

Option

Mechanical indexer



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ZRS

Technical data

Option

Safety precautions

Model selection specifications
Check sheet



Option

Worm reducer HO32 to 80

ZRS

Technical data

Option

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Features

1. Mechanical indexer performance

Mechanical indexer dedicated worm reducer. Direct installation onto the input shaft enables an ideal rotation and braking operation, as well as full performance of each Mechanical indexer Series.

2. Space saving

By directly installing on the input shaft, the drive part can be made compact.
In addition, work-hours for driving part design and assembly can be reduced.

3. Clutch/brake equipment

Select between type with clutch/brake and type without clutch/brake.

4. 5 sizes in series

Mechanical indexer size enables standardized series variations.

Standard mounted worm reducer list

Standard mounting combinations are shown below.

Check the reducer load torque (T_{er}) and worm reducer rated output torque before use.

Body model No.		HO reducer Size	Reduction ratio Values in () are for special speed ratio
ZRS	04	HO32	1/20, 1/40, 1/60, (1/30, 1/50)
	05	HO32	1/20, 1/40, 1/60, (1/30, 1/50)
	06	HO40	1/20, 1/40, 1/60, (1/30, 1/50)
	08	HO50	1/20, 1/40, 1/60, (1/30, 1/50)
	11	HO60	1/20, 1/40, 1/60, (1/30, 1/50)
	14	HO80	1/20, 1/40, 1/60, (1/30, 1/50)

How to order

HO50 - 1/40 - Y - A - 5

1 2 3 4 5

1 Model	2 Reduction ratio	3 With/without clutch brake	4 Worm axis layout									
HO32	1/20	Y With clutch brake	<table border="1"> <thead> <tr> <th></th> <th>With clutch brake</th> <th>Without clutch brake</th> </tr> </thead> <tbody> <tr> <td>A</td> <td></td> <td></td> </tr> <tr> <td>B</td> <td></td> <td></td> </tr> </tbody> </table>		With clutch brake	Without clutch brake	A			B		
	With clutch brake	Without clutch brake										
A												
B												
HO40	1/30	N Without clutch brake										
HO50	1/40											
HO60	1/50											
HO80	1/60											

Note) The deceleration ratio of 1/30 and 1/50 is a special speed ratio, so check the delivery date.

* A: Input axis on the left axis toward you, B: Input axis on the right axis toward you

5 Reducer orientation

Direction of gravity ↓

	Worm Axis Layout-A	Worm Axis Layout-B		Worm Axis Layout-A	Worm Axis Layout-B
1			4		
2			5		
3			6		

a: Lubrication port b: Oil level indicator c: Oil discharge port

* Grease nipple is included at shipment.

Option

Worm reducer [HO32]

Characteristics table

Standard mounting body		ZRS-04/05				
Reduction ratio () is the special speed ratio		1/20, 1/40, 1/60, (1/30, 1/50)				
Internal moment of inertia (converted to input axis)		1/20	(1/30)	1/40	(1/50)	1/60
		$4.28 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$3.60 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$3.95 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$2.88 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$3.88 \times 10^{-6} \text{kg} \cdot \text{m}^2$
Input shaft max. rotation speed		1800rpm				
Input axis allowable OHL	With C/B	78.5 N				
	Without C/B	147 N				
Internal friction torque (Tinr)	5°C (5500mm ² /s)	0.3 N·m				
	10°C (3200mm ² /s)	0.24 N·m				
ISO viscosity grade	15°C (2000mm ² /s)	0.19 N·m				
	20°C (1400mm ² /s)	0.16 N·m				
VG320	30°C (650 mm ² /s)	0.12 N·m				
	40°C (320 mm ² /s)	0.084 N·m				
Weight	With C/B	5.0 kg				
	Without C/B	4.0 kg				
Lubricant (at shipment)		Bonnock TS320 (ENEOS)				
Oil amount		0.05 to 0.10ℓ				
Worm torsion direction		Right torsion				

Clutch/brake characteristics table

		Clutch (102-04-13-K-35G)	Brake (112-04-12-K-35G)
Kinematic friction torque		1.2 N·m	1.2 N·m
Rotary moment of inertia		$1.41 \times 10^{-5} \text{kg} \cdot \text{m}^2$	-
Armature moment of inertia		$4.38 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$6.15 \times 10^{-6} \text{kg} \cdot \text{m}^2$
Excitation voltage		24 VDC	24 VDC
Coil (20°C)	Current	0.33A	0.33A
	Capacity	8 W	8 W
	Resistance	72 Ω	72 Ω

Rated output torque (N·m)

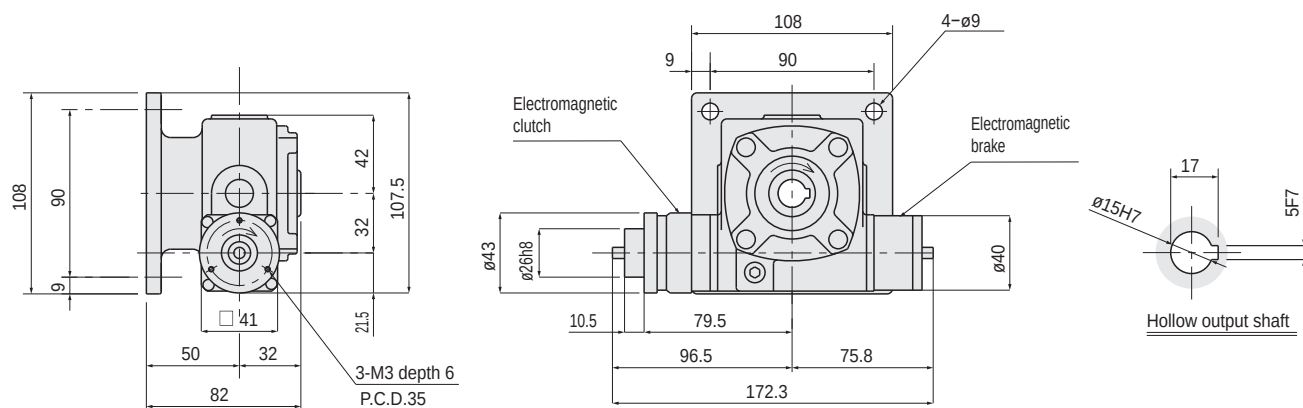
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800	With C/B	17	22	22	23	19
	Without C/B	20	26	22	23	19
1700	With C/B	17	22	22	23	19
	Without C/B	21	27	22	23	19
1600	With C/B	17	22	23	23	19
	Without C/B	21	27	23	23	19
1500	With C/B	16	22	23	24	20
	Without C/B	22	28	23	24	20
1400	With C/B	16	22	24	24	20
	Without C/B	22	28	24	24	20
1300	With C/B	16	22	25	25	21
	Without C/B	23	29	25	25	21
1200	With C/B	16	22	25	26	21
	Without C/B	23	30	25	26	21
1100	With C/B	16	22	25	26	21
	Without C/B	24	31	26	26	21
1000	With C/B	16	21	25	27	21
	Without C/B	25	32	26	27	21

Efficiency (%)

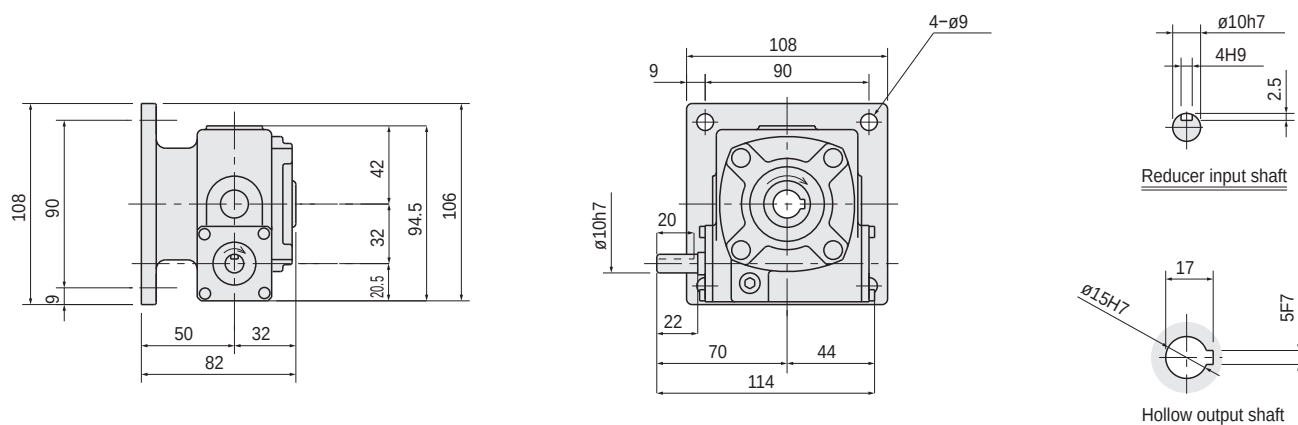
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800		69	62	57	54	48
1700		69	61	56	54	47
1600		69	61	56	53	47
1500		68	61	55	53	47
1400		68	60	55	53	46
1300		68	60	55	52	46
1200		67	60	54	51	45
1100		67	59	53	50	44
1000		66	58	52	50	43

Dimensions

● With C/B



● Without C/B



Oil level indicator position and supply/exhaust port according to HO reducer mounting orientation

Orientation	1	2	3	4	5	6
Dimensions						

Option

Worm reducer [HO40]

Characteristics table

Standard mounting body		ZRS-06				
Reduction ratio () is the special speed ratio		1/20, 1/40, 1/60, (1/30, 1/50)				
Internal moment of inertia (converted to input axis)		1/20	(1/30)	1/40	(1/50)	1/60
		$1.44 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$1.33 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$1.32 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$1.15 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$1.23 \times 10^{-5} \text{kg} \cdot \text{m}^2$
Input shaft max. rotation speed		1800rpm				
Input axis allowable OHL	With C/B	104 N				
	Without C/B	196 N				
Internal friction torque (Tinr)	5°C(5500mm ² /s)	0.53 N·m				
	10°C(3200mm ² /s)	0.42 N·m				
	15°C(2000mm ² /s)	0.34 N·m				
	20°C(1400mm ² /s)	0.29 N·m				
	30°C(650 mm ² /s)	0.20 N·m				
ISO viscosity grade VG320	40°C(320 mm ² /s)	0.15 N·m				
Weight	With C/B	6.0 kg				
	Without C/B	5.0 kg				
Lubricant (at shipment)		Bonnock TS320 (ENEOS)				
Oil amount		0.10 to 0.15ℓ				
Worm torsion direction		Right torsion				

Clutch/brake characteristics table

		Clutch (102-05-13-K-35G)	Brake (112-05-12-K-35G)
Kinematic friction torque		2.4 N·m	2.4 N·m
Rotary moment of inertia		$3.15 \times 10^{-5} \text{kg} \cdot \text{m}^2$	-
Armature moment of inertia		$9.08 \times 10^{-6} \text{kg} \cdot \text{m}^2$	$1.38 \times 10^{-5} \text{kg} \cdot \text{m}^2$
Excitation voltage		24 VDC	24 VDC
Coil (20°C)	Current	0.42A	0.42A
	Capacity	10 W	10 W
	Resistance	58 Ω	58 Ω

Rated output torque (N·m)

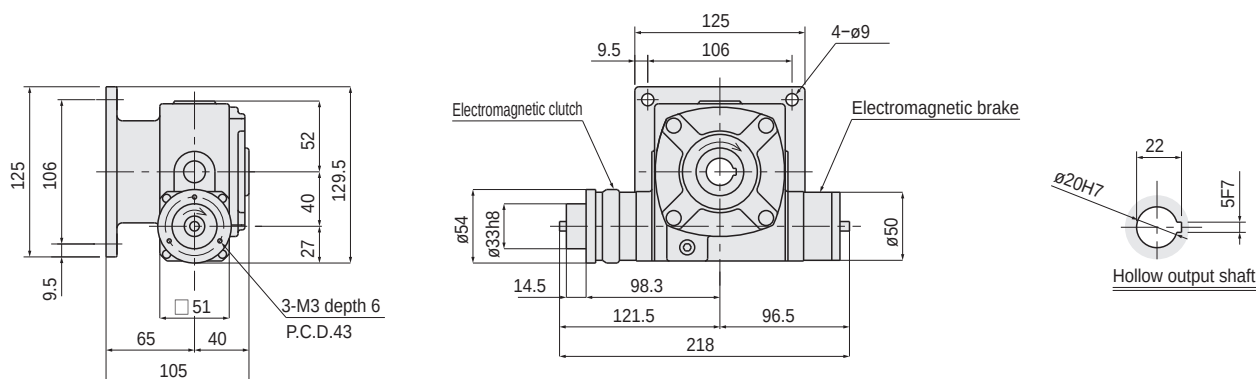
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800	With C/B	34	46	42	41	33
	Without C/B	35	47	42	41	33
1700	With C/B	34	45	42	42	33
	Without C/B	36	48	42	42	33
1600	With C/B	34	45	43	43	34
	Without C/B	37	49	43	43	34
1500	With C/B	34	45	44	43	35
	Without C/B	38	51	44	43	35
1400	With C/B	33	45	46	45	35
	Without C/B	39	52	46	45	35
1300	With C/B	33	44	47	46	36
	Without C/B	40	53	47	46	36
1200	With C/B	33	44	48	47	37
	Without C/B	41	54	48	47	37
1100	With C/B	33	43	49	48	38
	Without C/B	43	56	49	48	38
1000	With C/B	33	43	51	50	39
	Without C/B	44	57	51	50	39

Efficiency (%)

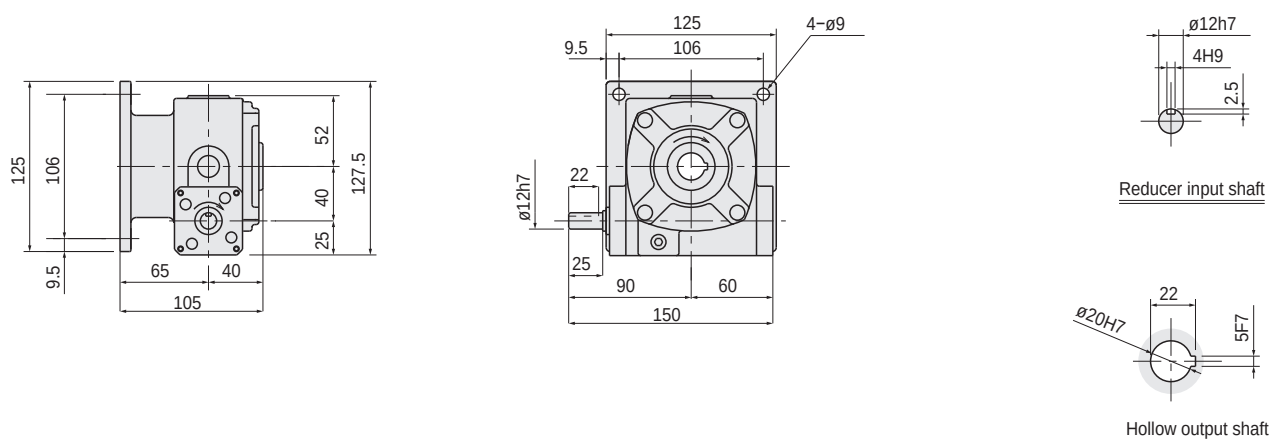
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800		71	64	61	56	50
1700		70	63	60	55	49
1600		70	63	60	55	49
1500		70	62	59	54	48
1400		69	62	59	54	48
1300		69	61	58	54	47
1200		68	61	58	53	47
1100		68	60	57	53	46
1000		68	60	56	52	46

Dimensions

● With C/B



● Without C/B



Oil level indicator position and supply/exhaust port according to HO reducer mounting orientation

Orientation	1	2	3	4	5	6
Dimensions						

Option

Worm reducer [HO50]

Characteristics table

Standard mounting body		ZRS-08				
Reduction ratio		1/20, 1/40, 1/60, (1/30, 1/50)				
Internal moment of inertia (converted to input axis)		1/20	1/30	1/40	1/50	1/60
		$1.79 \times 10^{-5} \text{kg}\cdot\text{m}^2$	$3.15 \times 10^{-5} \text{kg}\cdot\text{m}^2$	$1.48 \times 10^{-5} \text{kg}\cdot\text{m}^2$	$3.17 \times 10^{-5} \text{kg}\cdot\text{m}^2$	$1.23 \times 10^{-5} \text{kg}\cdot\text{m}^2$
Input shaft max. rotation speed		1800rpm				
Input axis allowable OHL	With C/B	196 N				
	Without C/B	491 N				
Internal friction torque (Tinr)	5°C (5500mm ² /s)	0.92 N·m				
	10°C (3200mm ² /s)	0.72 N·m				
	15°C (2000mm ² /s)	0.59 N·m				
	20°C (1400mm ² /s)	0.50 N·m				
ISO viscosity grade VG320	30°C (650 mm ² /s)	0.35 N·m				
	40°C (320 mm ² /s)	0.26 N·m				
Weight	With C/B	9.5 kg				
	Without C/B	8.0 kg				
Lubricant (at shipment)		Bonnock TS320 (ENEOS)				
Oil amount		0.2ℓ				
Worm torsion direction		Right torsion				

Clutch/brake characteristics table

		Clutch (101-06-15-K-35G)	Brake (111-06-12-K-35G)
Static friction torque		5.5 N·m	5.5 N·m
Kinematic friction torque		5.0 N·m	5.0 N·m
Rotary moment of inertia		$7.35 \times 10^{-5} \text{kg}\cdot\text{m}^2$	-
Armature moment of inertia		$1.05 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$6.03 \times 10^{-5} \text{kg}\cdot\text{m}^2$
Excitation voltage		24 VDC	24 VDC
Coil (20°C)	Current	0.46A	0.46A
	Capacity	11 W	11 W
	Resistance	52 Ω	52 Ω

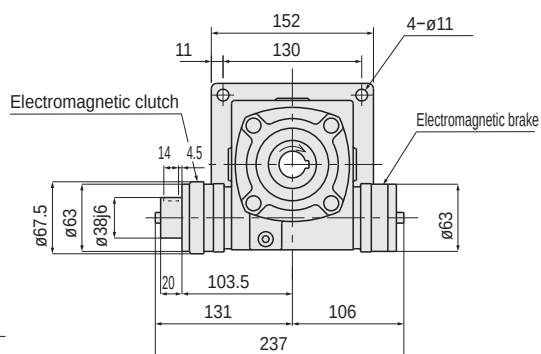
Rated output torque (N·m)

Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800	With C/B	64	70	68	56	59
	Without C/B	64	70	68	56	59
1700	With C/B	65	72	69	57	60
	Without C/B	65	72	69	57	60
1600	With C/B	66	73	70	58	61
	Without C/B	66	73	70	58	61
1500	With C/B	68	74	72	59	63
	Without C/B	68	74	72	59	63
1400	With C/B	70	76	74	61	64
	Without C/B	70	76	74	61	64
1300	With C/B	72	77	76	62	66
	Without C/B	72	77	76	62	66
1200	With C/B	72	79	77	64	67
	Without C/B	75	79	77	64	67
1100	With C/B	72	81	79	65	69
	Without C/B	77	81	79	65	69
1000	With C/B	72	84	81	67	71
	Without C/B	78	84	81	67	71

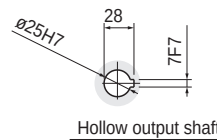
Efficiency (%)

Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800		75	67	64	57	58
1700		74	66	64	56	57
1600		74	65	63	55	57
1500		74	65	63	54	56
1400		73	64	62	54	56
1300		73	63	62	53	55
1200		72	63	61	52	55
1100		72	62	61	52	54
1000		72	61	60	51	53

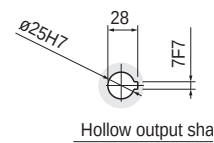
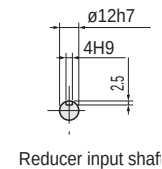
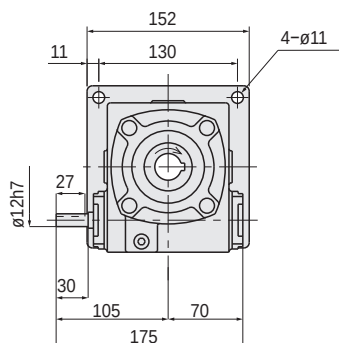
● With C/B



Reducer input shaft



- Without C/B



Orientation	1	2	3	4	5	6
Dimensions						

Option

Worm reducer [HO60]

Characteristics table

Standard mounting body		ZRS-11				
Reduction ratio		1/20, 1/40, 1/60, (1/30, 1/50)				
Internal moment of inertia (converted to input axis)		1/20	1/30	1/40	1/50	1/60
		$5.64 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$7.19 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$5.13 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$4.85 \times 10^{-5} \text{kg} \cdot \text{m}^2$	$2.48 \times 10^{-5} \text{kg} \cdot \text{m}^2$
Input shaft max. rotation speed		1800rpm				
Input axis allowable OHL	With C/B	294 N				
	Without C/B	785 N				
Internal friction torque (Tinr)	5°C (5500mm ² /s)	1.5 N·m				
	10°C (3200mm ² /s)	1.1 N·m				
	15°C (2000mm ² /s)	0.93 N·m				
	20°C (1400mm ² /s)	0.79 N·m				
ISO viscosity grade VG320	30°C (650 mm ² /s)	0.56 N·m				
	40°C (320 mm ² /s)	0.41 N·m				
Weight	With C/B	14.5 kg				
	Without C/B	11.0 kg				
Lubricant (at shipment)		Bonnock TS320 (ENEOS)				
Oil amount		0.3ℓ				
Worm torsion direction		Right torsion				

Clutch/brake characteristics table

		Clutch (101-08-15-K-35G)	Brake (111-08-12-K-35G)
Static friction torque		11 N·m	11 N·m
Kinematic friction torque		10 N·m	10 N·m
Rotary moment of inertia		$2.24 \times 10^{-4} \text{kg} \cdot \text{m}^2$	-
Armature moment of inertia		$3.00 \times 10^{-4} \text{kg} \cdot \text{m}^2$	$1.71 \times 10^{-4} \text{kg} \cdot \text{m}^2$
Excitation voltage		24 VDC	24 VDC
Coil (20°C)	Current	0.63A	0.63A
	Capacity	15 W	15 W
	Resistance	38 Ω	38 Ω

Rated output torque (N·m)

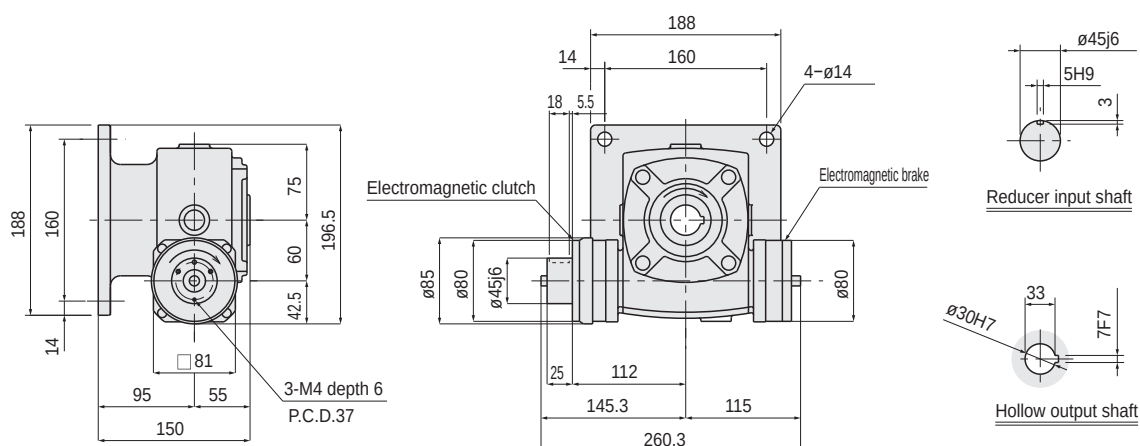
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800	With C/B	90	112	99	101	95
	Without C/B	90	112	99	101	95
1700	With C/B	92	115	101	103	97
	Without C/B	92	115	101	103	97
1600	With C/B	93	118	103	105	99
	Without C/B	93	118	103	105	99
1500	With C/B	96	120	106	107	101
	Without C/B	96	120	106	107	101
1400	With C/B	99	123	108	109	103
	Without C/B	99	123	108	109	103
1300	With C/B	102	126	111	112	106
	Without C/B	102	126	111	112	106
1200	With C/B	105	128	114	115	108
	Without C/B	105	128	114	115	108
1100	With C/B	108	131	117	119	111
	Without C/B	108	131	117	119	111
1000	With C/B	111	136	121	122	114
	Without C/B	111	136	121	122	114

Efficiency (%)

Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800		74	68	63	63	60
1700		74	68	63	62	59
1600		73	67	62	62	59
1500		73	67	61	61	58
1400		72	66	60	61	58
1300		71	65	60	60	57
1200		71	64	59	60	57
1100		70	63	58	59	56
1000		70	63	57	58	56

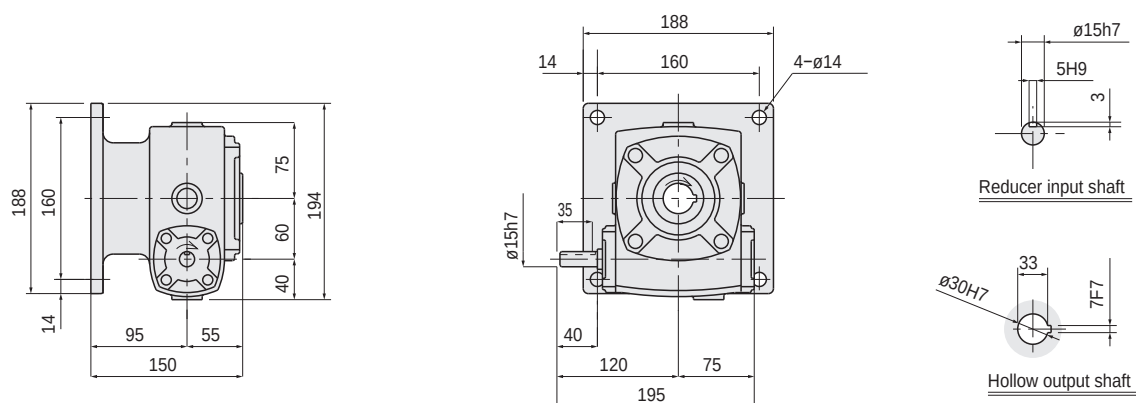
Dimensions

● With C/B



*The positional relationship between the key groove and the 3-M4 screw is arbitrary.

● Without C/B



Oil level indicator position and supply/exhaust port according to HO reducer mounting orientation

Orientation	1	2	3	4	5	6
Dimensions						

Option

WormReducer [HO80]

Characteristics table

Standard mounting body		ZRS-14				
Reduction ratio		1/20, 1/40, 1/60, (1/30, 1/50)				
Internal moment of inertia (converted to input axis)		1/20	1/30	1/40	1/50	1/60
		$2.65 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$3.20 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$2.46 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$2.44 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$1.62 \times 10^{-4} \text{kg}\cdot\text{m}^2$
Input shaft max. rotation speed		1800rpm				
Input axis allowable OHL	With C/B	687 N				
	Without C/B	1570 N				
Internal friction torque (Tinr)	5°C (5500mm ² /s)	2.9 N·m				
	10°C (3200mm ² /s)	2.2 N·m				
	15°C (2000mm ² /s)	1.8 N·m				
	20°C (1400mm ² /s)	1.4 N·m				
ISO viscosity grade VG320	30°C (650 mm ² /s)	1.0 N·m				
	40°C (320 mm ² /s)	0.73 N·m				
Weight	With C/B	35.0 kg				
	Without C/B	30.0 kg				
Lubricant (at shipment)		Bonnock TS320 (ENEOS)				
Oil amount		0.7 to 1.0ℓ				
Worm torsion direction		Right torsion				

Clutch/brake characteristics table

		Clutch (101-10-15-K-35G)	Brake (111-10-12-K-35G)
Static friction torque		22 N·m	22 N·m
Kinematic friction torque		20 N·m	20 N·m
Rotary moment of inertia		$6.78 \times 10^{-4} \text{kg}\cdot\text{m}^2$	-
Armature moment of inertia		$9.45 \times 10^{-4} \text{kg}\cdot\text{m}^2$	$6.63 \times 10^{-4} \text{kg}\cdot\text{m}^2$
Excitation voltage		24 VDC	24 VDC
Coil (20°C)	Current	0.83A	0.83A
	Capacity	20 W	20 W
	Resistance	29 Ω	29 Ω

Rated output torque (N·m)

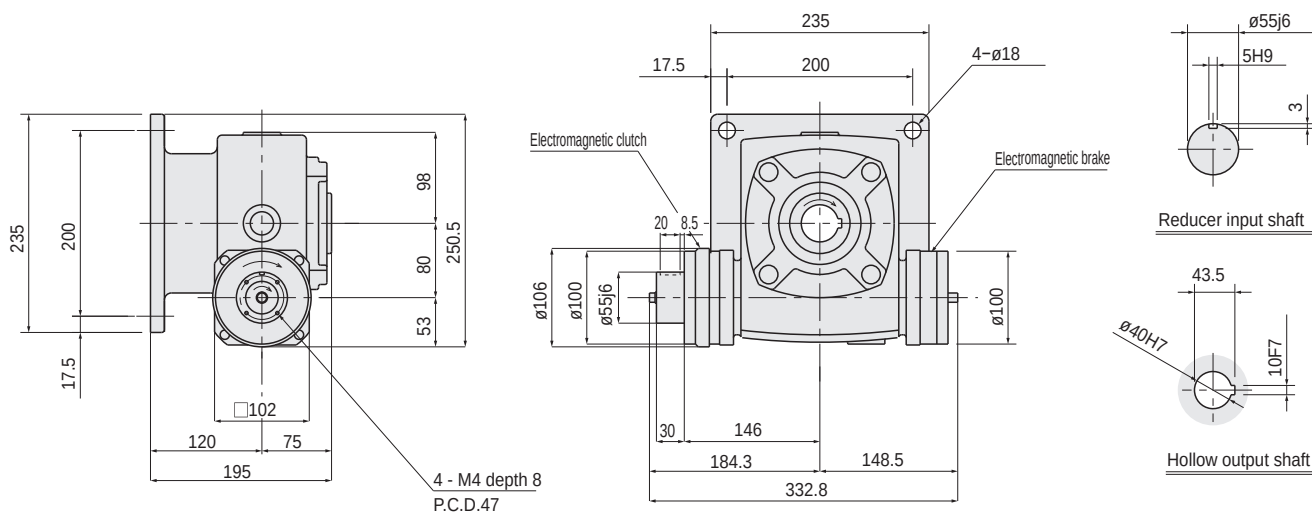
Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800	With C/B	190	237	210	207	195
	Without C/B	190	237	210	207	195
1700	With C/B	195	242	214	211	200
	Without C/B	195	242	214	211	200
1600	With C/B	200	247	219	217	206
	Without C/B	200	247	219	217	206
1500	With C/B	206	253	225	222	211
	Without C/B	206	253	225	222	211
1400	With C/B	211	260	231	229	215
	Without C/B	211	260	231	229	215
1300	With C/B	216	268	237	233	219
	Without C/B	216	268	237	233	219
1200	With C/B	225	275	245	239	223
	Without C/B	225	275	245	239	223
1100	With C/B	232	284	252	244	230
	Without C/B	232	284	252	244	230
1000	With C/B	238	293	259	252	237
	Without C/B	238	293	259	252	237

Efficiency (%)

Reduction ratio		1/20	(1/30)	1/40	(1/50)	1/60
Input rpm						
1800		75	70	65	63	61
1700		75	69	64	63	60
1600		75	69	64	62	60
1500		74	69	64	62	60
1400		74	68	63	61	59
1300		74	68	63	61	58
1200		73	67	62	59	57
1100		73	66	61	58	56
1000		72	65	60	57	55

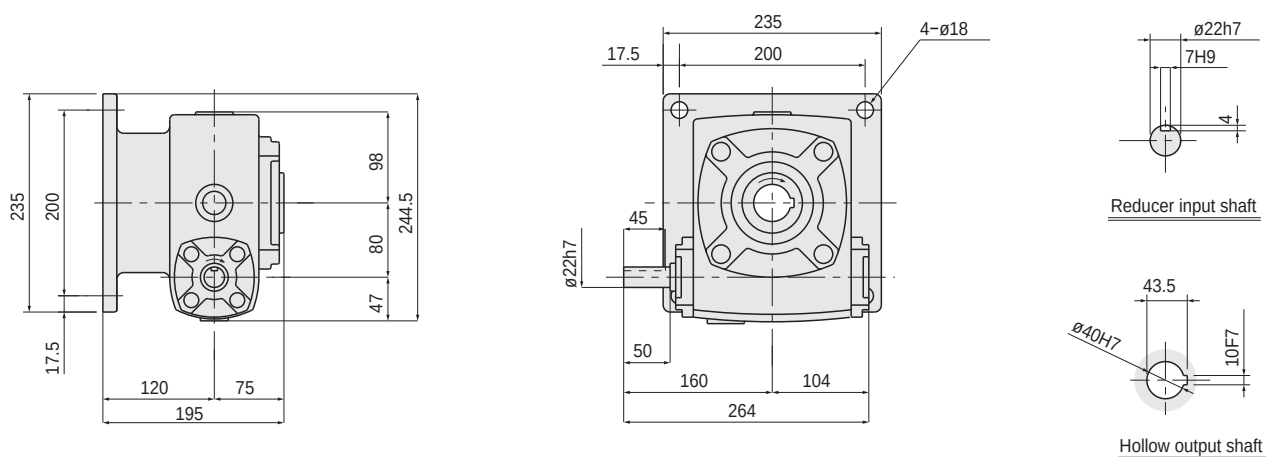
Dimensions

● With C/B



*The positional relationship between the key groove and the 4-M4 screw is arbitrary.

- Without C/B



Oil level indicator position and supply/exhaust port according to HO reducer mounting orientation

Orientation	1	2	3	4	5	6
Dimensions	Oil filler Rc3/8 Oil level indicator (Both sides) Oil discharge port (Both sides) Rc3/8 65 90 120 50 20 Land Heaven	Oil filler (Both sides) Rc3/8 Oil level indicator (Both sides) Oil discharge port (Both sides) Rc3/8 65 90 120 50 20 Land Heaven	Oil filler (Both sides) Rc3/8 Oil level indicator (Both sides) Oil discharge port (Both sides) Rc3/8 65 90 120 50 20 Land Heaven	Oil filler Rc3/8 Oil level indicator (Both sides) Oil discharge port (Both sides) Rc3/8 65 90 120 50 20 Land Heaven	Grease nipple Oil filler Rc3/8 Oil level indicator Oil discharge port Rc3/8 65 90 120 50 20 Land Heaven	Oil filler Rc3/8 Oil level indicator Oil discharge port Rc3/8 65 90 120 50 20 Land Heaven



Option

Torque saver TSF

Overload protection device (for table mounting)

ZRS

Technical data

Option

Safety precautions

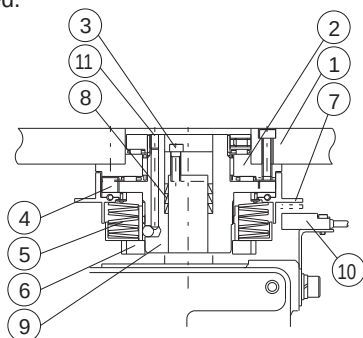
Model selection specifications
Check sheet

Features

1. High return accuracy
2. High rotation rigidity
3. Reliably released during overload
4. Release torque can be adjusted continuously
5. Equipped with one-point setting function
6. Overload detection possible (in combination with proximity switch)
7. Higher thrust and radial rigidity

Operational overview

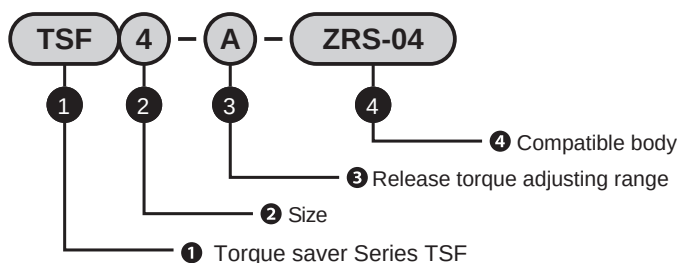
The release torque is adjusted by changing the pressure of the ⑤ spring with the ⑥ adjusting nut. When an overload exceeding the release torque occurs on the table ①, the roller ④ held in the groove of the drive plate ② is pushed out of the groove by the spring pressure ⑤, and the torque transmitted from the output shaft is cut off. At this time, the ⑦ pusher plate moves and can be detected by the ⑩ proximity switch. After the overload is removed, the table automatically returns to its original position when the table is manually rotated.



Mechanical index

①	Table	⑦	Pusher plate
②	Drive plate	⑧	Taper ring
③	Hexagon socket head cap screw	⑨	Drive boss
④	Roller	⑩	Proximity switch
⑤	Spring	⑪	Lock pin
⑥	Adjusting nut		

How to order (when ordering separately without a torque saver mounted on the Mechanical indexer)



Body model No.		Torque saver
ZRS	04	TSF4
		TSF5
	05	TSF5
		TSF6
	06	TSF6
	08	TSF8
	11	TSF11
	14	TSF14

Refer to the table at right for the applicable body of ④.

(CAUTION)

- * When ordering a torque saver as a Discrete unit, please confirm the model number of the main unit to be installed. The applicable main unit shown on the TSF nameplate is uniformly listed as "ZRS-□□□" according to the shaft hole diameter, which may differ from the main unit to be installed.
- * When ordering the torque saver as a Discrete unit, please pay attention to the output shaft specifications of the main unit to which the torque saver will be attached.
- * Depending on the specifications, the appropriate release torque may not be set even if the Torque Saver is installed. Please confirm that the release torque of the torque saver does not exceed the dynamic rated output torque of the Mechanical indexer. If there is any problem, please contact CKD at the time of model selection.

Positioning pin hole dimension (made to order)

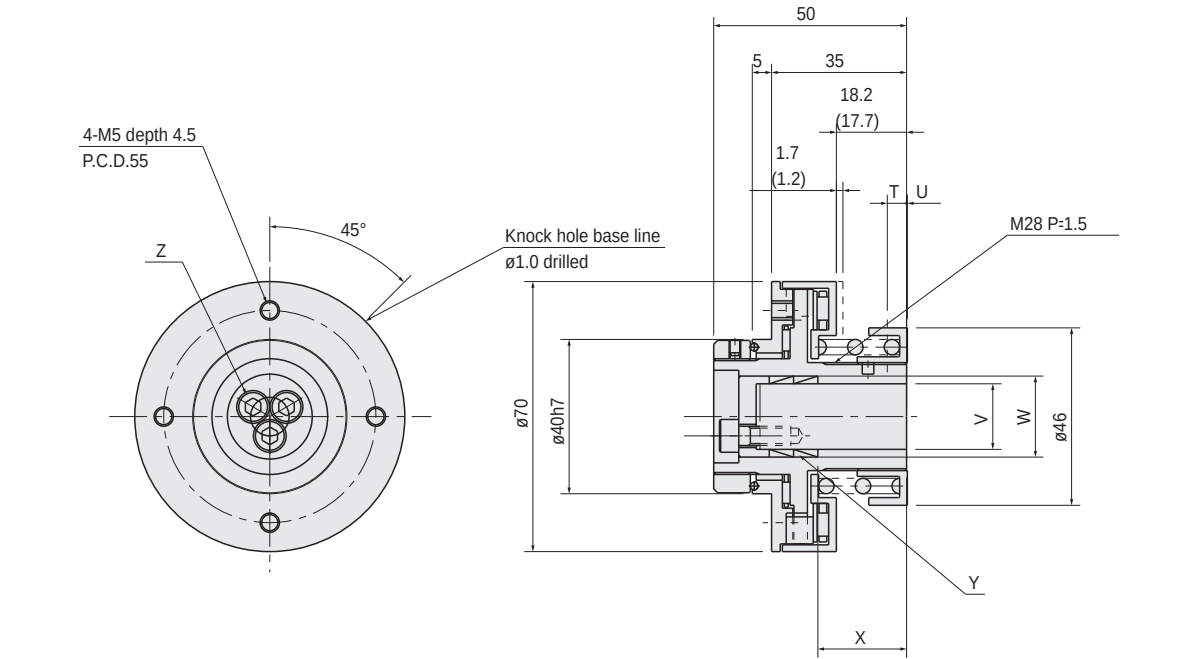
Size	TSF4	TSF5	TSF6
Pitch			
Reference hole diameter	ø5H7 depth 3 P.C.D.55	ø6H7 depth 5 P.C.D.75	ø6H7 depth 7 P.C.D.100

Size	TSF8	TSF11	TSF14
Pitch			
Reference hole diameter	ø8H7 depth 7 P.C.D.120	ø10H7 depth 11 P.C.D.150	ø12H7 depth 12 P.C.D.180

Option

Torque saver [TSF4]

Dimentions



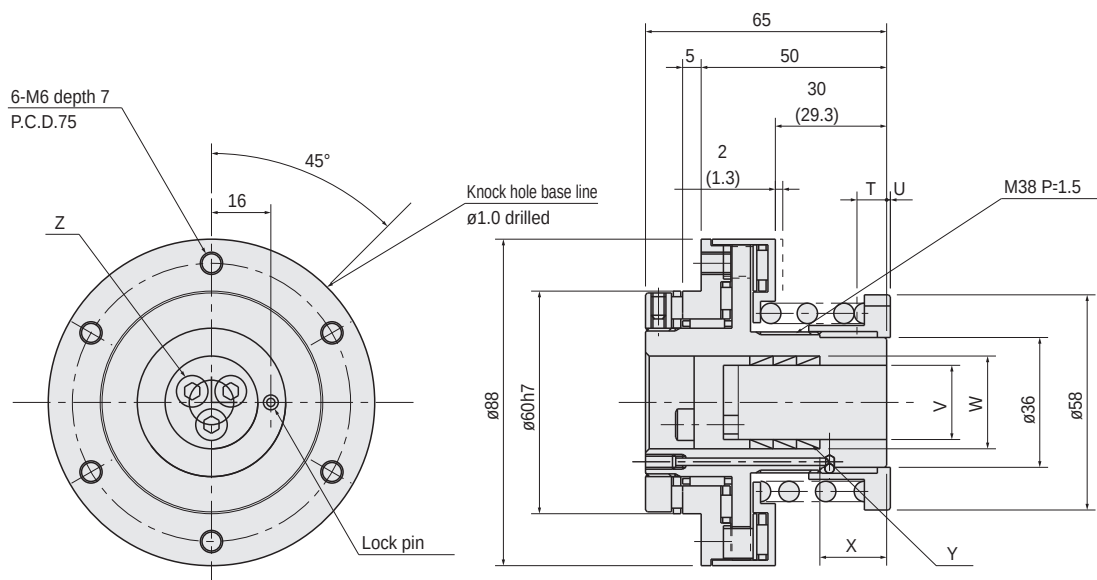
Note) Dimensions in () indicate dimensions for models A and C.

Model	Release torque Adjusting range (N·m)	Allowable thrust force (N)	Allowable radial force (N)	Allowable bending moment (N·m)	Moment of inertia (kg·m ²)	Weight (kg)	Torque change amount per rotation of the adjusting nut (N·m)	T	U
TSF4	A 1.47 to 4.91	392	196	9.81	2.65×10 ⁻⁴	0.56	1.47	5.3	0.7
	B 1.96 to 7.85						2.94	5.8	0.2
	C 2.94 to 12.8						3.24	5.3	0.7
	D 5.40 to 21.6						5.89	5.8	0.2

Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-04	ø17 ^{+0.02} ₀	ø21H7	23	2-17×21(S)	3-M5 Special hexagon socket head cap screw	3-M5 depth 10 (P.C.D.9)

U : Adjusting nut popping out at torque 0N·m
T : Max. tightening amount
Contact CKD for information on accuracy.

Dimensions



Note) Dimensions in () indicate dimensions for models A and C.

Model	Release torque Adjusting range (N·m)	Allowable thrust force (N)	Allowable radial force (N)	Allowable bending moment (N·m)	Moment of inertia (kg·m ²)	Weight (kg)	Adjusting nut per rotation Torque change rate (N·m)	T	U
TSF5	A 2.94 to 7.85	7850	3430	147	1.01×10 ⁻³	1.34	1.18	10.3	1.7
	B 3.92 to 11.8						2.26	11.0	1.0
	C 9.81 to 29.4						4.91	9.3	2.7
	D 19.6 to 58.9						9.81	10.0	2.0

Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-04	ø17 ^{+0.02} ₀	ø21H7	23	2-17×21(S)	3-M5 Special hexagon socket head cap screw	3-M5 depth 10 (P.C.D.9)
ZRS-05	ø20 ^{+0.02} ₀	ø25H7	18	3-20×25(S)	3-M5 Hexagon socket head cap screw	3-M5 depth 12 (P.C.D.12)

U : Adjusting nut popping out at torque 0N·m

T : Max. tightening amount

Contact CKD for information on accuracy.

ZRS

Technical data

Option

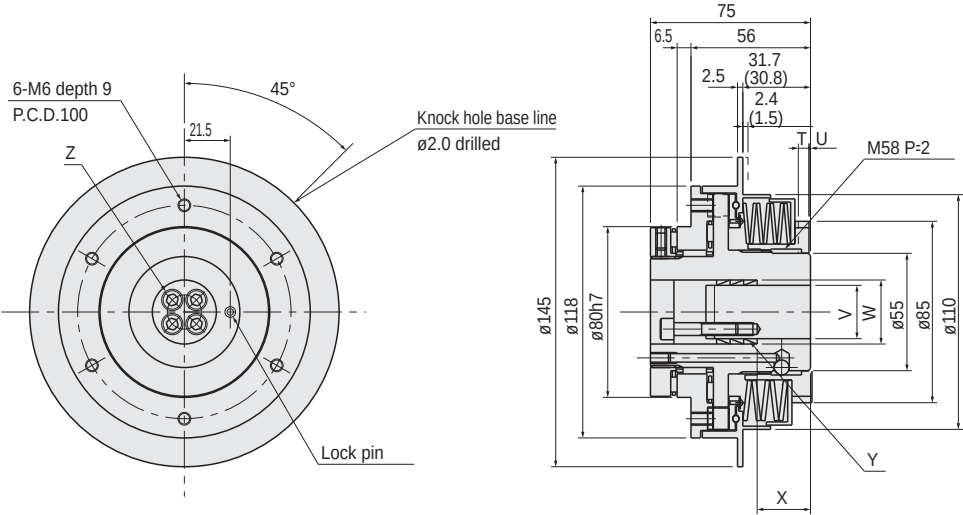
Safety precautions

Model selection specifications
Check sheet

Option

Torque saver [TSF6]

Dimintions



Note) Dimensions in () indicate dimensions for models A and C.

Model	Release torque Adjusting range (N·m)	Allowable thrust force (N)	Allowable radial force (N)	Allowable bending moment (N·m)	Moment of inertia (kg·m ²)	Weight (kg)	Adjusting nut per rotation Torque change rate (N·m)	T	U
TSF6	A 9.81 to 29.4	9810	6870	196	5.47×10 ⁻³	3.7	14.7	5.4	1.6
	B 19.6 to 58.9						26.5	6.3	0.7
	C 39.2 to 118						39.2	5.8	0.2
	D 58.9 to 177						70.6	6.7	-0.7

Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-05	ø20 ^{+0.02} ₀	ø25H7	18	3-20×25(S)	3-M5 Hexagon socket head cap screw	3-M5 depth 12 (P.C.D.12)
ZRS-06	ø25H6	ø30H7	25	3-25×30(S)	4-M6 Hexagon socket head cap screw	4-M6 depth 18 (P.C.D.16)

U : Adjusting nut popping out at torque 0N·m
T : Max. tightening amount
Contact CKD for information on accuracy.

ZRS

Option



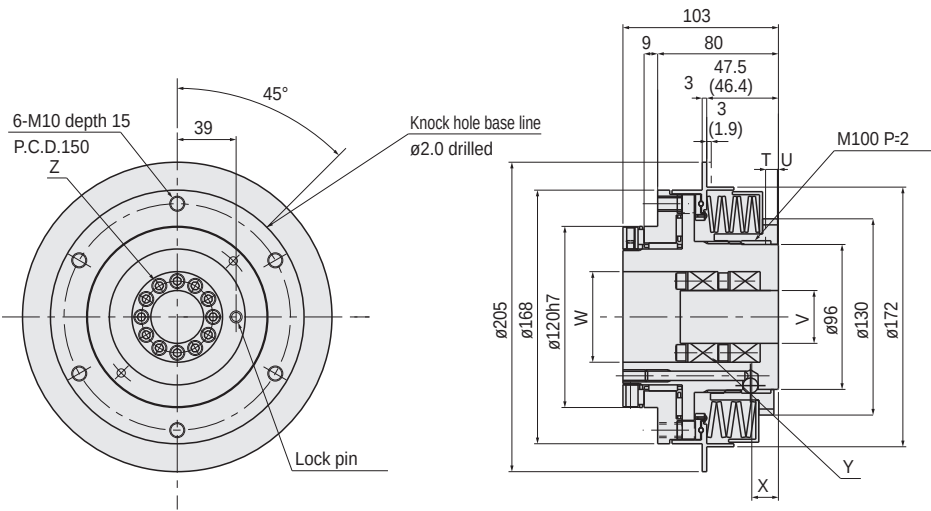
Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-08	ø30H6	ø55H7	40	1-30x55	10-M6 Hexagon socket head cap screw	-

Contact CKD for information on accuracy.

Option

Torque saver [TSF11]

Dimensions



Note) Dimensions in () indicate dimensions for models A and C.

Model		Release torque Adjusting range (N·m)	Allowable thrust force (N)	Allowable radial force (N)	Allowable bending moment (N·m)	Moment of inertia (kg·m ²)	Weight (kg)	Adjusting nut per rotation Torque change rate (N·m)	T	U
TSF11	A	68.7 to 196	21600	14700	687	3.74×10 ⁻²	11.8	64.7	13.4	0.6
	B	88.3 to 294						108	14.5	-0.5
	C	216 to 589						128	11.9	-1.9
	D	294 to 1180						275	13.0	-3.0

Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-11	ø35H6	ø60H7	40 16.5	1-35×60 2- "	12-M6 Hexagon socket head cap screw	-

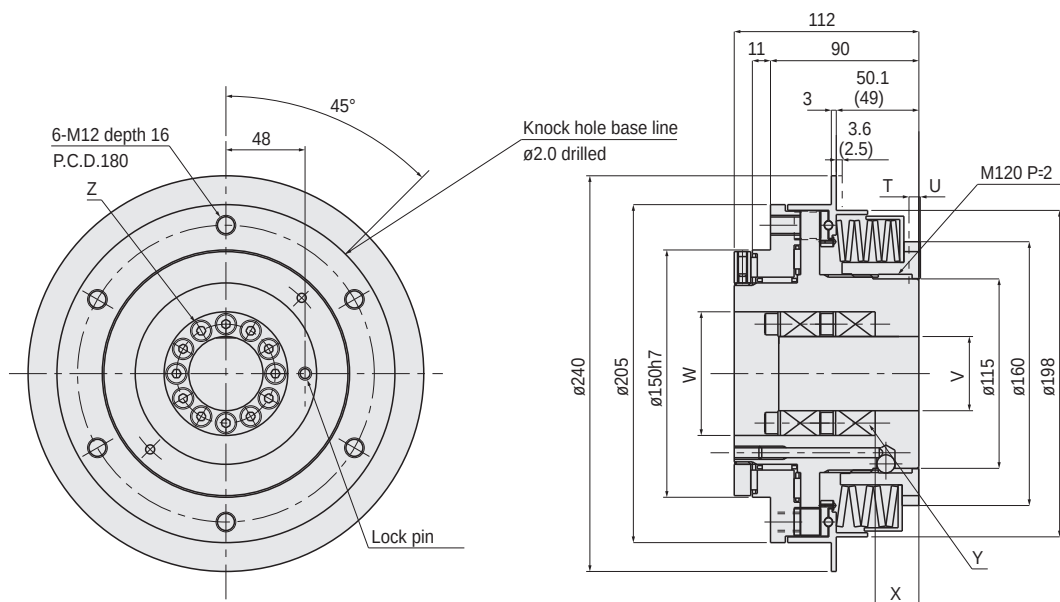
*The lower row of X and Y in the table above indicates dimensions for release torque D.

U : Adjusting nut popping out at torque 0N·m

T : Max. tightening amount

Contact CKD for information on accuracy.

Dimensions



Note) Dimensions in () indicate dimensions for models A and C.

Model	Release torque Adjusting range (N·m)	Allowable thrust force (N)	Allowable radial force (N)	Allowable bending moment (N·m)	Moment of inertia (kg·m ²)	Weight (kg)	Adjusting nut per rotation Torque change rate (N·m)	T	U
TSF14	A 98.1 to 294	28400	23500	981	9.10×10 ⁻²	19.8	98.1	12.0	2.0
	B 147 to 441						147	13.1	0.9
	C 392 to 1180						265	11.5	1.0
	D 589 to 1860						451	12.6	-0.1

Compatible body	V	W	X	Y	Z	Shaft end mounting hole
ZRS-14	ø45H6	ø75H7	60 26.5	1-45×75 2- "	12-M8 Hexagon socket head cap screw	-

* The lower row of X and Y in the table above indicates dimensions for release torque D.

U : Adjusting nut popping out at torque 0N·m

T : Max. tightening amount

Contact CKD for information on accuracy.

ZRS

Technical data

Option

Safety precautions

Model selection specifications
Check sheet



Option

Torque guard TGX

Overload protection device (for shaft mounting)

ZRS

Technical data

Option

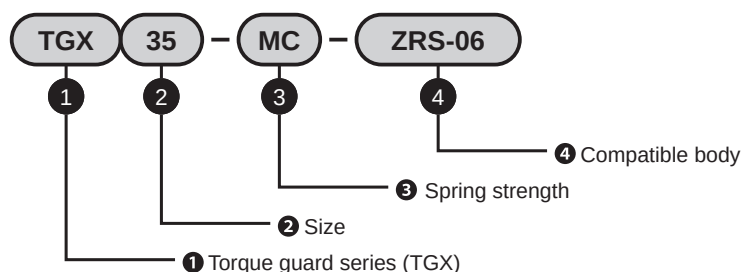
Safety precautions

Model selection specifications
Check sheet

Features

- 1. Coupling function**
Misalignment caused by angle error, parallelism, or axial direction are absorbed by the ball & wedge mechanism.
- 2. High return accuracy ± 10 sec**
Less phase deviation between the drive side and load side when re-reset after a trip.
- 3. High precision trip (release)**
There is no deviation in adjacent trip torque during repeated trip (release) $\pm 3\%$ within the specified range.
- 4. Easy torque adjustment**
The trip torque can be set freely just by turning the adjusting nut.
- 5. Confirming set torque**
Set torque can be easily confirmed with easy-to-read rotation scale and angle scale.
- 6. One-positioned**
The ball and wedge alignment is a unique combination that only fits in one place.
- 7. Overload detection possible (in combination with proximity switch)**

How to order (when ordering separately without a torque guard mounted on the Mechanical indexer)



Body model No.		Torque guard
ZRS	04	TGX20
	05	TGX20
	06	TGX35
	08	TGX50
	11	TGX70

(Note) When ordering the torque guard as a Discrete unit, pay attention to the body output shaft specifications on the mounting side.

Refer to the table on the right for the application of ④.

Operational overview

Ball & wedge mechanism

Torque is transmitted from ① hub to ⑨ steel ball to ② center flange to ⑤ flange to ⑥ boss.

The ⑨ steel balls are held in the ① hub and ② center flange by the pressure of the ⑩ coil spring. The contact area of the ③ plate with the ⑨ steel balls is tapered, and the ⑨ steel balls are always pressed against the grooves in the ① hub and ② center flange. This mechanism is the ball and wedge mechanism. (Figures 1 and 2)

When overloaded, the ⑨ steel ball rides up from the pocket and starts rolling. Since there are no slipping parts and all the balls are rolling, the idling frictional torque is very small, resulting in excellent durability. In this case, the ③ plate is pushed down and can be detected by a proximity switch or other means. After removing the overload, the table automatically returns to its original position when it is manually rotated.

Fig. 1

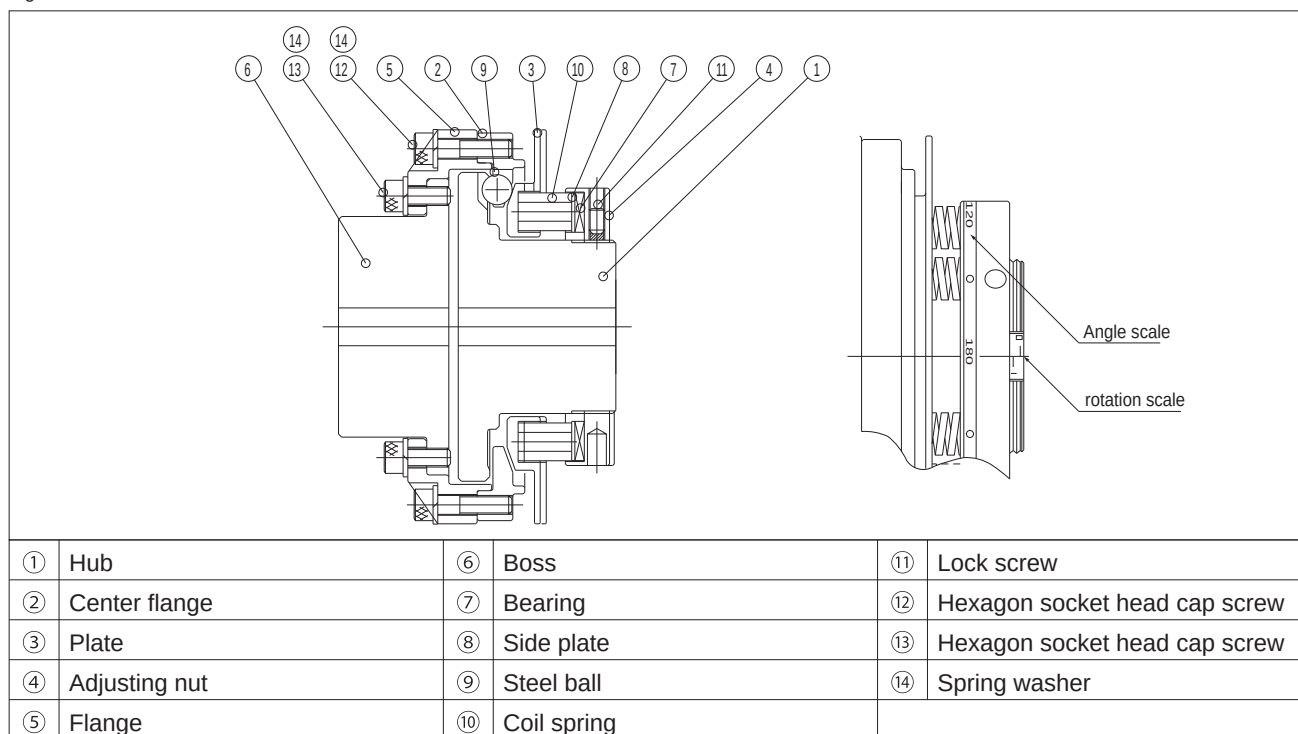
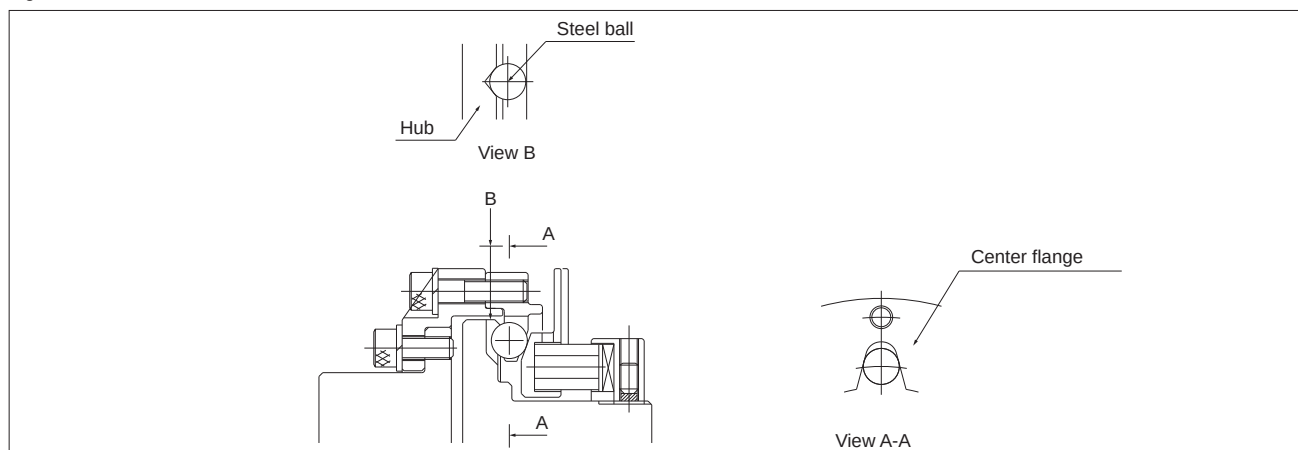


Fig. 2



Option

Torque guard [TGX20]

Dimensions

ZRS

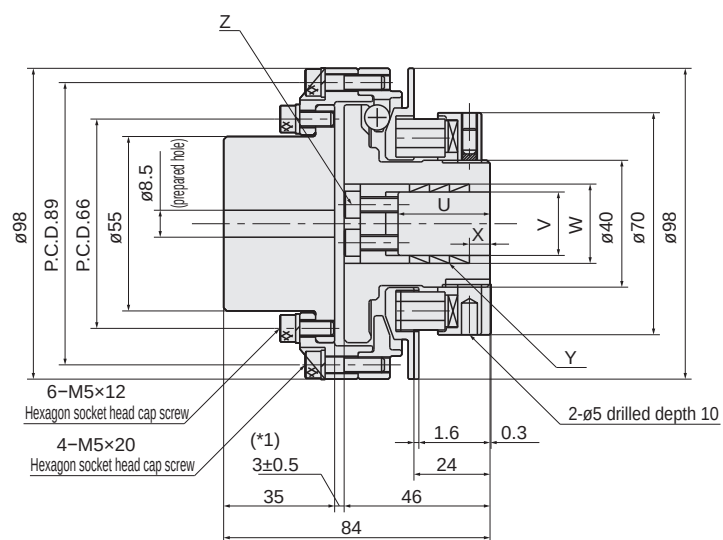
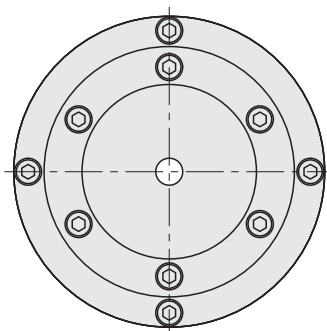
Technical data

Option

Safety precautions

Model selection specifications
Check sheet

Return accuracy	±10 seconds
Variations in adjacent trip torque	±3%



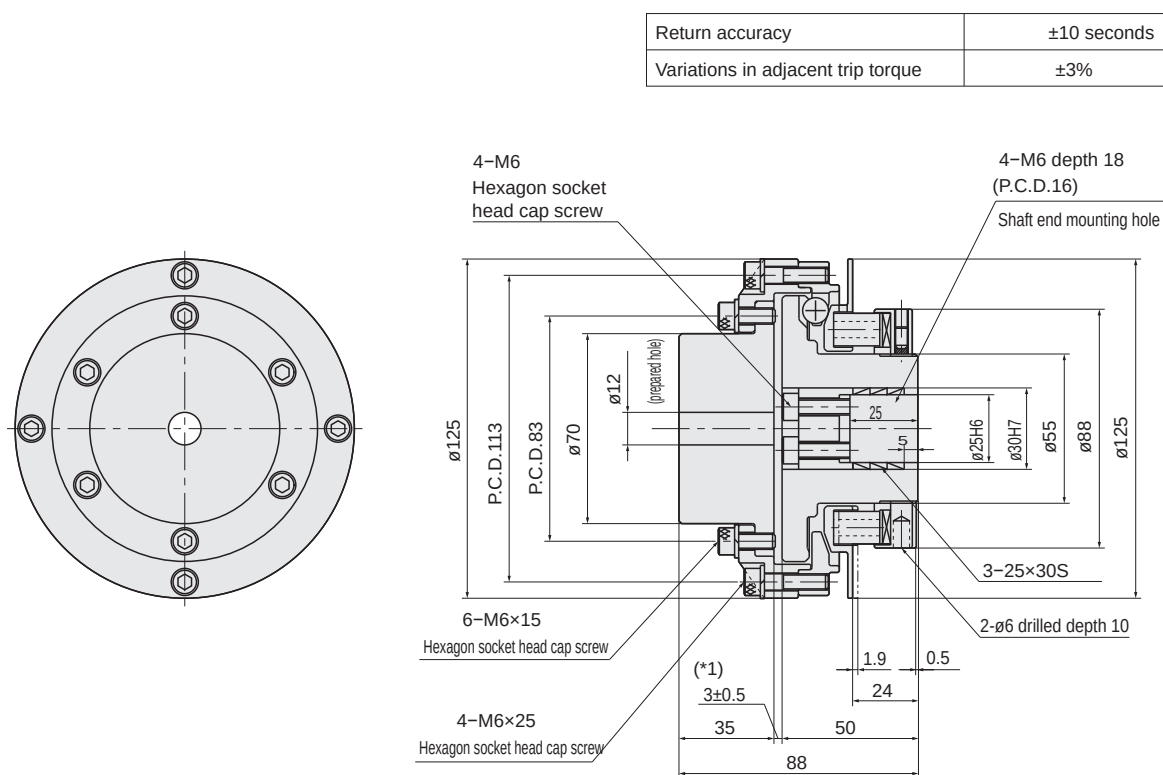
(*1) Assemble on the device within the dimension range.

Characteristic value

Torque guard coupling Model No.	Set torque range (N·m)	Max. rotation speed (rpm)	Number of coil × colors	Torque guard (boss)		Weight (kg)	Moment of inertia $\times 10^{-2}(\text{kg} \cdot \text{m}^2)$	Allowable angle error (deg)	Allowable parallelism (mm)	Allowable axial displacement (mm)
				Bottom hole diam.	Max. bore size					
TGX20-LC	5.2 to 19	550	Yellow×6	8.5	35	2.38	0.231	0.6	0.1	±0.5
TGX20-MC	9.8 to 27		Red×3							
TGX20-HC	21 to 55		Red×6							

Compatible body	U	V	W	X	Y	Z	Shaft end mounting hole
ZRS-04	33	ø17H7	ø21H7	18	2-17×21(S)	3-M5 special hexagon socket head cap screw	3-M5 depth 10 (P.C.D.9)
ZRS-05	29	ø20H7	ø25H7	6.5	3-20×25(S)	3-M5 hexagon socket head cap screw	3-M5 depth 12 (P.C.D.12)

Dimensions



(*1) Assemble on the device within the dimension range.

Characteristic value

Torque guard coupling Model No.	Set torque range (N·m)	Max. rotation speed (rpm)	Number of coil × colors	Torque guard (boss)		Weight (kg)	Moment of inertia $\times 10^{-2}(\text{kg} \cdot \text{m}^2)$	Allowable angle error (deg)	Allowable parallelism (mm)	Allowable axial displacement (mm)
				Bottom hole diam.	Max. bore size					
TGX35-LC	19 to 57	400	Red ×5	12	50	3.92	0.663	0.6	0.1	±0.5
TGX35-MC	36 to 84		Green ×5							
TGX35-HC	74 to 167		Green ×10							

Compatible body
ZRS-06

ZRS

Technical data

Option

Safety precautions

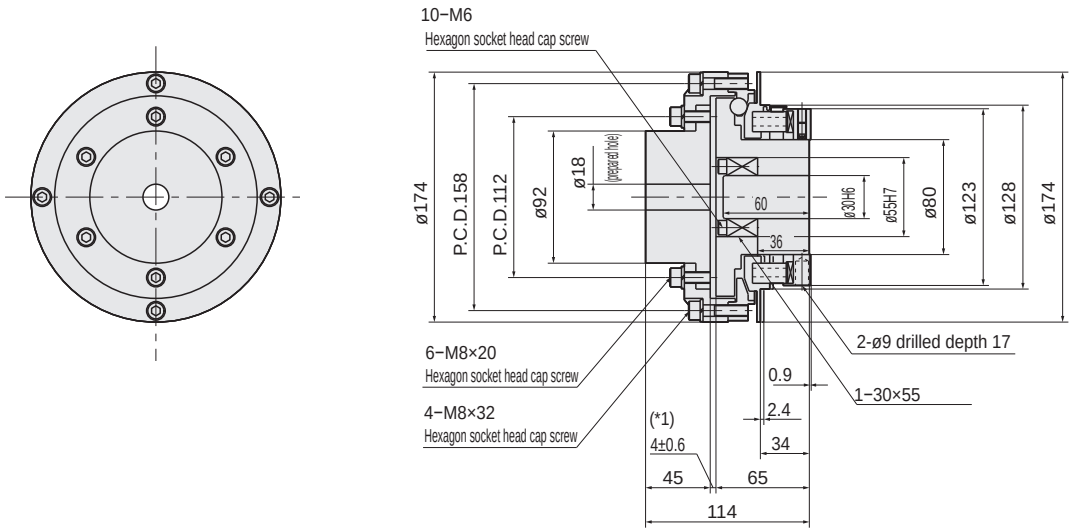
Model selection specifications
Check sheet

Option

Torque guard [TGX50]

Dimintions

Return accuracy	±10 seconds
Variations in adjacent trip torque	±3%



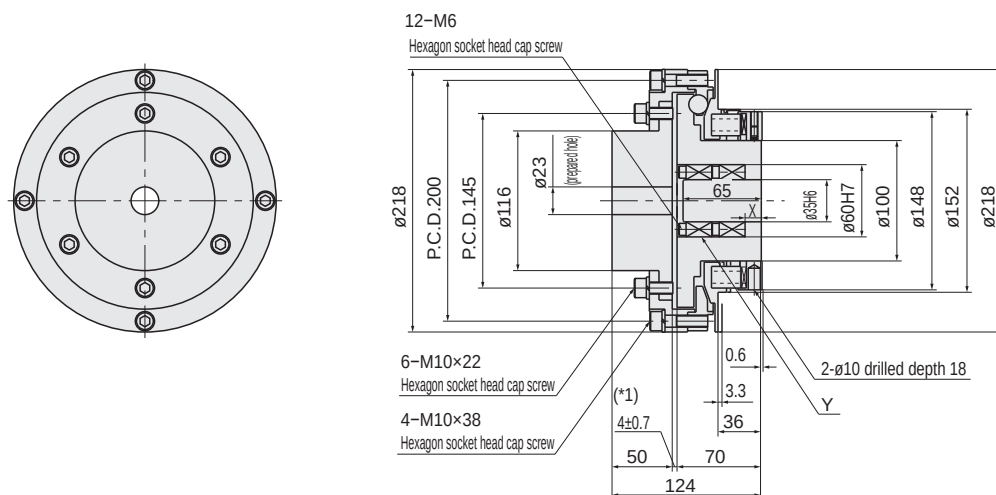
Characteristic value

Torque guard coupling Model No.	Set torque range (N·m)	Max. rotation speed (rpm)	Number of coil × colors	Torque guard (boss)		Weight (kg)	Moment of inertia ×10 ⁻² (kg·m ²)	Allowable angle error (deg)	Allowable parallelism (mm)	Allowable axial displacement (mm)
				Bottom hole diam.	Max. bore size					
TGX50-LC	40 to 98	300	Red ×5	18	60	10.9	3.35	0.6	0.1	±0.6
TGX50-MC	81 to 176		Green ×5							
TGX50-HC	167 to 343		Green ×10							

Compatible body
ZRS-08

Dimensions

Return accuracy	±10 seconds
Variations in adjacent trip torque	±3%



(*1) Assemble on the device within the dimension range.

Characteristic value

Torque guard coupling Model No.	Set torque range (N·m)	Max. rotation speed (rpm)	Number of coil × colors	Torque guard (boss)		Weight (kg)	Moment of inertia ×10 ⁻² (kg·m ²)	Allowable angle error (deg)	Allowable parallelism (mm)	Allowable axial displacement (mm)
				Bottom hole diam.	Max. bore size					
TGX70-LC	118 to 323	240	Red ×8	23	80	16.3	8.93	0.6	0.1	±0.7
TGX70-MC	235 to 461		Green ×8							
TGX70-HC	353 to 696		Green ×12							

Compatible body		X	Y
ZRS-11	TGX70-LC/MC	41	1-35×60
	TGX70-HC	13.5	2-35×60

ZRS

Technical data

Option

Safety precautions

Model selection specifications
Check sheet



Option

Hollow shaft type geared motor

ZRS

Technical data

Option

Safety precautions

Model selection specifications
Check sheet

Features

1. Eco-friendly

Eliminates the need to dispose of consumable parts by eliminating clutches/brakes and employing inverter-controlled start/stop. Reduces power consumption by improving motor reducer efficiency.

2. Maintenance-free

By adopting the start/stop of inverter control, maintenance of clutch/brake parts is eliminated.

3. Mechatronics design

We propose a drive unit with an eye to the DD motor.

Characteristics table

[Applicable models: ZRS-05]

Motor model No. (Nissay)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
F3S20N20-MM01TNNTNX	0.1	20	75	90	11	8.6	4.8 x 10 ⁻⁴	6.5
F3S20N25-MM01TNNTNX		25	60	72	13	11		
F3S20N30-MM01TNNTNX		30	50	60	16	13		
F3S20N40-MM01TNNTNX		40	37.5	45	21	18		
F3S20N50-MM01TNNTNX		50	30	36	25	22		
F3S20N60-MM01TNNTNX	0.2	60	25	30	31	25	5.3 x 10 ⁻⁴	8.5
F3S25N10-MM02TNNTNX		10	150	180	11	9.2		
F3S25N15-MM02TNNTNX		15	100	120	17	14		
F3S25N20-MM02TNNTNX		20	75	90	23	19		
F3S25N25-MM02TNNTNX		25	60	72	27	24		
F3S25N30-MM02TNNTNX		30	50	60	33	27		
F3S25N40-MM02TNNTNX		40	37.5	45	44	37		
F3S25N50-MM02TNNTNX		50	30	36	55	46		
F3S25N60-MM02TNNTNX		60	25	30	67	55		

[Applicable models: ZRS-06]

Motor model No. (Nissay)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
F3S25N20-MM02TNNTNX	0.2	20	75	90	23	19	5.3 x 10 ⁻⁴	8.5
F3S25N25-MM02TNNTNX		25	60	72	27	24		
F3S25N30-MM02TNNTNX		30	50	60	33	27		
F3S25N40-MM02TNNTNX		40	37.5	45	44	37		
F3S25N50-MM02TNNTNX		50	30	36	55	46		
F3S25N60-MM02TNNTNX		60	25	30	67	55		
F3S30N10-MM04TNNTNX	0.4	10	150	180	23	19	1.1 x 10 ⁻³	11.5
F3S30N15-MM04TNNTNX		15	100	120	33	27		
F3S30N20-MM04TNNTNX		20	75	90	44	37		
F3S30N25-MM04TNNTNX		25	60	72	55	46		
F3S30N30-MM04TNNTNX		30	50	60	67	55		
F3S30N40-MM04TNNTNX		40	37.5	45	88	74		
F3S30N50-MM04TNNTNX		50	30	36	111	92		
F3S30N60-MM04TNNTNX		60	25	30	133	111		

Characteristics table

[Applicable models: ZRS-08]

Motor model No. (Nissay)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
F3S30N20-MM04TNNTNX	0.4	20	75	90	44	37	1.1 × 10 ⁻³	11.5
F3S30N25-MM04TNNTNX		25	60	72	55	46		
F3S30N30-MM04TNNTNX		30	50	60	67	55		
F3S30N40-MM04TNNTNX		40	37.5	45	88	74		
F3S30N50-MM04TNNTNX		50	30	36	111	92		
F3S30N60-MM04TNNTNX		60	25	30	133	111		
F3S35N10-MD08TNNTNX	0.75	10	150	180	41	34	3.2 × 10 ⁻³	21
F3S35N15-MD08TNNTNX		15	100	120	63	52		
F3S35N20-MD08TNNTNX		20	75	90	83	70		
F3S35N25-MD08TNNTNX		25	60	72	104	86		
F3S35N30-MD08TNNTNX		30	50	60	124	104		
F3S35N40-MD08TNNTNX		40	37.5	45	166	138		
F3S35N50-MD08TNNTNX		50	30	36	208	173		
F3S35N60-MD08TNNTNX		60	25	30	249	208		

[Applicable models: ZRS-11]

Motor model No. (Nissay)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
F3S35N20-MD08TNNTNX	0.75	20	75	90	83	70	3.2 × 10 ⁻³	21
F3S35N25-MD08TNNTNX		25	60	72	104	86		
F3S35N30-MD08TNNTNX		30	50	60	124	104		
F3S35N40-MD08TNNTNX		40	37.5	45	166	138		
F3S35N50-MD08TNNTNX		50	30	36	208	173		
F3S35N60-MD08TNNTNX		60	25	30	249	208		
F3S45N10-MD15TNNTNX	1.5	10	150	180	83	70	6.2 × 10 ⁻³	35.5
F3S45N15-MD15TNNTNX		15	100	120	124	104		
F3S45N20-MD15TNNTNX		20	75	90	166	138		
F3S45N25-MD15TNNTNX		25	60	72	208	173		
F3S45N30-MD15TNNTNX		30	50	60	249	208		
F3S45N40-MD15TNNTNX		40	37.5	45	332	276		
F3S45N50-MD15TNNTNX		50	30	36	416	345		
F3S45N60-MD15TNNTNX		60	25	30	498	416		

[Applicable models: ZRS-14]

Motor model No. (Nissay)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
F3S45N20-MD15TNNTNX	1.5	20	75	90	166	138	6.2 × 10 ⁻³	35.5
F3S45N25-MD15TNNTNX		25	60	72	208	173		
F3S45N30-MD15TNNTNX		30	50	60	249	208		
F3S45N40-MD15TNNTNX		40	37.5	45	332	276		
F3S45N50-MD15TNNTNX		50	30	36	416	345		
F3S45N60-MD15TNNTNX		60	25	30	498	416		
Motor model No. (Tsubakimoto Chain)	Output (kW)	True reduction ratio (ir)	Output shaft rotation speed Nrs (rpm)		Output axis allowable torque Trr (N·m)		Motor moment of inertia Jm (kg·m ²)	Weight (kg)
			50Hz	60Hz	50Hz	60Hz		
HMTR220-45H10F1S5	2.2	10	150	180	122	102	8.8 × 10 ⁻³	43
HMTR220-45H15F1S5		15	100	120	182	152		
HMTR220-45H20F1S5		20	75	90	244	203		
HMTR220-45H25F1S5		25	60	72	290	242		
HMTR220-45H30F1S5		30	50	60	349	290		
HMTR220-45H40F1S5		40	37.5	45	465	387		
HMTR220-45H50F1S5		49.286	30	36	581	484		
HMTR220-45H60F1S5		60	25	30	697	581		