

H u r k o

Series HK Electric Actuator Selection and Use Instructions

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Series HK Electrical Actuator

1. Advanced design

The HK Series Electric actuators offers many specially performances, high cost-effective even its applies in the general situation.

Non-intrusive switching:

The HK Series Electric actuators utilizes magnetic induction mode switching without any shafts penetrating the shell.

Non-intrusive setting:

The actuators operational parameter setting are effected using the non-intrusively, hand held, infra-red setting tool.

Double sealed:

All the HK series actuators are housed in a double-sealed enclosure and prov complete protection to the internal equipment even if the terminal cover are remov during site wiring, the type of waterproof actuator can running 48 hours while the actua immerge into water deep 3 meters.

Torque protection:

A sensor serve as overload protection for the entire valve travel, and you can setu different torque volume between 40~120% of rated torque, in addition the open torc protection value can be different from close torque.

Limit protection setting:

If this function is enable, the actuator shall be stopped automatically while the valve position reaches the limit position.

Loss Phase protection:

The actuators real time monitor all three phase of the power supply during operation to prevent the motor from running when the power supply is short of phase.

Electronic Latching :

Electronic Latching inhibits the actuator torque protection function within 5 seconds and allows the motor to generate torque in excess of rated torque to enable operation of jammed valves while starting operation signal is enable , should the actuator stall when attempting to unseat a valve stuck in its seat, the motor will be de-energised to prevent damage.

Motor thermal protection:

Two thermostats are embedded in the windings for provide thermal-protection by de-energise motor in the event of motor over the maximum temperature.

Electric protection:

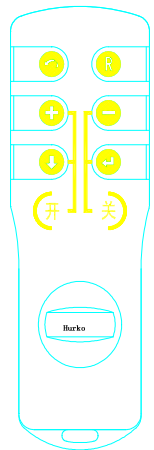
The input and output signal channel of circuits are designed as photoelectric isolate mode.

Valve position and torque measure:

Use hall effect magnetic pulse system continually monitoring the valve position and use the magnetic flux and current of the motor for continually measures the controlling torque are to avoid the mechanical wearing and ensure function stability.

Automatic correction for phase sequence:

The actuators monitor the phases and run in the correct direction regardless of the sequence of power supply connection that is realized through a phase rotation correction Boolean logical calculation .



Setting the following configurations with infra-red setting tool

- ✧ Direction to close
- ✧ Close limit position protection function
- ✧ Close/ open operation torque value
- ✧ Open /close limit position
- ✧ ESD Optional function (ESD: Emergency shut down)

Digital indication of valve position:

The percentage digital of valve position real time indicates on LCD display.

Power failed protection:

If main power failed, the internal battery of the actuator should supply power for control circuit and supports valve position control in hand operation. In case of no battery available, actuator can save the currently valve position Data as well.

Handwheel operation:

Direct drive handwheel to provide reliable emergency manual operation in the event of a power supply failure. Electric operation always has the higher priority than manual operation, when motor is energized that the operation state automatic switch to electric operation mode unless hand/auto lever is purposely locked into 'manual operation'

Explosion proof:

The actuators has high class enclosure which is designed according to GB3836, it provides reliable ingress and seals guarantee. In addition, the threaded is designed at the cable entry conduit of the actuator for fixing explosion proof tube.

High torque, low inertia motor:

The low inertia and high torque motor generates peak torque rapidly after starting but with very little overrun when it is de-energized.

Lubrication:

HK series are filled with high-quality gear oil, the most important machine parts such as worm and turbine operates in an oil bath to reduce wearing and extend life.

Standard valve/actuator interface:

Actuator Base of ranges HK03 to HK60, designed as a removable mode and Series HK100 to HK300 as an integral mode, the flange and drive bushing conforming to international standard ISO5210

Thrust bearing configuration:

The type 'A' is the thrust type drive bushing that couples a fully sealed and lubricated thrust bearing to guarantee which have not any load effects on the actuator inner structure.

Solid state circuit measure:

All of Series HK provides the solid state circuit to measure the torque without any mechanical equipments such as the spring switch or the level.

1.1 Specification:

Power Supply:	380VAC/50Hz	220VAC/50Hz
Watertight Enclosure :	IP68	
Explosion Proof:	Exd II CT4	
Ambient Temperature:	-40~+70C°	
Ambient Humidity:	≤95%	

Frequency of Operation: To the on-off mode is 60 starts per hour; the modulatory mode are divided into two kinds, one is 600 starts per hour, the other is 1200

starts per hour; all series HK actuators are maximal continuous operation time within 15 minutes per hour.

2 . Applications

2.1 Multi-turn control:

Series HK on-off mode multi-turn actuators suitable the required that within 60 starts per hour, maximal continuous operation time within 15 minutes and duty cycle under 33%. The Series HK has also modulatory mode actuator(the frequency of operation is under 600 starts per hour or under 1200 starts per hour) . Series HK on-off mode actuator combined with B,S, or D gear box could control the largest gate valve, globe valve and the reduction ratio as 4:1, 6:1, 10:1, 40:1, 60:1, 70:1 and listed go on. In this case, we can get the largest output torque.

Rated Output Torque: 34Nm ~ 3000Nm;

Output speed: 18 / 24 / 36 / 48 / 72 / 96 / 144 / 192 rmp;

Series HK on-off mode actuators provide 'B' type drive bushing for output rotate operation and 'A' for Linear operation.

2.2 Linear control:

Series HK on-off mode actuator combined with X series components could directly control linear operation valve such as slide valves.

2.3 0~90°Quarter Turn control:

Series HK on-off mode actuator combined with W gear box could carry out valve's quarter turn operation, the reduction ratio as 40:1, 60:1, 70:1 and list go on, in this case, we can get a largest output torque.

3. Technical Data

3.1 Series HK on-off type actuator performance (220VAC / 50Hz)

Output rotate speed (rpm)		18	24	36	48	72	96	144	192
HK03	Rated output torque N. m	20	17	17	15				
	Motor power KW	0.08	0.08	0.08	0.08				
	Start current A	7.3	7.3	7.3	7.3				
	Rated current A	1.8	1.8	1.8	1.8				
HK08	Rated output torque N. m	24	23	20	17				
	Motor power KW	0.1	0.1	0.1	0.1				
	Start current A	7.9	7.9	7.9	7.9				
	Rated current A	1.9	1.9	1.9	1.9				
HK14	Rated output torque N. m	30	25	22					
	Motor power KW	0.12	0.12	0.12					
	Start current A	8.5	8.5	8.5					
	Rated current A	2	2	2					
HK20	Rated output torque N. m	81	81	81	63	63			
	Motor power KW	0.23	0.25	0.28	0.28	0.32			
	Start current A	11.6	13	14.1	14.1	16.5			
	Rated current A	2.8	3.2	3.4	3.4	3.6			
HK40	Rated output torque N. m	142	142	127	108				
	Motor power KW	0.35	0.37	0.37	0.35				
	Start current A	17.2	18.1	18.1	17.2				
	Rated current A	3.75	3.9	3.9	3.75				
HK60	Rated output torque N. m	272	252	204	157	109			
	Motor power KW	0.8	0.8	0.75	0.8	0.8			
	Start current A	36	36	32	36	36			
	Rated current A	7.8	7.8	7	7.8	7.8			

3.2 Series HK on-off type actuator performance (380VAC/50Hz)

Output rotate speed (rpm)		18	24	36	48	72	96	144	192
HK03	Rated output torque N. m	34	34	34	34	34	34		
	Motor power KW	0.05	0.05	0.07	0.10	0.13	0.17		
	Stall current A	1.4	1.8	2.3	3	3.6	3.6		
	Rated current A	0.45	0.6	0.75	1	1	1.3		
HK08	Rated output torque N. m	81	81	81	81	61	47		
	Motor power KW	0.12	0.14	0.19	0.23	0.24	0.24		
	Stall current A	2.7	3.7	4.7	6.4	6.4	6.4		
	Rated current A	0.85	1.1	1.5	2.1	2.1	2.1		
HK14	Rated output torque N. m	108	136	102					
	Motor power KW	0.15	0.23	0.23					
	Stall current A	3.7	6.4	6.4					
	Rated current A	1.1	2.1	2.1					
HK20	Rated output torque N. m	203	203	203	203	176	142	102*	
	Motor power KW	0.30	0.35	0.47	0.58	0.70	0.70	0.70	
	Stall current A	6.8	9.25	10.25	13.4	16	16	16	
	Rated current A	2.3	2.8	3.6	4.6	5.5	5.5	5.5	
HK30	Rated output torque N. m	350	300	250					
	Motor power KW	0.55	0.55	0.5					
	Stall current A	12.5	12.5	13.4					
	Rated current A	4.3	4.3	4.6					
HK40	Rated output torque N. m	400	400	298	244				
	Motor power KW	0.58	0.68	0.68	0.68				
	Stall current A	13.4	16	16	16				
	Rated current A	406	5.5	5.5	5.5				
HK60	Rated output torque N. m	610	610	542	474	474	366	257	
	Motor power KW	0.90	1.05	1.27	1.35	1.90	1.80	1.80	
	Stall current A	18	25	28	29	41	37	37	
	Rated current A	6	7	9	8.2	12.5	12	12	
HK100	Rated output torque N. m	1020	1020	845	680	680	542	406*	
	Motor power KW	2.10	2.10	2.10	3.7	3.7	3.7	3.7	
	Stall current A	45	45	45	61	61	61	61	
	Rated current A	11	11	11	16.5	16.5	16.5	16.5	
HK150	Rated output torque N. m	1490	1490	1290	1020	1020	745	645*	542*
	Motor power KW	2.75	2.75	4.80	4.80	4.80	4.80	4.80	4.80
	Stall current A	61	61	95	95	95	95	95	95
	Rated current A	15	15	25	25	25	25	25	25
HK200	Rated output torque N. m	2030	2030	1700	1355	1355	1020	865*	730*
	Motor power KW	4.5	4.5	4.5	7.5	7.5	7.5	7.5	7.5
	Stall current A	78	78	78	138	138	138	138	138
	Rated current A	21	21	21	35	35	35	35	35
HK201	Rated output torque N. m							1355*	1355*
	Motor power KW							13.0	13.0
	Stall current A							218	218
	Rated current A							88	88
HK300	Rated output torque N. m		3000						
	Motor power KW		4.8						
	Stall current A		78						
	Rated current A		22						

Note: If you want to use these type of Series HK on-off type Actuators that have a sign “ * ” in above data sheet to drive your valve directly, you must consider carefully.

3.3 Technical Data of Worm Gearbox combined with Series HK on-off type actuator (220VAC / 50Hz)

Suitable Model		Rated Torque (Nm)	Out Put Speed (rpm)	Reduction Ratio	Max. Valve Shaft Dia. (mm)
HK03	D4	190~422	18~48	40/70	φ 64
	W4				
HK08	D4	270~564	18~48	40/70	φ 64
	W4				
HK14	D5	318~630	18~36	40/70	φ 76
	W5				
HK20	D5	1009~1556	18~72	40/70	φ 76
	W5				
HK20	D6	1324~1704	18~72	70	φ 102
	W6				
HK40	D6	2271~2979	18~48	70	φ 102
	W6				
HK40	D7	2986~4281	18~48	60	φ 127
	W7				
HK60	D7	2504~6248	18~72	60	φ 127
	W7				

3.4 Technical Data Worm Gearbox (380VAC / 50Hz)

Suitable Model		Rated Torque (Nm)	Out Put Speed (rpm)	Reduction Ratio	Max. Valve Shaft Dia (mm)
HK03	D4	430~717	18~96	40/70	φ 64
	W4				
HK08	D4	750~1691	18~96	40/70	φ 64
	W4				
HK14	D5	1300~2858	18~36	40/70	φ 76
	W5				
HK20	D5	1621~3900	18~144	40/70	φ 76
	W5				
HK20	D6	2140~4270	18~144	70	φ 102
	W6				
HK30	D6	5260~7344	18~36	70	φ 102
	W6				
HK40	D6	5132~8393	18~48	70	φ 102
	W6				
HK40	D7	6746~12060	18~48	60	φ 127
	W7				
HK60	D7	5920~14013	18~144	60	φ 127
	W7				
HK100	D8	9350~19480	18~114	60	φ 153
	W8				

Notes: 1. The shown of tables 'Technical Data Worm Gearboxes' just for partially of first reduction configurations of gear boxes, we also provided the secondary reduction configurations of gear boxes that Reduction Ratio over then 80:1, for more detail information please contact to us.

2. We can recommend model designation according to the valve technical Data of provided by customer such as diameter, pressure, differential pressure, type of valve, median flow rate etc.

3.5 Valve/Actuator interface

Model		HK03 HK08 HK14	HK20 HK30 HK40	HK60	HK100	HK150	HK200	HK201	HK300
Thrust Base (A)	Max. acceptance diameter Basset (mm)	32	51	67	73	83	83	—	83
	Max. acceptance diameter Hidden (mm)	26	38	51	57	73	73	—	73
Non- Thrust Base (B)	“B1” type (fixed bore)	42	60	80	—	—	—	—	—
	“B3” type (fixed bore)	20	30	40	50	50	50	50	—
	“B4” type (fixed bore)	20	30	44	50	60	60	60	—
Flange		F10	F14	F16	F25	F25	F30*	F25	F30
Weight (kg)		33	55	80	235	258	259	238	258

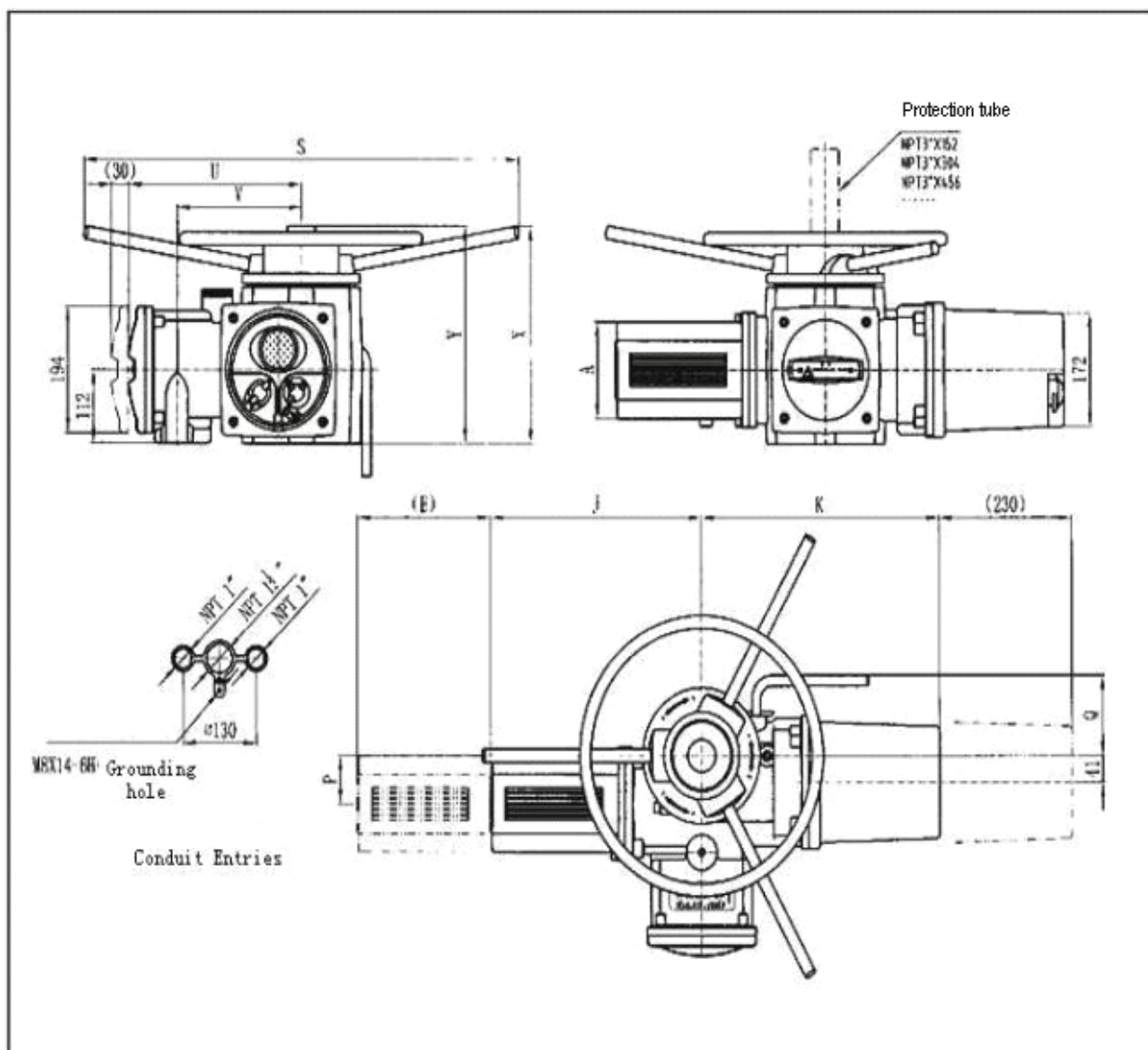
* In case of HK200 coupling with B3、B4, may choose flange of F25.

3.6 Coupling dimension

3.6.1 Interface connection table for HK

Actuator type		HK03/ 08/14	HK20/3 0/40	HK60	HK100	HK150	HK200	HK201	HK300
Thrust Type A (mm)	Max acceptance diameter Basset	32	51	67	73	83	83	-	83
	Max acceptance diameter Hidden	26	38	51	57	73	73	-	73
Non- thrust Type B (mm)	"B1"	42	60	80	-	-	-	-	-
	"B3"	20	30	40	50	50	50	50	-
	"B4"	20	30	44	50	60	60	60	-
Flange		F10	F14	F16	F25	F25	F30*	F25	F30
Net-weight (kg)		33	55	80	235	258	258	238	258

* Connection by B3,B4 for HK200 can choose F25 flange.

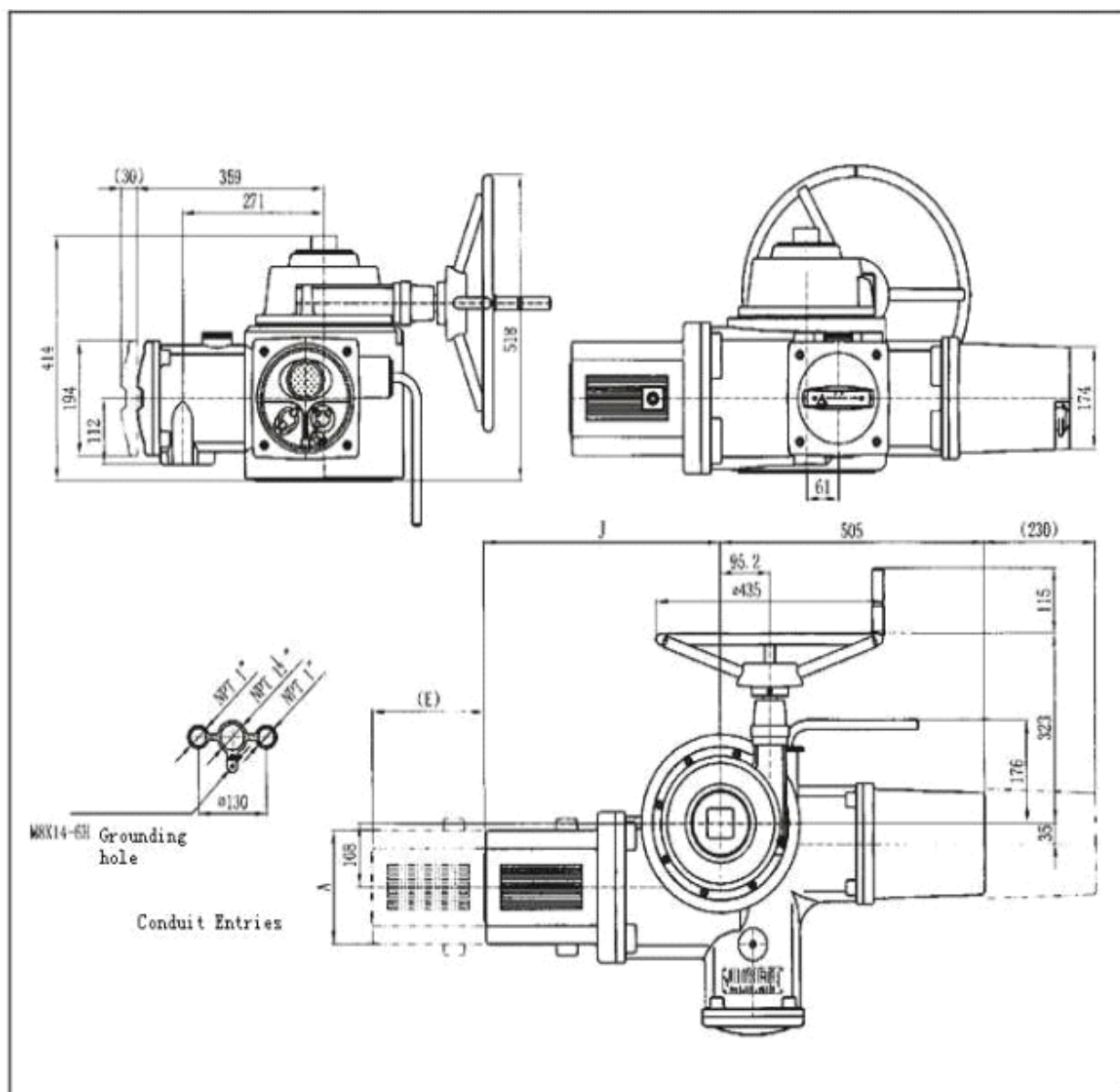


Parameter	A	E	J	K	Q	P	S	U	V	Y	X
Standard											
HK03 HK08 HK14	102	198	264	373	110	41	Φ 300	260	167	222	264
HK20 HK30 HK40	134	210	297	390	110	60	Φ 666	286	198.5	305	288
HK60	148	270	376	424	125	75	Φ 784	310	222	334	335
HK100	198	280	452	505	176	108	Φ 820	358	269	392	415

3.6.3

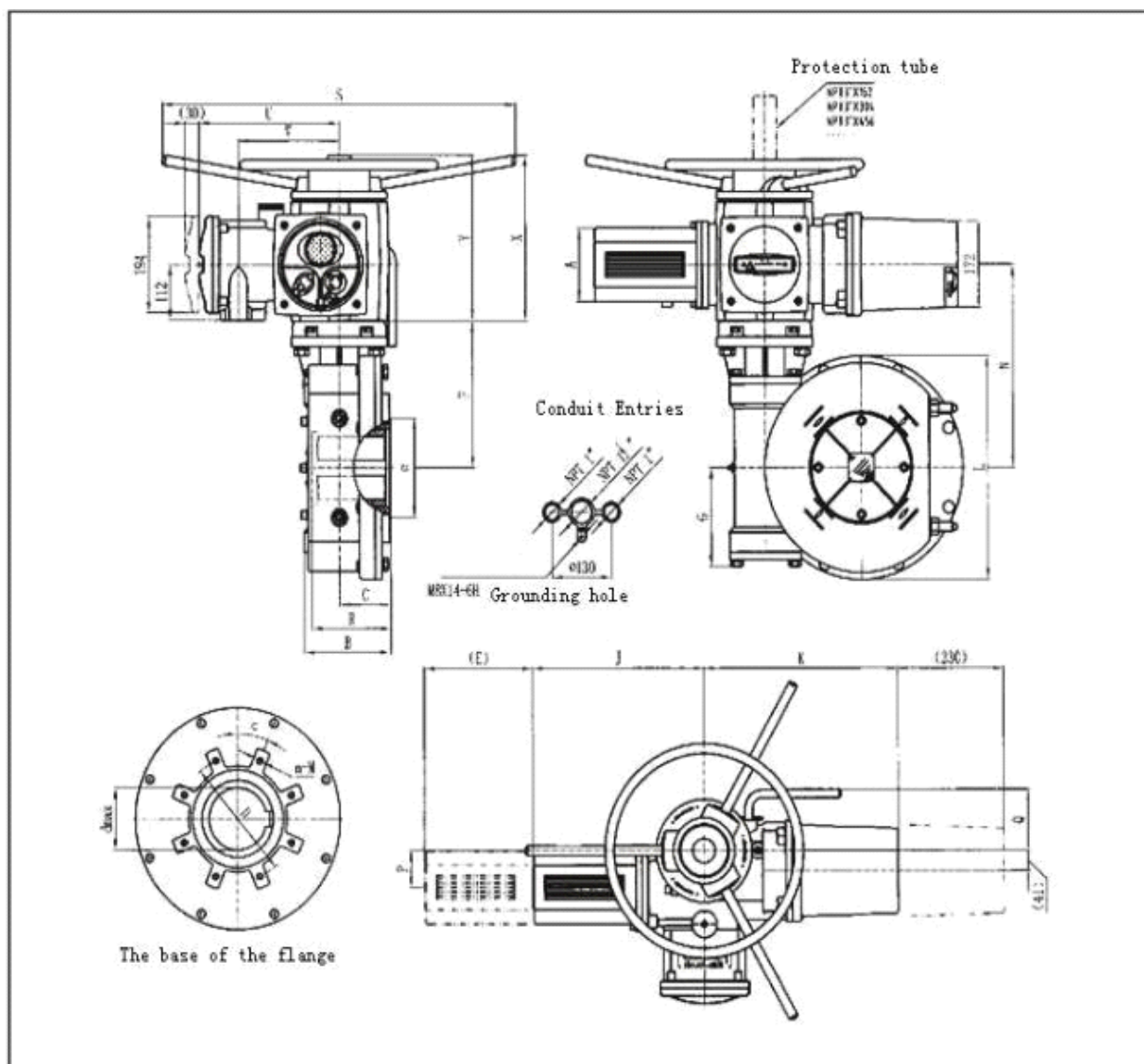
HK150/HK200/HK201/HK300

actuator dimension data



Parameter Standard	A	E	J	Flange standard
HK150	178	335	520	F25
HK200				F25
				F30
HK201	222	360	545	F25
HK300	178	335	521	F30

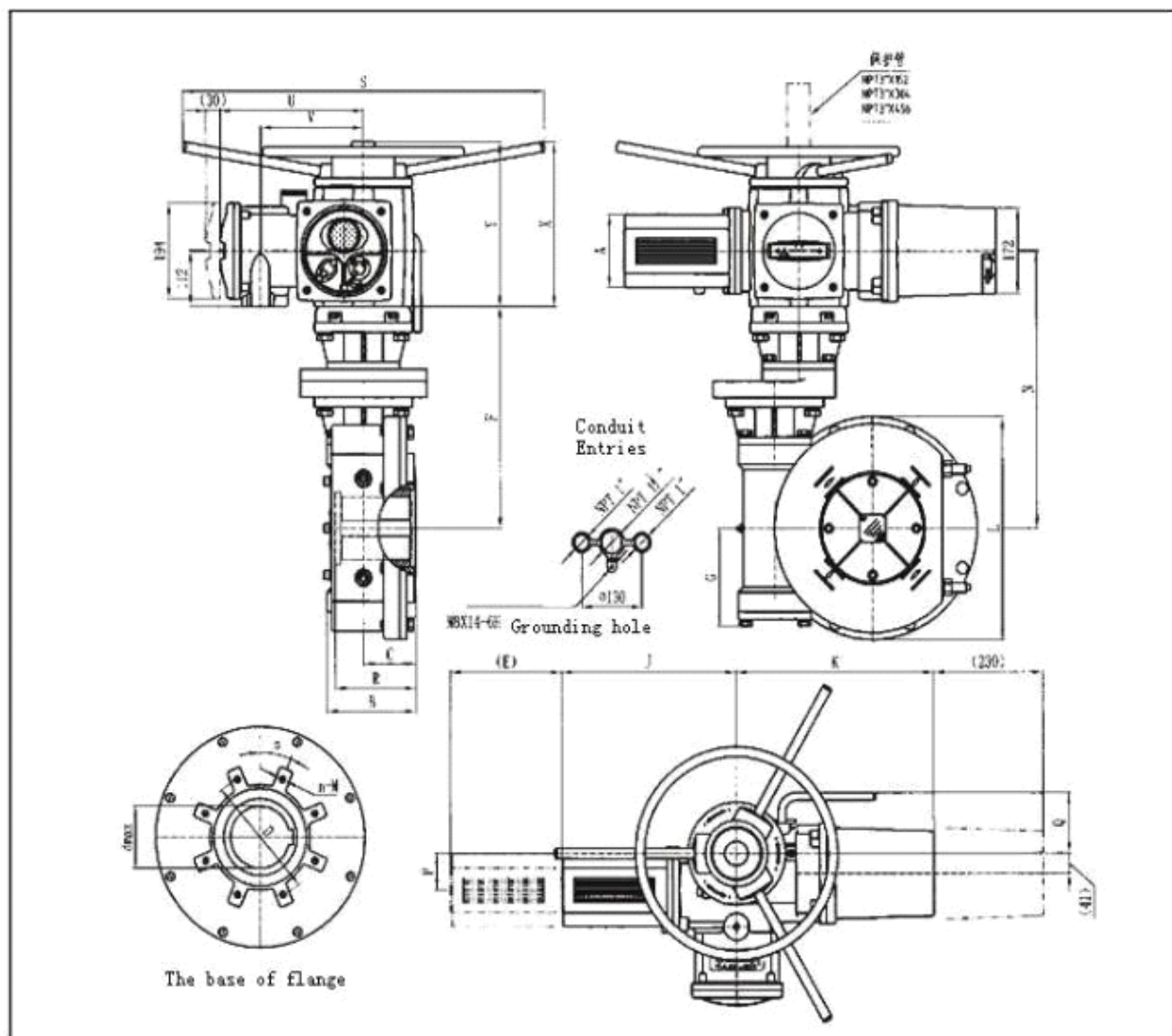
3.6.4 Series HK actuator combined with D/W one grade gear-box



Parameter Standard	A	E	-	J	K	Q	P	S	U	V	Y	X
HK03-14/H4	102	198	-	264	373	110	41	Φ 300	260	167	222	264
HK20-4-/H4 HK20-40/H5 HK20/H6 HK20/H7	134	210	-	297	390	110	60	Φ 666	286	198.5	305	288
HK60/H7	148	270	-	376	424	125	75	Φ 785	310	222	334	335
Parameter Standard	dmax	D	B	α	C	R	n-M	F	H	G	L	N
HK03-14/H4	Φ 64	Φ 140	106	45°	50	93	4-M16	147	101.6	108	Φ 218	230
HK20-40/H4												
HK20-40/H5	Φ 76	Φ 165	134		65	120	4-M20	197	135.89	134	Φ 285	298
HK20/H6	Φ 102	Φ 254	147	22.5°	70	130	8-M16	186	177.8	144	Φ 375	303
HK20/H7	Φ 127		181		87	160		276	209.55	196	Φ 450	377
HK60/H7												289

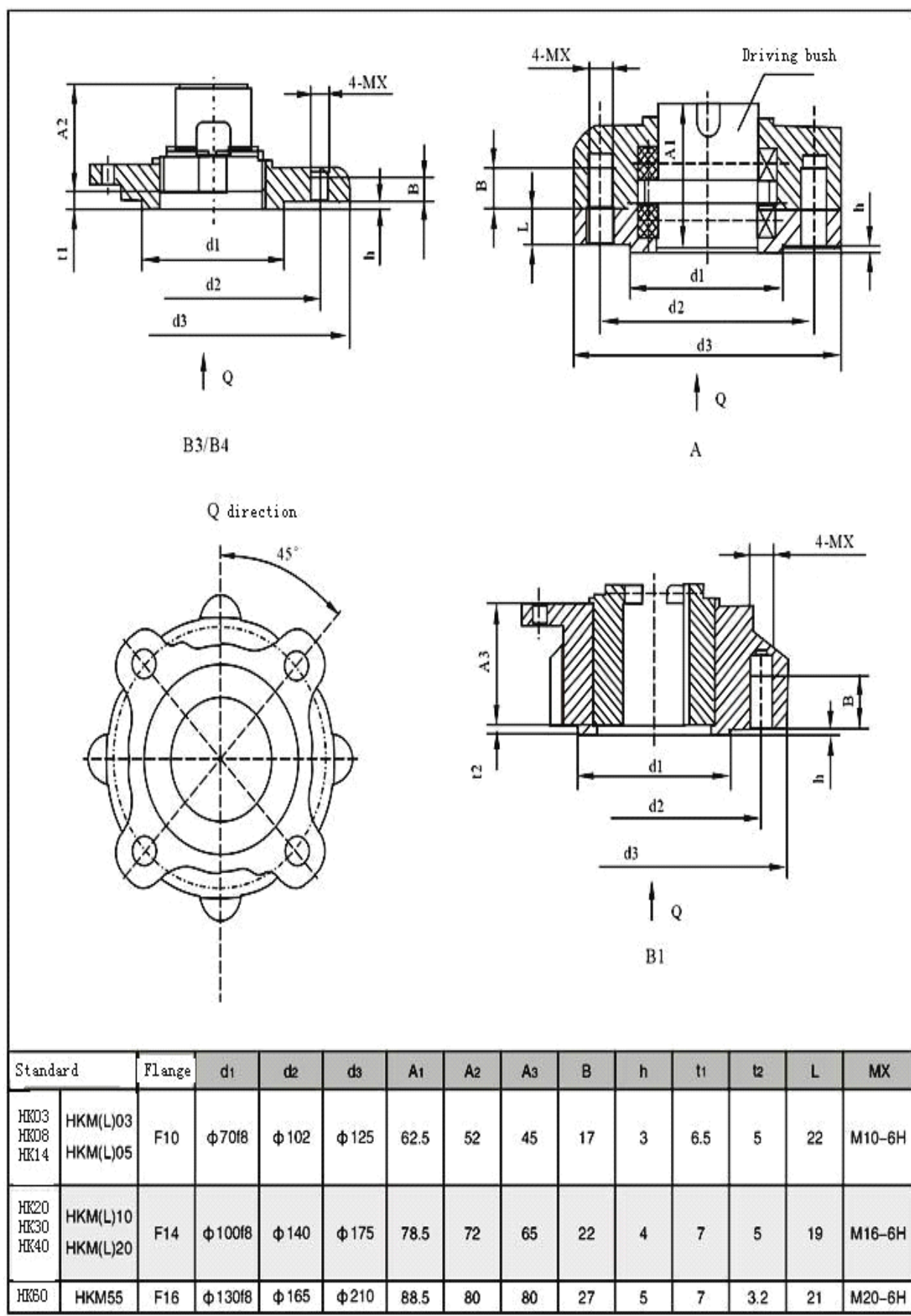
The character "H" include series D or W gear-box in the above data table.

3.6.5 Series HK actuator combined with DR/WR two grades gear-box

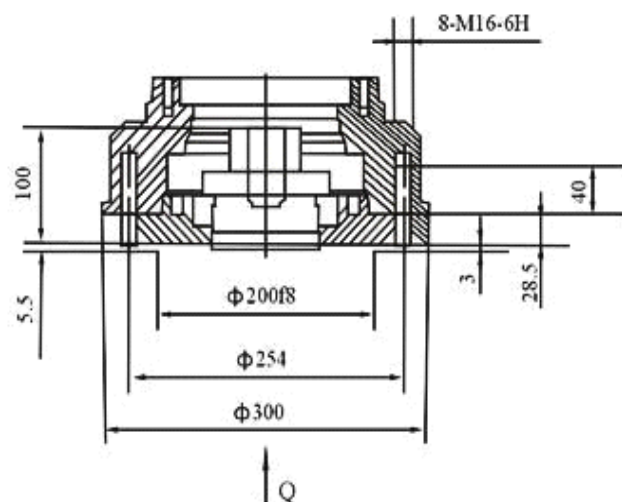


Parameter Standard	A	E	-	J	K	Q	P	S	U	V	Y	X
HK03-14/H4R	102	198	-	264	373	110	41	Φ 300	260	167	222	264
HK20-40/H5R HK20-40/H6R HK20-40/H7R HK20-40/H8R	134	210	-	297	390	110	60	Φ 666	286	198.5	305	288
HK60/H8R	148	270	-	376	424	125	75	Φ 785	310	222	334	335
Parameter Standard	dmax	D	B	α	C	R	n-M	F	H	G	L	N
HK03-14/H4R	Φ 64	Φ 140	106	45°	50	93	4-M16	274	101.6	108	Φ 218	341
HK20-40/H5R		Φ 165	134		65	120	4-M20	324	135.89	134	Φ 285	425
HK20-40/H6R	Φ 76	Φ 254	147	22.5°	65	120	8-M16		466	177.8	144	Φ 375
HK20-40/H7R	Φ 127		181		70	130		209.55		196	Φ 450	578
HK20-40/H7R	Φ 153		194		87	160		496	246.38	226	Φ 520	597
HK60/H8R												608

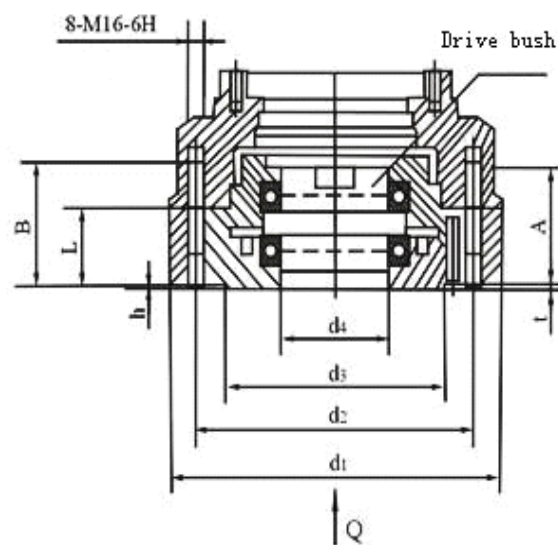
The above data table is only the part, if you want to get more, please contact us.



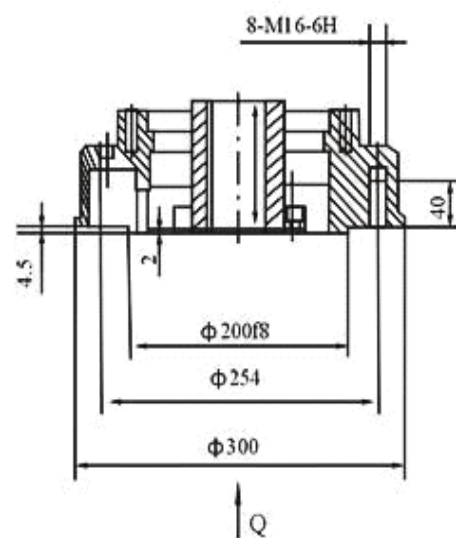
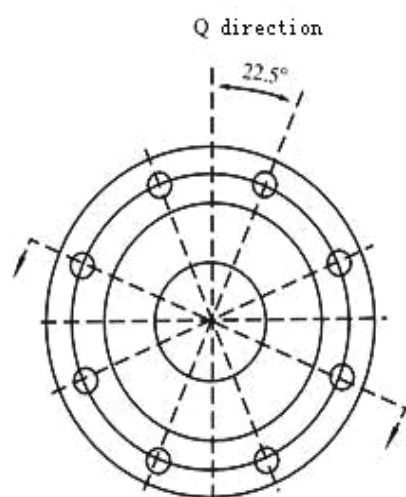
F25 Flange
(HK100 / HK150 / HK200 / HK201)



F25 B3 / B4
(HK100)

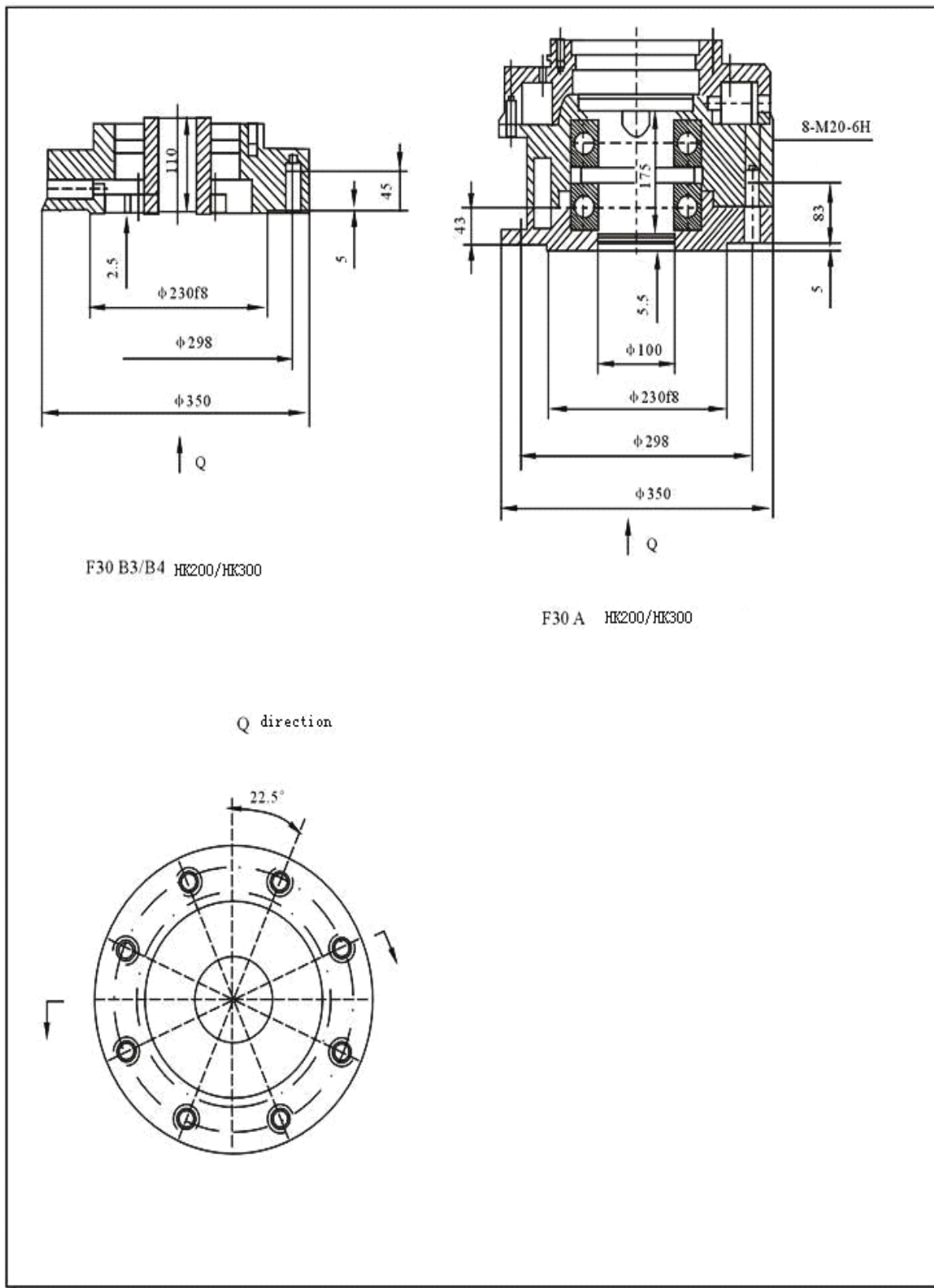


F25 A
(HK100, HK150, HK200)



F25 B3 / B4
(HK150, HK200, HK201)

Type	Flange	d1	d2	d3	d4	A	B	L	h	t
HK100	F25	200f8	254	300	100	100	106.5	66.5	3	4.5
HK150					110	120	143	103	5	5.5
HK200										



*The shown just listed partially combination Datas, the more requested please contact us.

4. Actuator electrical wiring diagram

Notice: all the numbers shown in the wiring diagram means the terminal port number.

4.1 Series HK basic type (wiring diagram B)

Series HK basic type may control motors rotary orientation without any external control relay (cabinet) and the ways of control include: Local control, remote control and ESD control. The wiring diagram of about remote controlling refer to figures from 1-1 to 1-9. This series actuators also provide single phase AC motor, terminal port 1 and 2 are power supply input with AC220V, port 3 is not used

Actuators wiring diagram refer to the right-side figures.

O1/C1 – normally opening contact; when the open/close limit position, the contact is closed.

O2/C2 – normally closing contact; when the open/close limit position, the contact is open.

QO/QC – normally closing contact; when open/close over torque, the contact is open.

Above relays contract rating 5A/250VAC or 5A/30VDC.

The monitor relay contract rating 5A/250VAC or 5A/30VDC. While monitor relay do not be at de-energized, terminal port 43 link with 42; while monitor relay is at energized, port 43 does not link with 42 but links with 44. In following cases relay should be at de-energized: Main power supply failed or phase lose; main control circuit failed; Local/remote selection knob at Local; thermostat tripped. All above that, monitoring the Local/remote control status by monitor relay is possible.

4.2 Series HK extended type (wiring diagram is BI,BO,BIO)

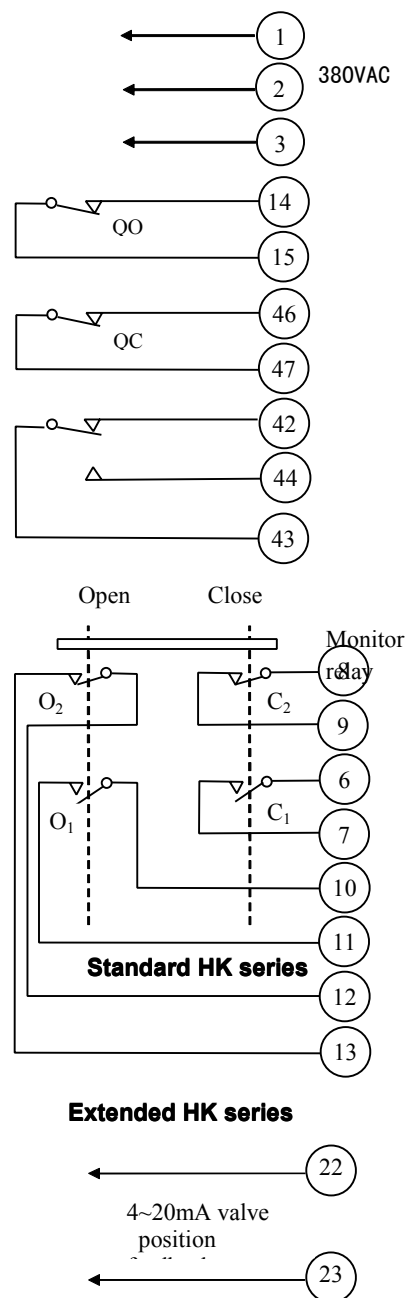
The type of the extended series HK is added a 4~20mA feedback signal module and a 4~20mA valve position control signal module to the basic type Series HK, its wiring diagram is divided into three kinds, first one is BI (add a 4~20mA valve position control signal module to the basic type Series HK), second one is BO (add a 4~20mA feedback signal module to the basic type Series HK), the third one is BIO (add a 4~20mA valve position control signal module and a 4~20mA feedback signal module to the basic type Series HK)

This extended type Series HK is 600 starts per hour as its operation frequency.

Notice: If have any special requirement orders please contract us.

4.3 Control and Wiring

Please see the table “Terminals description sheet”



Terminals description sheet

No.	Name	Operation	No.	Name	Operation
⏏	Grounding	Wiring ground port	23	Valve position feedback- signal (-)*	Valve position current signal feedback port (-)

1	POW-VAC1**	380VAC Input port 1	25	ESD	Emergency shut down signal input port
2	POW-VAC2**	380VAC Input port 2	26	Valve-position control signal (+) *	Control current input +
3	POW-VAC3**	380VAC Input port 3	27	Valve-position control signal (-) *	Control current input -
4	DC 0V	DC 24V “-” output port	33	Remote close	Remote close signal input port
5	DC 24V	DC 24V “+” output port	34	Stop/Maintained	Stop/Maintained signal input port
6	C1 relay port 1	Close position relay 1, normally open port 1			
7	C1 relay port 2	Close position relay 1, normally open port 2	35	Remote open	Remote open signal input port
8	C2 relay port 1	Close position relay 2, normally open port 1	36	Remote low voltage Common-port	ESD, stop/ Maintained,remote open/close input signal low voltage Common-port
9	C2 relay port 2	Close position relay 2, normally open port 2			
10	O1 relay port 1	Open position relay 1, normally open port 1	39	Manual/automatic input *	Manual/automatic mode select input port
11	O1 relay port 2	Open position relay 1, normally open port 2	40	Remote-high voltage Common-port -	ESD,stop/ Maintained,remote open/close input signal low voltage Common-port
12	O2 relay port 1	Open position relay 2, normally close port 1	41	Manual/automatic common-port *	Manual/automation low voltage common-port
13	O2 relay port 2	Open position relay 2, normally close port 2	42	Monitor relay port 1	Monitor relay contact normally close port
14	QO relay port 1	Open over torque protection relay contact, normally close port 1	43	Monitor relay port 2	Monitor relay contact common Port
15	QO relay port 2	Open over torque protection relay contact, normally close port 2	44	Monitor relay port 3	Monitor relay contact normally open port
18	Extended relay port 1***	This relay is as the flash alarming relay or the "Local/remote" Indication relay	45	Manual/automatic common-port *	Manual/automatic high voltage common-port
19	Extended relay port 2***		46	QC relay port 1	Close over torque protection relays contact normally close port 1
22	Valve position feedback signal (+) *	Valve position current signal feedback port (+)	47	QC relay port 2	Close over torque protection Relays contact,normally closeport 2

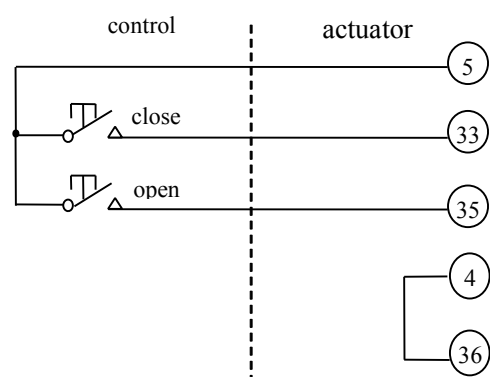
Notice: Mark of “**” items are only used in single phase actuator, No.1 and No.2 port are connected with 220VAC, No.3 port is void; “*” items is only used in type of extended or enhanced actuator. “***” items is not provided unless the clients specially noted in the sale order.

The above table “Terminals description sheet” is also suitable for the HKE range actuator.

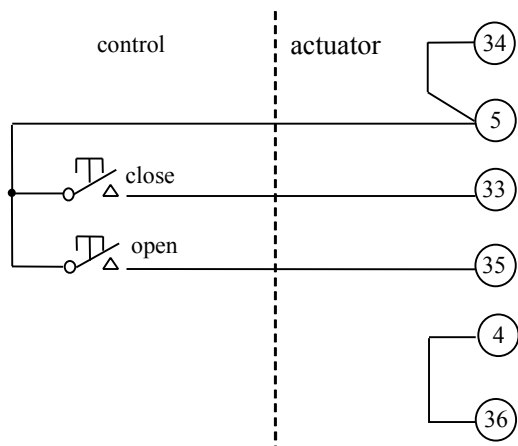
5. Control mode

5.1 Local control

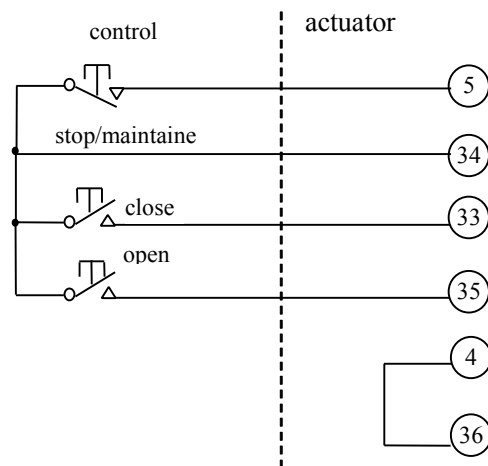
For all Series HK actuators, when the mode selection knob positioned at the “Local Position” as well as operated the operation knob that can control the actuator open or close. The local operation mode of actuators can be setted as “Maintained local control ” or “Push to Run control” (according to the primitive parameter setting). In addition the setting tool can control the actuator open or close in “maintained local control” mode.



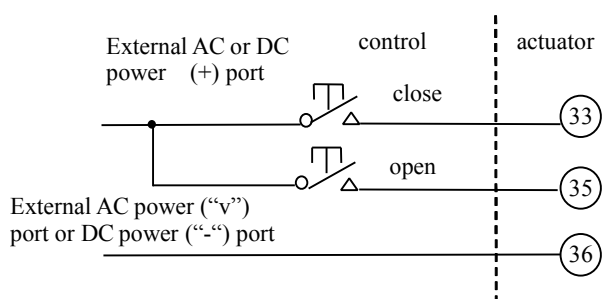
1-1 push to run open/close control, the valve intermediate positioning is possible



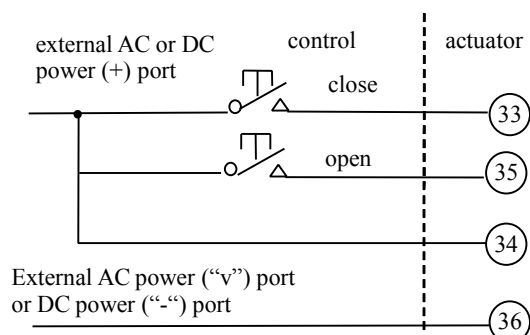
1-2 maintained open/close control, support reversion, intermediate positioning impossible



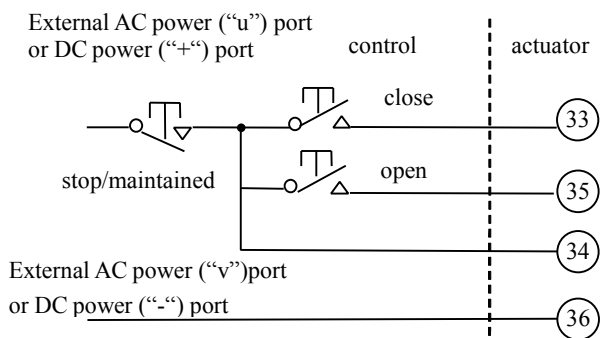
1-3 maintained open/close/stop control



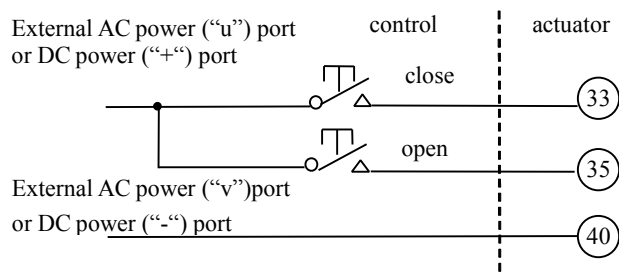
1-4 push to run open/close control, valve intermediate positioning is possible



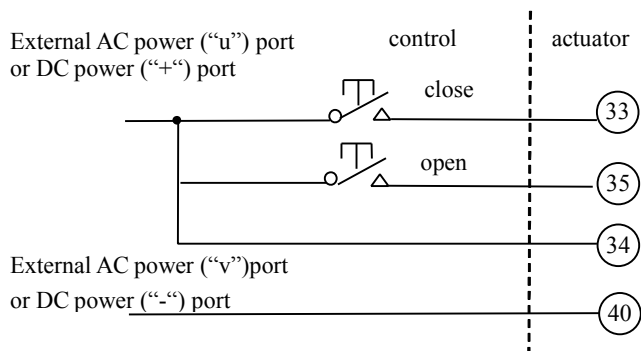
1-5 maintained open / close control, support reversion, intermediate positioning impossible



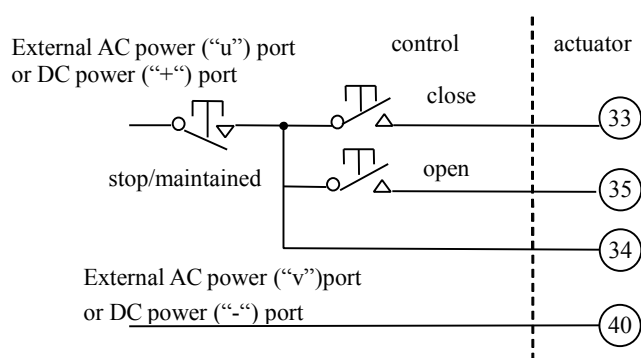
1-6 maintained open/close control



1-7 push to run open/close control, valve intermediate positioning is possible



1-8 maintained open / close control, support reversion, intermediate positioning impossible



1-9 maintained open / close control

5.3 ESD Control

The number of the ESD signal terminal port is No.25 and the common port number is 36 or 40 (refer to the above terminal explanatory table). While input a AC 110 ~220V or DC 24V circuit signal on the terminal port, actuator should be moved to the safety position that full close, full open, or stop position according to the preset operation parameter. More detailed about wiring, refer to “remote control” description.

5.4 Valve position feedback signal

Extended or enhanced Series HK provides 4~20mA signal proportional to valve position. Available at terminals 22 (+) and 23 (-), the maximum external load impedance is 400ohms. The Valve position feedback signal precision is 0.5%.

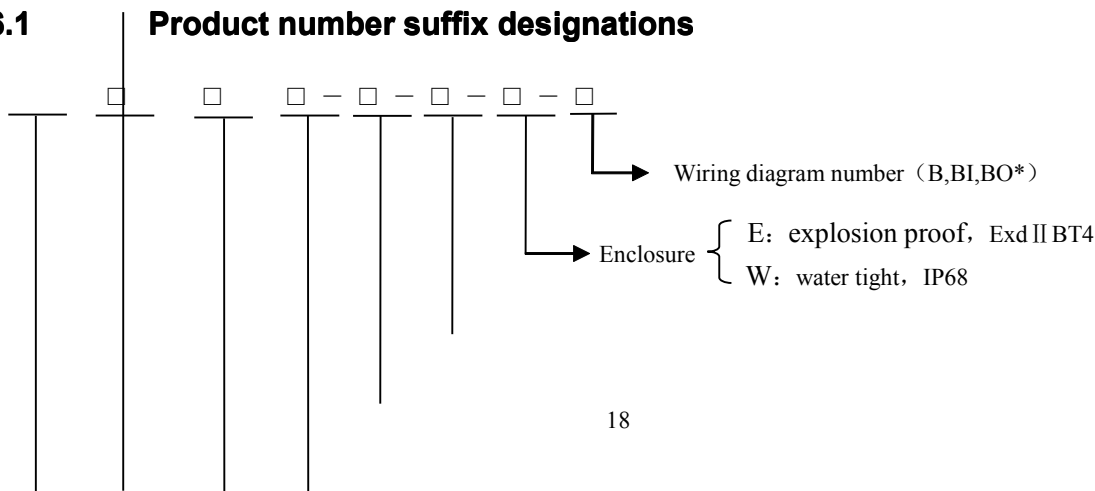
5.5 The analogue signal control

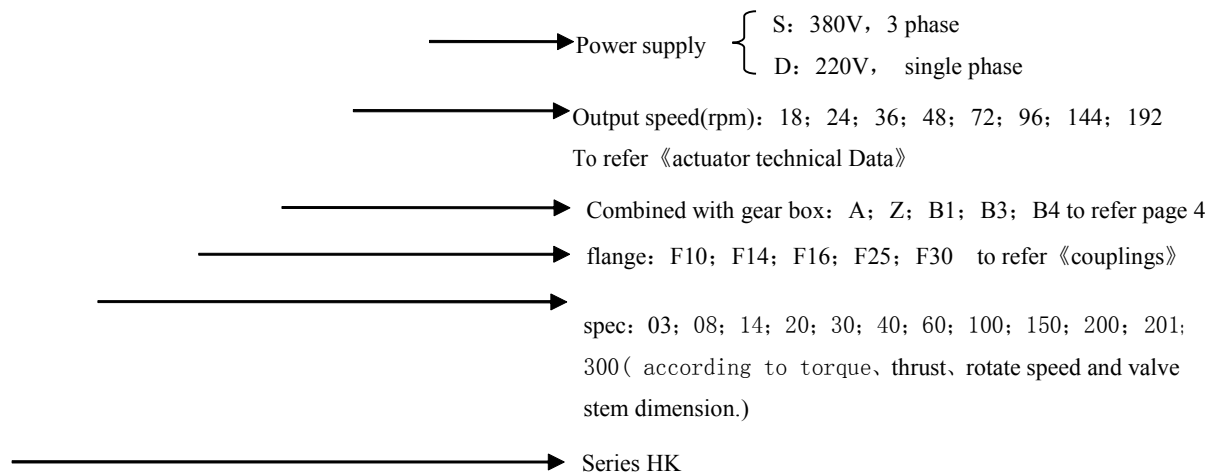
Extended or enhanced Series HK provides 4~20mA current signal to control the valve. The 4~20mA valve position control signal is inputted into the terminals 26(+) and 27(-). Thus you can use 4~20mA electric current signal to control the valve. For example, the 4mA electric current may make the valve to the full close position, the 20mA electric current signal can make the valve to the full open position.

6. Order

Please fully fill in following “product number suffix designations” while you order the actuators to us, the last suffix number of ordering information means the actuator model, and if you require order a gear box, you need to label its model number.

6.1 Product number suffix designations



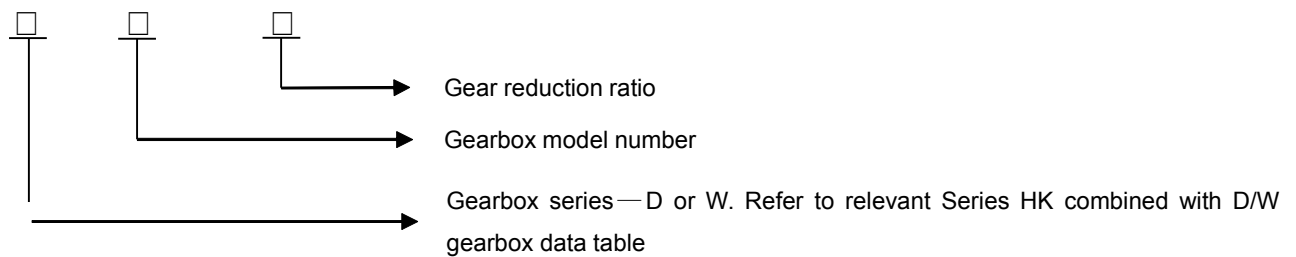


For instance: HK40-F14A-24-S-W-BIO

Output torque=400Nm, coupling flange=F14, drive coupling="A", output speed=24rpm, power supply= AC 380V, enclosure=IP68 water tight, wiring type=BIO.

*** Please refer to section 4.1, 4.2**

6.2 Gearbox



Detailed information about the gearbox selection refer to the corresponding gearbox selection instructions.

For instance: W5-40 :1

Gearbox series=W series, model number= 5, gearbox reduction ratio= 40:1.

The actuator nameplate does not label the gearbox model number even if the actuator and the gearbox are assembled together and delivered, the gearbox have own nameplate and the gearbox model is labeled on it.

Tel: 086-577-67305888

Fax: 86-577-67301800

Please refer to : www.hurko.cn

E-mail:clivexcs@163.com

