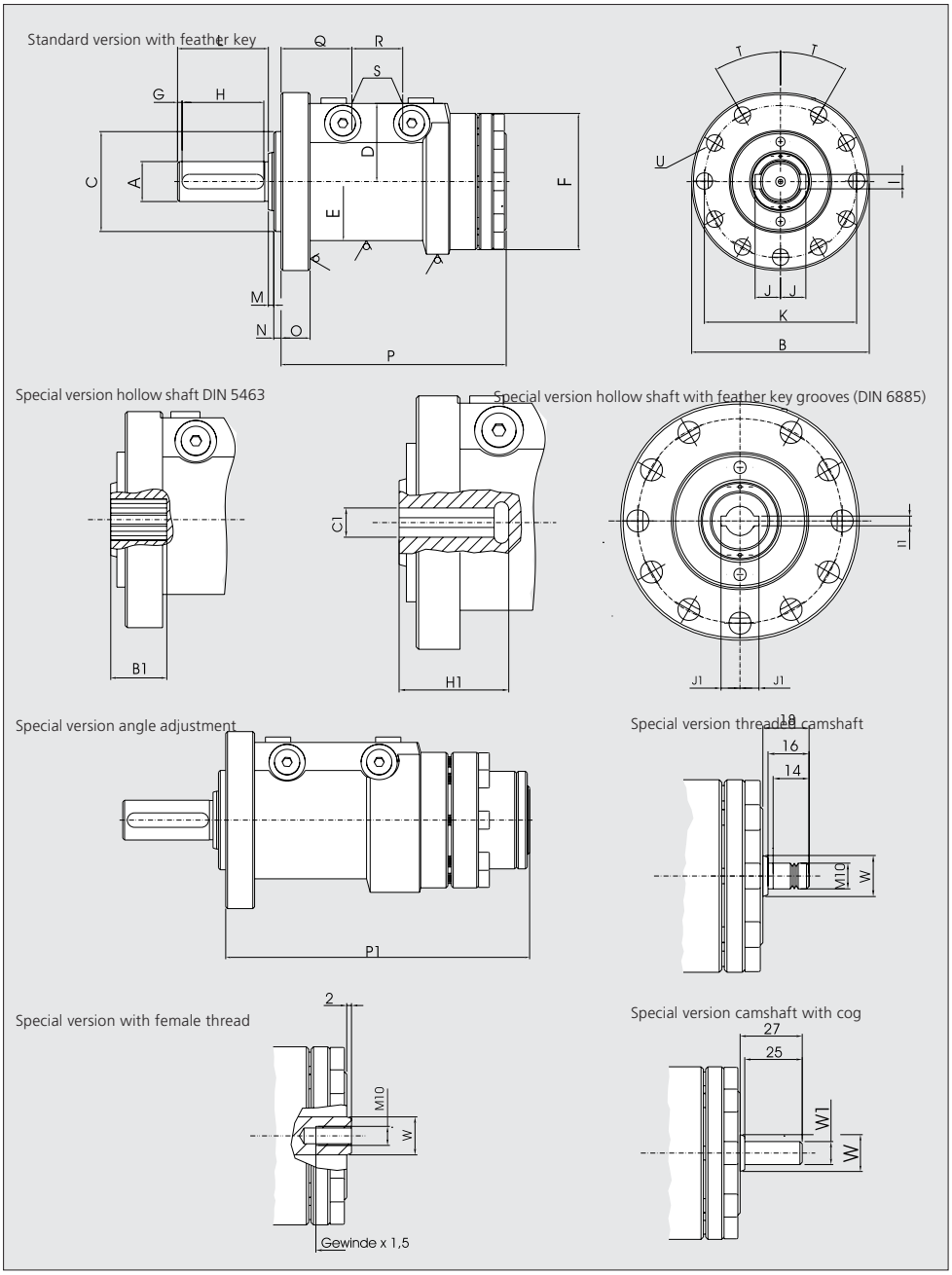
Angle of rotation and its adjustment
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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

Technical informations DA-H 200

Hydraulic rotary actuator



Dimension table

Typ		DA-H 200
A m 6		140
DIN 5480*)		W 120x5x22x8f
B	Ø	325
C f 7	Ø	235
D		150
E	Ø	255
F	Ø	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_{H7}	Ø	95
$I1_{P9}$		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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Technical informations DA-H 225
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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

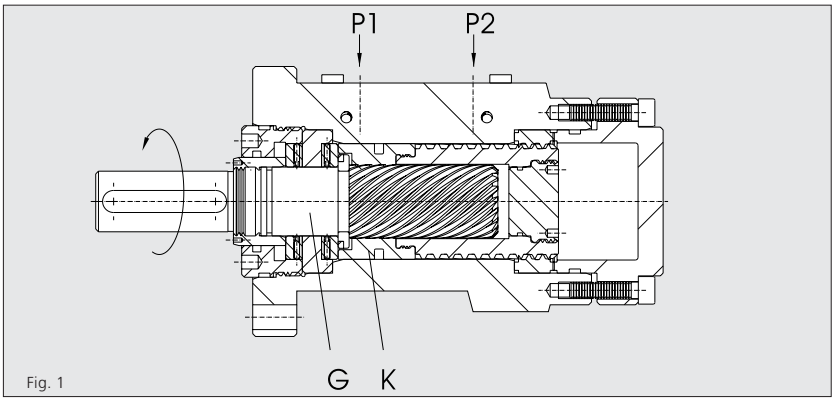


Fig. 1

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^3	3,178
	Angle 180°	dm^3	6,346
	Angle 270°	dm^3	9,522
	Angle 360°	dm^3	12,695
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 WV.

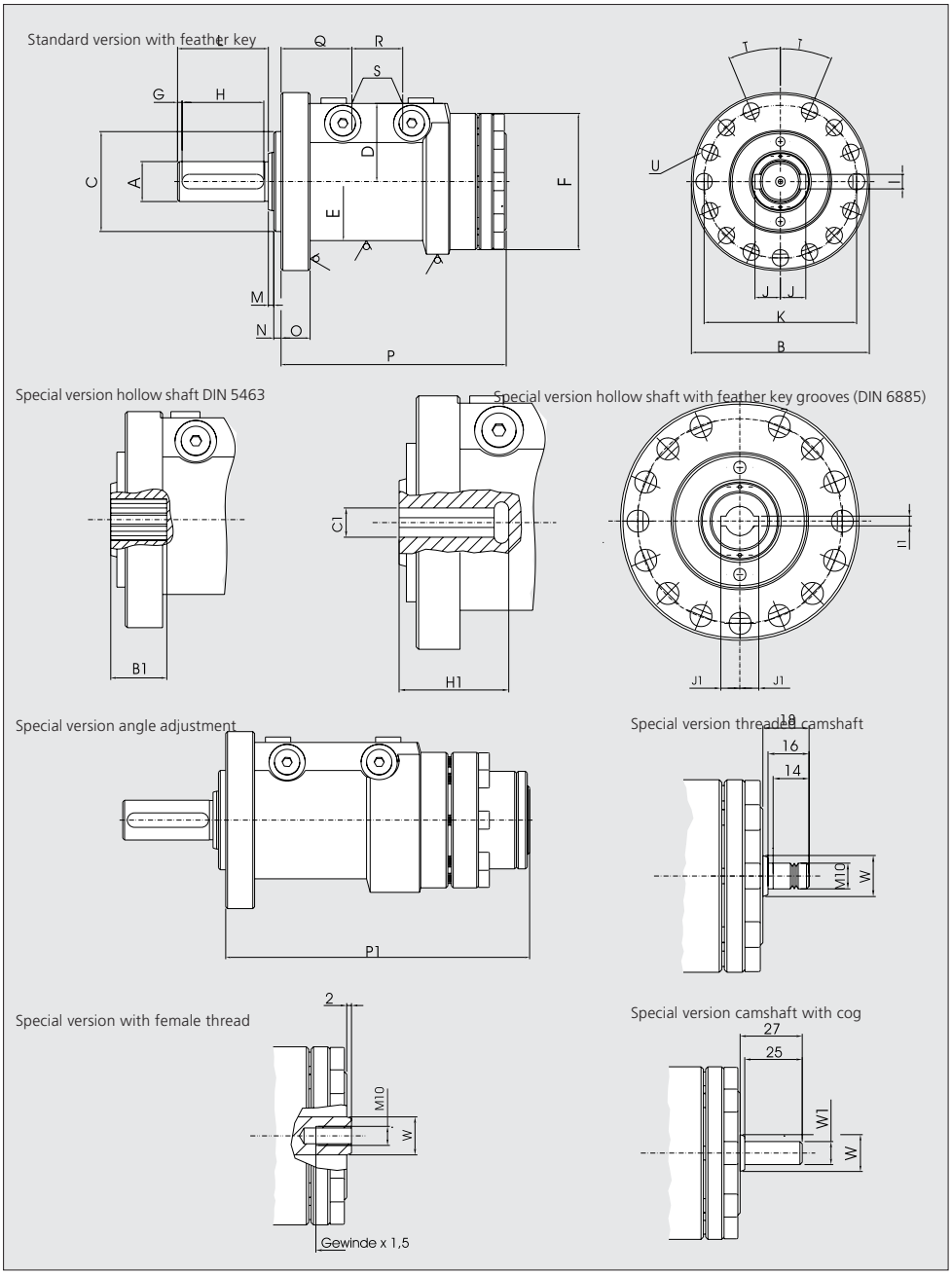
Cushioning

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

Technical informations DA-H 225

Hydraulic rotary actuator



Dimension table

Typ		DA-H 225
A m 6		140
DIN 5480*)		W 120x5x26x8f
B	Ø	385
C f 7	Ø	260
D		224
E	Ø	300
F	Ø	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_{H7} Ø	100
$I1_{P9}$	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°	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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

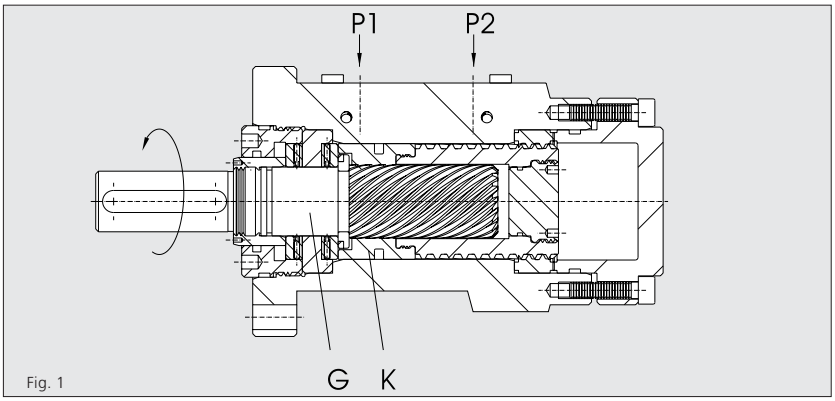


Fig. 1

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^3	4,127
	Angle 180°	dm^3	8,245
	Angle 270°	dm^3	12,368
	Angle 360°	dm^3	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° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

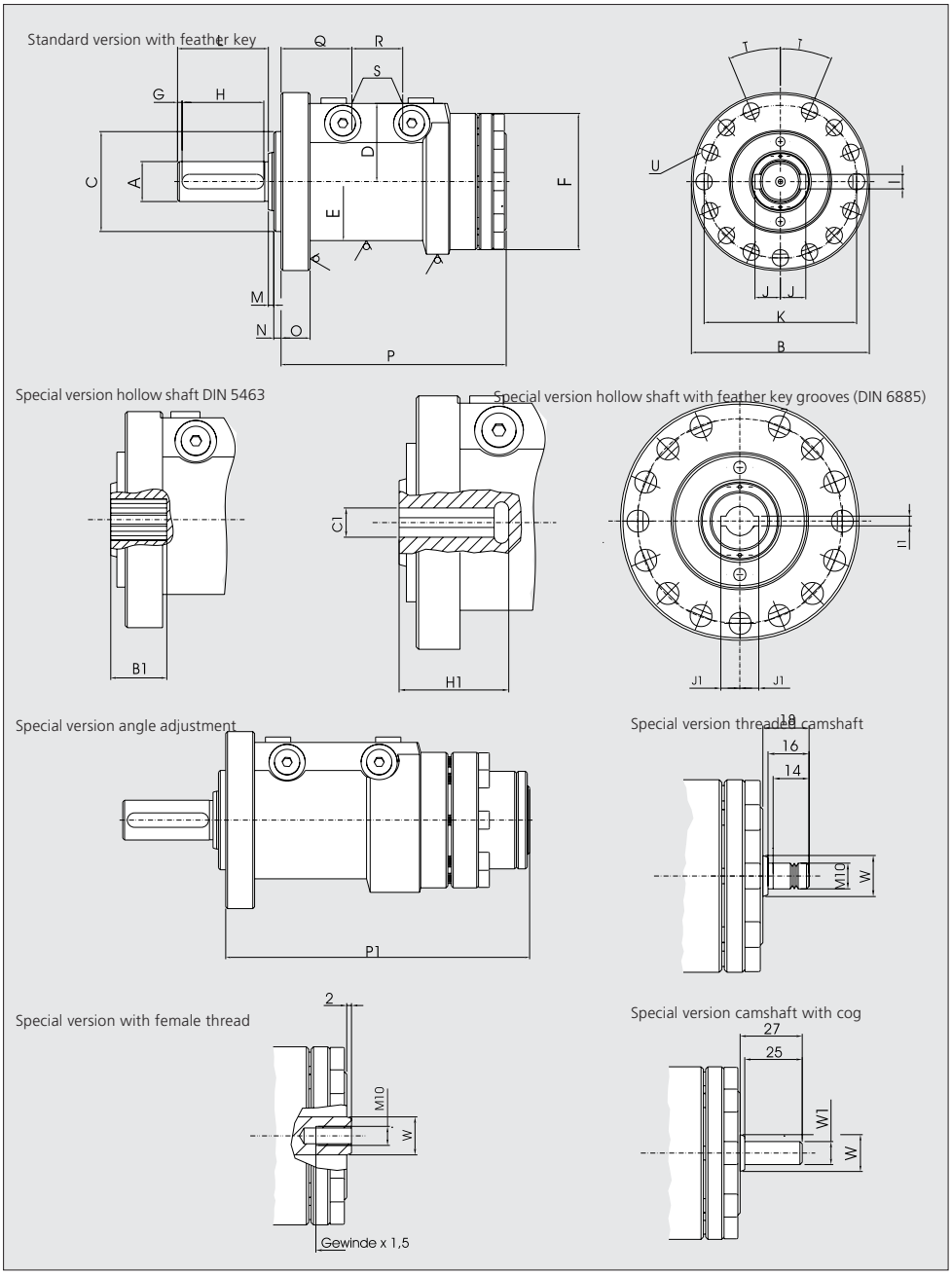
Cushioning

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

Technical informations DA-H 225 S

Hydraulic rotary actuator



Dimension table

Typ		DA-H 225 S
A m 6		140
DIN 5480*)		W 140x5x26x8f
B	Ø	385
C f 7	Ø	260
D		224
E	Ø	300
F	Ø	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_{H7}	Ø	100
$I1_{P9}$		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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

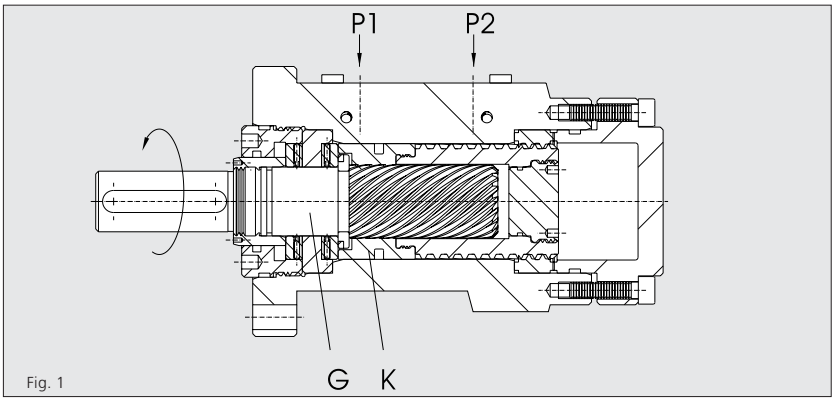


Fig. 1

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^3	4,490
	Angle 180°	dm^3	8,980
	Angle 270°	dm^3	13,470
	Angle 360°	dm^3	17,959
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

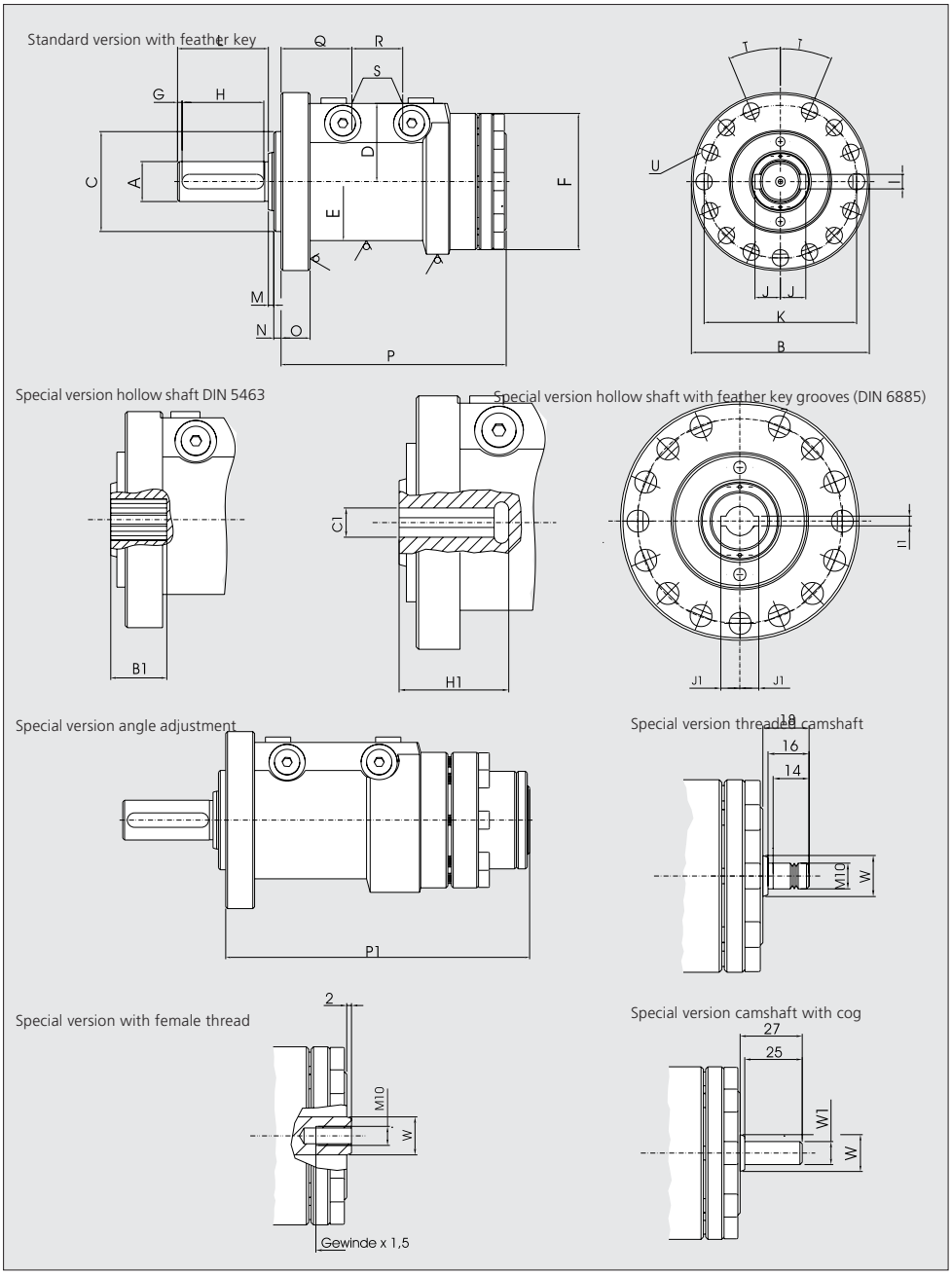
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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

Technical informations DA-H 250
Hydraulic rotary actuator



Dimension table

Typ		DA-H 250
A m 6		150
DIN 5480*)		W 150x5x28x8f
B	ø	450
C f 7	ø	300
D		240
E	Ø	346
F	Ø	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_{H7}	Ø	110
$I1_{P9}$		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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

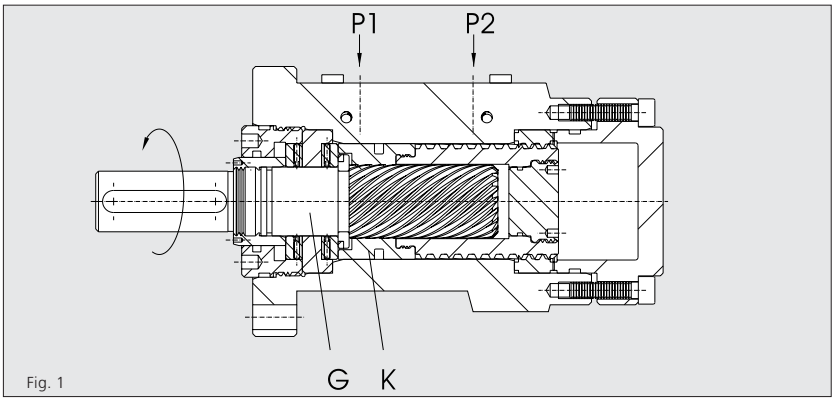


Fig. 1

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^3	6,221
	Angle 180°	dm^3	12,442
	Angle 270°	dm^3	18,664
	Angle 360°	dm^3	24,885
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

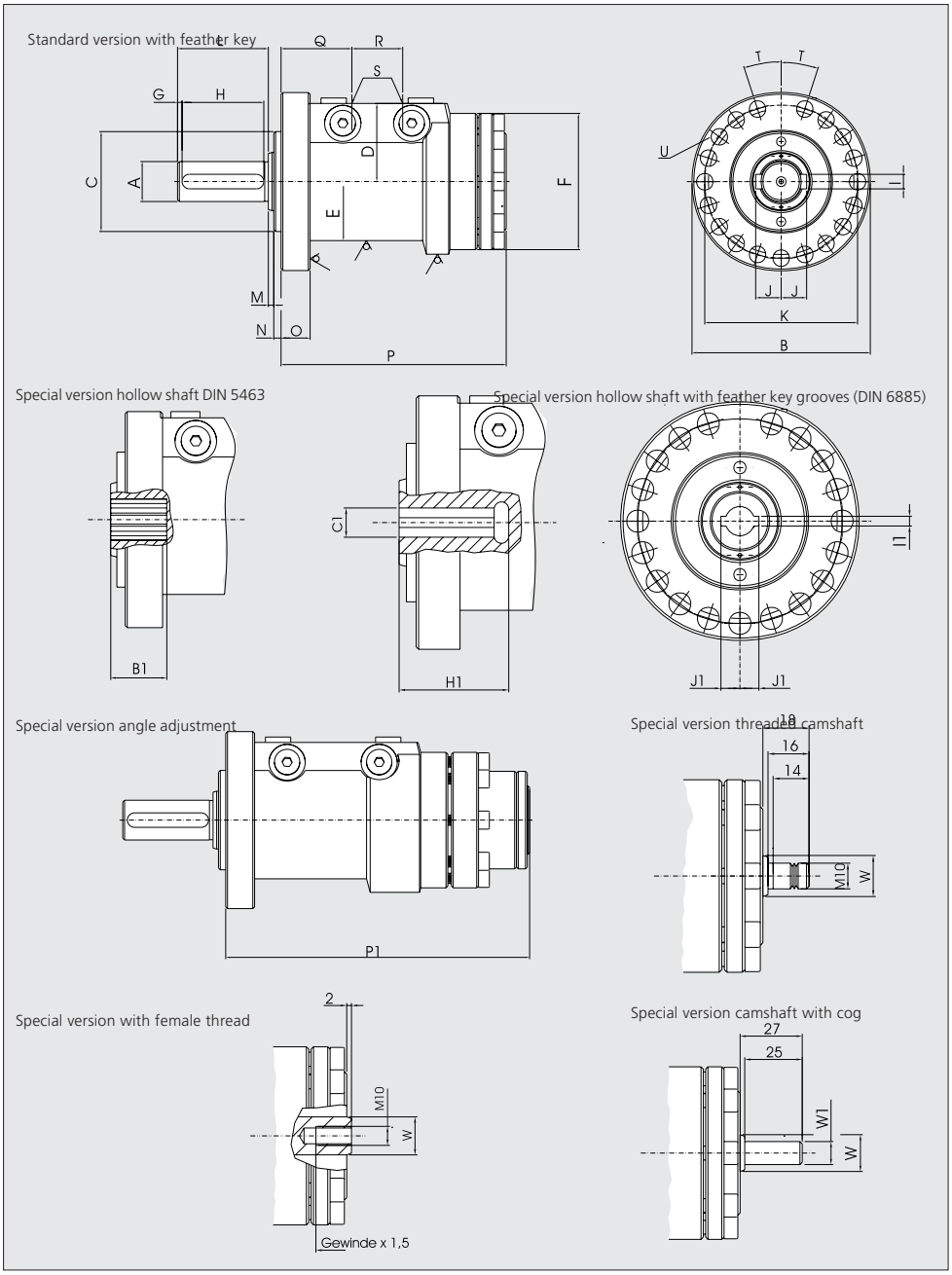
In the standard version the angle of rotation may be up to 4° in the positive range. An exact angle of rotation is achieved by means of an additional device WV.

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

Technical informations DA-H 280
Hydraulic rotary actuator



Dimension table

Typ		DA-H 280
A m 6		170
DIN 5480*)		W 170x5x32x8f
B	ø	490
C f 7	ø	340
D		266
E	Ø	394
F	Ø	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_{H7} Ø	120
$I1_{P9}$	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 rages 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 ± 4°
- 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, whey they are used as actuators for armatures.

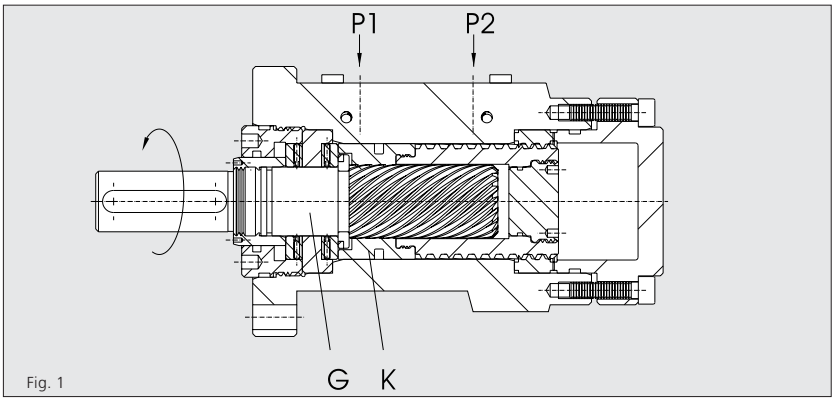


Fig. 1

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^3	7,792
	Angle 180°	dm^3	15,584
	Angle 270°	dm^3	23,376
	Angle 360°	dm^3	31,168
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.

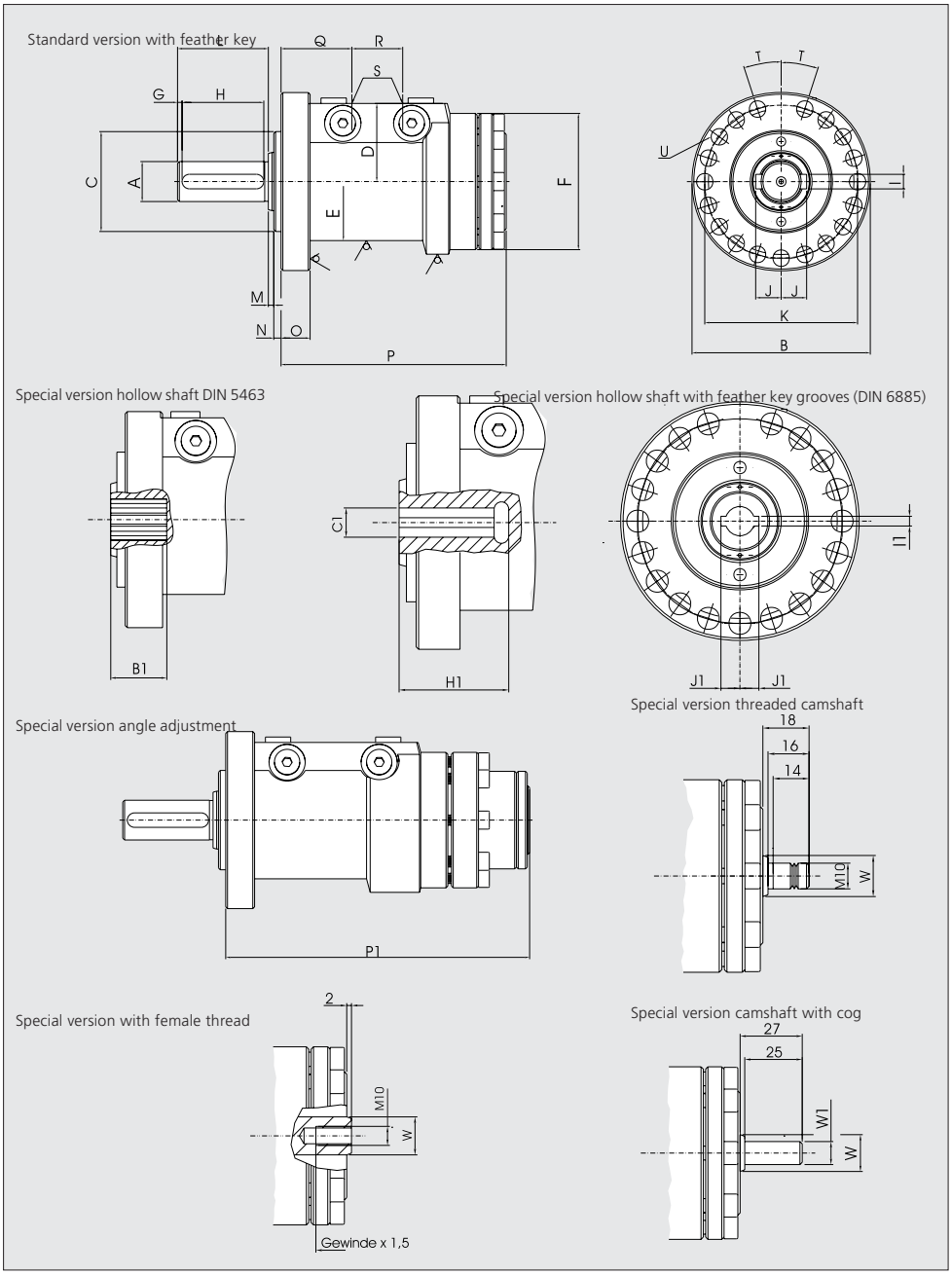
Normal position of the feather key:
Figure 1 shows the factory set position of piston *K* Changes of position are possible.

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

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

Technical informations DA-H 300
Hydraulic rotary actuator



Dimension table

Typ		DA-H 300
A m 6		180
DIN 5480*)		W 180x5x34x8f
B	Ø	555
C f 7	Ø	380
D		285
E	Ø	440
F	Ø	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_{H7}	Ø	140
$I1_{P9}$		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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