

WELLMAN Resilient Couplings

Assembly and Maintenance

Coupling Rating and Working Factors



WELLMAN

Resilient Couplings

Assembly

Care is necessary in the assembly of coupling particularly in checking for both parallel and angular alignment and in setting the correct gap as shown in the table. The coupling grooves must be completely packed with grease before the spring is inserted and a further liberal application of grease after its insertion is essential. After the assembly of the outer cover the maximum possible quantity of grease should be injected through the grease valves.

After the first hour's running at full speed an extra "topping up" of grease should be given to couplings that cannot be serviced more often than every 12 to 15 months.

Lubrication

Wellman couplings should be lubricated with good quality stiff waterfree grease. The following are approved.

- Duckham - Admax S.3 (previously H.S.G)
Admax L.2 (previously L.B. 10)
 - Esso - H.M.P. or Beacon 2 or 3
 - Mobil oil - Mobilux No. 2 or Mobilgrease Larital No.2
 - Indian oil - Servogem 2
 - Power - B.P. Energese R.B.B.3 or L.S.3
 - Regent/Texaco/Caltex - Marfak 3 or Marfak Multi-Purpose 2
 - Sheel - Narita 3 or Alvania 3
 - Castrol - Speerol-A.P. or A.P.3
- Turbine and high speed couplings are designed for oil lubrication as individually specified

Maintenance

1. Periodically replenish grease valves.
2. Open up covers occasionally to check shaft alignment and to ensure that springs are lubricated against wear.
3. Clean out and renew grease in accordance with the above instructions as necessary, but at least every 12 to 15 months.

Class of Machine		
Agitator	...	2
Calender	...	3
Serment Mill and Kiln	...	3
Conveyor	Horizontal	1.0
	Inclined	1.5
Couches	...	2.5
Crane motions	...	
a) (Classes 3 & 4)	Hoist	4
	Long travel	3
	Cross traverse	3
b) (Classes 1 & 2)	Hoist	3
	Long travel	2.5
	Cross traverse	2.5
Electric Generator	(Steady load)	1.75
Fan	Colling tower	2.5
	Industrial	2.0
	Mine	2.5
Haulage	...	3
Life shafting	...	2
Machine Tool	Reversing	3.0
	Other	1.5
Paper Mill		2 to 4 +
	Pumps : Centrifugal	1.25
	rotary	2
	reciprocating	3
Rock Crushers	...	4
Rubber Mill	Rubber Mixer	3
Steel Work drives	...	2 to 5 +
Turbine Driven Generators	...	1.25
Rollg Mills, Motor Driven without Flywheel	...	4

+ The factors given above for Paper Mill and Steel Works drives are only a general guide. These drives are so varied in their characteristics and methods of specifying power transmitted are so diverse that each must be considered individually. Full details should be sent to Wellman Wacoma Limited. Drives from prime movers other than electric or turbine, e.g. steam, diesel, petrol engines, etc. call for individual consideration. Here also full details should be sent to Wellman Wacoma Limited.

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Brakewheel Couplings Types WK and WKE WX and WXE

Wellman Brakewheel Couplings have a world-wide reputation for reliability and long life. They are fitted as standard equipment by many crane manufacturers and have an especially high reputation where working conditions are arduous.

Because of the innumerable combinations of coupling sizes with various brakewheel diameters, facewidths, positions and so on, all Wellman Brakewheel Coupling were originally designed individually. In recent years these designs have moved increasingly towards conformity with certain fixed standards, in sympathy with a growing preference for standardisation on the part of designers and engineers. Standard Wellman Brakewheel Couplings are now available in a range of sizes based on extensive analyses of past records and experience. Standardisation goes a long way towards eliminating the need for individual coupling design but it cannot solve all problems. Industrial design and custom built production will continue to be necessary in many cases and Wellman service in this field is in no way restricted. However, where standardisation can be recommended as having certain advantages particularly in the replacement of worm parts, it will be offered.

As will be apparent from a study of the diagrams (on pages 2,3), the selection of a particular type of brakewheel (aa.bb.cc) is dictated, to a large extent by the brakewheel diameter in relation to the coupling size. This must be kept in mind when considering brakewheels other than standards; the minimum practicable diameter for each type of brakewheel is therefore given in the table.

Standard material for Wellman Brakewheel is an alloy cast iron having a minimum tensile strength of 20 tons per square inch. Brakewheels can be specially made to order in other materials and heat treated when required.

Brakewheel coupling types WK and WKE have a single piece cover which can be withdrawn in one axial direction only. Brakewheel coupling types WX and WXE have a two piece axially split cover which is removable at right angles to the driving and driven shaft. When the axially split cover is used with a type cc brakewheel it is partly shrouded by the brakewheel and therefore requires an amount of C_2 of removal space. When used with a type aa or bb brakewheel the axially split cover needs no extra removal space. It is conventional practice to place the brakewheel half coupling on the driven side although this is not essential.

The free hubs (i.e. those shown on the left of the diagrams on pages 2,3) the covers and the springs of brakewheel couplings type WK, WX, WKE and WXE are interchangeable with the corresponding parts of flanged couplings type FK, FX, FKE and FXE.

Wellman Couplings can also be supplied with discs to suit disc brakes.

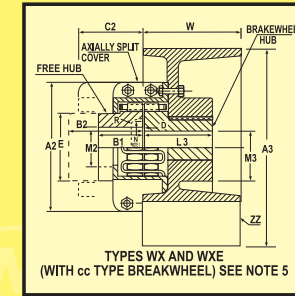
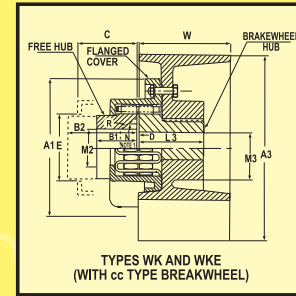
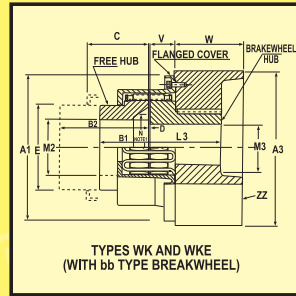
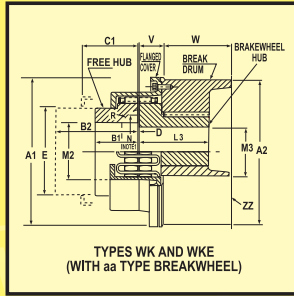
To obtain full benefit from the resilient qualities of a Wellman Coupling it must be carefully matched to the particular characteristics of the power transmission system for which it is intended. The characteristics must therefore be carefully studied before the coupling can be specified. Although some systems are found on examination to present special problems, in most cases it is possible to select a Wellman Coupling of a rating precisely right for its purpose by using a simple formula which includes a working factor, the latter taking account of such contingencies as overloads shocks, stalling, accidental misalignment etc; thus,

$$\text{Coupling rating} = \frac{\text{Normal h.p.} \times \text{factor}}{r.p.m.}$$

$$\text{or } \frac{\text{Normal torque in lbs/ins} \times \text{factor}}{63,000}$$

Coupling ratings are given in each of the tables appearing in next pages. Recommended factors for various duties are listed opposite. The list is not intended to be more than a general guide to such factors because each case must be studied on its merits and account taken of the particular working conditions. Sometimes reduced factors can safely be used (for example with certain low speed applications) with consequent cost savings. Wellman engineers are always ready to give advice on this subject.

After the coupling rating has been selected, it is always necessary to check the maximum bore and safe speed against the requirements of the drive. If the maximum bore is too small, a larger coupling must be selected. If the safe speed is too low, a different type of Wellman Coupling will be required.



Coupling No.	Rating (note 2) (h.p. per r.p.m.)	Types WK, WX, WKE and WXE										Type WK and WKE			Types WX and WXE			Brakewheel Type aa		Brakewheel Type bb		Bkwl. Type cc		Standard brakewheels (Note 4.5 & 6)						Coupling No.
		Free hub (note 1) WK WX B ₁ (mm)	length WKE WXE B ₂ (mm)	Hub length L ₃ (mm)	Max. recess dia (note 3) N (mm)	Gap D (mm)	Cover Bore E (mm)	Max bore		Standard rough bore (mm)	Cover dia. A ₁ (mm)	Removal Space C ₁ (mm)	Safe Speed (Note 3)			Cover dia. A ₂ (mm)	Removal Space C ₂ (mm)	Safe Speed (note 5) (r.p.m.)	Min. face dia. A ₃ (mm)	Position (note 6) V (mm)	Min. face dia. A ₃ (mm)	Position (note 6) V (mm)	Min. face dia. A ₃ (mm)	Face dia. A ₃ (mm)	Max. face width W (mm)	Position V (mm)	Type	Max bore M ₃ (mm)	Safe speed (note 3) (r.p.m.)	
								M ₂ (mm)	M ₁ (mm)				WKc WKcE (r.p.m.)	Wkn WknE (r.p.m.)	WKcs WKcsE (r.p.m.)															
124	0,025	51	85,5	86	62	0,8	76	46	49	16	178	87	4100	6000	8500	165	60,32	2700	127,00	47,62	177,80	23,81	203,20	152,40	69,85	47,62	aa	46,03	4400	124
126	0,04	51	100	86	70	0,8	89	52,38	56	16	194	87	3700	5400	7600	180,9	60,32	2500	152,40	47,62	203,20	22,22	228,60	152,40	69,85	47,62	aa	52,38	4400	126
136	0,06	57	114	101	78	0,8	95	55,56	69	16	209	117	3500	5150	7300	196,8	80,96	2400	152,40	57,15	228,60	28,57	254,00	203,20	82,55	47,62	aa	55,56	3300	136
152	0,09	63,50	114	114	100	0,8	118	63,50	74	25	229	117	3000	4400	6200	215,8	80,96	2000	177,80	57,15	228,60	28,57	254,00	203,20	82,55	47,62	aa	55,56	3300	152
158	0,12	70	114,5	114	111	0,8	133,5	76,20	86	25	263,5	117	2500	3700	5300	250,8	80,96	1750	203,20	57,15	279,40	28,57	304,80	254,00	107,95	47,62	aa	76,20	2650	158
168	0,18	89	130	114	133	0,8	156	85,72	102	25	286	117	2300	3300	4700	273	80,96	1600	228,60	57,15	304,80	28,57	330,20	304,80	139,70	47,62	aa	76,20	2200	168
212	0,35	102	183	159	130	1,59	156	88,90	102	38	311	187	2200	3200	4500	295,2	128,58	1500	228,60	82,55	330,20	53,97	355,60	304,80	139,70	53,97	bb	88,90	2000	212
236	0,45	101,5	208	165	158	1,59	184	101,60	120	50	349	217	1900	2800	3900	333,3	149,22	1300	279,40	92,07	355,60	63,50	406,40	304,80	146,05	0	cc	101,60	1650	236
266	0,65	101,5	208	178	155	1,59	187,5	107,95	122	50	362	217	1800	2600	3700	346	149,22	1250	279,40	92,07	381,00	63,50	406,40	304,80	146,05	0	cc	107,95	1450	266
290	0,90	114	208	190,5	184	1,59	219	120,65	146	50	400	217	1550	2300	3200	384,1	149,22	1100	330,20	92,07	406,40	63,50	431,80	304,80	146,05	0	cc	120,65	1400	290
318	1,25	127	208	190,5	203,2	1,59	244,5	136,52	162	50	438	217	1400	2000	2900	425,4	149,22	1000	355,60	92,07	457,20	63,50	482,60	304,80	146,05	0	cc	136,50	1100	318

Notes :

- Types WK and WX have free hub length B₁. Types WKE and WXE have free hub length extended up to B₂, maximum. Inner face of free hub can be recessed (as dotted in diagrams), to suit a shaft nut or an increased distance between shaft ends. Radius R should be not less than 1/4".
- Larger sizes quoted on application.
- The safe speeds in columns 14, 15, 16 and 19 refer to the couplings assembly only. Those in column 30 are for brakewheels of the specified diameters. To determine safe speed for combined coupling and brakewheel select Lowest Speed for either Couplings and brakewheels can be supplied for higher Speeds than those listed - details on application.
- Brakewheel of narrower face width are produced by removing material from edge ZZ. Other brakewheel size (face diameter, width, position and type) are supplied to order.
- The axially split cover shown with cc-type brakewheel (diagram extreme right) can be fitted also to aa or bb types Removal space C₂ is measured from the inner edge of the brakewheel on all types.
- Dimensions V is measured from the inner face of the brakewheel hub to the edge of the brakewheel face.
- All couplings are fitted with grease valves, BS. 1486 part I, 1959 type II B in covers.
- Any enquiry should be accompanied by the following service information:
 - h.p. and r.p.m. to be transmitted;
 - classes of driving and driven machines;
 - starting loads or overloads;
 - nominal diameters and lengths of shafts extensions;
 - to which shaft (driving or driven) the brakewheel is to be fitted;
 - any other relevant details of working conditions;
 - brakewheel diameter and face width.
- When ordering, the following additional information should be supplied; (h) bore diameter and limit required for each half coupling (or each shaft diameter and manufacturing limits); (i) full keyway dimensions and whether parallel or taper.
- All dimensions are subject to confirmation.