

Flange to Flange Type, Hollow Center Bore



7TAD Torque Limiter Shown

DESCRIPTION

Sankyo's **TAD Series** features a low profile, hollow center bore and a ground center pilot for flange mounted dial plates, hub less gears or sprockets. Sankyo's proprietary design uses nine detent ball and pocket configurations to enhance lubrication while reducing the pocket vacuum thus eliminating inconsistent overload conditions. Hardened metal components accommodate rotational shock loads during speed ramps to reduce pocket wear. Torque settings are easily adjusted by rotating the top plate. Multiple torque ranges are achieved by exchanging all or a partial group of die springs. Precision internal components produce low backlash, repetitive overload thresholds in both directions while maintaining an overall strong rigidity. Standard units are free spinning when the torque range is exceeded & automatically resets every 360° of rotation when the torque is reduced. Optional overload monitoring sensors mount in the hollow bore.

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FEATURES

- Torque settings are adjustable by rotating the top plate; multiple torque ranges are achieved in less than 2 minutes by exchanging or removing the spring combinations.
- Compact design offers versatile mounting in any position & a standard option for our AD/Alpha index.
- Accurate resetting within ±15 arc seconds in any direction and large bending moment capacity.
- Unit is free-spinning during overload and automatically resets every 360° after cured overload condition.
- Optional proximity sensor detects when a torque limit setting has been exceeded or overloaded.

SPECIFICATIONS

Description	Unit	7TAD	9TAD	11TAD	15TAD	19TAD	23TAD
Standard Torque Ranges	N•m	40~150 100~250	60~200 140~450	90~230 150~600	300~1000 650~2200	500~2000 1500~4500	1200~3500 2000~5500
	in•lbs	354~1328 886~2213	531~1771 1240~3983	797~2036 1328~5310	2655~8850 5753~19472	4425~17702 13276~39828	10621~30977 17702~48679
		mm	85	120	150	210	260
Hollow Bore Dia.	mm	47	70	95	130	166	246
Dial Flange Mount B.C.	mm	168	220	260	365	450	525
Dial Center Pilot Dia.	mm	155	200	235	335	420	495
Overload Detect Motion	mm	3	3.5	3.7	5.5	5.6	6.5
Overall Height	mm	49.5	62	70	90	111	118
Max. Radial Load	N	2450	5200	7300	11800	16800	24800
Max. Axial Load	N	2950	5000	7000	12000	17000	35000
Max. Bending Moment	N•m	45	100	180	430	750	1950
Max. Rotational Speed	rpm	200	200	200	140	120	100
Unit Inertia Moment	kg•m ²	0.02	0.07	0.15	0.8	2.1	4.5
Unit Weight	kg	4.5	9.6	15	43	74	110
Backlash Accuracy	arcsec.	30					
Resetting Accuracy	arcsec.	±15					
Trip Torque Accuracy	percent	±10%					
Lubrication Frequency	hours	1000 to 2000					
Lubrication	Lithium type Grease with Molybdenum Disulfide, Density Grade 2 (NLGI)						
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Conversions:

in = (mm) x 0.039 • lb-force = (N) x 0.224 • in•lbs = (N•m) x 8.851 • lb•in² = (kg•m²) x 3417.168 • deg = (arcsec) x 0.00028

TAD SERIES

Torque Limiting Clutch


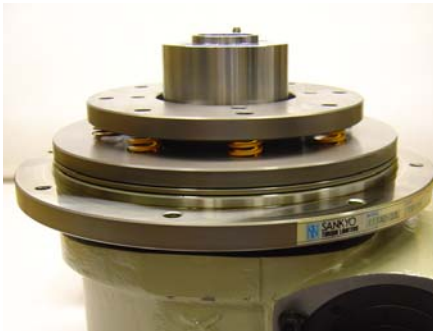

SANDEX™

Flange to Flange Type, Hollow Center Bore

General Mounting and Overload Detection

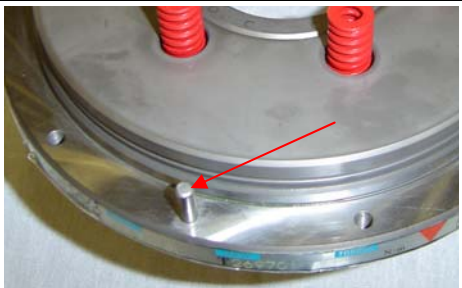
		
<p>Mounts to our AD/Alpha series indexing flange shown or as a stand-alone unit between flanges.</p>	<p>The hollow center bore allows access to the indexing unit stationary flange & through bore.</p>	<p>An overload sensor can mount to the index stationary flange with the wiring routed through the bore.</p>

Riser & Spring Exchange

		
<p>The indexing unit center bore can be fitted with a riser to mount a stationary dial above the indexing table. The TAD series torque limiter can accommodate the riser diameter & still a bore through the riser.</p>		<p>Changing the die springs for a new torque range is done quickly with easy access to the components.</p>

Dowel Pin Information

Using dowel pins to anchor the dial plate for rotational orientation reference is common practice. Sankyo offers finished bore holes in the hardened surface to fit metric dowel pins. The location of the dowel pin hole is equally spaced between any two of the dial plate mounting holes, except for one that is used for a lubricant passage. Dowel hole locations are referenced from the center bore.

	<table border="1"> <thead> <tr> <th>Model Code</th> <th>Dowel Hole Diameter (mm)</th> <th>Bolt Circle Dia. (mm)</th> <th>Location Tolerance (mm)</th> </tr> </thead> <tbody> <tr> <td>7TAD</td> <td>Ø6 (+0.012/-0)</td> <td>Ø168</td> <td>Ø0.04</td> </tr> <tr> <td>9TAD</td> <td>Ø8 (+0.015/-0)</td> <td>Ø220</td> <td>Ø0.04</td> </tr> <tr> <td>11TAD</td> <td>Ø8 (+0.015/-0)</td> <td>Ø260</td> <td>Ø0.04</td> </tr> <tr> <td>15TAD</td> <td>Ø12 (+0.018/-0)</td> <td>Ø365</td> <td>Ø0.04</td> </tr> <tr> <td>19TAD</td> <td>Ø16 (+0.018/-0)</td> <td>Ø450</td> <td>Ø0.04</td> </tr> <tr> <td>23TAD</td> <td>Ø16 (+0.018/-0)</td> <td>Ø525</td> <td>Ø0.04</td> </tr> </tbody> </table>	Model Code	Dowel Hole Diameter (mm)	Bolt Circle Dia. (mm)	Location Tolerance (mm)	7TAD	Ø6 (+0.012/-0)	Ø168	Ø0.04	9TAD	Ø8 (+0.015/-0)	Ø220	Ø0.04	11TAD	Ø8 (+0.015/-0)	Ø260	Ø0.04	15TAD	Ø12 (+0.018/-0)	Ø365	Ø0.04	19TAD	Ø16 (+0.018/-0)	Ø450	Ø0.04	23TAD	Ø16 (+0.018/-0)	Ø525	Ø0.04			
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TAD Series

Torque Limiting Clutch

Dimensions

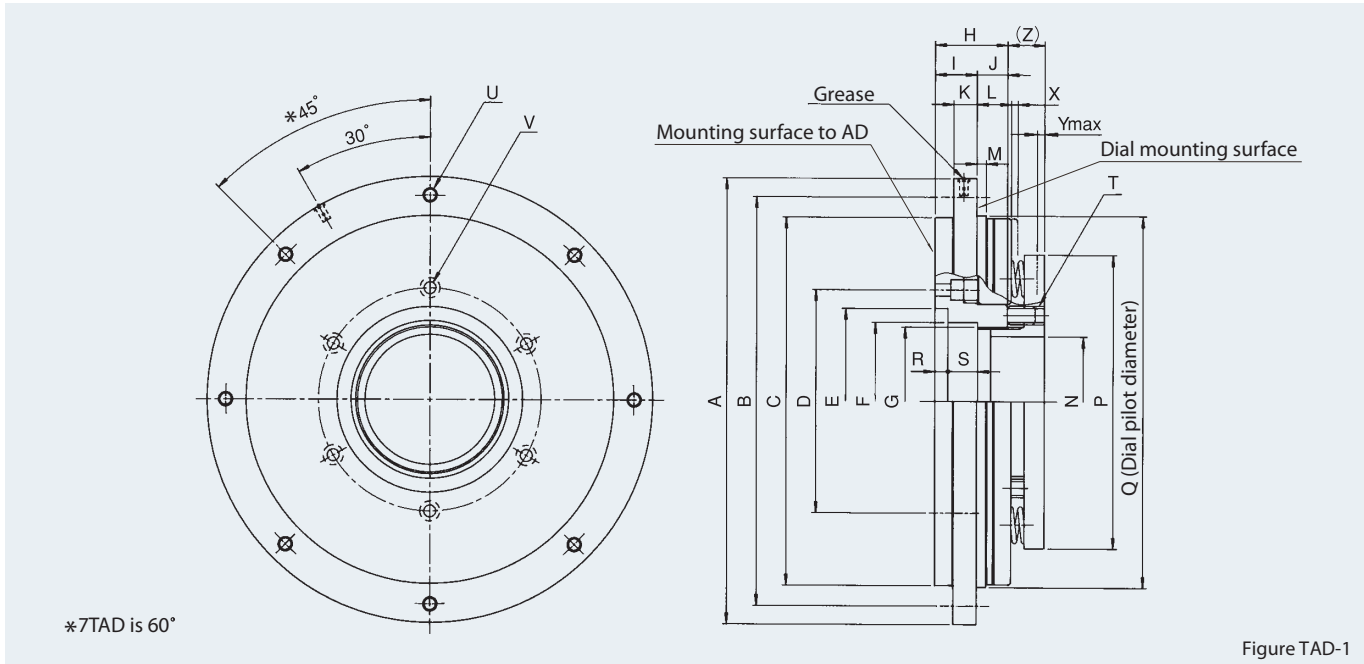


Figure TAD-1

Table of dimensions

Table TAD-1

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	X	Y _{max}	Z
7TAD	φ180	φ168	φ152	φ85	φ70 H7	φ60	M55 ×2	33	19	14	10.5	14	5	φ47	φ107	φ155 h7	7	10	4-M5	6-M5 ×0.8	6- 6.6DR.	3	5	16.5
9TAD	φ240	φ220	φ198	φ120	φ100 H7	φ85	M80 ×2	39	22.5	16.5	12.5	17.5	5	φ70	φ158	φ200 h7	7	16	4-M10	8-M8 ×1.25	6- 6.6DR.	3.5	7	23
11TAD	φ285	φ260	φ229	φ150	φ120 H7	φ108	M105 ×2	44	25	19	14.5	20	6	φ95	φ186	φ235 h7	12	13	4-M10	8-M10 ×1.5	6- 9DR.	3.7	7.5	26
15TAD	φ395	φ365	φ328	φ210	φ172 H7	φ155	M145 ×2	64	37	27	20	27	6	φ130	φ256	φ335 h7	12	33	4-M10	8-M12 ×1.75	6- 11DR.	5.5	7	26
19TAD	φ480	φ450	φ419	φ260	φ230 H7	φ186	M180 ×2	80	42	38	21	33	8	φ166	φ326	φ420 h7	16	43	4-M10	8-M12 ×1.75	8- 14DR.	5.6	7	31
23TAD	φ555	φ525	φ494	φ336	φ275 H7	φ262	M260 ×2	82	47	35	25	35	9	φ246	φ402	φ495 h7	17	44	4-M10	8-M14 ×2	8- 14DR.	6.5	8	36

(Unit: mm)

Specifications

Table TAD-2

Model	Code	Range of tripping torque (N·m)	Thread pitch on torque adjusting nut (mm)	Max. allowable radial load (N)	Max. allowable thrust load (N)	Max. allowable bending moment (N·m)	Max. revolution per minute (r.p.m.)	Moment of inertia (kg·m ²)	Mass (kg)
7TAD	7TAD-15L	40 ~ 150	2	2450	2950	45	200	0.02	4.5
	7TAD-25H	100 ~ 250							
9TAD	9TAD-20L	60 ~ 200	2	5200	5000	100	200	0.07	9.6
	9TAD-45H	140 ~ 450							
11TAD	11TAD-23L	90 ~ 230	2	7300	7000	180	200	0.15	15
	11TAD-60H	150 ~ 600							
15TAD	15TAD-100L	300 ~ 1000	2	11800	12000	430	140	0.8	43
	15TAD-220H	650 ~ 2200							
19TAD	19TAD-200L	500 ~ 2000	2	16800	17000	750	120	2.1	74
	19TAD-450H	1500 ~ 4500							
23TAD	23TAD-350L	1200 ~ 3500	2	24800	35000	1950	100	4.5	110
	23TAD-550H	2000 ~ 5500							

Precautions

- After adjusting the torque, make sure to tighten the set bolts.
- Specifications and dimensions are subject to change without notice. Please check with Sankyo sales before ordering.

X : When an overload occurs, the overload detection panel moves X mm. This movement is used to activate a sensing device and thereby allows the user to take appropriate measures in the control logic.

(Z) : This dimension indicates the height when the spring is free and should be referred to when calculating tripping torque.

Y_{max} : This dimension indicates tightening length when tripping torque is maximum. If tightening more than this figure, the torque limiter does not operate.