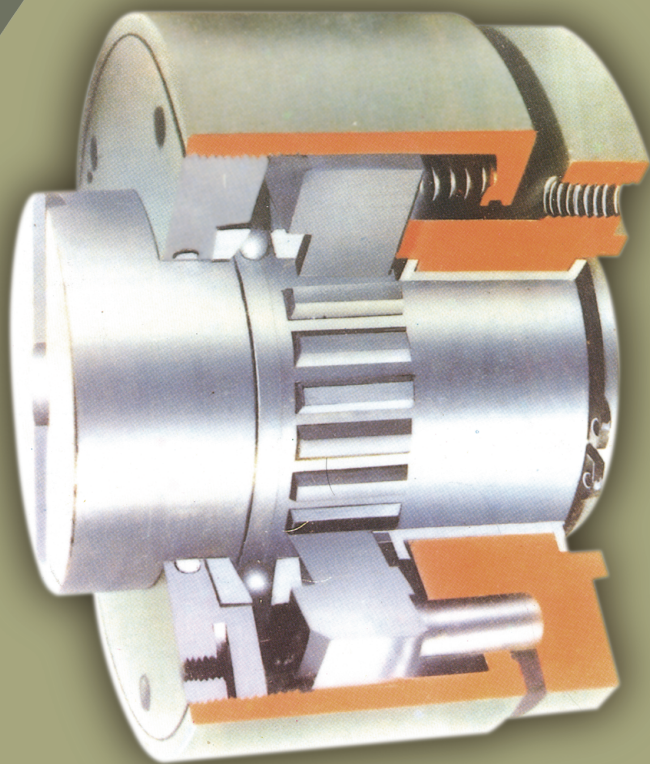


WELLMAN



Wellman Torque Limiters



WELLMAN WACOMA LIMITED



Wellman Torque Limiters

- **Remove over load problems.**
- **Years of trouble free service.**
- **Virtually no maintenance.**
- **Competitive first cost.**

Disappeared have the problems associated with slow reaction electrical overloads Shear pins which give a wide torque variation and rapidly overheating slip clutches.

Wellman Torque Limiters will save your money. The initial cost normally is more than covered by saving of down time during the first overload.

A complete engineering service is available. Let our Sales Engineers assist you on your particular problems.

Typical Applications Manual Reset (Type A)

Conveyors, machine tools, wood-working and paper machinery, pumps, textile machinery, test rigs, rolling mills, quarrying plant, Post Office machinery, extruders, automatic furnaces and ovens. AUTOMATIC RESET (TYPES B & C) conveyors, bakery equipment, sliding and folding door actuators, also packaging, bottling and labelling machines, printing presses, and special purpose machines.

How to Select (Types A, B & C)

Decide on manual or automatic reset. Choose a position as near to the expected overload as possible (see Fig. 1 inside back cover). Calculate the torque setting required at that position. This can be determined from the motor HP r.p.m. and gearing ratio - the driven load - or from the maximum permissible torque for drive components such as crushing stress on keys. It is the weakest component that requires protection. Make allowance for motor starting torques (generally twice normal running torque). Having calculated and approximate setting for the clutch, final adjustments can easily be made on site.

Check from tables that shaft, sprocket or pulley etc. can be accommodated.

CONTENTS

Type AB, AS, AP, ACR, ACP. Complete release - manual reset. Types CB, CS, CP, CCR. Complete release for one revolution - automatic reset. Type B. Complete release for one revolution - automatic reset.

Technical Features

- Complete disengagement on overload
- Simple "one screw" torque adjustment
- Positive drive-no slip
- Rapid easy reset
- Full Bi-directional operation
- Horizontal or Vertical Torque setting maintained indefinitely
- All metal totally enclosed construction
- Robust and compact design
- Release action can operate a warning device or limit switch
- May also be used as lever operated clutch.

Normal running

The drive is transmitted from the hub (1) through the splined ring (2) via the tapered jaws (3) to the coupling flange (4). The jaws are normally held together by spring pressure acting through two angled races (5 and 6) and a crowded circle of balls (7) located by a step on the hub.

Disengagement

On overload, the tapered jaws are thrust apart moving the splined ring (2) and lifting the balls (7) over the step on the hub, thus instantly disengaging the drive leaving flange jaw ring (4) free to rotate on bearing (10).

Torque adjustment

The release torque settings are made by adjusting the control ring (9) so altering the spring forces. The adjusting ring is located in position by a grub screw (8).

Installation

Clutches can be supplied pilot bored or finish bored and keywayed. The hub may be fitted to either shaft and the flange can be connected to a flexible coupling or can carry a sprocket or pulley. See pages 3.

Re-engagement

To re-engage, the tapered jaws are aligned using reference marks and the sliding assembly pushed along the hub until the balls snap back into their original position. This requires no further spring compression so is easily accomplished.

Application

The clutch can be installed in any drive system, safeguarding against sudden surges or gradual build up of torque. Modifications are possible to provide manual lever operation of the clutch while retaining the overload release and one position mesh can also be provided.



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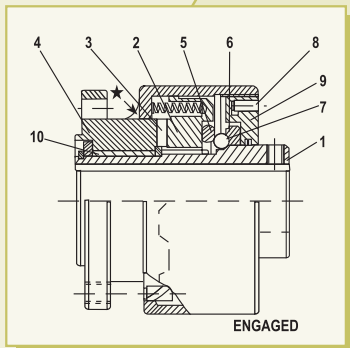
Note:

For particularly dusty conditions such as cement works we offer neoprene seals at position (*) above please specify when ordering.

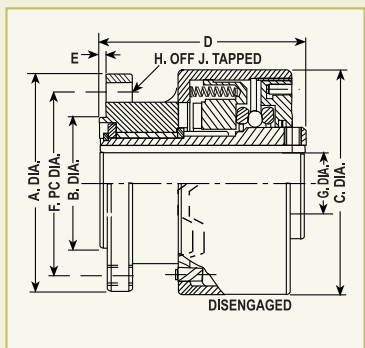
TYPE AB

Model	Release Torque			Dimensions in millimetres and inches											Weight Kg. lb.
	Min. (Note 1)	Max		A	B (Note 3)	C	D	E	F	G. Max.	G. Min. (Note 2)	H	J	Axial movement on overload (Note 2)	
	Kgm. lb ft	Kgm. lb ft	HP/ RPM												
100	1.4	14	0.02	90	55	93.5	85	3	75	25.4	12.7	6	M8	6.35	2.95
	10	100		3.54	2.16	3.68	3.35	0.118	2.95	1.00	0.50	0.25	6.5		
500	7	70	0.1	120	80	123.8	90	3	100	40	19.05	6	M10	6.35	5.59
	50	500		4.70	3.15	4.875	3.54	0.118	3.94	1.57	0.75	0.25	12.3		
1000	49	140	0.2	180	110	177.8	150	3	150	57	31.75	6	M12	6.35	17
	350	1000		7.09	4.33	7.00	5.91	0.118	5.91	2.24	1.25	0.25	37		
2000	63	280	0.4	235	150	228.6	150	3	195	77	38.1	6	M16	6.35	30
	450	2000		9.25	5.91	9	5.91	0.118	7.68	3.03	1.50	0.25	66		
4000	84	560	0.8	305	200	305	205	3	270	102	50.8	6	M20	8.13	84
	600	4000		12	7.874	12	8.07	0.118	10.63	4.00	2.00	0.32	185		

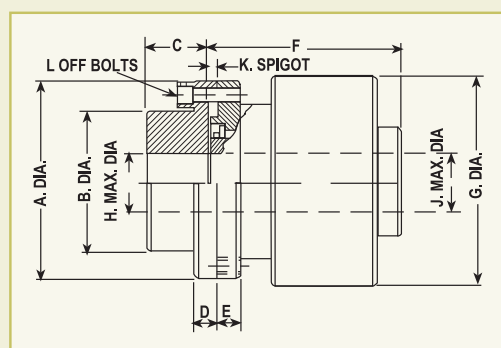
NOTES : 1. Lower release torques can be achieved. Consult Wellman Wacoma Ltd. 2. Dimensions G. Min & Axial movement on overload also apply to types ACR, ACP, AS and AP. 3. Tolerance on spigot diameter B is f7 to BS 4500 : 1969.



TYPE - AB



TYPE - AB



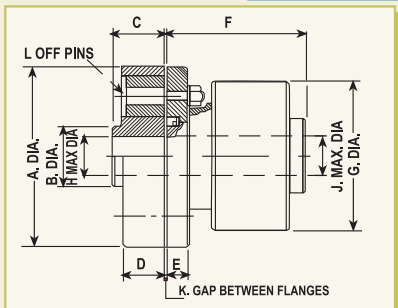
TYPE - ACR

TYPE ACR (Type AB combined with rigid coupling)

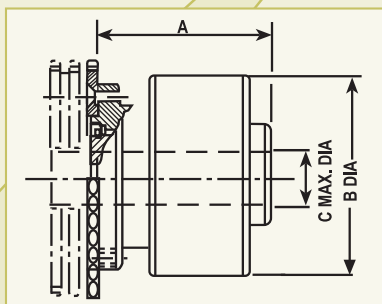
Model	Release Torque			Dimensions in millimetres and inches											Weight Kg. lb.
	Min.	Max		A	B	C	D	E	F	G	H	J	K	L	
	Kgm. lb ft	Kgm. lb ft	HP/ RPM												
100	1.4	14	0.02	90	65	40	15	10	85	93.5	40	25.4	3	6	5.7
	10	100		3.54	2.56	1.57	0.59	0.39	3.35	3.68	1.57	1.00	0.118	12.5	
500	7	70	0.1	120	85	40	15	13	90	123.8	50	40	3	6	10
	50	500		4.72	2.35	1.57	0.59	0.51	3.54	4.875	1.97	1.57	0.118	22	
1000	49	140	0.2	180	125	65	25	22	150	177.8	85	57	3	6	25
	350	1000		7.09	4.92	2.56	0.98	0.87	5.91	7.00	3.35	2.24	0.118	54	
2000	63	280	0.4	235	165	95	25	22	150	228.6	110	77	3	6	49
	450	2000		9.25	6.50	3.74	0.98	0.87	5.91	9.00	4.33	3.03	0.118	108	
4000	84	560	0.8	305	215	115	30	25	205	305	140	102	3	6	125
	600	4000		12	8.46	4.53	1.18	0.98	8.07	12	5.51	4.00	0.118	275	



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TYPE-ACP



TYPE - AS

TYPE AS

Duplex and Triplex sprockets will usually be supplied bushed to run on customers shaft for additional support.

For sprockets smaller than listed, an adaptor is used. Details on request.

TYPE ACP (Type AB combined with flexible pin coupling)

Model	Release Torque			Dimensions in millimetres and inches													Weight Kg. lb.
	Min.		Max.	A	B	C	D	E	F	G	H Max.	H Min.	J	K	L		
	Kgm. lb ft	HP/ RPM															
100	1.4 10	14 100	0.02	146 5.75	73.2 2.88	44.4 1.75	28.70 1.13	15.8 0.625	88 3.46	93.5 3.68	44.4 1.75	0 0	25.4 1.00	2.3 0.09	4	6.8 14.97	
500	7 50	70 500	0.1	231.9 9.13	120.6 4.75	69.8 2.75	50.8 2.00	27.8 1.093	100 3.94	123.8 4.875	76 3.00	31.75 1.25	40 1.57	5 0.197	4	24 53	
1000	49 350	140 1000	0.2	231.9 9.13	120.6 4.75	69.8 2.75	50.8 2.00	27.8 1.093	152 6.00	177.8 7.00	76 3.00	31.75 1.25	57 2.24	5 0.197	4	34.7 76.35	
2000	63 450	280 2000	0.4	270 10.63	155.7 6.13	82.5 3.25	50.8 2.00	31.7 1.25	157.6 6.20	228.6 9.00	89 3.5	31.75 1.25	77 3.03	5 0.197	10	35.46 128.61	
4000	84 600	560 4000	0.8	381 15	222.25 8.75	120.65 4.75	71.37 2.81	39.68 1.56	205 8.07	305 12	120.65 4.75	63.50 2.50	102 4.00	6.35 0.25	10	145 319	

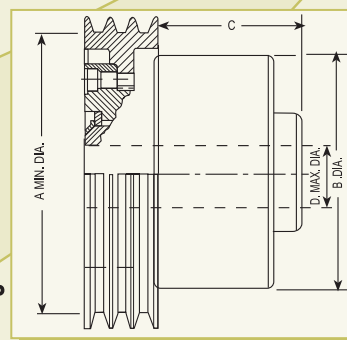
TYPE AS (Type AB combined with chain wheel)

Model	Release Torque			Dimensions in millimetres and inches			Smallest Standard Sprocket (Number of teeth)				
	Min.		Max.	A	B	C	3/8" Pitch	1/2" Pitch	5/8" Pitch	3/4" Pitch	1" Pitch
	Kgm. lb ft	HP/ RPM									
100	1.4 10	14 100	0.02	82 3.23	93.5 3.68	25.4 1.00	38	26	21	18	15
500	7 50	70 500	0.1	87 3.43	123.8 4.875	40 1.57	57	33	27	23	18
1000	49 350	140 1000	0.2	147 5.79	177.8 7.00	57 2.24		43	39	38	26
2000	63 450	280 2000	0.4	147 5.79	228.6 9.00	77 3.03			50	57	38
4000	84 600	560 4000	0.8	202 7.93	305 12	102 4.00				57	57

TYPE AP (Type AB combined with Pulley)

NOTE : Pulleys to suit the following belts can also be supplied standard 'V' section, flat, poly 'V' and timing or toothed.

For pulleys smaller than listed, an adaptor is used. Details on request.



TYPE- AP



Wellman Torque Limiters

TYPE AP (Type AB combined with Pulley)

Model	Release Torque			Dimensions in millimetres and inches			
	Min.	Max.		A	B	C	D
	Kgm. lb ft	Kgm. lb ft	HP/ RPM				
100	1.4 10	14 100	0.02	115 4.53	93.5 3.68	Dimensions to suit Customers Pulley Requirements	25.4 1.00
500	7 50	70 500	0.1	155 6.10	123.8 4.875		40 1.57
1000	49 350	140 1000	0.2	210 8.27	177.8 7.00		57 2.24
2000	63	280	0.4	270	228.6		77
	450	2000		10.63	9.00		3.03

Technical Features

Instant release at pre-set torque ● Smooth hold-out for one revolution ● Means for motor switch-off ● Bi-directional ● Horizontal or Vertical ● All metal, totally enclosed ● Automatic self-engagement on re-start without loss of phasing

Normal running

The drive is transmitted between the hub flange (1) and the housing (2) by the balls (3) spring-loaded into the pockets on the flange face.

Disengagement

On overload, the balls are displaced axially through the housing further compressing the springs. Once out of their pockets, the balls roll on the face of the hub flange for one revolution before re-engaging and synchronising the drive.

Torque adjustment

The release torque is set by tightening nut (4) thus increasing the spring pressure. After setting the nut is locked with a grub screw and plug.

Installation

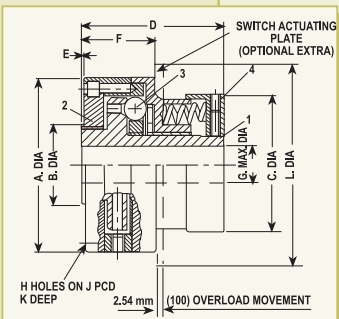
Clutches can be supplied pilot bored or finish bored and keywayed. The hub may be fitted to either shaft and should be located against a shoulder to resist the resetting spring force. The drive flange may be replaced by a sprocket, pulley, etc. or connected to a coupling. See page 5.

Application

This type of protection is ideally suited to drives such as wrapping and packing machinery where it is essential to re-start in the correct sequence and where access for manual resetting is not available.

NOTE :

Type 'C' clutches should always be used with a limit switch to bring the drive to rest within a few revolutions thus preventing possible damage by continual releasing and resetting.



TYPE-CB

TYPE CB

Model	Release Torque			Dimensions in millimetres and inches										Weight Kg. lb.	
	Min. (Note 1)	Max. (Note 3)		A	B	C	D	E	F	G	H	J	K		L
	Kgm. lb ft	Kgm. lb ft	HP/ RPM												
20	1.4	4.9	0.006	76	35	60	62	1.5	31	16	3	66	8	89	1.36 3
	10	35		2.98	1.38	2.37	2.42	0.06	1.23	0.63	M6	2.60	0.31	3.5	
150	4.2	21	0.03	94	54	87	66	1.5	34	28	6	84	11	114	2.80 6.20
	30	150		3.70	2.13	3.44	2.56	0.06	1.33	1.13	M6	3.81	0.44	4.5	

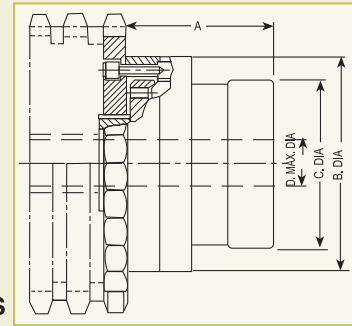


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TYPE CS (Type CB combined with Sprocket)

Duplex and Triplex sprockets with usually be supplied bushed to run on customers shaft for additional support.

For sprockets smaller than listed, an adaptor is used. Details on request.



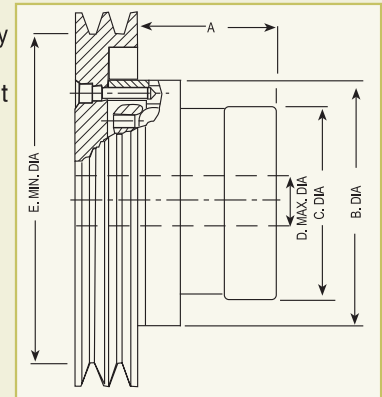
TYPE-CS

Model	Release Torque			Dimensions in millimetres and inches				Smallest Standard Sprocket (Number of teeth)				
	Min.	Max.		A	B	C	D	3/8" Pitch	1/2" Pitch	5/8" Pitch	3/4" Pitch	1" Pitch
	Kgm. lb ft	Kgm. lb ft	HP/ RPM									
20	1.4	4.9	0.006	52	76	60	16	30	22	19	17	14
	10	35		2.04	2.98	2.87	0.625					
150	4.2	21	0.03	55	94	87	28	38	28	23	20	15
	30	150		2.10	3.70	3.44	1.125					

TYPE CP (Type CB combined with Pulley)

NOTE : Pulleys to suit the following belts can also be supplied standard 'V' section, flat, poly 'V' and timing or toothed.

For pulleys smaller than listed, an adaptor is used. Details on request



TYPE-CP

Model	Release Torque			Dimensions in millimetres and inches				
	Min.	Max.		A	B	C	D	E
	Kgm. lb ft	Kgm. lb ft	HP/ RPM					
20	1.4	4.9	0.006	To suit	76	60	16	102
	10	35		2.98	2.37	0.625	4.00	
150	4.2	21	0.03	To suit	94	87	28	124
	30	150		3.70	3.44	1.125	4.875	

General Information

Limit Switch operation

The axial movement of the body on overload can be used to operate a limit switch, either to cut the drive out or to give visual or audible warning. Because of its completely free running on overload the use of a limit switch with the 'A' types is optional. However, we strongly recommended than one be used with the 'C' types unless the operating speeds are exceptionally low.

Maintenance

During assembly all units are sprayed internally with ASP antiseizing compound and then packed with a 3% Molybdenum Disulphide (MoS₂) grease.

Because of their uniquely fully enclosed design all units need only be stripped and re-packed with grease every two years. However, under extremely adverse conditions of environment and duty, please consult Wellman Wacoma Ltd.



Wellman Torque Limiters

Specials

It is apparent that Torque Control is a field where at time designs must be tailored to suit the customer's precise needs. Wellman's reputation for specials stands high and Torque Control Division maintains this excellent service. Therefore, should you require characteristics not included in the catalogue, please ask.

Running in oil

All Wellman units can be run in oil if required without affecting performance. For remote resetting of type 'A' units under these conditions, the body can be supplied with a flange to suit a resetting, mechanism see Fig. 2.

How to Order

Example

Model 1000 type ACP

This specifies

Manual reset clutch capable of 1000 lbs ft torque complete, with flexible coupling for shaft to shaft application. See page 3.

Additional information

HP R.P.M. to be transmitted.

Type of drive position of Bibbi-gard.

Approximate torque setting required.

Details of shaft(s)

Any special requirements such as shifter ring, neoprene seals, etc.

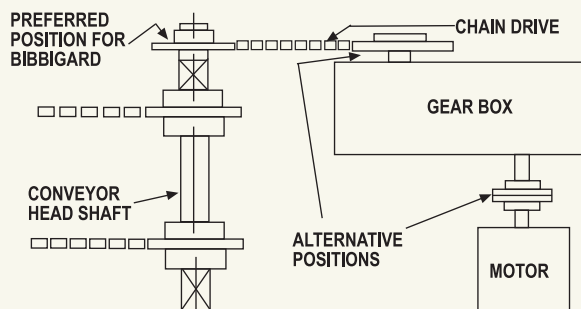


FIG. 1

TYPICAL ARRANGEMENT OF TYPE AS FITTED WITH SHIFTER RING WHICH CAN ALSO BE USED TO OPERATE A LIMIT SWITCH

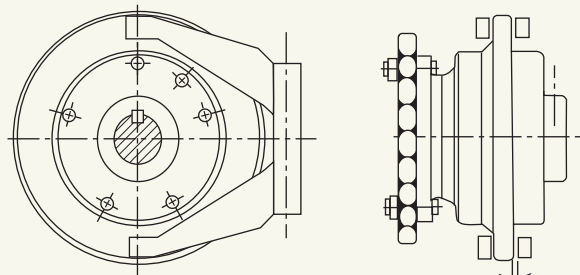


FIG. 2

CLEARANCE MUST BE SUFFICIENT TO ALLOW FOR CLUTCH DISENGAGEMENT

As improvements in design are continually being achieved, the specifications given in this catalogue are not to be regarded as binding in detail, and dimensions are subject to alteration without notice.



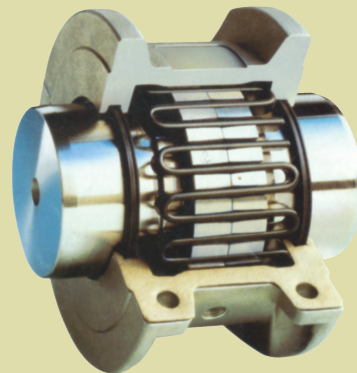
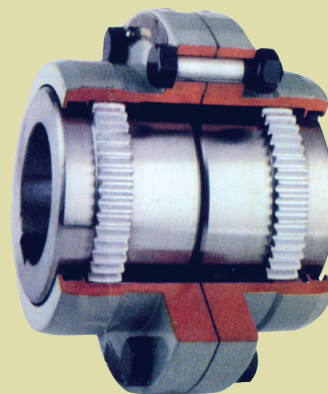
Wellman Torque Limiters

Wellman Range of Products

WELLMAN RANGE OF PRODUCTS

Unrivalled experience, comprehensive design and manufacturing capabilities - accepted world-wide by designers, manufacturers and maintenance engineers seeking long-term reliability.

- ▶ Gear Couplings
- ▶ Resilient Couplings
- ▶ Flexible Couplings
- ▶ Series 54 Resilient Couplings
- ▶ Taper Grid Resilient Couplings
- ▶ Wellman Torque Limiters



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