



SZ SERIES
HAND OPERATING
VALVE ACTUATORS

OPERATION INSTRUCTION

CHANGZHOU POWER STATION AUXILIARY EQUIPMENT WORKS LTD.

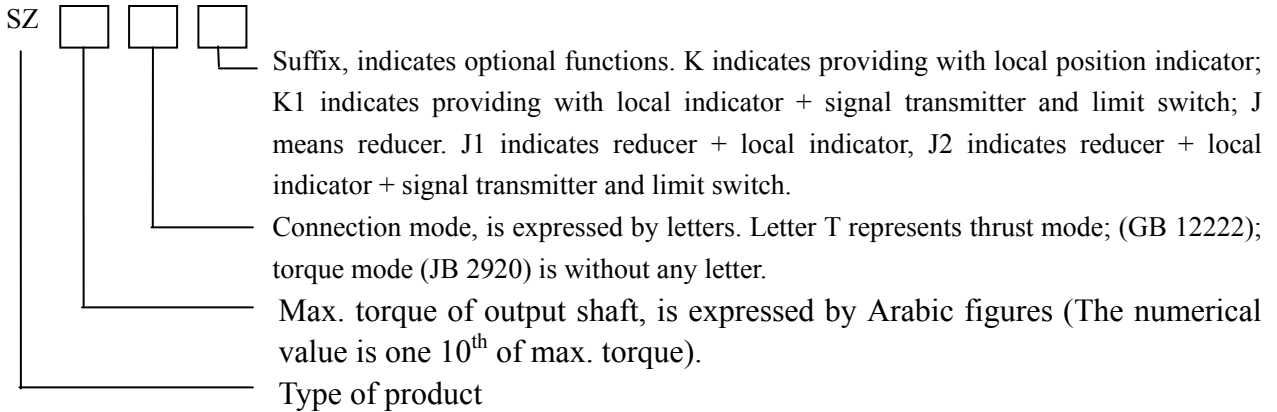
THE PEOPLE'S REPUBLIC OF CHINA

1 GENERAL DESCRIPTION

Series SZ Hand Operating Valve Actuators are a generation of products of a new type which are improved on what has already been achieved at home and abroad. Preserving the original performance, Series SZ Hand Operating Valve Actuators are smaller in size, more economical in structure design, more reliable, and easier to install. Its total driving efficiency is more than 90%.

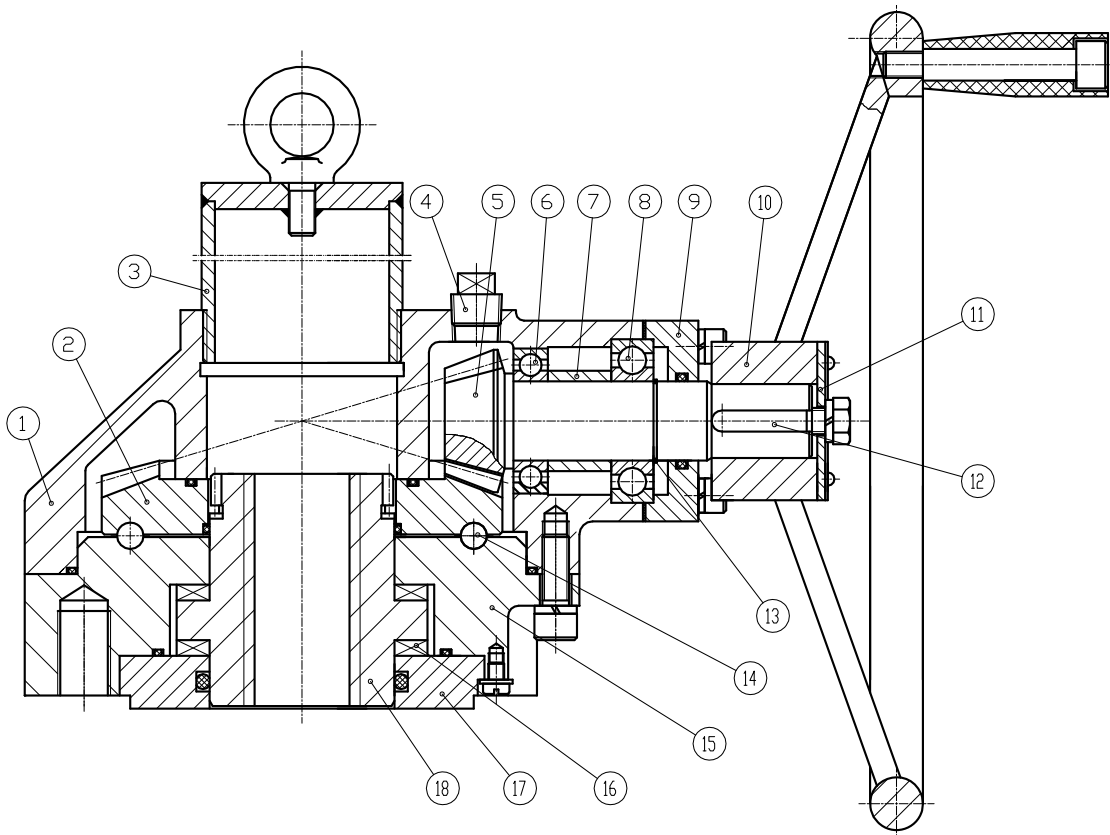
According to output force, they are divided into tow modes: Torque Mode and Thrust Mode.

2 REPRESENTATION OF TYPE



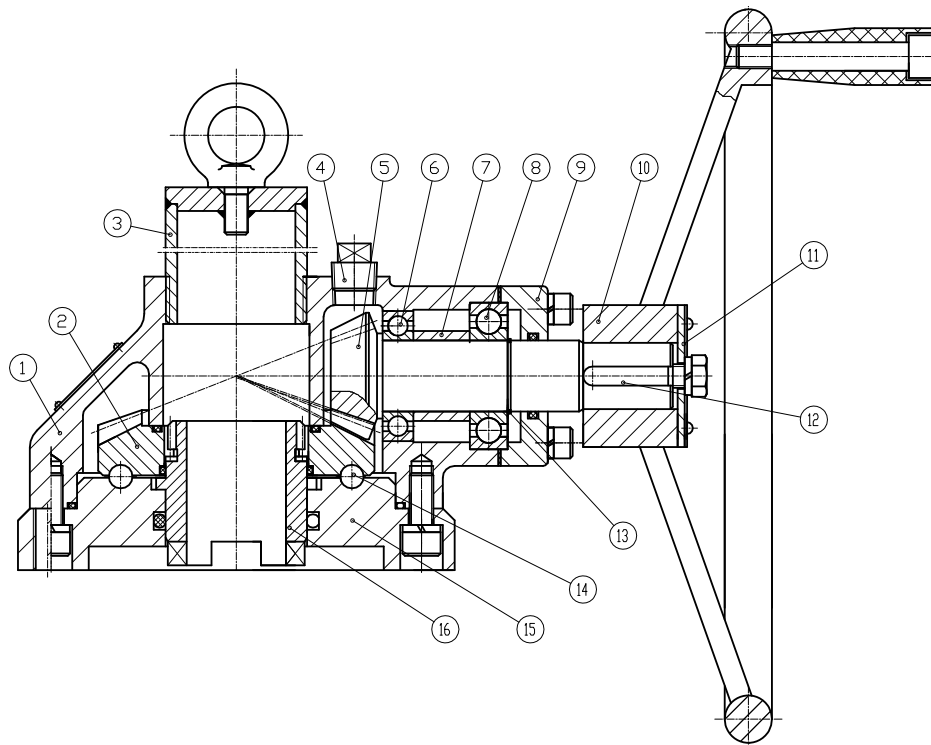
e.g. SZ75T indicates max. Torque of 750 N • m (75 kgm), thrust mode.

3 DRIVE STRUCTURE AND PARTS NAME



Hand operating actuators of thrust mode

1. Housing
2. Large bevel gear
3. Stem cap
4. Oil plug
5. Small bevel gear
6. Bearing
7. Sleeve
8. Bearing
9. Gland
10. Hand wheel
11. Washer
12. Key
13. Circlip
14. Steel ball
15. Thrust base
16. Thrust bearing
17. Attachment
18. Stem nut



Hand operating actuators of torque mode

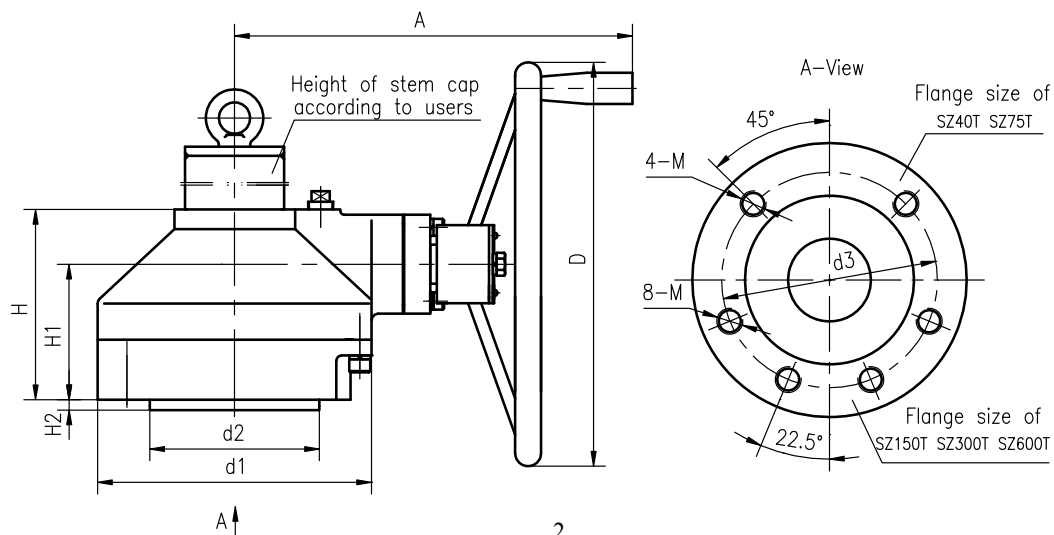
1. Housing 2. Large bevel gear 3. Stem cap 4. Oil plug 5. Small bevel gear 6. Bearing 7. Sleeve
 8. Bearing 9. Gland 10. Handwheel 11. Washer 12. Key 13. Circlip 14. Steel ball 15. Torque base
 16. Output shaft

4 MAIN TECHNICAL PARAMETERS

Item	Type	SZ40(T)	SZ75(T)	SZ150(T)	SZ300(T)	SZ600(T)
Ratio		2.5	3.3:1	4.18:1	6:1	10:1
Max torque	(N • m)	400	750	1500	3000	6000
Max axial thrust	(kN)	100	150	200	350	700
Max dia of stem	(mm)	40	44	60	75	100
Weight	(kg)	17	23	40	85	150

5 OVERALL SIZE AND CONNECTION DIMENSION

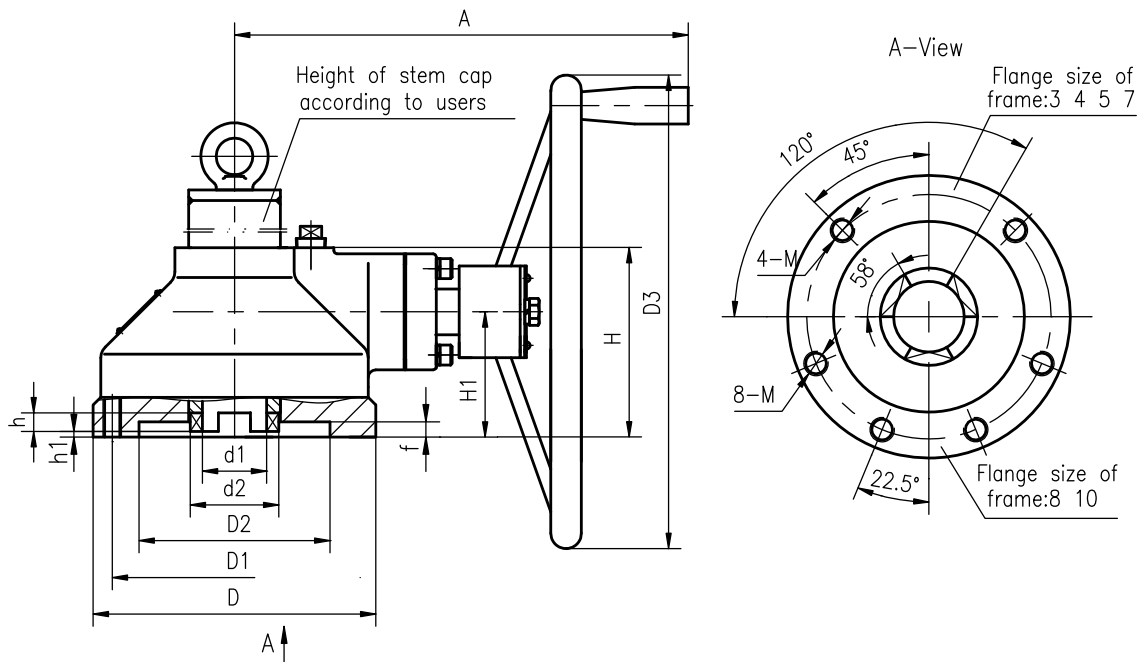
1) Overall size and connection dimension of thrust mode actuators



Overall size and connection dimension (thrust mode GB 12222)

Parameters Type	A	H	H1	H2	d1	d2(f8)	d3	D	n-M
SZ40T	315	130	90	4	175	100	140	310	4-M16 depth 28
SZ75T	335	151	104	5	210	130	165	310	4-M20 depth 32
SZ150T	335	179	121	5	290	200	254	460	8-M16 depth 30
SZ300T	431	171	124	5	350	230	298	610	8-M20 depth 35
SZ600T	506	211	162	5	415	260	356	813	8-M30 depth 45

2) Overall size and connection of torque mode actuators



Overall size and connection dimension (torque mode JB 2920)

*) Frame size

Parameter Type	*)	A	H	H1	h	h1	f	d1	d2	D	D1	D2 (H9)	D3	n-M
SZ40	3	315	110	70	10	2	8	42	58	185	160	125	310	4-M12 depth 20
SZ75	4	335	130	88	12	2	10	46	72	225	195	150	310	4-M16 depth 30
SZ150	5	335	144	96	14	2	10	60	82	275	235	180	460	4-M20 depth 36
SZ300	7	431	160	118	16	3	6	65	98	330	285	220	610	4-M24 depth 40
	8				20			80	118					380
SZ600	8	506	158	114	20	3	10	80	118	380	340	280	813	8-M20 depth 36
	10				30			105	158					510

6 OPTIONAL FUNCTIONS

1) Position indicators

There are two types of position indicators:

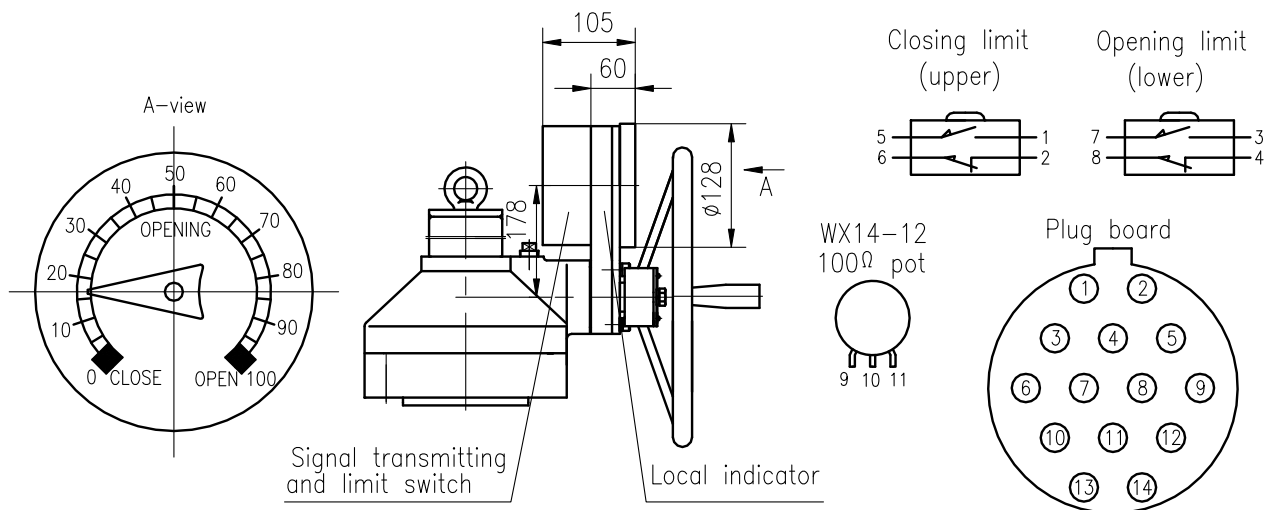
- (1) Local mechanical pointer
- (2) Local mechanical pointer also with travel limit switches and signal-transmitting potentiometer

For overall size and mounting position of the indicator on hand operating actuator see figures below.

After the indicator is mounted, the overall size of the actuator as described above does not change. Corresponding to output rotation, pointers of 10, 20, 30, 40, 60, 80, 100, 120, 160 and 200 revolutions are provided. If the actual revolution of user's hand-operating actuators is identical with the indicator, the pointer will indicate in full scales or errors to various degrees may occur.

Adjustment of local indicator: rotate and remove the cover plate, and then loosen the screw on pointer, set the pointer corresponding to valve position.

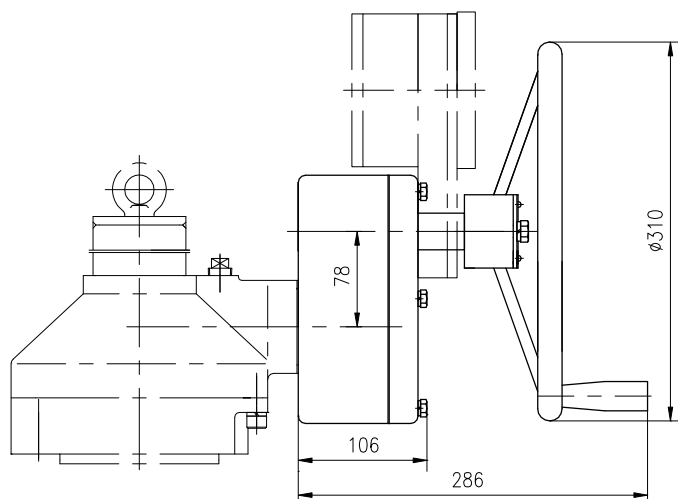
Adjustment of travel limit switches and transmitting potentiometer: Remove the back cover and close the valve to seat, and move the closing cam to press micro-switch, then tighten the fixing screw of the cam (with a screwdriver through the plug-hole aside), meanwhile make the axial of potentiometer approach the limit position and tighten the fixing screw of potentiometer gear. With this done, open the valve to predetermined position and then adjust the opening cam in the same way.



2) Optional reducer

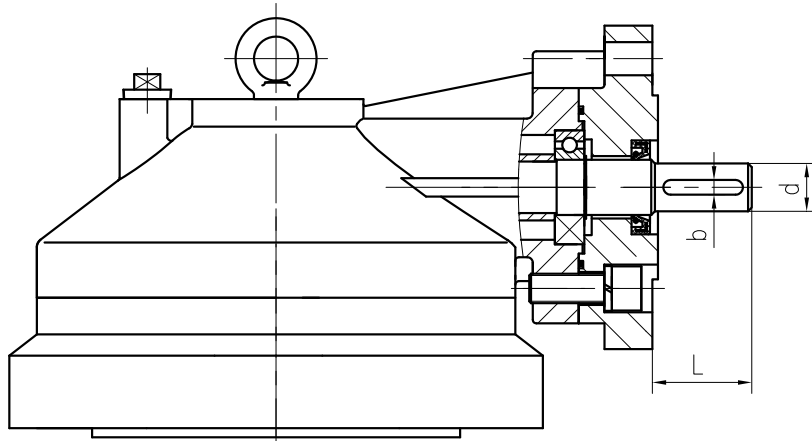
To reduce the operating force, reducers can be added to the actuators except Type SZ 40 and Type SZ 75. The reducing ration is generally 3:1 (2:1 or 3.78:1 are provided for special order)). Diameter of handwheel on the reducer is generally 310. Handwheel of 460 or 610 in diameter is also optional. Rotating direction of handwheel on actuator with reducer is the same of handwheel on actuator without reducer, i.e. rotate the handwheel clockwise to close the valve.

The above two types of position indicator are still suitable to the actuator added with reducer.



3) Combined with electrical actuator

Modification of Type SZ Hand Operating Actuator can be used as combined reducer as shown in the figure below.



Add flange to it for combination with electrical actuator. Connection size of the flange may be alternatively the flange frame in GB 12222(ISO 5210) or the flange frame in JB 2920. The final output torque is not allowed to exceed maximum torque of SZ Hand Operating actuator of corresponding specification. When ordering, consumer should declare the type of Hand Operating Actuator as well as connection size: a) flange No.(or frame No.); b) diameter of shaft end d (no more than $\Phi 30$); c) breadth of key b ; d) length of shaft from flange face L .

7 ORDERING

- 1) When ordering, users must make clear if the valve is of rising-stem or non-rising-stem. For rising-stem valve, users must define the height of stem cap.
- 2) We supply semi-manufactured copper stem nut only. It will be finished by users themselves.
- 3) Before leaving the factory, the actuators are already filled with 1# Lithium-loaded grease and need not refilled by users.
- 4) if special specifications and special supply is needed, please contact us.
- 5) Specific requirement is generally based on the contract and technical agreement and such change not present in the operation instruction.

Address: 8 Fengxi Road Wujin Hi-Tech Industrial Zone, Jiangsu Province, China

Post Code: 213164

Home Page: www.czcdf.cn

Email: yjs@czcdf.cn (Technology Dep.)

xsc@czcdf.cn (Sales Dep.)

Fax: 0519-86643393

Telephone Exchange: 0519-88898989

Actuator Sales Dep.: 0519-86642689, 89856689

Technology Dep.: 0519-89856680

Service Dep.: 0519-89856692