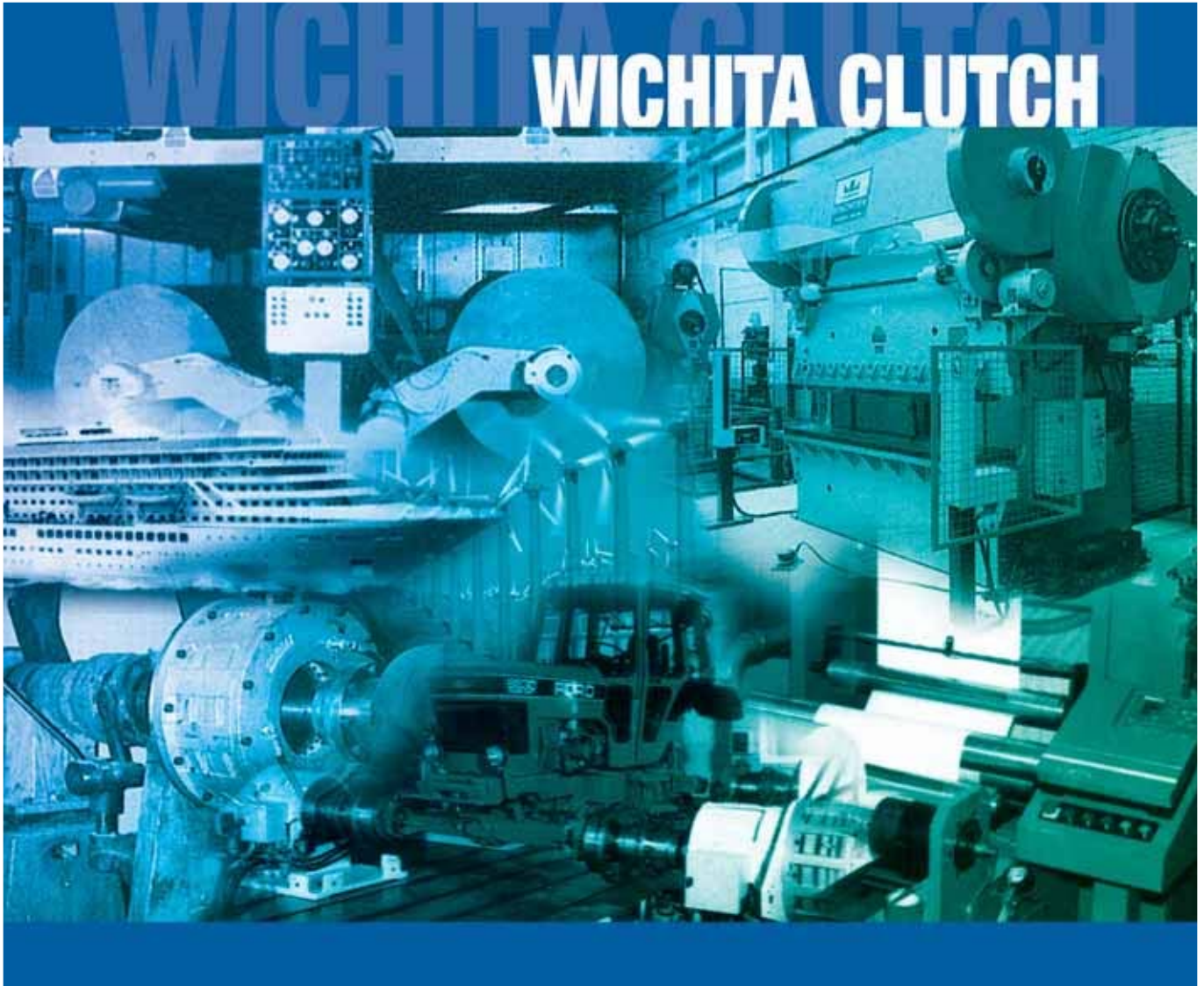


**WICHITA CLUTCH**



Wichita  
Pneumatically actuated  
Clutch & Brake  
Catalogue



## THE COMPANY

Wichita Company Limited manufacture a wide range of pneumatically and hydraulically operated clutches and brakes.

The products are marketed through company facilities in England, Germany, Holland and France, together with an extensive distributor network throughout the world.

Highly skilled technical service, research, development and quality assurance departments, together with modern manufacturing and test facilities at the Bedford,



England factory, means the company is equipped to meet every requirement, within a Total Quality culture.

Wichita Clutches and Brakes have been manufactured in Bedford since 1961.

Products designed and manufactured at Bedford have won prestigious awards including the British Design Award and the company's Quality Management

System is approved to ISO 9001-2000.



## PRODUCTS

“Wichita” clutches and brakes, disc couplings are well proven and established as standard throughout industry in many applications such as Paper, Steel, Metal Forming, Mining, Marine, Forestry, Petrochemical, Ceramic, Dynamometry and many more.

The torque range of Wichita units catalogued is from 0.25 – 2,000,000 Nm. This is by no means restricted. Units are manufactured outside those catalogued – details are available on request.



## ENGINEERING

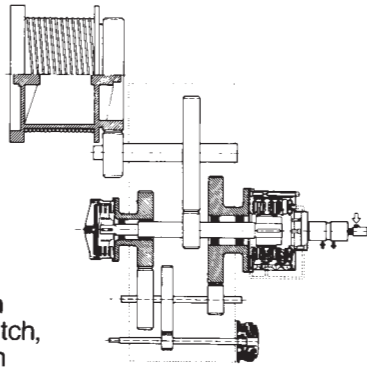


Manufacturers benefit from Wichita's considerable experience and expertise in system design. Continuing development assures the ability to meet demands for higher quality, improved performance and increased production.

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Explained in separate catalogues, available on request, are Wichita WCM and CSM Clutches, Hydraulically operated clutches and brakes and MSV and MLI Marine Propulsion Clutches as well as Taylor clutches and brakes, Formflex flexible couplings and Micro Tension controller and monitor ranges.



Maraven winch disconnect Clutch, SV324H Clutch

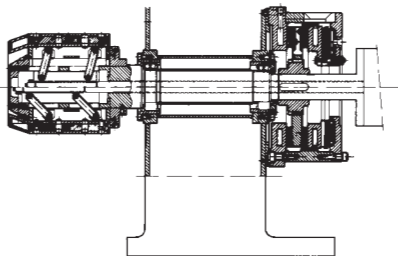


ESV lolair emergency support vessel

Main propulsion Wichita/Holset MSV 321/6WB Clutch couplings

Prop-shaft Brakes. LIM324H

Fire pump PTO's  
Wichita/Holset MSV321/6WB Clutch/Coupling



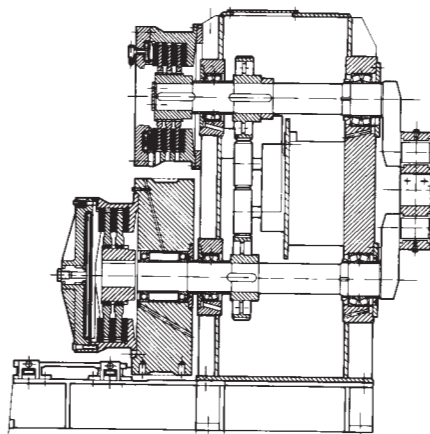
Single Mandrel uncoiler back tension brake WCM 121 Large Bore



Conversion of Bruderhaus winder with CSM 221 Brake

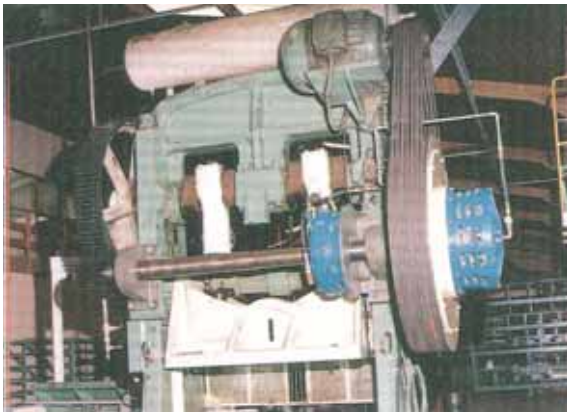
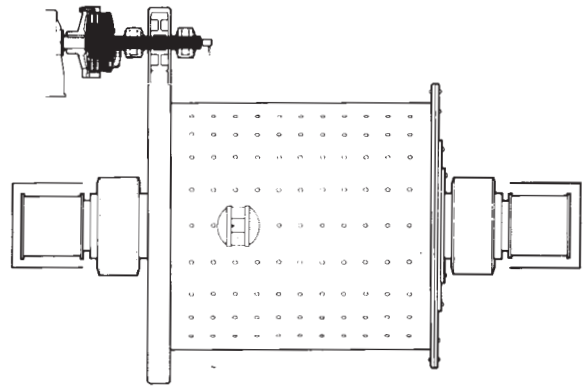
Asmas Rotary Flying Shear LIM218 Clutch LIM214 Brake

Conversion of British Clearing 350 ton Press Brake with Spring Set Brake SSM 316

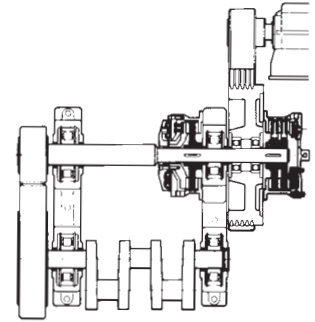




Allis Chalmers ball mills SV360 Clutch



Bliss Press  
Conversion HTM 221  
Clutch & SSM 118 Brake



Conversion of Cincinnati  
Series 5 Press Brake with  
combined Clutch/Brake  
CCB 380 REP



SHM 'J Series' Reel Stand for sheeters  
using Magnum 340 Brakes

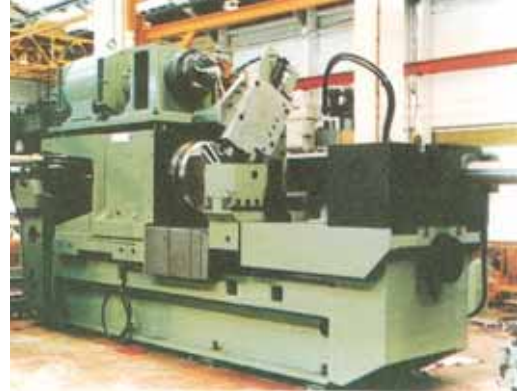
Duffy  
Slitter  
— Magnum  
260/2  
Tension  
Brake





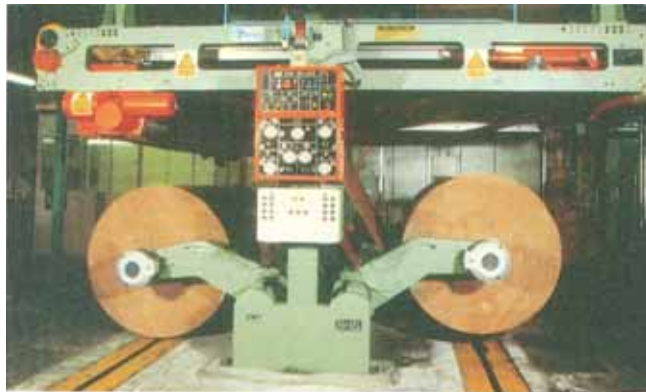
Craven Fawcett clay mixer SV214 Clutches

NEI John Thompson friction welder SV211 Clutch



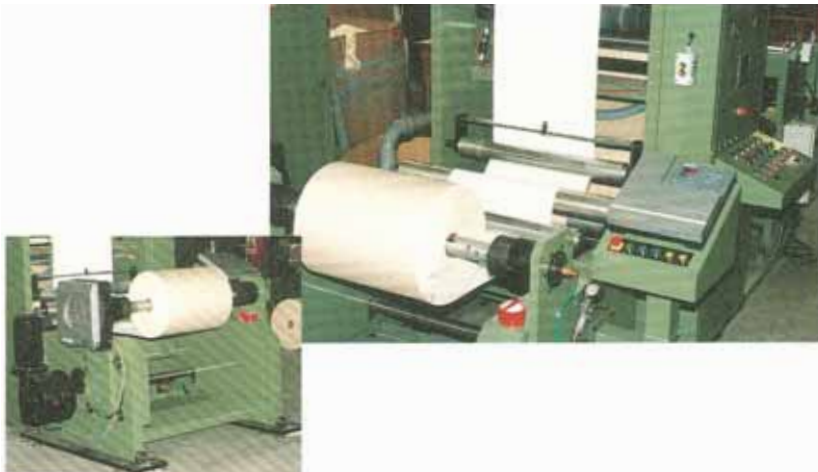
Wise Handling Cable transfer drum, SV218 Clutch + LIM 218 Brake

Conversion of BHS Mill Roll Stands on Peters Corrugator — Mistral 200/6 Brakes



Plint & Partners Advanced Axle Dynamometer at Silsoe Research Institute, Bedford —CSM 224 Brakes on Front Wheels, CSM 130 Brake on Rear Wheels.

Kinghorn Press Brake  
— Taylor PCAB  
Combined Clutch/Brake



Flexotecnica 4 Colour  
Flexograph Printing  
Machine — Micro Web  
Tension Controller —  
Magnum 400/4 Disc Brake

Brush Rolling  
Road Dynamometer  
— Formflex 8 Bolt  
Flexible Coupling  
Type HSH 55



Main Propulsion and Generator Drive Clutches  
on Royal Princess — MLI 248 and SV 430 Clutches



# Wichita TECHNICAL INFORMATION

Wichita pneumatic disc clutches and brakes are available with friction disc diameters ranging from 100-2 500 mm and in one, two or three plate designs, giving a torque range of 50-2 000 000 Nm. This means that even in designs where available mounting space is limited, or rotational speed is high, there is a standard WICHITA unit to solve the problem.

Accurate control of a large variety of machine functions can be achieved through the convenient operating medium of compressed air. Because the units have freely moving discs, the force on which is directly proportional to the applied pressure in the airtube, precise torque control is made possible for:-

- TORQUE LIMITING & OVERLOAD PROTECTION**
- WINDING AND UNWINDING OF PAPER, FABRICS, FOIL, PLASTICS, FERROUS AND NON FERROUS METALS.**
- LINE TENSION CONTROL IN WINCHES**
- DYNAMOMETER AND TEST RIG INSTALLATIONS**

Alternatively, the airtube can be rapidly inflated and deflated through quick action valves, to provide the extremely fast response required in:-

- RAPID STOP/START CYCLING OF LARGE INERTIAS**
- FAST APPLICATION OF EMERGENCY BRAKES**
- ACCURATE POSITIONING OF STOP/START MOVEMENTS**

## MODEL CODES

The model code used in the tables indicates the type of unit together with the number of plates and the friction diameter in inches. For example:-



Additional suffix letters denote special features such as /MR — Multi-range; /A — One size smaller airtube; /LC — Low Coefficient Friction Material; /HS — High Speed Airtube; /GL — Grooved Linings (friction material).

## SELECTING A CLUTCH OR BRAKE

When selecting a clutch or brake for a particular application, there are always a minimum of three parameters to be considered. Our application engineers are pleased to select the most suitable unit for your application.

### 1. Torque Capacity

The dynamic torque capacities of the clutches and brakes given in the tables represent the full capacity of the clutch or brake.

Service factors should be applied to the dynamic torque rating. For continuously slipping applications, such as tension control, 100% of the rating may be used, but for other applications a maximum of 75% of the rating should be used. For some arduous applications our engineers may recommend using 40-50% of the torque rating.

With the exception of the CCB and SSM units, the torque capacity is directly proportional to the applied air pressure. The torque of the SSM brake and the CCB brake side is dependant upon the force of the engaging springs. The CCB clutch side has a torque dependant upon air pressure applied (less brake spring force).

All models will accept 5.5 bar air pressure. Some models, depending upon the application, are suitable for 7 bar or 8.5 bar.

### 2. Maximum Speeds

The maximum allowable speed is dependent on several factors. The speeds given in the tables are those allowable for standard cast iron units, and for special high speed design. The high speed design is achieved by a combination of several special features including:-

- a High Speed Reinforced Airtube;
- Construction in Ductile Iron or Steel;
- Balancing of the Unit.

The given speeds are applicable in the engaged or disengaged position. Allowable engaging speeds depend entirely on the details of the application and the heat developed during engagement.

### 3. Heat Transfer

The heat transfer figures given for the WCM and CSM models show the maximum heat which the units can dissipate on an intermittent basis. No figures are given for the air-cooled models as these are greatly influenced by the particular application details such as rotational speed and frequency of engagement. Special designs of air-cooled models for high heat dissipation are available.

## AIR CONSUMPTION

The airtube volumes stated in this catalogue are 'actual' values. The 'free air' volume may be calculated as follows:-

$$\text{Free air volume per engagement (cm}^3\text{)} = \frac{\text{actual volume (cm}^3\text{)} \times [\text{air pressure (bar)} + 1]}{1 \text{ (bar)}}$$

Example: LIM 114 brake at 5 bar air pressure

$$\text{Free air volume per engagement} = \frac{700 [5 + 1]}{1} = 4\,200 \text{ cm}^3$$

Volume of hoses between airtube and operating valve need to be added to the airtube volume to obtain total free air volume.

## CONVERSION FACTORS

This catalogue conforms as closely as possible with the S.I. System of Units. Commonly used conversion factors are as follows:-

**TORQUE:** 1 newton-metre (Nm) = 0,102kpm = 8,85lbf in.

**PRESSURE:** 1 bar = 10<sup>5</sup>N/m<sup>2</sup> = 1,02atm = 14,5lbf/in<sup>2</sup>.

**HEAT:** 1kW = 1,34 BRITISH H.P. = 860kcal/h.

**TENSION:** 1N/mm = 5,7lbf/in.

**WATER FLOW:** 1l/min = 0,22gall/min.

**MOMENT OF INERTIA:** = J.

Moment of inertia (kgm<sup>2</sup>) = mass (kg) x [radius of gyration (metre)]<sup>2</sup>

$$J = mr^2 = \frac{GD^2}{4}$$

For conversion between Wr<sup>2</sup> and J      1 kgm<sup>2</sup> = 23,73lb ft<sup>2</sup>



# Wichita

## TYPICAL APPLICATION SELECTION

### Example I – Electric Motor Drive via a Gearbox. Clutch to transmit 60 kW at 300 rev/min

$$\text{Full load torque (Nm)} = \frac{\text{kW} \times 1000}{\omega} \text{ where angular velocity } = \omega = \text{rev/min} \times \frac{2\pi}{60}$$

$$\therefore \text{F.L.T.} = \frac{60 \times 1000 \times 60}{300 \times 2 \times \pi} = 1910 \text{ Nm}$$

Because electric motors are capable of a starting torque that is higher than F.L.T., use a starting torque factor of at least 1.5.

$$\therefore \text{Starting torque} = 1910 \times 1.5 = 2865 \text{ Nm}$$

Select LIM 214 Clutch (page 16) which has a dynamic torque capacity of 4870 Nm at 5.5 bar air pressure. Using 75% of this value to allow for a service factor =  $4870 \times 0.75 = 3652 \text{ Nm}$ . For shaft to shaft mounting an SV 214 (page 12) would be selected.

The speed of rotation of 300 rpm is well within the limits of the clutch. Heat generation within the clutch will depend upon the rate of engagement and the frequency or quantity of consecutive engagements.

### Example II – Brake to stop a given Inertia at Intervals

A brake is required to stop a machine 10 times per minute. The speed of the brake shaft is 120 rev/min, and the inertia of the stop/start parts referred to this shaft is 20 kgm<sup>2</sup> (including brake hub and centreplates). The brake must be Fail-Safe and must stop the machine within one revolution.

$$\text{At full speed, time to cover 1 revolution} = \frac{60}{n} = \frac{60}{120} = 0.5 \text{ sec}$$

where n = speed (rev/min)

To determine the stop time to be used in the torque equation, the response time of the brake must first be subtracted. This is the time,  $t_r$  between signalling 'brake on' and the full brake torque being available. The resulting time is then doubled because the average angular velocity during a stop is only half the full speed.

$$\text{i.e. } t = \left( \frac{60}{n} - t_r \right) \times 2$$

In this case,  $t_r$  will certainly be within 0.050 seconds because spring-set brakes have a rapid response, so  $t = (0.5 - 0.05) \times 2 = 0.9$  seconds.

$$\text{Required brake torque (Nm)} = \frac{\text{Inertia (kgm}^2\text{)} \times \text{Angular Velocity (rad/sec)}}{\text{Stopping time (sec)}} = \text{mr}^2 \times \frac{\omega}{t}$$

$$\text{where } \omega = \frac{n}{60} \times 2\pi \text{ (rad/sec)}$$

$$\text{Required brake torque} = \frac{20 \times 120 \times 2 \times \pi}{6.0 \times 0.9} = 278 \text{ Nm}$$

From the spring-set torque table on page 34, it can be seen that model SSM 108/45 has a torque of 450 Nm using 75% of this value for a service factor =  $450 \times 0.75 = 338 \text{ Nm}$ . Having selected a brake, the heat dissipation requirement must be checked as follows:-

$$\text{Kinetic Energy of stop/start parts} = \frac{1}{2} (\text{mr}^2) \omega^2 \text{ Joules} = \frac{20}{2} (12.6)^2 = 1588 \text{ J}$$

$$\text{Heat (kW)} = \text{K.E.} \times \text{Engagements/Second} = 1158 \times \frac{10}{60} = 284 \text{ W} = 0.284 \text{ kW}$$

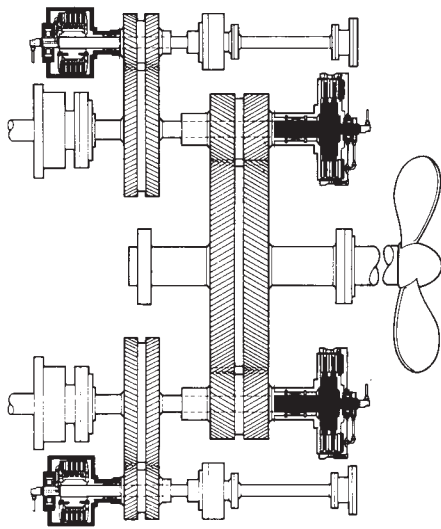
This is within the continuous heat dissipation range of the 108 brake, so the SSM 108/45 would be selected.

### Example III – An example of a tension control selection is shown on page 47.

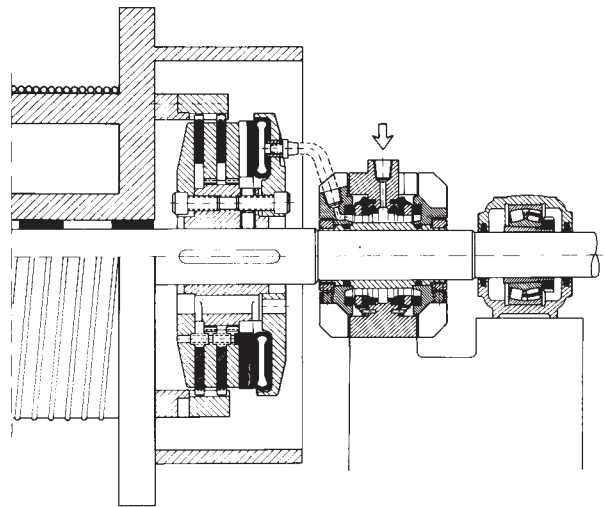
Whilst preliminary selection may be made from this catalogue, it is recommended that each application is submitted to Wichita engineers for confirmation of selection. A convenient sheet listing the data required to select a clutch or brake will be found inside the back cover of this catalogue.

# Wichita

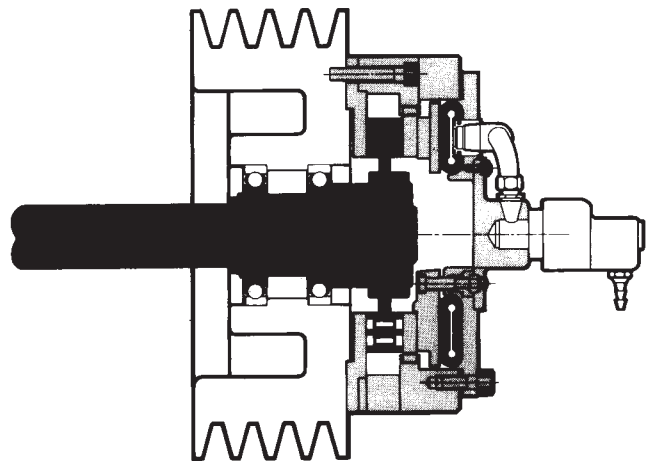
## CLUTCH MOUNTING ILLUSTRATIONS



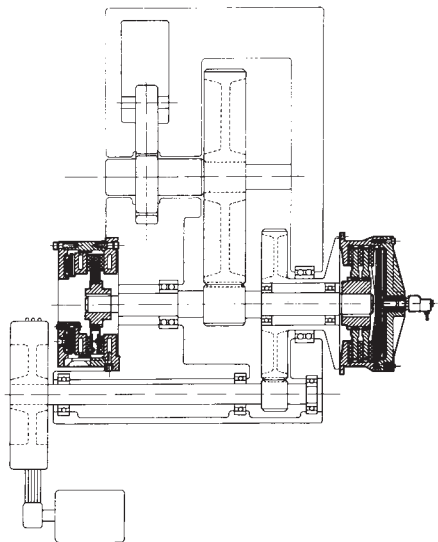
SV and LIM Clutches of Twin Input Marine Gearbox Driving Propeller and two Generators



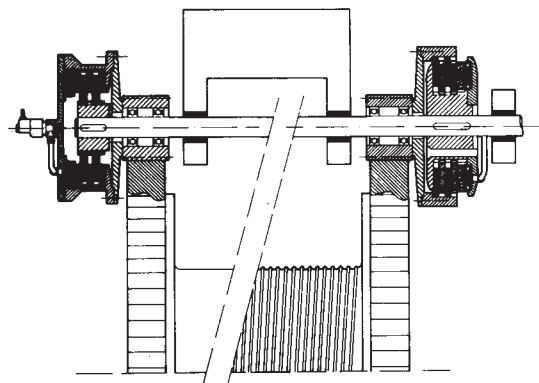
SV Clutch on Winch Drum with Mid Shaft Air Seal



HPM Clutch on Pulley

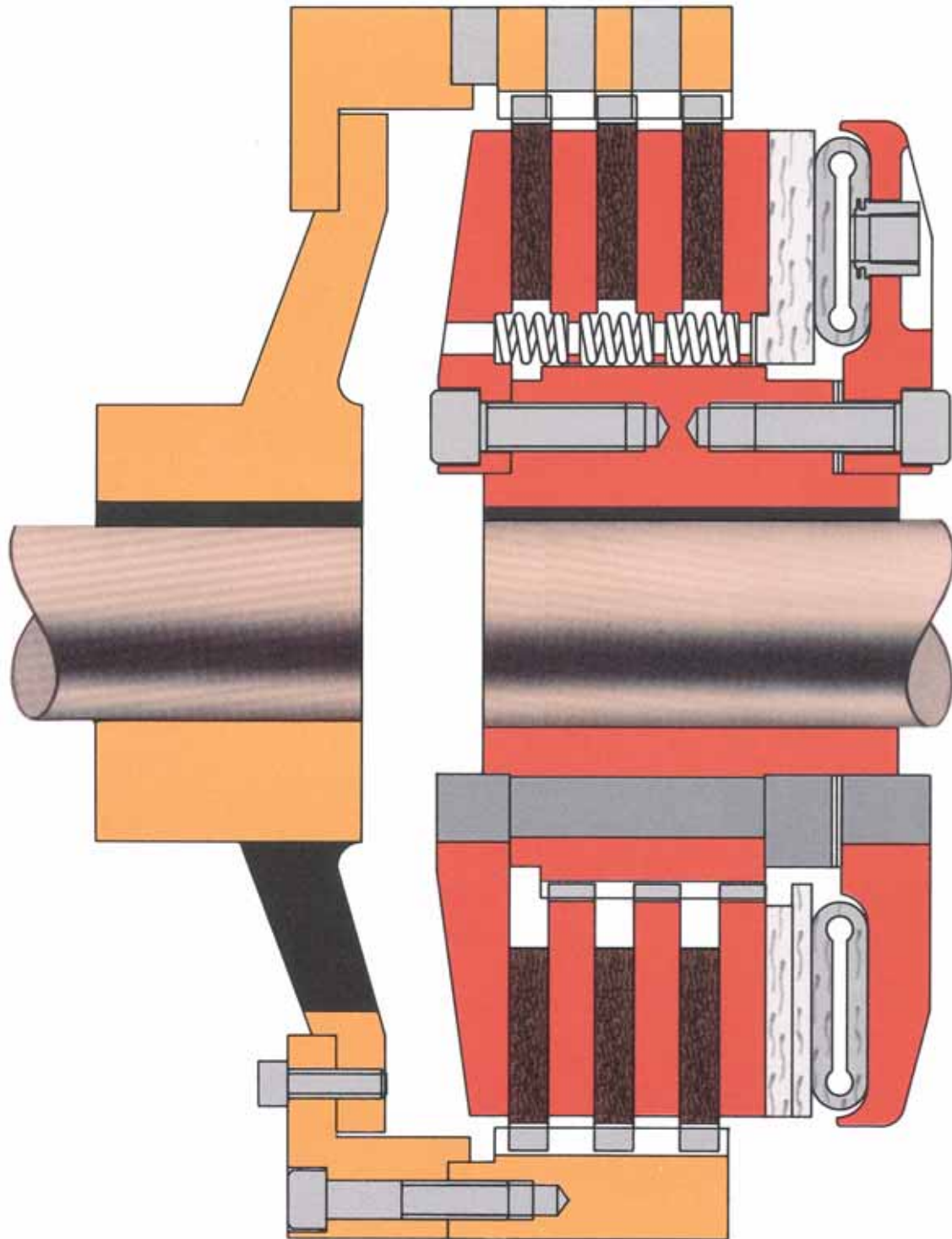


HTM Clutch and WCM Brake on Intermediate Shaft of Eccentric Power Press



LIM Clutch & SV Clutch on Winch Drive

**Wichita**  
**CLUTCH SECTIONAL VIEW**



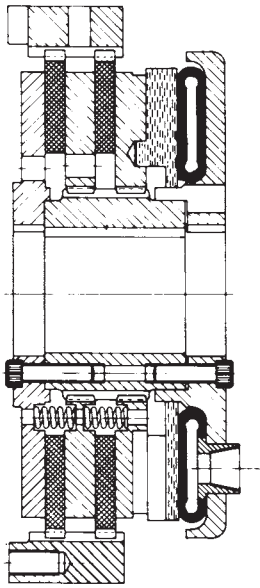
Wichita Standard Ventilated Clutch Model SV with Quick Change Driving Adaptor

# Wichita

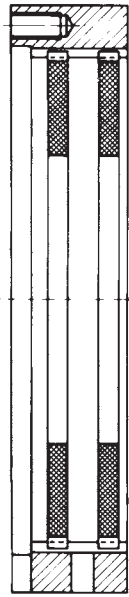
## STANDARD VENTILATED CLUTCH

### Performance

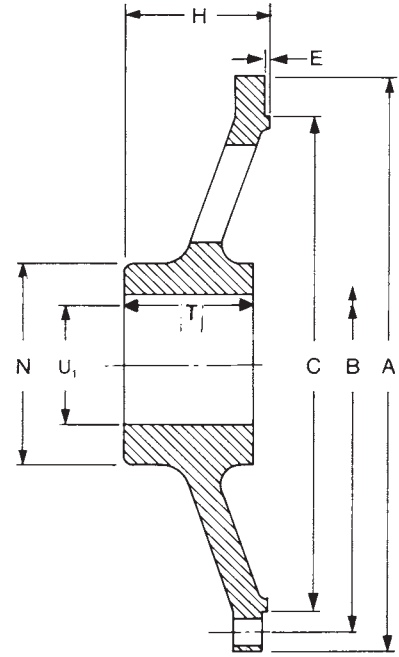
SV



Total Unit



External Parts



Standard adaptor

Model (clutch)	Dynamic Slip Torque capacity (Nm) (1)		Maximum Speed (rev/min) (2)		Weights and Inertia ( $J = m r^2$ )						Airtube Displacement Volume (cm <sup>3</sup> ) New Worn
	at 5,5 bar	at 8,5 bar	Standard performance	High performance	Total Unit		External Parts		Standard Adaptor		
					Weight (kg)	Inertia (kg m <sup>2</sup> )	Weight (kg)	Inertia (kgm <sup>2</sup> )	Weight (kg)	Inertia (kgm <sup>2</sup> )	
SV 106	340	525	1800	2600	9	0,05	2,5	0,025			30 195
SV 108	620	960	1750	2500	16	0,103	3,6	0,05	8	0,0625	55 300
SV 208	1 240	1 920			26	0,155	8	0,074			
SV 111	1 400	2 170	1400	2200	30	0,458	8,6	0,21	19	0,3	90 500
SV 211	2 800	4 340			49	0,715	16	0,43			
SV 114	2 435	3 765	1200	2000	68	1,55	15	0,575	35	0,775	125 700
SV 214	4 870	7 530			93	1,98	26	0,985			
SV 314	7 305	11 295			118		37				
SV 116	3 360	5 190	1200	2000	85	2,53	19	0,945	43	0,863	160 920
SV 216	6 720	10 380			124	3,65	41	1,93			
SV 316	10 080	15 570			165	4,85	60	2,90			
SV 118	5 705	8 815	1000	1750	125	3,93	21	1,35	72	1,7	250 1400
SV 218	11 410	17 630			176	6,15	42	2,7			
SV 318	17 115	26 445			228	8,43	66	4,1			
SV 121	7 755	11 985	900	1400	184	7,1	33	2,55	100	2,5	300 1600
SV 221	15 510	23 970			260	11,2	62	5			
SV 321	23 265	35 955			360	16,3	100	7,43			
SV 124H	13 575	20 980	700	1100	244	14,6	41	4,15	109	3,08	490 2600
SV 224H	27 150	41 960			343	22,4	82	8,2			
SV 324H	40 725	62 940			470	27,9	130	13,3			
SV 127	15 260	23 585	700	1100	306	20,9	42	5,63	170	10	400 2600
SV 227	30 520	47 170			420	29,5	84	10,1			
SV 327	45 780	70 755			540	39	132	15,8			
SV 130H	29 630	45 795	600	1000	420	38,3	68	10,2	250	19,5	960 5100
SV 230H	59 260	91 590			624	55,4	130	19,6			
SV 330H	88 890	137 385			860	80	254	38,8			
SV 136	44 920	69 425	560	800	725	88,6	105	22,9	400	50	1800 6800
SV 236	89 840	138 850			975	122	175	37,3			
SV 336	134 760	208 275			1218	141	285	41,3			
SV 142	64 160	99 160	460	690	1190	230	266	83,5	520	112,5	2100 8000
SV 242	128 320	198 320			1620	316	487	138			
SV 342	192 480	297 480									
SV 248	237 600	367 200	400	600	2152	495	445	171	900	132,5	3550 13500
SV 348	356 400	550 800			3500	775	520	420			
SV 260	473 000	731 000	340	475	3150	1013	592	325			8400 29300
SV 360	709 000	1096 000			4850	1450	570	355			
SV 460	946 000	1462 000									
SV 272	803 000	1241 000	265	400							21500 75000
SV 372	1204 500	1861 500									
SV 296	1617 000	2499 000	210	300							
SV 396	2425 500	3748 500									

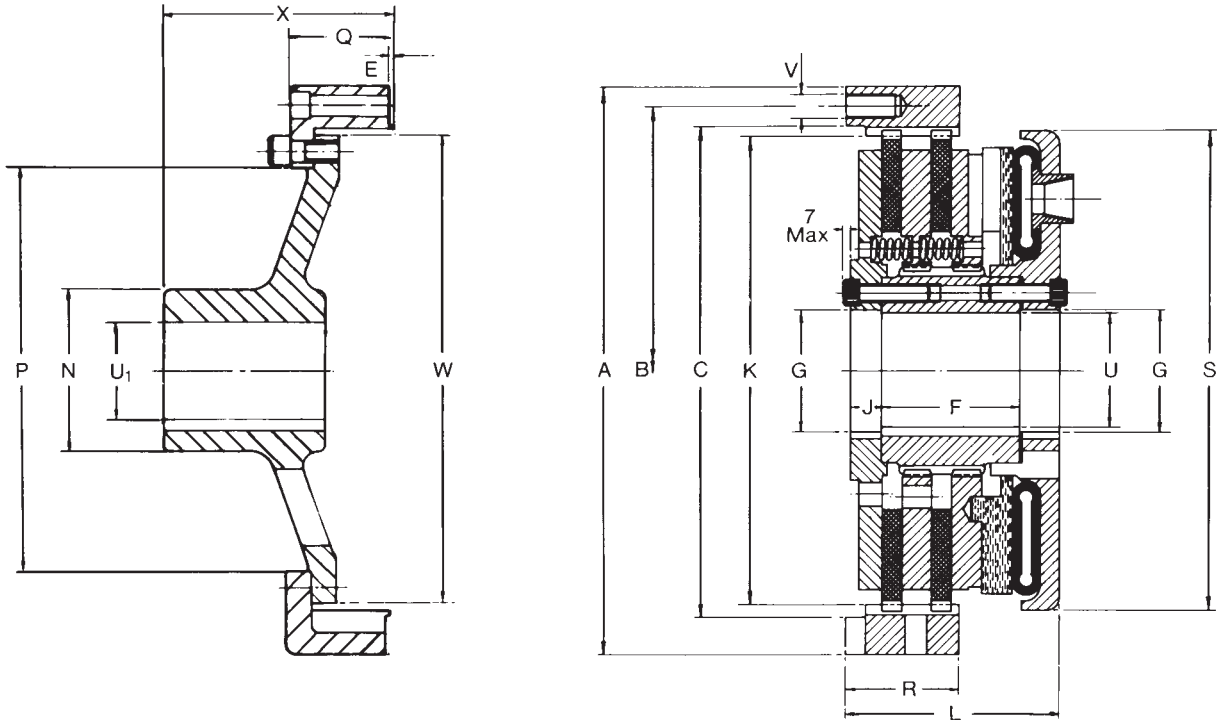
#### Selection Guide — Service Conditions

- (1) Torque Rating — Dynamic torque ratings represent full clutch capacity. Service conditions vary but as a guide to selection for cycling application use 75% of torque rating.  
Air Pressure — torque is directly proportional to the air pressure applied.
- (2) High Speed.  
Maximum speed ratings may be exceeded in many applications. For advice on speed, service factors etc. consult your Wichita Engineer.

# Wichita

## STANDARD VENTILATED CLUTCH

### Dimensions



Quick change driving adapter

Clutch

MODEL	A	B	C <sup>(1)</sup>	E	F	G	H	J	K	L	N	P	Q	R	S	T	U <sup>(2)</sup>			U <sup>1(2)</sup>			V	W	X	
																	Min	Max	Sp	Min	Max	Sp				
SV 106	224	203	187.33	1.6	41.27	30.00	68	14.0	172	75	83	—	—	29	194	63	19	30	—	—	—	—	—	—	—	—
SV 206	224	203	187.33	1.6	—	30.00	68	14.0	172	75	83	—	—	—	194	63	19	30	—	—	—	—	—	—	—	—
SV 108	264	244	225.50	3.2	50.4	49	80	19.0	210	102	95	152	60	35	244	76	32	50	—	32	50	80	6XM12	203	111	
SV 208	264	244	225.50	3.2	85.73	49	80	19.0	210	137	95	152	60	70	244	76	32	50	—	32	50	80	6XM12	203	111	
SV 111	365	340	314.40	6.4	57.15	76	92	19.0	299	102	127	219	38	38	303	82	38	75	—	32	75	80	8XM16	264	90	
SV 211	365	340	314.40	6.4	88.90	76	92	19.0	299	138	127	219	38	73	303	82	38	75	—	32	75	80	8XM16	264	90	
SV 114	445	413	384.25	6.4	109.52	115	136	0	367	129	140	314	79	48	365	121	51	83	108	50	100	120	6XM16	365	177	
SV 214	445	413	384.25	6.4	146.05	115	136	0	367	165	140	314	79	83	365	121	51	83	108	50	100	120	6XM16	365	177	
SV 116	508	476	444.58	6.4	107.95	124	155	0	416	129	203	368	90	48	413	139.7	57	85	—	57	100	115	6XM16	432	189	
SV 216	508	476	444.58	6.4	146.05	124	155	0	416	165	203	368	90	83	413	139.7	57	85	115	57	100	115	6XM16	432	189	
SV 316	508	476	444.58	6.4	170.00	124	155	11.0	416	200	203	368	90	113	413	139.7	35	85	115	57	100	115	6XM16	432	189	
SV 118	559	527	495.40	9.5	120.65	133	175	0	477	143	203	394	108	49	492	146	70	90	115	75	127	—	6XM16	457	222	
SV 218	559	527	495.40	9.5	145.50	133	175	11.0	477	181	203	394	108	89	492	146	70	90	115	75	127	—	6XM16	457	222	
SV 318	559	527	495.40	9.5	185.74	133	175	11.0	477	219	203	394	108	127	492	146	70	90	115	75	127	—	6XM16	457	222	
SV 121	635	603	571.5	6.4	114.3	178	171	28.5	543	170	178	470	114	64	541	152.0	75	115	165	75	115	165	6XM16	533	222	
SV 221	635	603	571.5	6.4	152.4	178	171	28.5	543	210	178	470	114	111	541	152	75	115	165	75	115	165	6XM16	533	222	
SV 321	635	603	571.5	6.4	231.7	178	171	28.5	543	257	178	470	114	159	541	152	75	115	165	75	115	165	6XM16	533	222	
SV 124H	711	679	647.7	6.4	150	178	213	19.0	618	167	203	546	114	72	686	186	75	115	165	75	127	179	6XM16	610	284	
SV 224H	711	679	647.7	6.4	169.9	178	213	19.0	618	221	203	546	114	114	686	186	75	115	165	75	127	179	6XM16	610	284	
SV 324H	711	679	647.7	6.4	214.3	178	213	19.0	618	264	203	546	114	159	686	186	75	115	165	75	127	179	6XM16	610	284	
SV 127	787	756	724	6.4	130.18	229	198	19.0	696	167	292	622	70	76	686	186	83	127	203	125	175	190	12XM16	686	254	
SV 227	787	756	724	6.4	177.80	229	198	19.0	696	222	292	622	70	114	686	186	83	127	203	125	175	190	12XM16	686	254	
SV 327	788	756	724	6.4	228.60	229	198	19.0	696	265	292	622	70	165	686	186	130	190	203	125	175	190	12XM16	686	254	
SV 130H	864	832	800.1	6.0	178	229	235	16.0	771	197	229	698	108	86	822	222	89	152	215	90	152	203	12XM16	762	344	
SV 230H	864	832	800.1	6.0	203	229	235	16.0	771	257	229	698	108	143	822	222	89	152	215	90	152	203	12XM16	762	344	
SV 330H	864	832	800.1	6.0	276.22	229	235	16.0	771	327	229	698	108	206	822	222	89	152	215	90	152	203	12XM16	762	344	
SV 136	1041	1010	978	6.4	178	343	267	0	944	222	381	800	110	89	972	254	150	229	280	150	215	255	16XM16	864	310	
SV 236	1041	1010	978	6.4	260.35	343	267	0	944	302	381	800	110	159	972	254	150	229	280	150	215	255	16XM16	864	310	
SV 336	1041	1010	978	6.4	327.03	343	267	0	944	368	381	800	110	232	972	254	150	229	280	150	215	255	16XM16	864	310	
SV 242	1251	1200	1143	6.4	266.70	254	280	0	1108	292	381	940	145	165	1121	254	203	254	355	178	230	279	12XM24	1041	347	
SV 342	1251	1200	1143	6.4	301.63	254	280	0	1108	365	381	940	145	244	1121	254	203	254	355	178	230	279	12XM24	1041	347	
SV 248	1441	1372	1320.8	12.7	276.23	533	345	0	1290	378	533	1143	168	219	1305	346	203	305	405	200	305	370	12XM24	1260	425	
SV 348	1422	1372	1320.8	12.7	346	533	345	54	1290	403	533	1143	168	251	1330	346	203	305	405	200	305	370	12XM24	1260	425	
SV 260	1695	1645	1594.0	19	413	530	412	0	—	413	610	1399	355	229	1562	412	300	—	530	300	—	530	12XM30	1527	—	

(1) Dimension "C" is given as a nominal figure calculated from inch dimensions. The applicable tolerance is ISO H8.

(2) The bore dimensions "U" are stated as a stock bore figure (Min) and the maximum allowable finished bore in the standard design (Max) plus a maximum bore in special designs where the ventilation holes in the hub are omitted. The latter reduces heat dissipation because of the omission of ventilation holes, but in many applications this is not a problem. Larger driving adaptor hub bores (dimension "U1" Sp) are available on request.

#### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita

## STANDARD VENTILATED CLUTCH

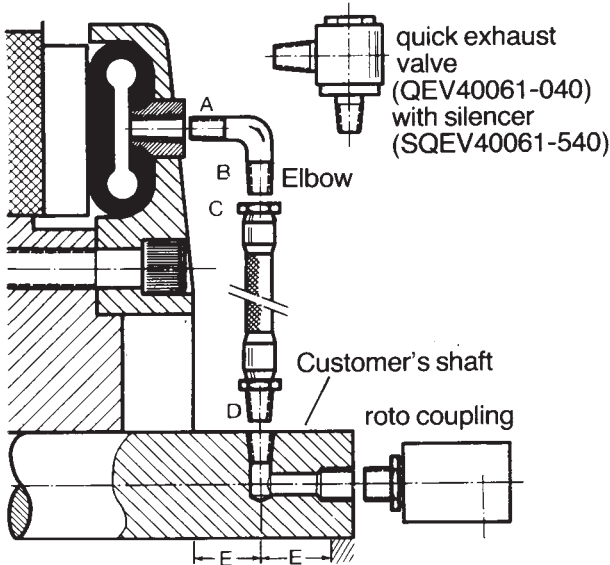
### Air Sets

SV

#### DESCRIPTION

The airtube inlets (spuds) are connected to the machine shaft by hoses. The shaft must be drilled and tapped for these hoses and for the roto coupling in the end of the shaft. For cycling duties and fastest response, silenced quick exhaust valves (SQEV's) should be used. Where noise is not a problem quick exhaust valves without silencers (QEV's) can be used instead.

Where fast response is not a requirement, then elbows are supplied instead of SQEV's. At low RPM and slow response speeds the number of hoses can be reduced to one up to size 327 and two on larger sizes. At higher speeds it is necessary to use the full complement of hoses to keep the assembly in balance.



#### THREAD SIZES

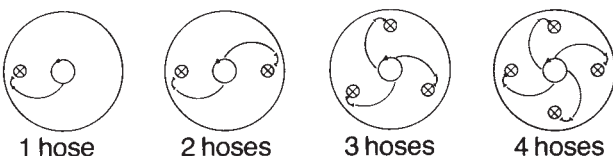
Threads A and D are  $\frac{1}{2}$ " NPT which is compatible with  $\frac{1}{2}$ " BSPT. Threads B and C are  $\frac{7}{8}$ " SAE for hose swivel fitting. Dimension E is 25 minimum, 45 maximum. Check Assembly drawing for position of shaft holes relative to keyway. Shaft hole size should equal Roto Coupling bore.

#### HOSES AND ROTO COUPLINGS

Clutch Size	Speed of Response	No. of Hoses	Roto Part Number
SV 106	slow fast	1 2	40067-720 40067-720
SV 108 - SV 211	slow fast	1 2	40067-720 40067-750
SV 114 - SV 316	slow fast	1 2	40067-720 40067-750
SV 118 - SV 327	slow fast	1 3	40067-750 40067-750
SV 130H - SV 348	slow fast	2 4	40067-750 24181-040

For larger sizes refer to your Wichita Engineer. Alternative large and small rotos, also special hoses are available on request.

#### HOSE CONFIGURATION



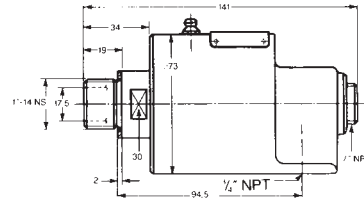
#### $\frac{1}{4}$ " ROTO COUPLING PART NO. 40067-720

This is dimensionally as 40067-730 shown on page 18, except roto thread is  $\frac{3}{8}$ " BSP instead of  $\frac{5}{8}$ "-18 NF.

#### $\frac{1}{2}$ " ROTO COUPLING PART NO. 40067-750

This is dimensionally as 40067-740 shown on page 18, except roto thread is  $\frac{3}{4}$ " BSP instead of 1x14 NS.

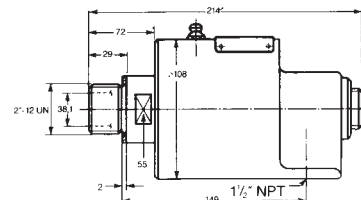
#### $\frac{3}{4}$ " ROTO COUPLING PART NO. 24181-014



#### 1" ROTO COUPLING PART NO. 24181-040

— Please see page 18

#### 1 1/2" ROTO COUPLING PART NO. 24181-045



#### 2" ROTO COUPLING PART NO. 24181-049

— Details on request

#### AIR SET NUMBERS

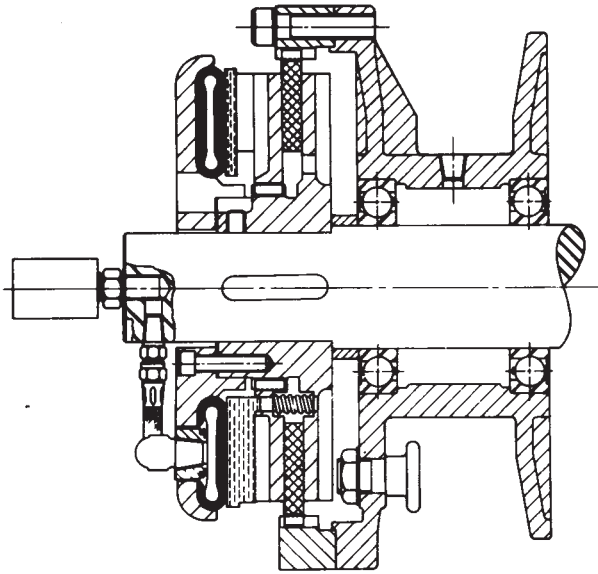
These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

Air Set Coding Example: Air Set No. 311 - 19 - RE			
Quantity of air connections	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
3	1	1	- 19 -
RE R = roto E = elbows Q = QEV SQ = silenced QEV			

# Wichita

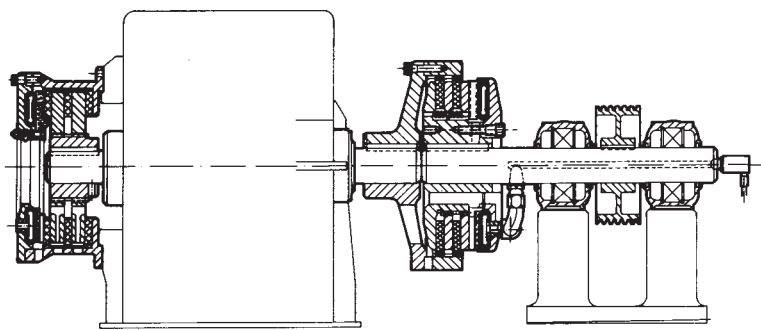
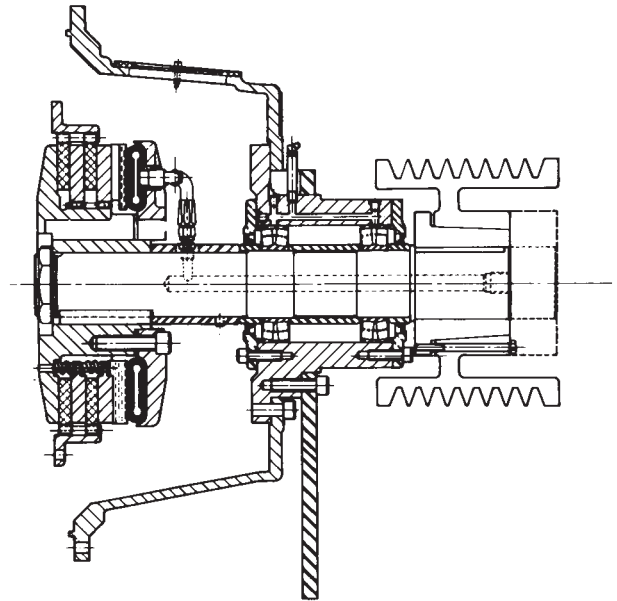
## STANDARD VENTILATED CLUTCH

### Mounting Arrangements

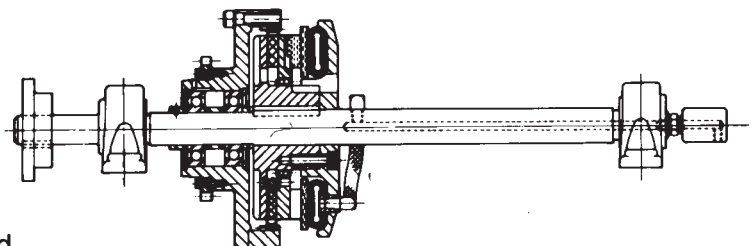


The SV clutch is suitable for end shaft or through shaft mounting.  
 NOTE: The clutch parts must be supported. On this typical winch drive, the inner clutch parts are shaft supported, the outer ring is mounted on the winch drum.

The SV clutch on a power take off arrangement provides remote control and avoids engine flywheel sideloads from Vee belt drives.



LIM Brake and SV Clutch on Pulley to Gearbox Drive.

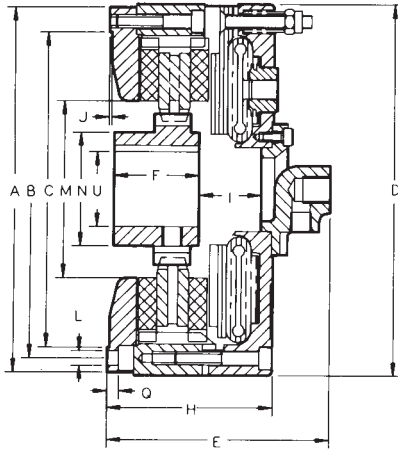


The SV clutch mid shaft mounted driving/driver from a bearing supported chain sprocket or gear wheel.  
 NOTE: Roto coupling is end shaft fitted for clutch air supply.

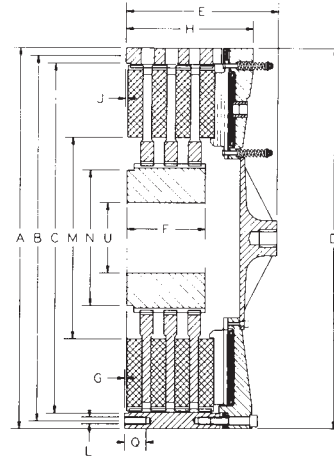
# Wichita

## LOW INERTIA CLUTCH

### Performance



LIM 106 CLUTCH



LIM 360 CLUTCH

MODEL (CLUTCH)	DYNAMIC SLIP TORQUE CAPACITY (Nm) (1)		MAXIMUM SPEED (rev/min) (2)				INERTIA ( $J = mr^2$ ) (kg m <sup>2</sup> )			WEIGHT OF TOTAL CLUTCH (kg)	AIR TUBE DISPLACE- MENT VOLUME (cm <sup>3</sup> ) new worn
	@ 5,5 bar	@ 7 bar	COMPLETE CLUTCH		HUB & CENTRE PLATE ONLY		TOTAL CLUTCH	HUB & CENTRE PLATE			
			Standard Performance	High Performance	Standard Performance	High Performance		Standard Performance	High Performance		
LIM 104	57	72	1 800	2 600	5 250	5 250	0,028	0,003		6	15/55
LIM 106	340	435	1 800	2 600	3 520	5 200	0,105	0,009		15	30
LIM 206	680	870					0,138	0,017		20	195
LIM 108	620	790	1 750	2 500	2 870	4 230	0,315	0,023		27	55
LIM 208	1 240	1 580					0,357	0,044		32	300
LIM 111	1 400	1 785	1 400	2 200	2 090	3 070	1,13	0,100		60	90
LIM 211	2 800	3,570					1,42	0,200		75	500
LIM 114	2 435	3 100	1 200	1 950	1 640	2 420	2,35	0,250		84	125
LIM 214	4 870	6 200					2,85	0,450		105	700
LIM 116	3 360	4 275	1 080	1 700	1 430	2 110	4,32	0,442	0,400	117	160
LIM 216	6,720	8,550					5,25	0,825	0,675	148	148
LIM 316	10 080	12 825					6,00	1,23	0,990	162	920
LIM 118	5 705	7 260	985	1 550	1 270	1 880	6,63	0,722	0,623	141	250
LIM 218	11 410	14 520					7,60	1,345	1,146	171	171
LIM 318	17 115	21 780					8,50	1,997	1,699	210	1400
LIM 121	7 755	9 870	850	1 350	1 090	1 610	12,5	1,31	1,20	211	300
LIM 221	15 510	19 740					14,6	2,5	2,20	264	264
LIM 321	23 265	29 610					18,4	4,0	3,20	330	1600
LIM 124H	13 575	17 275	700	1 100	950	1 410	19,2	2,3	2,25	289	490
LIM 224H	27 150	34 550					26,8	4,5	4,25	365	365
LIM 324H	40 725	51 825					31	6,75	6,25	465	2600
LIM 127	15 260	19 420	700	1 090	850	1 250	28,9	4,75	3,45	349	490
LIM 227	30 520	38 840					35	8,5	6,75	426	426
LIM 327	45 780	58 260					40	12,6	10,0	504	2600
LIM 130H	29 630	37 710	600	1 000	765	1 130	62,5	7,75	6,2	640	960
LIM 230H	59 260	75 420					62,5	15,1	10,2	640	640
LIM 330H	88 890	113 130					73,5	19,5	17,0	795	5100
LIM 136	44 920	57 175	525	800	640	940	97	15,2	15,0	660	1800
LIM 236	89 840	114 350					133	29,5	28,2	905	905
LIM 336	134 760	171 525					187	44,7	43,5	1 180	6800
LIM 142	69 160	81 660	440	650	545	805	176	26,5	25,2	890	890
LIM 242	128 320	163 320					237	65	54,8	1 040	2100
LIM 342	192 480	244 980					375	92	74	1 680	8000
LIM 248	237 600	302 400	380	580	475	705	515	140	138	2 050	3550
LIM 348	356 400	453 600					675	211	184	2 530	13500
LIM 260	473 000	602 000	320	475	380	565	1650	283	208	3 800	8400
LIM 360	709 000	902 300					2125	450	335	4 910	4 910
LIM 460	946 000	1204 000					2520	617	462	6 020	29300
LIM 272	803 000	1 022 000	265	400	320	470	3770	635		6 500	21500
LIM 372	1 204 500	1 533 000					5560	1200		8 900	75000
LIM 296	1 617 000	2 058 000	210	300	240	350	9900	3000		9 500	9 500
LIM 396	2 425 500	3 087 000					12800	4300		12 700	12 700

#### Selection Guide — Service Conditions

##### (1) Torque rating.

Dynamic torque ratings represent full clutch capacity.

Service conditions vary but as a guide to selection, for cycling applications use 75% of torque rating

Air pressure.

Note torque is directly proportional to the air pressure applied.

##### (2) High speed

Maximum speed ratings may be exceeded in many applications.

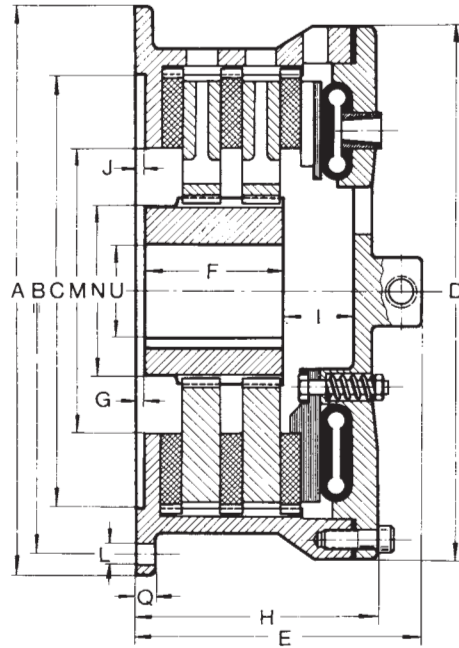
For advice on speed or service factors etc. consult your Wichita Engineer



# Wichita

## LOW INERTIA CLUTCH

### Dimensions



LIM Clutch (LIM 108-LIM 242)

MODEL	A	B	C <sup>(1)</sup>	D	E	F	G	H	I	J	L	M	N	Q	U <sup>(2)</sup>	
															Min	Max
LIM 104	181	165	140	181	97	25	14	60	27	5	4 × Ø8,5	75	49	65	15	25
LIM 106	220	203	190	224	132	51	0	95	45	1,5	4 × Ø9	92	68	6	15	45
LIM 206	220	203	190	224	162	83	0	125	45	1,5	4 × Ø9	92	68	6	15	45
LIM 108	310	280	220	283	159	51	6	127	54	6	6 × Ø14	136	89	13	25	57
LIM 208	310	280	220	283	192	83	8	160	54	6	6 × Ø14	136	89	13	25	57
LIM 111	400	375	295	375	184	70	3	152	63	10	6 × Ø18	179	102	16	25	64
LIM 211	400	375	295	375	229	112	6	200	48	10	6 × Ø18	179	102	16	25	64
LIM 114	470	445	370	445	187	95	3	165	40	10	8 × Ø18	240	140	16	35	90
LIM 214	470	445	370	445	238	114	10	216	65	10	8 × Ø18	240	140	16	35	90
LIM 116	540	510	410	508	200	102	10	176	40	10	12 × Ø18	267	152	16	35	102
LIM 216	540	510	410	508	248	120	10	222	65	10	12 × Ø18	267	152	16	35	102
LIM 316	540	510	410	508	297	168	10	272	70	10	12 × Ø18	267	152	16	35	102
LIM 118	590	560	470	559	206	102	11	184	29	10	12 × Ø18	318	178	16	50	120
LIM 218	590	560	470	559	257	120	11	235	62	10	12 × Ø18	318	178	16	50	120
LIM 318	590	560	470	559	304	165	11	282	64	10	12 × Ø18	318	178	16	50	120
LIM 121	685	648	540	632	225	102	19	203	40	8	12 × Ø18	368	229	19	50	152
LIM 221	685	648	540	632	283	130	19	280	70	8	12 × Ø18	368	229	19	50	152
LIM 321	685	648	540	632	337	178	19	294	88	8	12 × Ø18	368	229	19	50	152
LIM 124H	760	730	620	736	232	102	18	200	39	6	12 × Ø18	368	229	19	50	152
LIM 224H	760	730	620	736	289	130	19	257	67	6	12 × Ø18	368	229	19	50	152
LIM 324H	760	730	620	736	352	190	21	320	36	6	12 × Ø18	368	229	19	50	152
LIM 127	830	800	700	787	237	115	19	198	37	6	16 × Ø18	413	229	19	65	165
LIM 227	830	800	700	787	297	175	19	265	39	6	16 × Ø18	413	229	19	65	165
LIM 327	830	800	700	787	365	202	19	323	60	6	16 × Ø18	413	229	19	65	165
LIM 130H	940	900	775	883	318	127	16	229	48	6	18 × Ø22	489	254	19	65	230
LIM 230H	940	900	775	883	368	137	19	280	92	6	18 × Ø22	489	254	19	65	230
LIM 330H	940	900	775	883	425	190	16	320	92	6	18 × Ø22	489	254	19	65	230
LIM 136	1105	1065	925	1042	324	143	16	245	38	6	18 × Ø22	600	305	22	153	230
LIM 236	1105	1065	925	1042	410	229	16	330	38	6	18 × Ø22	600	305	22	153	230
LIM 336	1105	1065	925	1042	457	314	16	419	41	6	18 × Ø22	600	305	22	153	230
LIM 142	1320	1250	1134	1245	318	108	6	220	60	6	24 × Ø26	750	407	25	204	255
LIM 242	1320	1250	1134	1245	378	168	6	280	60	6	24 × Ø26	750	407	25	204	255
LIM 342 <sup>(4)</sup>	1320	1250	1134	1245	438	228	6	340	60	6	24 × Ø26	750	407	38	204	255
LIM 248 <sup>(3)</sup>	1442	1372	1320	1442	449	220	0	356	102	6	24 × M24	813	610	—	254	457
LIM 348 <sup>(3)</sup>	1442	1372	1320	1442	547	320	0	448	102	6	24 × M24	813	610	—	254	457
LIM 260 <sup>(3)</sup>	1790	1689	1590	1790	527	238	6	448	158	6	24 × 2" NC	914	686	—	280	480
LIM 360 <sup>(3)</sup>	1790	1689	1590	1790	635	360	6	575	158	6	24 × 2" NC	914	686	—	280	480
LIM 460 <sup>(3)</sup>	1790	1689	1590	1790	748	473	6	690	158	6	24 × 2" NC	914	686	—	280	480
LIM 272 <sup>(3)</sup>	2172	2048	1925	2172	512	325	0	500	—	13	24 × 2½" NC	1168	940	—	400	650
LIM 372 <sup>(3)</sup>	2172	2048	1925	2172	630	445	0	619	—	13	24 × 2½" NC	1168	940	—	400	650
LIM 296 <sup>(3)</sup>	2718	2616	2515	2718	575	381	—	578	—	13	32 × 2½" NC	1727	1448	—	500	850
LIM 396 <sup>(3)</sup>	2718	2616	2515	2718	730	533	—	730	—	13	32 × 2½" NC	1727	1448	—	500	850

(1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.

(2) The bore dimensions "U MIN" are those held in stock and are the minimum produceable. The tolerance is +, 00 -, 10. The bore dimensions "U MAX" are the maximum for the standard design. Larger bores may be possible with special designs.

(3) No flange or backplate.

(4) No backplate.

The overall length dimension "E" does not include a roto coupling for air supply.

#### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita

## LOW INERTIA CLUTCH

### Air Sets

#### DESCRIPTION

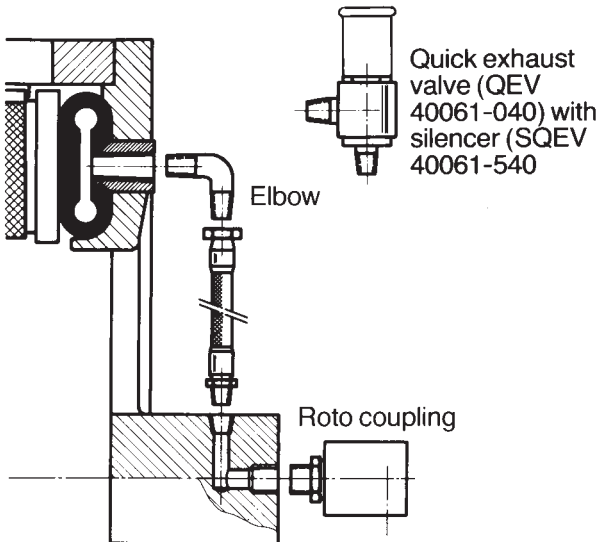
Hoses from the airtube inlets (spuds) are connected to a central adaptor (spider) on the clutch into which screws the roto coupling.

For cycling duties and fastest response, silenced quick exhaust valves (SQEV's) should be used. Note, however (a) quick exhaust valves without silencers (QEV's) can be used where noise is not a problem. (b) QEV's cannot be fitted to models 104 to 206.

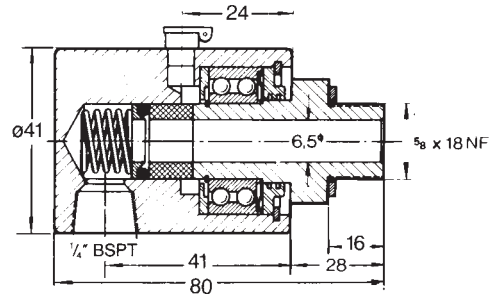
For other duties elbows are supplied.

For models 106 to 208, 1 hose is adequate for low speeds. Use 2 hoses for high speeds.

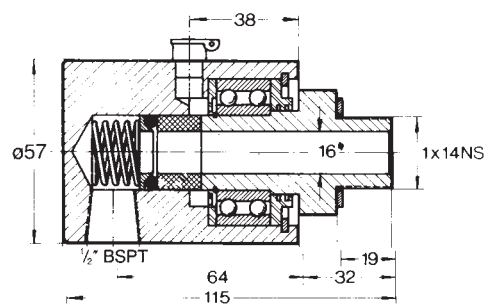
LIM



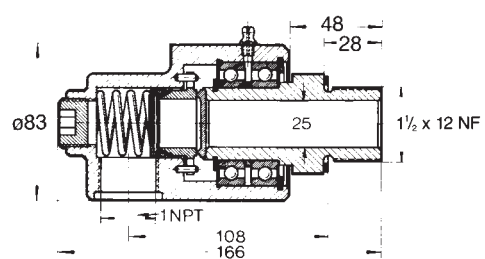
#### 1/4" ROTO COUPLING PART NO 40067-730



#### 1/2" ROTO COUPLING PART NO 40067-740



#### 1" ROTO COUPLING PART NO 24181-040

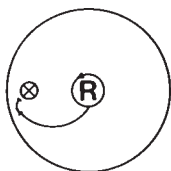


#### HOSES AND ROTO COUPLINGS

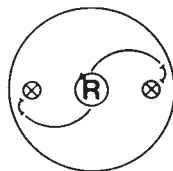
Clutch Size	Speed of Response	No. of Hoses	Roto Part Number
LIM 106-206	slow	1	40067-730
	fast	2	40067-730
LIM 108 - LIM 211	slow	1	40067-740
	fast	2	24181-014
LIM 114 - LIM 316	slow	2	40067-740
	fast	2	24181-040
LIM 118 - LIM 327	slow	3	40067-740
	fast	3	24181-045
LIM 130H - LIM 348	slow	4	24181-040
	fast	4	24181-049

For larger sizes refer to your Wichita Engineer.

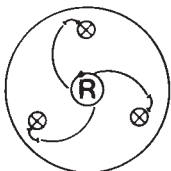
#### HOSE CONFIGURATION



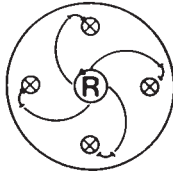
1 hose



2 hoses



3 hoses



4 hoses

#### AIR SET NUMBERS

These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

Air Set Coding Example: Air Set No. 333 - 18 - RSQ			
Quantity of air connections	Quantity of fittings	Quantity of hose	Approx. hose length in inches
3	3	3	- 18 -
RSQ R = roto E = elbows Q = QEV's SQ = silenced QEV's IR = integral roto			

# Wichita

## HIGH TORQUE CLUTCH

### Air Sets

#### DESCRIPTION

HTM clutches are either fitted with an 'integral' roto coupling inside the airtube holding plate, alternatively, an integral adaptor with an external roto coupling is supplied.

For small clutches and applications where fast response is not important, use air set No. 78500-120.

From model HTM 116 and bigger where fast engagement/disengagement is required, use air set No. 78500-441.

From model HTM 121 and upwards, air set No. 78500-443 can be used to obtain the fastest possible response times.

Air set numbers are given in quotations and acknowledgements.

#### DIMENSIONS

Details of the three most common air sets are given on this page.

Other air sets with non-standard roto couplings are available on request.

#### BRAKES

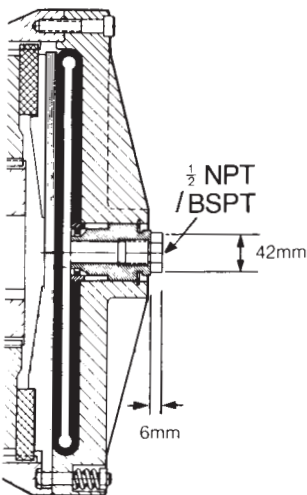
HTM units can be used as brakes where no roto coupling is needed.

The brake is then supplied with an integral adaptor, dimensions similar to air set.

No. 78500-120.

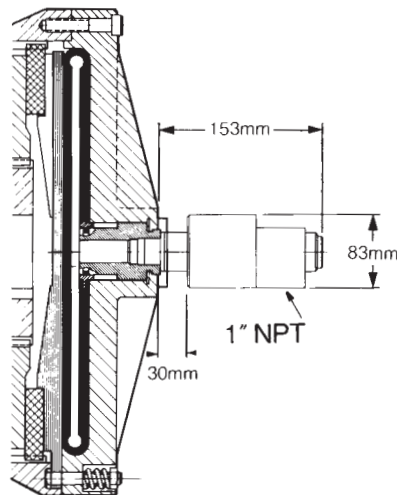
ITM

**AIR SET 78500-120**



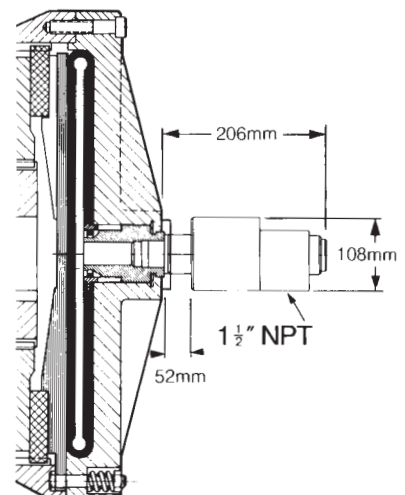
1/2" integral roto

**AIR SET 78500-441**



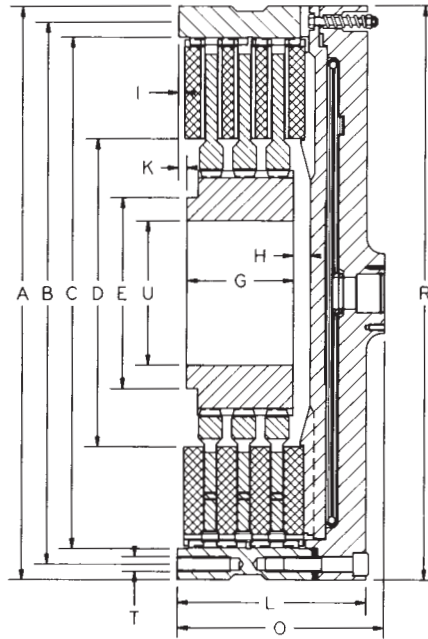
1" external roto with bolt on adaptor

**AIR SET 78500-443**



1 1/2" external roto with bolt on adaptor

# Wichita HIGH TORQUE CLUTCH Performance



HTM 348 Clutch

MODEL (CLUTCH)	DYNAMIC SLIP TORQUE CAPACITY (Nm) (1)		MAXIMUM SPEED (rev/min) (2)				INERTIA - $J = mr^2$ (kgm <sup>2</sup> )			WEIGHT OF TOTAL CLUTCH (kg)	AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW WORN
			COMPLETE CLUTCH		HUB & CENTRE PLATES ONLY		TOTAL CLUTCH	HUB & CENTRE PLATES			
	⑤ 5,5 bar	⑤ 7 bar	Standard performance	High performance	Standard performance	High performance		Standard performance	High performance		
HTM 106 HTM 206	475 950	602 1 204	2100	2600	3520	5200	0,100 0,132	0,009 0,018		14,5 19,8	35 220
HTM 108 HTM 208	790 1 580	1 008 2 016	1890	2500	2870	4230	0,275 0,335	0,023 0,044		23,5 29	60 400
HTM 111 HTM 211 HTM 311	2 365 4 730 7 095	3 010 6 020 9 030	1430	2200	2090	3070	0,913 1,04 1,23	0,100 0,200 0,300		50 60 71	155 880
HTM 114 HTM 214 HTM 314	4 400 8 800 13 200	5 600 11 200 16 800	1225	1930	1640	2420	1,98 2,58 3,15	0,250 0,450 0,650		90 114 136	230 1300
HTM 116 HTM 216 HTM 316	6 600 13 200 19 800	8 400 16 800 25 200	1080	1700	1430	2110	3,75 4,3 4,9	0,442 0,825 1,29	0,400 0,675 0,990	118 134 162	290 1650
HTM 118 HTM 218 HTM 318	10 120 20 240 30 360	12 880 25 760 38 640	985	1530	1270	1880	7,45 9,88 10,3	0,683 1,345 1,997	0,584 1,146 1,693	170 220 240	440 2500
HTM 121 HTM 221 HTM 321	14 520 29 040 43 560	18 480 36 960 55 440	850	1400	1090	1610	13,6 17,5 18	1,31 2,5 4,0	1,20 2,20 3,20	252 315 345	620 3300
HTM 124 HTM 224 HTM 324	21 430 42 860 64 020	27 160 54 320 81 480	765	1210	950	1410	20,5 28,3 36	2,3 4,5 6,75	2,25 4,25 6,25	290 397 530	825 4400
HTM 127 HTM 227 HTM 327	30 800 61 600 92 400	39 200 78 100 117 600	700	1090	850	1250	39,3 42,8 48,8	4,75 8,50 12,6	3,45 6,75 10,0	480 560 640	995 5300
HTM 230 HTM 330	88 000 132 000	112 000 168 000	620	1000	765	1130	93 100	15,1 19,5	10,2 17,0	840 910	1275 6800
HTM 236 HTM 336	176 000 264 000	224 000 336 000	525	800	640	940	185 208	29,5 44,7	28,2 43,5	1300 1620	3420 13000
HTM 242 HTM 342	247 500 371 250	315 000 472 500	440	650	545	805	335 575	65 92	54,8 74,0	1530 2350	
HTM 248 HTM 348	407 000 605 000	518 000 770 000	380	580	475	705	790 1175	140 211	138 201	2950 3650	

### Selection Guide — Service Conditions

#### (1) Torque rating.

Dynamic torque ratings represent full clutch capacity.

Service conditions vary but as a guide to selection, for cycling applications use 75% of torque rating

Air pressure.

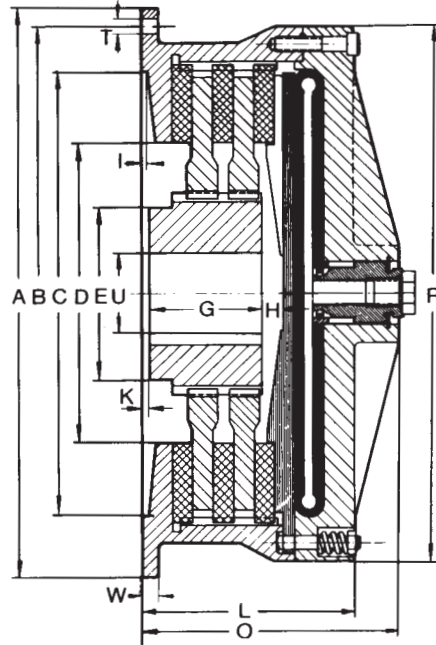
Note torque is directly proportional to the air pressure applied.

#### (2) High speed

Maximum speed ratings may be exceeded in many applications.

For advice on speed or service factors etc. consult your Wichita Engineer.

# Wichita HIGH TORQUE CLUTCH Dimensions



HTM Clutch  
(HTM 106-HTM 342)

MODEL	A	B	C <sup>(1)</sup>	D	E	G	H Min	I	K	L	O	R	T	U <sup>(2)</sup>		W
														Min	Max	
HTM 106 HTM 206	220 220	203 203	190 190	101 101	68 68	51 83	8 8	1,6 1,6	0 0	99 129	99 129	224 224	4×Ø9 4×Ø9	15 15	45 45	6 6
HTM 108 HTM 208	310 310	280 280	220 220	156 156	102 102	32 45	17 19	6,3 6,3	12 20	103 127	145 169	283 283	6×Ø14 6×Ø14	25 25	57 57	13 13
HTM 111 HTM 211	400 400	375 375	295 295	178 178	102 102	70 111	25 25	9,6 9,6	3 6	149 192	203 246	375 375	6×Ø18 6×Ø18	25 25	65 65	16 16
HTM 114 HTM 214	470 470	445 445	370 370	240 240	140 140	71 114	22 19	9,6 9,5	3 10	162 210	208 262	445 445	8×Ø18 8×Ø18	35 35	90 90	16 16
HTM 116 HTM 216	540 540	510 510	410 410	266 266	152 152	70 120	27 27	9,6 9,6	10 10	173 219	227 273	508 508	12×Ø18 12×Ø18	35 35	102 102	16 16
HTM 118 HTM 218	590 590	560 560	470 470	317 317	178 178	70 120	36 33	9,6 9,6	11 11	181 231	229 278	559 559	12×Ø18 12×Ø18	50 50	120 120	16 16
HTM 121 HTM 221	685 685	648 648	540 540	368 368	229 229	73 130	38 33	8 8	17 19	199 248	250 296	632 632	12×Ø18 12×Ø18	50 50	152 152	19 19
HTM 124 HTM 224	760 760	730 730	620 620	368 368	229 229	89 130	32 32	6 6	18 19	216 275	253 307	737 737	12×Ø18 12×Ø18	50 50	152 152	19 19
HTM 127 HTM 227	830 830	800 800	700 700	413 413	267 267	89 140	38 41	6 6	19 19	210 278	250 318	794 794	16×Ø18 16×Ø18	65 65	165 165	19 19
HTM 230 HTM 330	940 940	900 900	775 775	489 489	356 356	137 178	22 22	6 6	19 19	275 326	304 355	918 918	18×Ø22 18×Ø22	65 65	230 230	19 19
HTM 236 HTM 336	1 105 1 105	1 065 1 065	925 925	600 600	356 356	190 215	38 38	6 6	28 28	383 467	388 473	1 055 1 055	18×Ø26 18×Ø26	152 152	230 230	38 38
HTM 242 HTM 342	1 320 1 320	1 250 1 250	1 070 1 070	749 749	406 457	190 235	57 56	6 6	66 22	464 564	464 564	1 245 1 245	24×Ø26 24×Ø26	204 204	255 255	50 50
HTM 248 <sup>(3)</sup> HTM 348 <sup>(3)</sup>	1 499 1 499	1 397 1 397	1 320 1 320		610 610	235 296	100 100	6 6	32 32	489 657	489 657	1 499 1 499	24×M36 24×M36	254 254	457 457	

(1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.

(2) The bore dimensions "U MIN" are those held in stock and are the minimum produceable. The tolerance is +, 00 -, 10.

The bore dimensions "U MAX" are the maximum for the standard design. Larger bores may be possible with special designs.

(3) No flange or backplate.

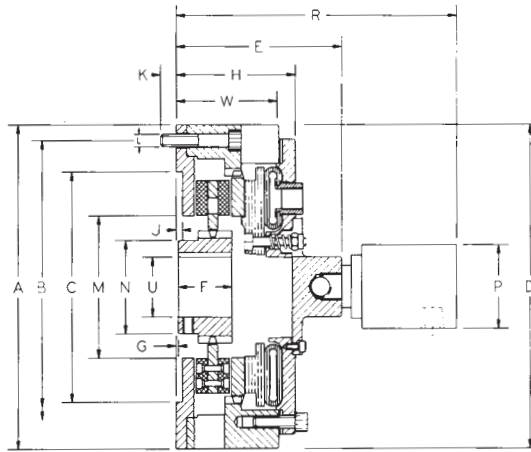
The overall length dimension "O" does not include a roto coupling for air supply. All dimensions in mm unless otherwise stated.

## DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita HIGH PERFORMANCE CLUTCH

## Dimensions



HPM Clutch

MODEL	A	B	C <sup>(1)</sup>	D	E	F	G	H	J	K	L	M	N	P	R	T	U <sup>(2)</sup>		W
																	Min	Max	
HPM 104	180	165	140	184	116	22	20	80	4	12	4×M8	76	45	38	189	51	15	25	62
HPM 106	220	203	190	224	142	51	0	105	2	11	4×M8	92	68	38	215	51	15	45	69
HPM 108	310	280	220	310	159	51	0	114	6	14	6×M12	136	89	64	255	57	25	57	98
HPM 111	400	375	295	410	178	60	0	138	9.5	25	6×M16	178	100	64	274	82	25	65	116

(1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.

(2) The bore dimensions "U.MIN" are those held in stock and are the minimum producible. The tolerance is +, 00 -, 10.

The bore dimensions "U.MAX" are the maximum for the standard design. Larger bores may be possible with special designs. Dimensions in mm unless stated.

### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

## Performance

MODEL CLUTCH	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)		MAXIMUM SPEED (rev/min) (2)		INERTIA OF HUB AND CENTREPLATES (J = mr <sup>2</sup> ) (kgm <sup>2</sup> )	WEIGHT (kg)		AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW WORN
	MINIMUM @ 0,2 bar	MAXIMUM @ 5,5 bar	COMPLETE CLUTCH	HUB + CENTRE-PLATES ON		TOTAL CLUTCH	HUB + CENTREPLATE	
HPM 104/LC	1	38	1800	5250	0.0015	7	0.88	15/55
HPM 104	1	57	1800	5250	0.0015	7	0.88	15/55
HPM 106/MR2/LC	3	83	1800	3520	0.0078	14.6	2.75	5/52
HPM 106/MR2	5	124	1800	3520	0.0078	14.6	2.75	5/52
HPM 106/A/LC	3	115	1800	3520	0.0078	14.6	2.75	20/100
HPM 106/A	3	176	1800	3520	0.0078	14.6	2.75	20/100
HPM 106/MR4/LC	6	166	1800	3520	0.0078	14.6	2.75	10/104
HPM 106/MR4	10	248	1800	3520	0.0078	14.6	2.75	10/104
HPM 106/LC	6	225	1800	3520	0.0078	14.6	2.75	30/195
HPM 106	6	340	1800	3520	0.0078	14.6	2.75	30/195
HPM 108/MR2/LC	4	108	1750	2870	0.032	26.3	3.70	5/52
HPM 108/MR2	8	162	1750	2870	0.032	26.3	3.70	5/52
HPM 108/MR4/LC	8	216	1750	2870	0.032	26.3	3.70	10/104
HPM 108/MR4	12	324	1750	2870	0.032	26.3	3.70	10/104
HPM 108/A/LC	8	330	1750	2870	0.032	26.3	3.70	30/195
HPM 108/A	10	405	1750	2870	0.032	26.3	3.70	30/195
HPM 108/MR6/LC	12	324	1750	2870	0.032	26.3	3.70	15/156
HPM 108/MR6	18	486	1750	2870	0.032	26.3	3.70	15/156
HPM 108/LC	10	405	1750	2870	0.032	26.3	3.70	55/300
HPM 108	10	620	1750	2870	0.032	26.3	3.70	55/300
HPM 111/MR2/LC	5	145	1400	2090	0.074	53	9.5	5/52
HPM 111/MR2	8	218	1400	2090	0.074	53	9.5	5/52
HPM 111/MR4/LC	10	290	1400	2090	0.074	53	9.5	10/104
HPM 111/MR4	16	436	1400	2090	0.074	53	9.5	10/104
HPM 111/A/LC	15	555	1400	2090	0.074	53	9.5	55/300
HPM 111/A	15	825	1400	2090	0.074	53	9.5	55/300
HPM 111/MR6/LC	15	435	1400	2090	0.074	53	9.5	15/156
HPM 111/MR6	24	654	1400	2090	0.074	53	9.5	15/156
HPM 111/MR8/LC	20	580	1400	2090	0.074	53	9.5	20/208
HPM 111/MR8	32	872	1400	2090	0.074	53	9.5	20/208
HPM 111/LC	25	940	1400	2090	0.074	53	9.5	90/500
HPM 111	25	1400	1400	2090	0.074	53	9.5	90/500

### Selection Guide — Service Conditions

(1) Torque Rating:- Dynamic torque rating may be used in selection for application such as tension control.

Service conditions vary but as a guide to selection, for cycling applications use 60% of torque rating.

Air pressure:- Note Torque is proportional to air pressure applied.

(2) High Speed

Maximum speed ratings can be exceeded in many applications — for advice contact your Wichita engineer.

# Wichita

## HIGH PERFORMANCE CLUTCH

### Air Sets

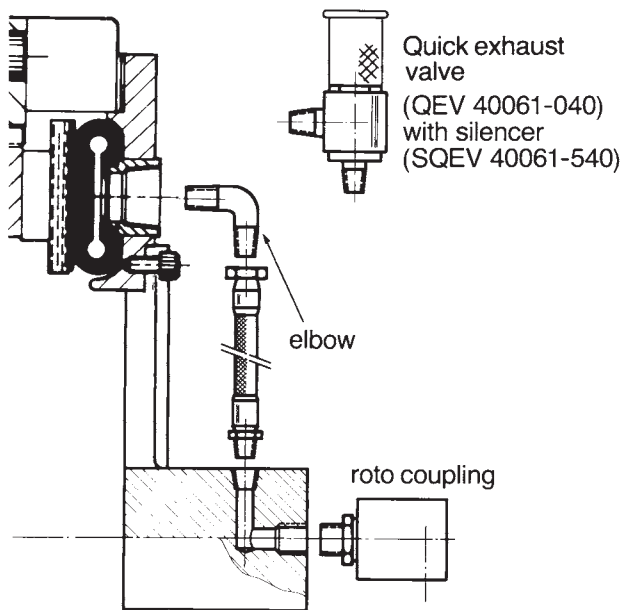
#### DESCRIPTION

Hoses from the airtube inlets (spuds) are connected to a central adaptor (spider) on the clutch into which screws the roto coupling.

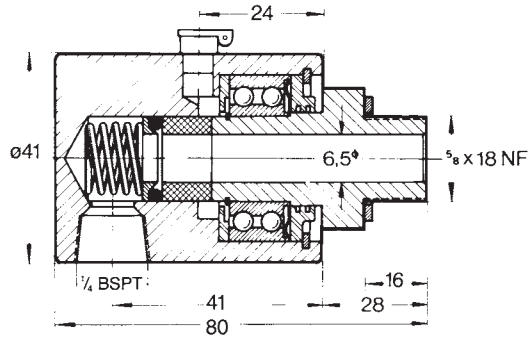
Generally the air set including elbows is adequate for most duties, although for the very fastest response quick exhaust valves can be used on sizes 108 and 111.

Sizes 106 and 108 can be supplied with either one or two hoses. Use two hoses for fast response and/or high speed.

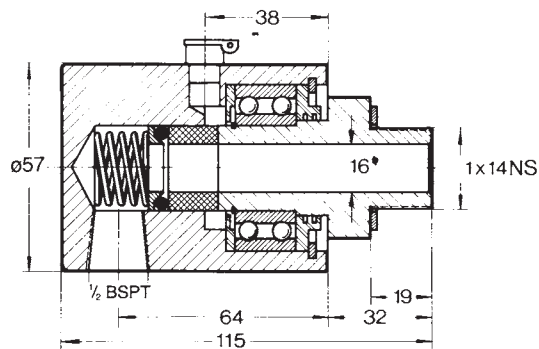
Size 104 always has one hose, size 111 always two hoses.



#### 1/4" ROTO COUPLING PART NO 40067-730



#### 1/2" ROTO COUPLING PART NO 40067-740



#### HOSES AND ROTO COUPLINGS

CLUTCH SIZE	QUANTITY OF HOSES	ROTO PART NUMBER
104, 106B	1	40067-730
106, 106A	1 or 2	40067-730
108	1 or 2	40067-740
108A, 108B	1 or 2	40067-730
111	2	40067-740
111A	1 or 2	40067-740
111B	1 or 2	40067-730

#### AIR SET NUMBERS

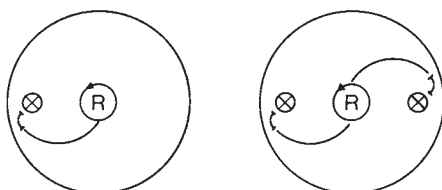
These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up an air set.

Air Set Coding Example:  
Air Set No. 221 - 8 - RE

Quantity of air inlets	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
2	2	1	- 8 -

RE  
R = roto  
E = elbows  
Q = QEV  
SQ = silenced QEVs

#### HOSE CONFIGURATION

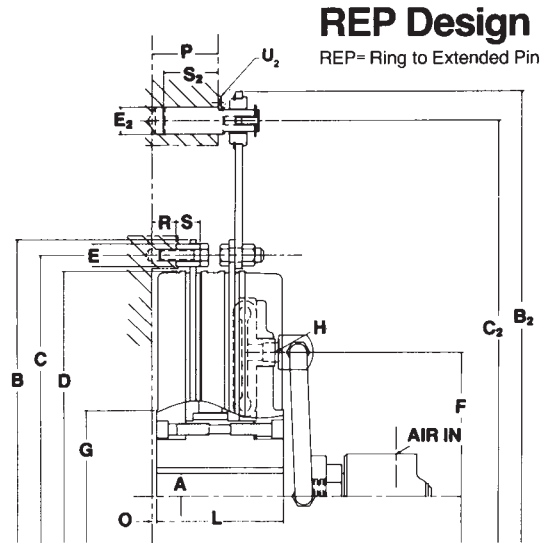
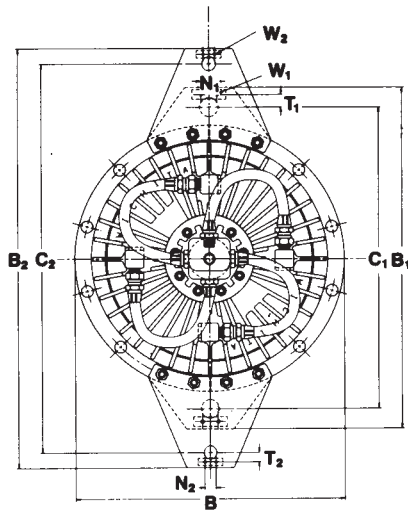


1 hose

2 hoses

# Wichita COMBINED CLUTCH/BRAKE

## Performance



CCB

MODEL	STATIC CLUTCH TORQUE CAPACITY (Nm) (2) @ 5,5 bar air pressure	DYNAMIC RANGE TORQUE CAPACITY (Nm) (2) @ 5,5 bar air pressure	MAXIMUM SPEED (rev/min) (1)	INERTIA ( $J = mr^2$ )		TOTAL WEIGHT (RR STYLE) (kg)	AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW/WORN
				INTERNAL PARTS (kgm <sup>2</sup> )	RR STYLE EXTERNAL PARTS (kgm <sup>2</sup> )		
CCB 170/13	130	150	3450	0,013	0,004	5,4	40/60
CCB 170/17	170	110	3450	0,013	0,004	5,4	40/60
CCB 170/21	205	75	3450	0,013	0,004	5,4	40/60
CCB 170/25	245	35	3450	0,013	0,004	5,4	40/60
CCB 190/21	205	240	3050	0,024	0,006	7,7	55/85
CCB 190/27	265	180	3050	0,024	0,006	7,7	55/85
CCB 190/33	325	120	3050	0,024	0,006	7,7	55/85
CCB 190/39	385	60	3050	0,024	0,006	7,7	55/85
CCB 230/41	410	465	2425	0,075	0,020	14,1	90/145
CCB 230/53	525	350	2425	0,075	0,020	14,1	90/145
CCB 230/64	640	235	2425	0,075	0,020	14,1	90/145
CCB 230/76	755	120	2425	0,075	0,020	14,1	90/145
CCB 310/92	915	1050	1875	0,221	0,060	27,7	165/275
CCB 310/118	1180	785	1875	0,221	0,060	27,7	165/275
CCB 310/144	1440	525	1875	0,221	0,060	27,7	165/275
CCB 310/171	1705	260	1875	0,221	0,060	27,7	165/275
CCB 380/260	2596	2030	1550	0,52	0,17	45	45/210
CCB 380/310	3100	1525	1550	0,52	0,17	45	45/210
CCB 380/360	3600	1015	1550	0,52	0,17	45	45/210
CCB 380/417	4120	505	1550	0,52	0,17	45	45/210
CCB 470/490	4900	3890	1250	1,4	0,67	86	70/415
CCB 470/587	5870	2920	1250	1,4	0,67	86	70/415
CCB 470/685	6845	1945	1250	1,4	0,67	86	70/415
CCB 470/780	7800	975	1250	1,4	0,67	86	70/415
CCB 550/769	7685	6095	1060	3,0	0,97	132	152/785
CCB 550/921	9210	4570	1060	3,0	0,97	132	152/785
CCB 550/1073	10733	3050	1060	3,0	0,97	132	152/785
CCB 550/1226	12260	1525	1060	3,0	0,97	132	152/785
CCB 600/999	9900	8090	970	5,0	3,0	172	165/860
CCB 600/1200	12000	6070	970	5,0	3,0	172	165/860
CCB 600/1404	14035	4045	970	5,0	3,0	172	165/860
CCB 600/1606	16060	2220	970	5,0	3,0	172	165/860
CCB 675/1490	14900	11910	860	8,8	3,4	240	290/1375
CCB 675/1788	17875	8930	860	8,8	3,4	240	290/1375
CCB 675/2085	20845	5955	860	8,8	3,4	240	290/1375
CCB 675/2382	23820	2975	860	8,8	3,4	240	290/1375
CCB 760/2148	21480	17380	765	15,6	6,5	345	370/1765
CCB 760/2583	25825	13035	765	15,6	6,5	345	370/1765
CCB 760/3017	30170	8690	765	15,6	6,5	345	370/1765
CCB 760/3450	34500	4345	765	15,6	6,5	345	370/1765
CCB 910/3915	39150	29160	640	34,5	11,8	540	820/3220
CCB 910/4643	46430	21870	640	34,5	11,8	540	820/3220
CCB 910/5373	52725	14580	640	34,5	11,8	540	820/3220
CCB 910/6600	66000	7290	640	34,5	11,8	540	820/3220

- (1) For continuous running only. In the case of high speeds it is necessary to balance the unit.  
 (2) For dry running only, it is essential to keep the friction surfaces free of lubricants.

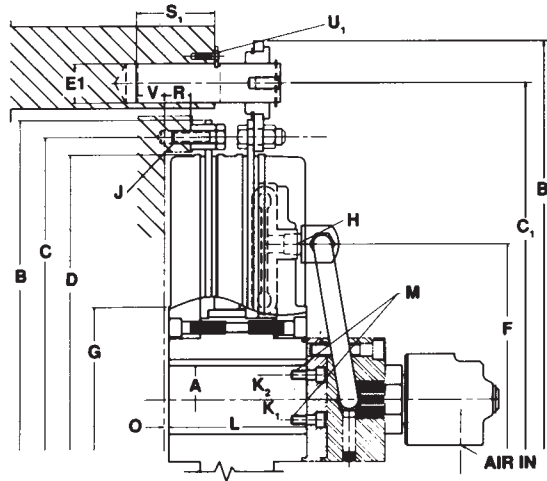


# Wichita COMBINED CLUTCH BRAKE UNIT

## Dimensions

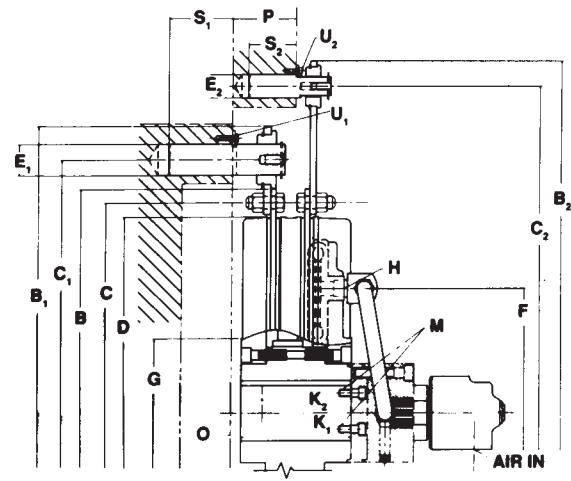
### RP Design

RP= Ring to Pin



### PEP Design

PEP= Pin to Extended Pin.



This sketch shown with optional End Cap and Spider (Air Manifold).

MODEL	CCD 170	CCB 190	CCB 230	CCB 310	CCB 380	CCB 470	CCB 550	CCB 600	CCB 675	CCB 760	CCB 910	
DIAMETERS mm	A max bore	35	35	45	65	80	95	110	125	140	160	180
	B	198	220	275	347	435	535	620	680	775	865	1025
	B <sub>1</sub>	262	282	360	435	560	695	780	870	1000	1090	1340
	B <sub>2</sub>	337	357	442	522	680	855	950	1075	1235	1335	1670
	C ± .18	182	205	255	325	408	500	584	640	725	810	965
	C <sub>1</sub> ± .18	230	250	315	390	495	610	695	770	880	970	1180
	C <sub>2</sub> ± .18	305	325	410	490	635	790	885	990	1135	1235	1525
	D	166	188	236	304	380	470	550	600	675	760	910
	E	10	10	12	15	18	25	25	30	35	40	45
	E <sub>1</sub>	14	14	22	22	30	40	40	45	55	55	75
	E <sub>2</sub>	14	14	14	14	22	30	30	40	45	45	65
	F	-	-	-	-	257	314	351	403	406	483	619
	G	-	-	-	-	152	178	241	254	273	328	381
	H	-	-	-	-	1/2" BSP	1/2" BSP	1/2" BSP	1/2" BSP	1/2" BSP	1/2" BSP	1/2" BSP
	K <sub>1</sub>	-	-	-	-	22,22	31,75	50,80	-	-	88,90	82,55
	K <sub>2</sub>	-	-	-	-	41,28	63,50	76,20	73,02	73,02	114,30	127,00
W <sub>1</sub>	4,5	4,5	5,5	5,5	5,5	7	7	7	9	9	11	
W <sub>2</sub>	4,5	4,5	4,5	4,5	5,5	5,5	5,5	7	7	7	9	
LENGTH mm	L	46	58	66	82	112	140	160	185	205	230	260
	N <sub>1</sub>	20	20	25	25	25	35	35	35	45	45	60
	N <sub>2</sub>	20	20	20	20	25	25	25	35	35	35	45
	O	2	3	4	4	12	10,5	13,0	12,5	18,0	12,5	22,5
	O <sub>1</sub>	5,5	5,5	8,5	10	-	-	-	-	-	-	-
	P	22	27	32	39	52,0	66,5	80,5	81,0	98,5	107,5	124,5
	P <sub>1</sub>	25,5	29,5	36,5	45	-	-	-	-	-	-	-
	R	6	10	13	15	24,5	28,5	34	33,5	36	40,5	53,5
	S	11	11	13	16	19	22	29	27	32	37	45
	S <sub>1</sub>	25	28	45	45	60	80	80	90	110	110	150
	S <sub>2</sub>	25	28	28	28	45	60	60	80	90	90	130
	T <sub>1</sub>	11	11	16	16	20	27	27	29,5	38,5	38,5	52,5
	T <sub>2</sub>	11	11	11	11	16	20	20	27	29,5	29,5	43,5
V	3	0	13	10	8	13,5	-0,5	9	11,5	2,5	25,5	
THREAD	J	M5	M5	M6	M8	M10	M14	M14	M16	M20	M24	M24
	M	-	-	-	-	M10	M10	M10	M10	M10	M10	M14
	U <sub>1</sub>	M4	M4	M5	M5	M5	M6	M6	M6	M8	M8	M10
	U <sub>2</sub>	M4	M4	M4	M4	M5	M5	M5	M6	M6	M6	M8

Consult factory for drawing before finalising designs.

RR = Ring to Ring, RP = Ring to Pin

PP = Pin to Pin, PEP = Pin to Extended Pin.

Larger bores available with shallow keys.

Max operating pressure P max = 7 bar.

All ring mountings use 12 off bushes 'E' diameter, equally spaced on 'C' pitch circle diameter.

Non standard suspension plates may be available on request, certified prints showing exact dimensions are sent with every order and should be obtained before finalising any design details.

CCB

# Wichita

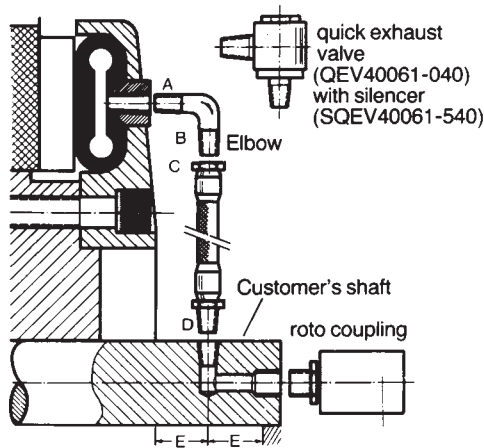
## COMBINED CLUTCH/BRAKE

### Air Sets

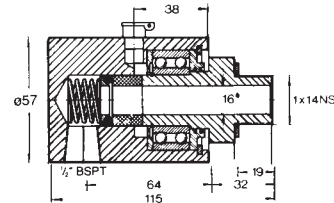
Hoses from the airtube inlets (spuds) are connected to the customers shaft. The shaft must be drilled radially and tapped  $\frac{1}{2}$ " BSPT for these hoses and the end of the shaft drilled and tapped to suite the roto-coupling.

Alternatively, where the clutch/brake unit is mounted at the free end of the shaft, the unit can be supplied with an end cap and spider (air manifold).

For cycling duties and fastest response, silenced quick exhaust valves (SQEV) should be used. Where noise is not critical, quick exhaust valves without silencers (QEV) may be used. For other duties elbows are used instead of QEVs.



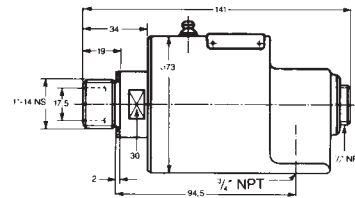
#### $\frac{1}{2}$ " ROTO COUPLING PART NO. 40067-740



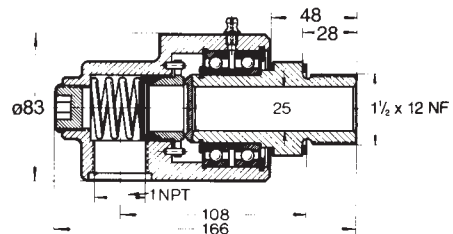
#### $\frac{1}{2}$ " ROTO COUPLING PART NO. 40067-750

This is dimensionally as 40067-740, except roto thread is  $\frac{3}{4}$ " BSP instead of 1 x 14 NS.

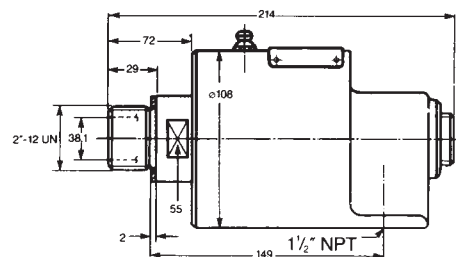
#### $\frac{3}{4}$ " ROTO COUPLING PART NO. 24181-014



#### 1" ROTO COUPLING PART NO. 24181-040



#### $\frac{1}{2}$ " ROTO COUPLING PART NO. 24181-045



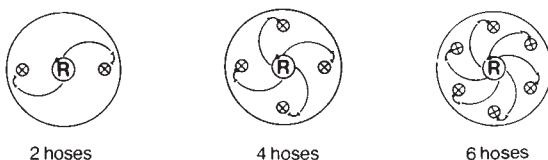
### THREAD SIZES

Threads A and D are  $\frac{1}{2}$ " NPT which is compatible with  $\frac{1}{2}$ " BSPT. Threads B and C are  $\frac{7}{8}$ " SAE for hose swivel fitting. Dimension E is 25 minimum, 45 maximum. Check Assembly drawing for position of shaft holes relative to keyway. Shaft hole size should equal Roto Coupling bore.

### HOSES AND ROTO COUPLINGS

Clutch/ Brake	Speed of Response	Quantity of Hoses	Roto Coupling Part Number	Required minimum pipe size from Solenoid Valve to Roto Inlet
CCB 380	Standard	2	40067-740/-750	19
	Fast	2	24181-014	19
CCB 470	Standard	4	40067-740/-750	19
	Fast	4	24181-014	19
CCB 500	Standard	4	24181-040	25
	Fast	4	Consult Wichita	
CCB 550	Standard	4	24181-040	25
	Fast	4	Consult Wichita	
CCB 600	Standard	4	24181-040	25
	Fast	4	Consult Wichita	
CCB 675	Standard	4	24181-040	25
	Fast	4	Consult Wichita	
CCB 760	Standard	4	24181-040	25
	Fast	4	Consult Wichita	
CCB 910	Standard	6	24181-045	38
	Fast	6	Consult Wichita	

### HOSE CONFIGURATION



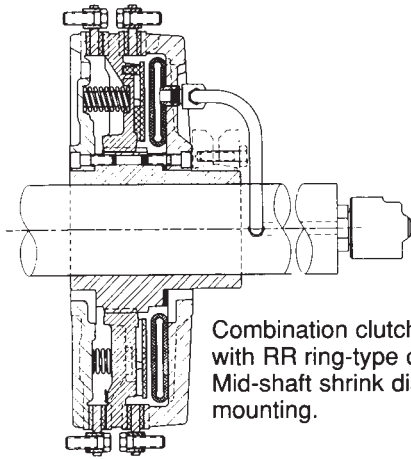
### AIR SET NUMBERS

These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

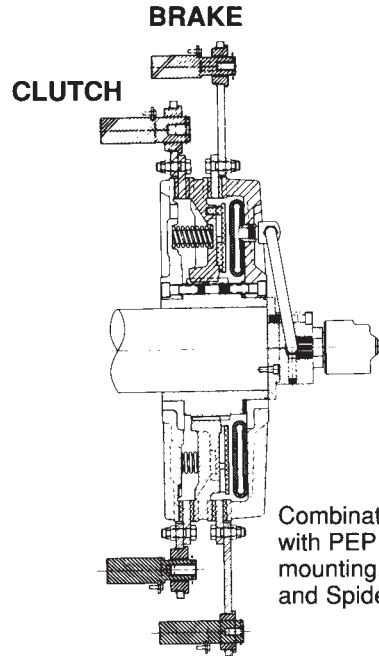
Air Set Coding Example: Air Set No. 422-18-RSQ			
Quantity of air connections	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
4	2	2	18
R = roto E = elbows Q = QEV SQ = silenced QEV			

# Wichita COMBINED CLUTCH BRAKE

## Air Sets



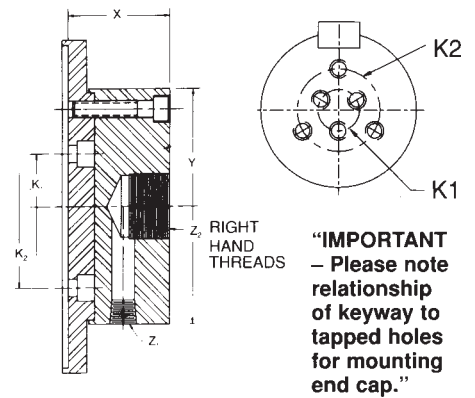
Combination clutch-brake with RR ring-type connection. Mid-shaft shrink disc mounting.



Combination clutch-brake with PEP pin-extended-pin mounting. With End Cap and Spider (Air Manifold).

### OPTIONAL END CAP AND SPIDER (AIR MANIFOLD)

FOR USE WITH	K <sub>1</sub>	K <sub>2</sub>	X	Y	Z <sub>1</sub>	Z <sub>2</sub>
CCB 380	22.2 PCD (3 OFF 10.3 ø)	41.28 PCD (3 OFF 10.3 ø)	80	107	1/2" BSPT 2 @ 180°	1"-14NS
CCB 470	31.75 PCD (3 OFF 10.3 ø)	63.5 PCD (3 OFF 10.3 ø)	80	107	1/2" BSPT 4 @ 90°	1"-14NS
CCB 500	41.28 PCD (3 OFF 10.3 ø)	50.8 PCD (3 OFF 10.3 ø)	80	125	1/2" BSPT 4 @ 90°	1 1/2"-12NF
CCB 550	50.8 PCD (3 OFF 10.3 ø)	76.2 PCD (3 OFF 10.3 ø)	80	125	1/2" BSPT 4 @ 90°	1 1/2"-12NF
CCB 600	—	73.0 PCD (3 OFF 10.3 ø)	80	125	1/2" BSPT 4 @ 90°	1 1/2"-12NF
CCB 675	—	73.0 PCD (3 OFF 10.3 ø)	80	125	1/2" BSPT 4 @ 90°	1 1/2"-12NF
CCB 760	88.9 PCD (3 OFF 10.3 ø)	114.3 PCD (3 OFF 10.3 ø)	80	178	1/2" BSPT 4 @ 90°	1 1/2"-12NF
CCB 910	82.55 PCD (3 OFF 13.5 ø)	127 PCD (3 OFF 13.5 ø)	80	185	1/2" BSPT 6 @ 60°	2"-12NF



**"IMPORTANT**  
— Please note relationship of keyway to tapped holes for mounting end cap."

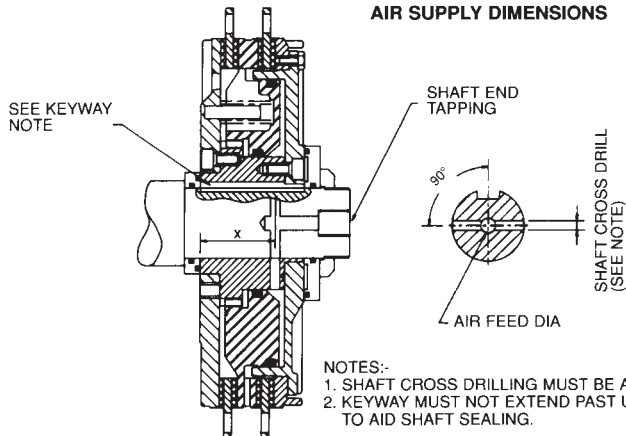
For mounting End Cap onto customers shaft end use either 3 bolts on K<sub>1</sub> PCD or K<sub>2</sub> PCD, whichever is preferred.

	DIMENSION X	SHAFT CROSS DRILL	AIR FEED DIA (MIN)	SHAFT END TAPPING
CCB 170	31	ø4	7	1/4" BSP x 20 DEEP
CCB 190	41	ø5	9	3/8" BSP x 20 DEEP
CCB 230	47.5	ø6	9	3/8" BSP x 20 DEEP
CCB 310	59	ø8	13	1/2" BSP x 25 DEEP

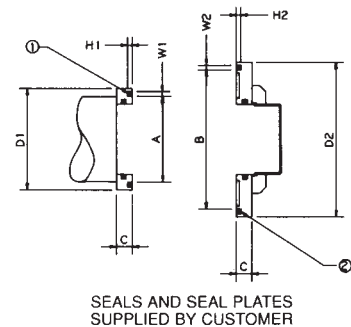
AIR SUPPLY DIMENSIONS

	A	B	C	D1	D2	H1	H2	W1	W2	"O" RING Ø TO BS4518 ②
CCB 170	44.5	69.4	10	52	80	1.8	2.3	2.4	3	0446-24 0695-30
CCB 190	44.5	69.4	10	52	80	1.8	2.3	2.4	3	0446-24 0695-30
CCB 230	57.5	89.4	10	65	100	1.8	2.3	2.4	3	0576-24 0895-30
CCB 310	79.4	109.4	10	88	120	2.3	2.3	3	3	0795-30 1095-30

SEAL PLATE DIMENSIONS



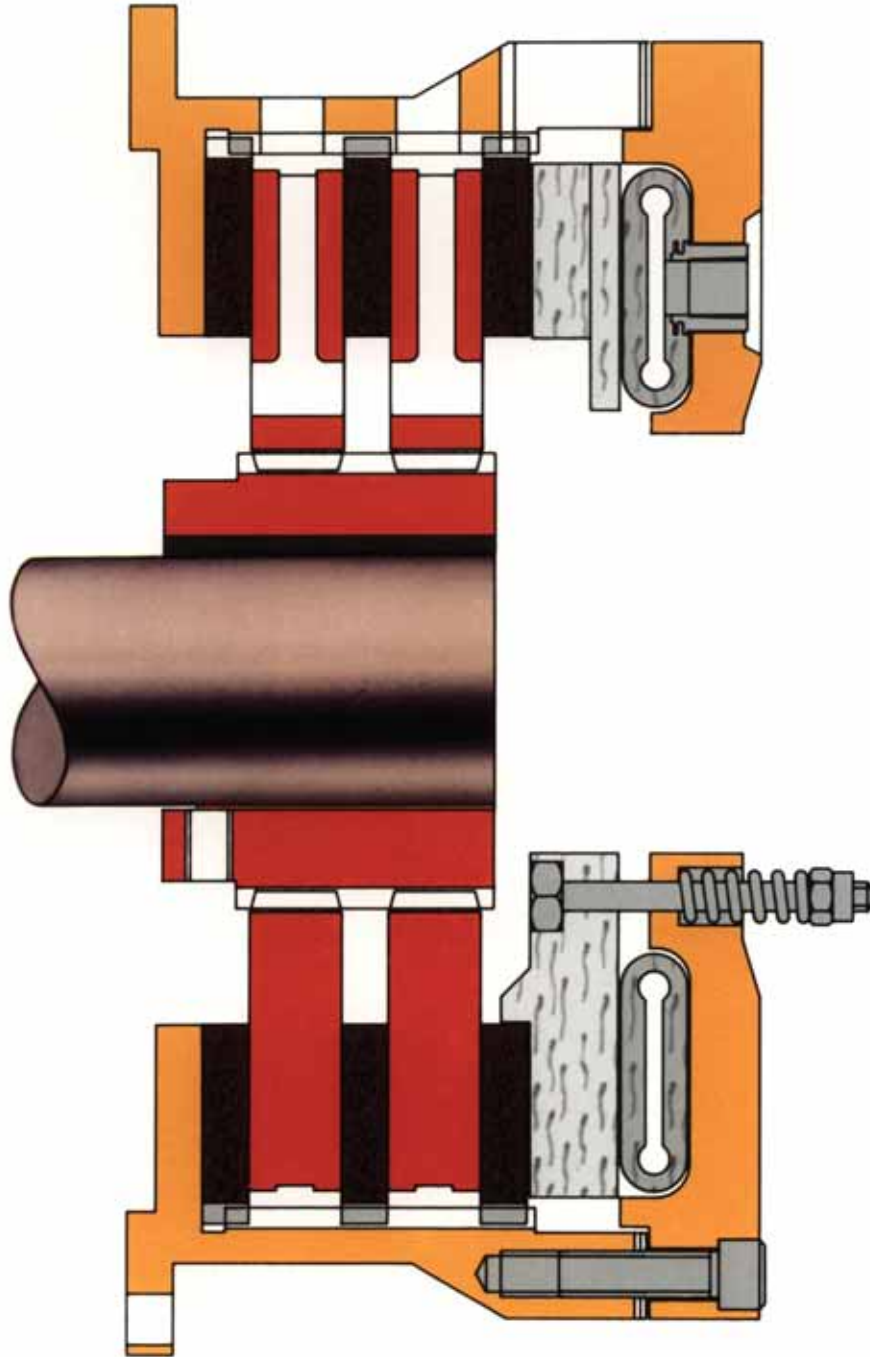
NOTES:-  
1. SHAFT CROSS DRILLING MUST BE AT 90° TO KEYWAY.  
2. KEYWAY MUST NOT EXTEND PAST UNIT LIMITS TO AID SHAFT SEALING.



SEALS AND SEAL PLATES SUPPLIED BY CUSTOMER

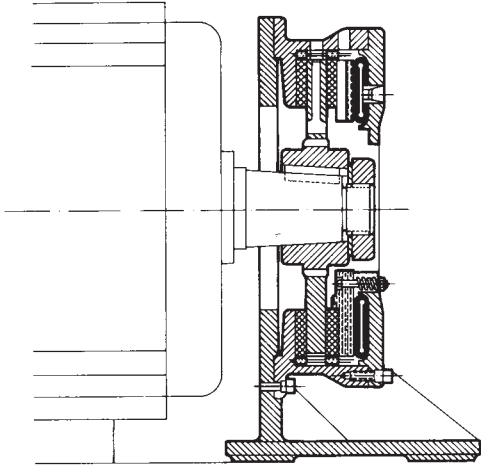
CCB

**Wichita**  
**BRAKE SECTIONAL VIEW**

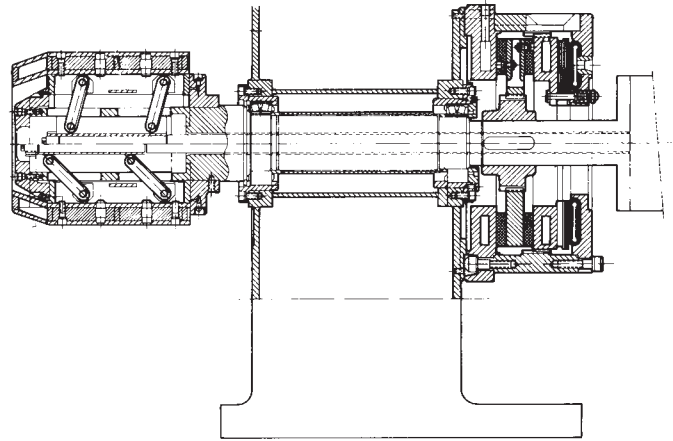


Wichita Low Inertia Brake Model LIM

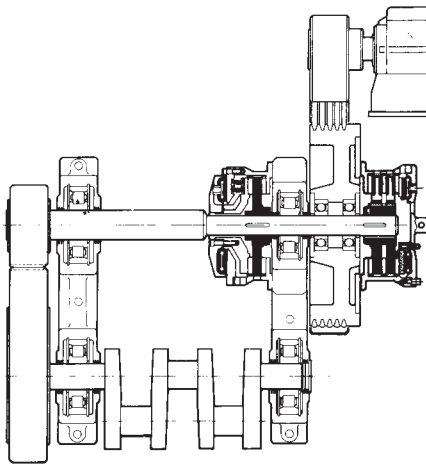
# Wichita BRAKE MOUNTING ILLUSTRATIONS



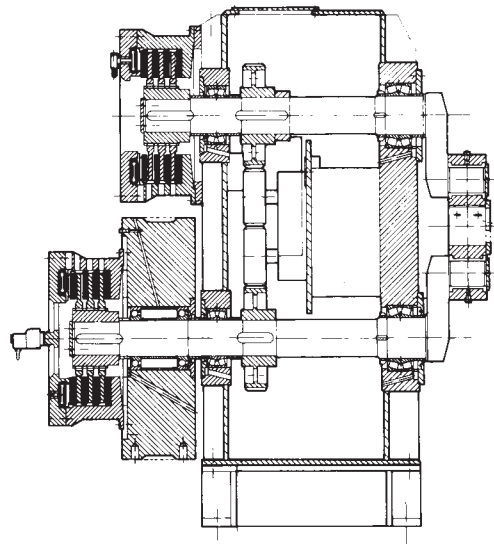
Low Inertia Brake  
on Motor



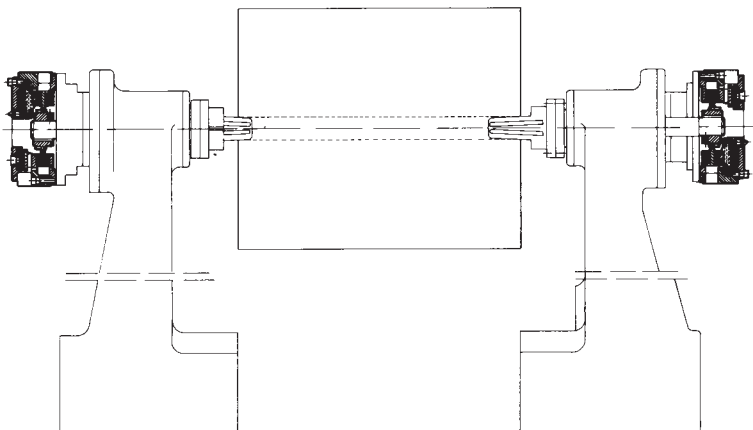
Water Cooled Brake on  
a Decoiler



Low Inertia Clutch and  
Spring Set Brake on  
Mechanical Power Press

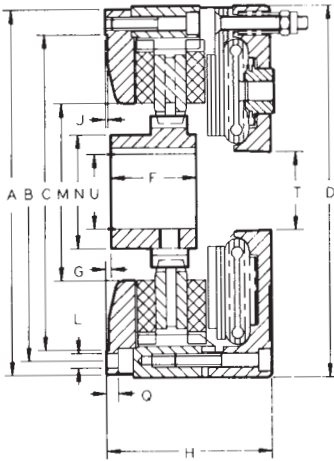


Low Inertia Clutch  
and Brake on Rotary  
Flying Shear

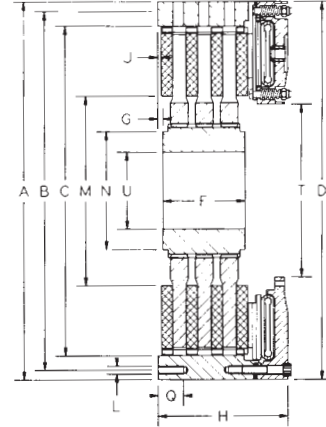


HPM Brakes on Shaftless Unwind Stand

# Wichita LOW INERTIA BRAKE Performance



LIM 106 Brake



LIM 360 Brake

MODEL (BRAKE)	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)		MAXIMUM SPEED (rev/min) (2)		INERTIA = $J = mr^2$ (kg m <sup>2</sup> ) HUB + CENTRE PLATES		WEIGHT (kg)		AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW WORN
	@ 5,5 bar	@ 7 bar	Standard Performance	High Performance	Standard Performance	High Performance	TOTAL BRAKE	HUB AND CENTRE PLATE	
LIM 104	57	72	5250	5250	0,003		6	0,9	15 55
LIM 106	340	435	3520	5200	0,009		15	3	30
LIM 206	680	870			0,017		20	6	195
LIM 108	620	790	2870	4230	0,023		27	4,5	55
LIM 208	1 240	1 580			0,044		32	9	300
LIM 111	1 400	1 785	2090	3070	0,100		60	11	90
LIM 211	2 800	3 570			0,200		75	22	500
LIM 114	2,435	3 100	1640	2420	0,250		84	20	125
LIM 214	4 870	6 200			0,450		105	40	700
LIM 116	3 360	4 275	1430	2110	0,442	0,400	117	25	160
LIM 216	6 720	8 550			0,825	0,675	148	48	48
LIM 316	10 080	12 825			1,29	0,990	162	83	920
LIM 118	5 705	7 260	1270	1880	0,722	0,623	141	32	250
LIM 218	11 410	14 520			1,345	1,146	171	65	65
LIM 318	17 115	21 780			1,997	1,699	210	100	1400
LIM 121	7 755	9 870	1090	1610	1,31	1,20	211	52	300
LIM 221	15 510	19 740			2,5	2,20	264	90	90
LIM 321	23 265	29 610			4,0	3,20	330	145	1600
LIM 124H	13 575	17 275	950	1410	2,3	2,25	289	60	490
LIM 224H	27 150	34 550			4,5	4,25	365	112	112
LIM 324H	40 725	51 825			6,75	6,25	465	172	2600
LIM 127	15 260	19 420	850	1250	4,75	3,45	349	80	490
LIM 227	30 520	38 840			8,5	6,75	426	160	160
LIM 327	45 780	58 260			12,6	10,0	240		2600
LIM 130H	29 630	37 710	765	1130	7,75	6,2	470	125	960
LIM 230H	59 260	75 420			15,1	10,2	640	248	640
LIM 330H	88 890	113 130			19,5	17,0	795	375	5100
LIM 136	44 920	57 175	640	940	15,2	15,0	660	180	180
LIM 236	89 840	114 350			29,5	28,2	905	360	360
LIM 336	134 760	171 525			44,7	43,5	1180	540	6800
LIM 142	64 160	81 605	545	805	26,5	25,2	890	265	2100
LIM 242	128 320	163 320			65	54,8	1040	530	8000
LIM 342	192 480	244 980			92	74	1680	800	800
LIM 248	237 600	302 400	475	705	140	138	2050	1005	3550
LIM 348	356 400	453 600			211	201	2530	1500	13500
LIM 260	473 000	602 000	380	565	283	208	3800		8400
LIM 360	709 000	902 300			450	335	4910		29300
LIM 460	946 000	1204 000			617	462	6020		
LIM 272	803 000	1 022 000	320	470	635		6500		21500
LIM 372	1 204 500	1 533 000			1200		8900		75000
LIM 296	1 617 000	2 058 000	240	350	3000		9500		
LIM 396	2 425 500	3 087 000			4300		12700		

**Selection Guide — Service Conditions**

**(1) Torque rating.**

Dynamic torque ratings represent full brake capacity.

Service conditions vary but as a guide to selection, for cycling applications use 75% of torque rating

Air pressure.

Note Torque is directly proportional to the air pressure applied.

**(2) High speed**

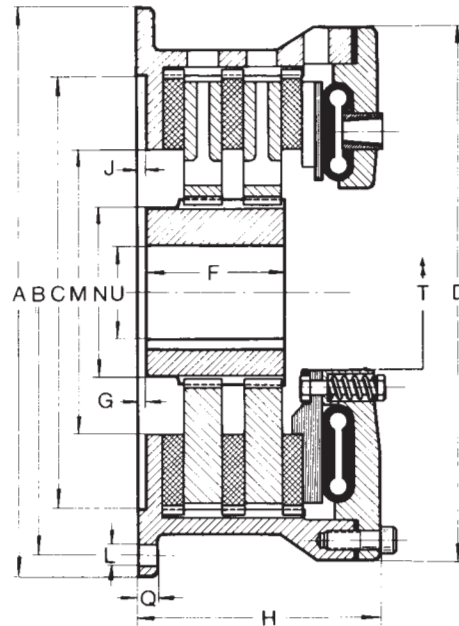
Maximum speed ratings may be exceeded in many applications.

**For advice on speed or service factors etc. consult your Wichita Engineer.**

# Wichita

## LOW INERTIA BRAKE

### Dimensions



LIM Brake (LIM 108-LIM 342)

MODEL	A	B	C <sup>(1)</sup>	D	F	G	H	J	L	M	N	Q	U <sup>(2)</sup>		T
													Min	Max	
LIM 104	180	165	140	181	25	14	60	5	4 × Ø8,5	75	49	65	15	25	83
LIM 106	220	203	190	224	51	0	102	1,5	4 × Ø9	92	68	6	15	45	50
LIM 206	220	203	190	224	51	0	132	1,5	4 × Ø9	92	68	6	15	45	50
LIM 108	310	280	220	283	51	6	129	6	6 × Ø14	136	89	13	25	57	57
LIM 208	310	280	220	283	83	8	160	6	6 × Ø14	136	89	13	25	57	57
LIM 111	400	375	295	375	69	3	140	10	6 × Ø18	178	102	16	25	64	82
LIM 211	400	375	295	375	111	6	184	10	6 × Ø18	178	102	16	25	64	82
LIM 114	470	445	370	445	95	3	170	10	8 × Ø18	240	140	16	25	90	127
LIM 214	470	445	370	445	114	10	216	10	8 × Ø18	240	140	16	25	90	127
LIM 116	540	510	410	508	102	10	160	10	12 × Ø18	267	152	16	35	102	155
LIM 216	540	510	410	508	120	10	210	10	12 × Ø18	267	152	16	35	102	155
LIM 316	540	510	410	508	165	10	256	10	12 × Ø18	267	152	16	35	102	155
LIM 118	590	560	470	559	102	11	184	10	12 × Ø18	318	178	16	50	120	196
LIM 218	590	560	470	559	120	11	235	10	12 × Ø18	318	178	16	50	120	196
LIM 318	590	560	470	559	120	11	263	10	12 × Ø18	318	178	16	50	120	196
LIM 121	685	648	540	632	102	19	203	8	12 × Ø18	368	229	19	50	152	235
LIM 221	685	648	540	632	130	16	260	8	12 × Ø18	368	229	19	50	152	235
LIM 321	685	648	540	632	178	19	294	8	12 × Ø18	368	229	19	50	152	235
LIM 124H	760	730	620	736	102	18	200	6	12 × Ø18	368	229	19	50	152	336
LIM 224H	760	730	620	736	130	19	257	6	12 × Ø18	368	229	19	50	152	336
LIM 324H	760	730	620	736	190	21	314	6	12 × Ø18	368	229	19	50	152	336
LIM 127	830	800	700	787	115	19	198	6	16 × Ø18	413	229	19	65	165	336
LIM 227	830	800	700	787	175	19	259	6	16 × Ø18	413	229	19	65	165	336
LIM 327	830	800	700	787	202	19	318	6	16 × Ø18	413	229	19	65	165	336
LIM 130H	935	900	775	883	127	16	229	6	18 × Ø22	489	254	19	65	185	380
LIM 230H	935	900	775	883	137	19	280	6	18 × Ø22	489	254	19	65	185	380
LIM 330H	935	900	775	883	190	16	320	6	18 × Ø22	489	254	19	65	185	380
LIM 136	1105	1065	925	1042	143	16	245	6	18 × Ø22	600	305	22	153	230	570
LIM 236	1105	1065	925	1042	229	16	330	6	18 × Ø22	600	305	22	153	230	570
LIM 336	1105	1065	925	1042	314	16	410	6	18 × Ø22	600	305	22	153	230	570
LIM 142	1320	1250	1070	1250	143		194	6	24 × Ø26	750	407	25	204	255	605
LIM 242	1320	1250	1070	1250	190		259	6	24 × Ø26	750	407	25	204	255	605
LIM 342	1320	1250	1070	1250	267		336	6	24 × Ø26	750	407	25	204	255	605
LIM 248 <sup>(3)</sup>	1440	1372	1320	1442	223	0	348	6	24 × M24	813	610		254	370	610
LIM 348 <sup>(3)</sup>	1535	1472	1320	1442	359	0	448		24 × Ø26	813	610		254	370	610
LIM 260 <sup>(3)</sup>	1790	1689	1590	1790	238	6	448		24 × 2" NC	914	686		280	480	610
LIM 360 <sup>(3)</sup>	1790	1689	1590	1790	359	6	575	6	24 × 2" NC	914	686		280	480	775
LIM 460 <sup>(3)</sup>	1790	1689	1590	1790	473		690	6	24 × 2" NC	914	686		280	480	775
LIM 272 <sup>(3)</sup>	2172	2048	1925	2172	375		500	10	24 × 2½" NC	1168	940		400	650	950
LIM 372 <sup>(3)</sup>	2172	2048	1925	2172	525		619	10	24 × 2½" NC	1168	940		400	650	950
LIM 296 <sup>(3)</sup>	2718	2616	1515	2718	378		578	13	32 × 2½" NC	1727	1448		500	850	1450
LIM 396 <sup>(3)</sup>	2718	2616	2515	2718	533		730	13	32 × 2½" NC	1727	1448		500	850	1450

(1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.

(2) The bore dimensions "U MIN" are those held in stock and are the minimum produceable. The tolerance is +, 00 -, 10. The bore dimensions "U MAX" are the maximum for the standard design. Larger bores may be possible with special designs.

(3) No flange or backplate.

#### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

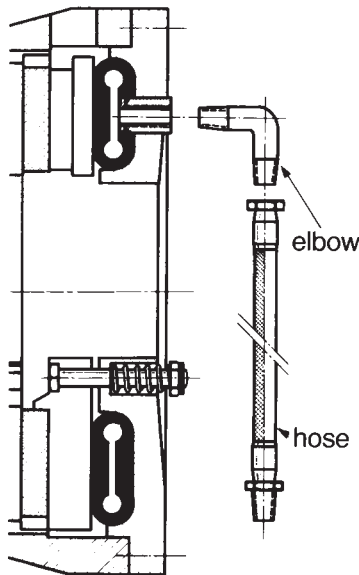
# Wichita

## LOW INERTIA BRAKE

### Air Sets

#### DESCRIPTION

Air sets are optional and consist of elbows (or quick exhaust valves), hoses and pipe fittings. For cycling duties and fast response time of brake engagement, elbows should be used. Customer's fast acting solenoid valve should be mounted as close as possible to the brake. For applications where fast disengagement of the brake is the main criteria then Quick Exhaust Valves should be used — see page 33 for dimensions. Alternatively, the air supply can be piped up directly to the 1/2" BSPT/NPT airtube connections (spud). Use flexible connections.



LIM

#### HOSES AND INLET CONNECTIONS

Brake	Quantity of hoses	Inlet Connection 'A'
104	1	1/8" BSPT male
106	1	1/4" BSPT male
108-208	1	1/2" BSPT male
111-316	2	1/2" BSPT female
118-321	3	3/4" BSPT female
124H-327	3	1 1/4" BSPT female
130H-348H	4	1 1/4" BSPT female

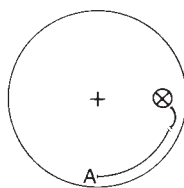
For larger sizes refer to your Wichita Engineer.

#### AIR SET NUMBERS

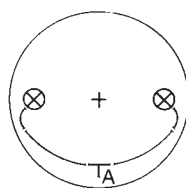
These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

Air Set Coding Example: Air Set No. 332 - 19 - EX			
Quantity of air inlets	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
3	3	2	— 19 —
SQX E = elbows Q = QEV's SQ = silenced QEV's X = pipe cross T = pipe tee			

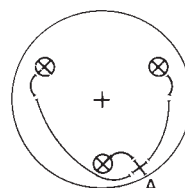
#### HOSE CONFIGURATION



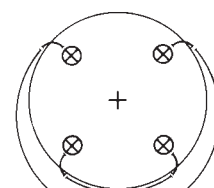
1 hose



2 hoses



3 hoses



4 hoses



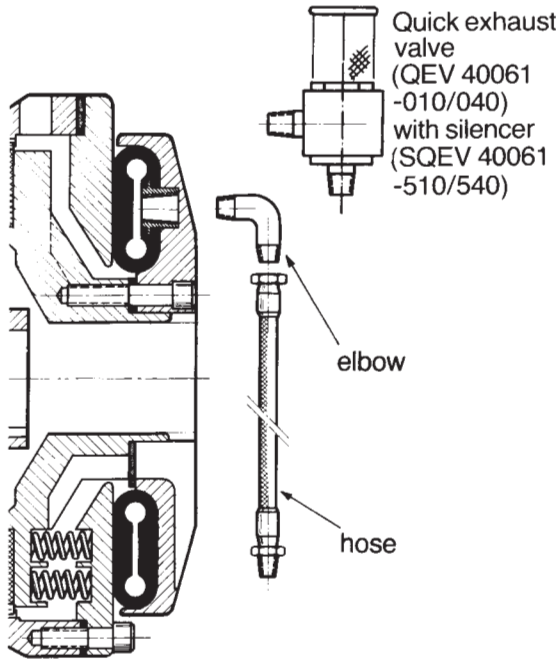
# Wichita

## SPRING SET BRAKE

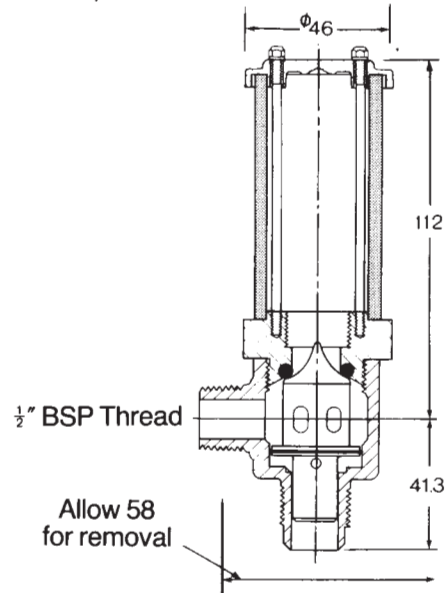
### Air Sets

#### DESCRIPTION

Air sets are optional and consist of elbows or quick exhaust valves, hoses and pipe fittings. For cycling duties and fast response, silenced quick exhaust valves (SQEV's) should be used. Note, however (a) quick exhaust valves without silencers (QEV's) can be used where noise is not a problem. (b) QEV's offer no real advantage on sizes 104H-206. Where fast response is not a requirement, the air set can be supplied with elbows. Alternatively, the air supply can be piped up directly to the 1/2" BSPT/NPT airtube connections (spuds). Use flexible connections.



#### SILENCED QUICK EXHAUST VALVE 40061-510/540



#### HOSES AND INLET CONNECTIONS

Brake Size	Quantity of hoses	Inlet Connection 'A'
104H	1	1/4" NPT/BSPT male
106	1	1/4" BSPT male
108-208	1	1/2" BSPT male
111-316	2	1/2" BSPT female
118-321	3	3/4" BSPT female
124H-327	3	1 1/4" BSPT female
130H-348H	4	1 1/4" BSPT female

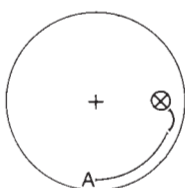
For larger sizes refer to your Wichita Engineer.

#### AIR SET NUMBERS

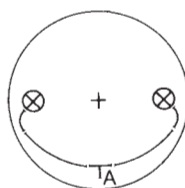
These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

Air Set Coding Example: Air Set No. 332 - 18 - SQX			
Quantity of air inlets	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
3	3	2	- 18 -
SQX E = elbows Q = QEV's SQ = silenced QEV's X = pipe cross T = pipe tee			

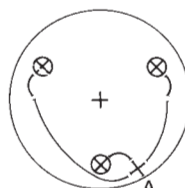
#### HOSE CONFIGURATION



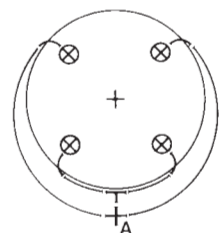
1 hose



2 hoses

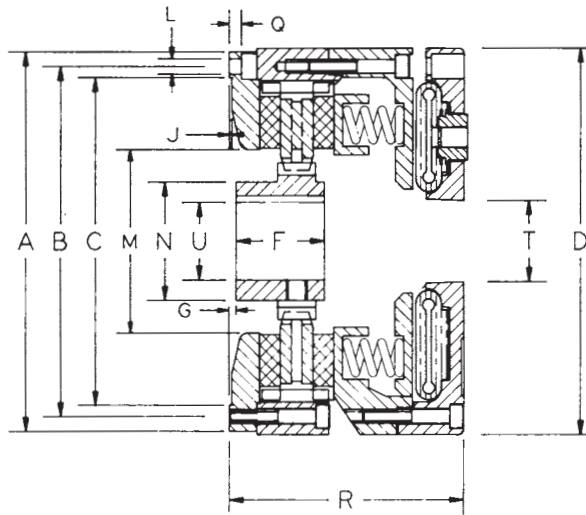


3 hoses



4 hoses

# Wichita SPRING SET BRAKE Performance



SSM 106 Brake

MODEL (BRAKE)	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)			MAXIMUM SPEED (rev/min) (3)		INERTIA = $J = mr^2$ (kg m <sup>2</sup> ) HUB AND CENTRE PLATES		WEIGHT (kg)		AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> )
	SPRING RETURN PRESSURE			Standard performance	High performance	Standard performance	High performance	TOTAL BRAKE	HUB AND CENTRE PLATE	
	4,5 bar (2a)	5,5 bar (2b)	7,0 bar (2c)							
SSM 104H	51			5 250	5 250	0,003		10	0,9	100
SSM 106 SSM 206	265 490	330 615	400 740	3 520	5 200	0,009 0,017		20 25	3 6	195
SSM 108 SSM 208	420 795	540 1 020	670 1 270	2 870	4 230	0,023 0,044		31 37	4,5 9	300
SSM 111 SSM 211	980 1 830	1 260 2 340	1 570 2 930	2 090	3 070	0,100 0,200		77 95	11 22	500
SSM 114 SSM 214	1 780 3 240	2 280 4 150	2 840 5 180	1 640	2 420	0,250 0,450		119 135	20 40	700
SSM 116 SSM 216	2 390 4 320	3 060 5 530	3 820 6 910	1 430	2 110	0,442 0,825	0,400 0,675	157 204	25 48	920
SSM 118 SSM 218	3 740 6 680	4 790 8 560	5 990 10 690	1 270	1 880	0,722 1,345	0,623 1,146	167 216	32 65	1 400
SSM 121 SSM 221 SSM 321	4 620 8 130 12 190	5 920 10 410 15 620	7 390 13 000 19 500	1 090	1 610	1,31 2,5 4,0	1,20 2,20 3,20	288 341 367	52 90 145	1 600
SSM 124H SSM 224H SSM 324H	7 050 12 150 18 230	9 040 15 570 23 350	11 280 19 440 29 160	950	1 410	2,3 4,5 6,75	2,25 4,25 6,25	387 435 550	60 112 172	2 600
SSM 127 SSM 227 SSM 327	9 590 16 190 24 290	12 280 20 750 31 120	15 330 25 900 38 850	850	1 250	4,75 8,5 12,6	3,45 6,75 10,0	475 552 630	80 160 240	2 600
SSM 130H SSM 230H SSM 330H	14 840 24 000 36 000	19 010 30 750 46 110	23 740 38 390 57 580	765	1 130	7,75 15,1 19,5	6,2 10,2 17,0	662 728 1 000	125 248 375	5 100
SSM 136 SSM 236 SSM 336	25 160 39 590 59 390			640	940	15,2 29,5 44,7	15,0 28,2 43,5	972 1 230 1 480	180 360 540	6 800
SSM 142 SSM 242 SSM 342				545	805	26,5 65 92	25,2 54,8 74	1 460 1 820 2 248	265 530 800	8 000
SSM 248 SSM 348	146 500 219 800			475	705	140 211	138 201	3 025 3 375	1 005 1 500	13 500
SSM 260 SSM 360 SSM 460	200 000 300 000 400 000			380	565	400 600 800	292 475 617			29 300
SSM 272 SSM 372	307 500 460 000			320	470	635				75 000
SSM 296 SSM 396	620 000 935 000			240	350	4 300				

## Selection Guide — Service Conditions

### (1) Torque rating.

Dynamic torque ratings represent full brake capacity.

Service conditions vary but as a guide to selection, for cycling applications use 75% of torque rating.

### (2) Spring set

Brake performance can be adjusted by fitting varying spring types and combinations. Three spring ratings are available and as a general guide we select.

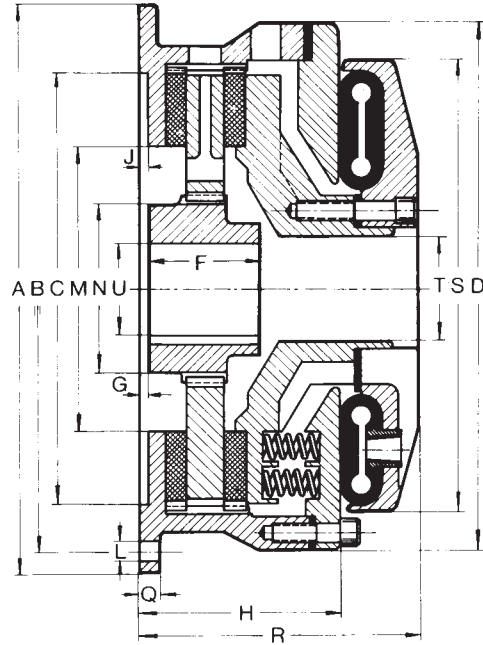
- a) SSM45 springs for high speed action
- b) SSM55 springs for cyclic applications
- c) SSM70 springs for power emergency braking

For advice on speed or service factors etc. consult your Wichita Engineer.

### (3) High speed

Maximum speed ratings may be exceeded in many applications, for advice consult your Wichita Engineer.

# Wichita SPRING SET BRAKE Dimensions



SSM 108-248 Brake

MODEL	A	B	C <sup>(1)</sup>	D	F	G	H	J	L	M	N	Q	R	S	T	U <sup>(2)</sup>	
																Min	Max
SSM 104H	180	165	140	180	25	1,6	96	4,7	4 × Ø9	76	50	54	105	180	50	15	25
SSM 106	220	203	190	224	51	1,6	133	1,6	4 × Ø9	106	68	6	133	224	50	15	45
SSM 206	220	203	190	224	83	1,6	165	1,6	4 × Ø9	106	68	6	165	224	50	15	45
SSM 108	310	280	220	283	51	6	129	6	6 × Ø14	136	89	13	156	238	50	25	57
SSM 208	310	280	220	283	83	6	160	6	6 × Ø14	136	89	13	190	238	50	25	57
SSM 111	400	375	295	375	79	3	152	9,5	6 × Ø18	179	102	16	175	303	77	25	65
SSM 211	400	375	295	375	112	6	200	9,5	6 × Ø18	179	102	16	218	303	77	25	65
SSM 114	470	445	370	445	76	3	170	9,5	8 × Ø18	240	140	16	208	375	98	35	90
SSM 214	470	445	370	445	114	10	216	9,5	8 × Ø18	240	140	16	254	375	98	35	90
SSM 116	540	510	410	508	102	10	160	9,5	12 × Ø18	267	152	16	215	414	112	35	102
SSM 216	540	510	410	508	120	10	224	9,5	12 × Ø18	267	152	16	270	414	112	35	102
SSM 118	590	560	470	559	102	11	184	9,5	12 × Ø18	318	178	16	225	492	124	50	120
SSM 218	590	560	470	559	120	11	235	9,5	12 × Ø18	318	178	16	273	492	124	50	120
SSM 121	685	648	540	632	102	19	203	8	12 × Ø18	368	229	19	252	550	158	50	152
SSM 221	685	648	540	632	130	19	260	8	12 × Ø18	368	229	19	305	550	158	50	152
SSM 321	685	648	540	632	178	19	292	8	12 × Ø18	368	229	19	356	550	158	50	152
SSM 124H	760	730	620	736	102	19	200	6	12 × Ø18	368	229	19	249	685	210	50	152
SSM 224H	760	730	620	736	130	19	257	6	12 × Ø18	368	229	19	308	685	210	50	152
SSM 324H	760	730	620	736	190	21	305	6	12 × Ø18	368	229	19	371	685	210	50	152
SSM 127	830	800	700	787	115	19	198	6	16 × Ø18	413	229	19	260	685	210	65	165
SSM 227	830	800	700	787	175	19	276	6	16 × Ø18	413	229	19	319	685	210	65	165
SSM 327	830	800	700	787	202	19	325	6	16 × Ø18	413	229	19	367	685	210	65	165
SSM 130H	940	900	775	883	82	16	185	6	18 × Ø22	489	356	19	243	812	210	65	230
SSM 230H	940	900	775	883	136	19	265	6	18 × Ø22	489	356	19	329	812	210	65	230
SSM 330H	940	900	775	883	257	19	337	6	18 × Ø22	489	356	19	395	812	210	65	230
SSM 136	1105	1065	925	1042	143	16	245	6	18 × Ø22	600	305	22	305	972	324	152	230
SSM 236	1105	1065	925	1042	229	16	330	6	18 × Ø22	600	305	22	384	972	324	152	230
SSM 336	1105	1065	925	1042	314	16	410	6	18 × Ø22	600	305	22	519	972	324	152	230
SSM 142	1320	1250	1070	1250	143		194	6	24 × Ø26	750	407	25	357	1120	520	204	255
SSM 242	1320	1250	1070	1250	190		259	6	24 × Ø26	750	407	25	420	1120	520	204	255
SSM 342	1320	1250	1070	1250	267		336	6	24 × Ø26	750	407	25	483	1120	520	204	255
SSM 248 <sup>(3)</sup>	1490	1440	1220	1442	223		359	0	24 × Ø26	813	610		516	1320	500	254	370
SSM 348 <sup>(3)</sup>	1490	1440	1220	1442	359		410	6	24 × Ø26	813	610		572	1320	500	254	370

(1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.

(2) The bore dimensions "U MIN" are those held in stock and are the minimum produceable. The tolerance is +, 00 -, 10. The bore dimensions "U MAX" are the maximum for the standard design. Larger bores may be possible with special designs.  
All dimensions in mm unless stated.

(3) No flange or backplate.

## DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita

## WATER COOLED BRAKE

### Performance

MODEL (BRAKE)	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)		HEAT TRANSFER CAPACITY (Intermittent Operation) (kW) (2)	MAX SPEED (rev/min) (3)	INERTIA $J = mr^2$ HUB AND CENTRE PLATE (kgm <sup>2</sup> )	WEIGHT (kg)		WATER FLOW REQUIRED FOR MAX HEAT TRANSFER (litre/min) (4)	AIR TUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW/WORN
	Minimum @ 0,2 bar air pressure	Maximum @ 5,5 bar air pressure				TOTAL BRAKE	HUB AND CENTRE PLATE		
WCM 104/LC	1	38	6	5250	0,00125	10,6		4	15/55
WCM 104	1	57	6	5250	0,00125	10,6		4	15/55
WCM 104H	2	115	6	5250	0,00125	10,6		4	15/55
WCM 106/MR2/LC	3	83	9	3520	0,02	21	3	6	5/52
WCM 106/MR2	5	124	9	3520	0,02	21	3	6	5/52
WCM 106/A/LC	3	115	9	3520	0,02	21	3	6	20/100
WCM 106/A	3	176	9	3520	0,02	21	3	6	20/100
WCM 106/MR4/LC	6	166	9	3520	0,02	21	3	6	10/104
WCM 106/MR4	10	248	9	3520	0,02	21	3	6	10/104
WCM 106/LC	6	225	9	3520	0,02	21	3	6	30/195
WCM 106	6	340	9	3520	0,02	21	3	6	30/195
WCM 206	12	680	12	3520	0,03	31	6	8	30/195
WCM 108/MR2/LC	4	108	13	2870	0,0225	36	4,5	8	5/52
WCM 108/MR2	6	162	13	2870	0,0225	36	4,5	8	5/52
WCM 108/MR4/LC	8	216	13	2870	0,0225	36	4,5	8	10/104
WCM 108/MR4	12	324	13	2870	0,0225	36	4,5	8	10/104
WCM 108/A/LC	8	330	13	2870	0,0225	36	4,5	8	30/195
WCM 108/A	10	405	13	2870	0,0225	36	4,5	8	30/195
WCM 108/MR6/LC	12	324	13	2870	0,0225	36	4,5	8	15/156
WCM 108/MR6	18	486	13	2870	0,0225	36	4,5	8	15/156
WCM 108/LC	10	405	13	2870	0,0225	36	4,5	8	55/300
WCM 108	10	620	13	2870	0,0225	36	4,5	8	55/300
WCM 208	20	1240	18	2870	0,0375	50	7	12	55/300
WCM 111/MR2/LC	5	145	18	2090	0,113	78	10	12	5/52
WCM 111/MR2	8	218	18	2090	0,113	78	10	12	5/52
WCM 111/MR4/LC	10	290	18	2090	0,113	78	10	12	10/104
WCM 111/MR4	16	436	18	2090	0,113	78	10	12	10/104
WCM 111/A/LC	15	555	18	2090	0,113	78	10	12	55/300
WCM 111/A	22	826	18	2090	0,113	78	10	12	55/300
WCM 111/MR6/LC	15	435	18	2090	0,113	78	10	12	15/156
WCM 111/MR6	24	654	18	2090	0,113	78	10	12	15/156
WCM 111/MR8/LC	20	580	18	2090	0,113	78	10	12	20/208
WCM 111/MR8	32	872	18	2090	0,113	78	10	12	20/208
WCM 111/LC	25	940	18	2090	0,113	78	10	12	90/500
WCM 111	25	1400	18	2090	0,113	78	10	12	90/500
WCM 211	50	2800	27	2090	0,25	90	20	17	90/500
WCM 114/MR2/LC	7	188	21	1640	0,45	125	20	13	5/52
WCM 114/MR2	10	282	21	1640	0,45	125	20	13	5/52
WCM 114/MR4/LC	14	376	21	1640	0,45	125	20	13	10/104
WCM 114/MR4	20	564	21	1640	0,45	125	20	13	10/104
WCM 114/MR6/LC	21	564	21	1640	0,45	125	20	13	15/156
WCM 114/MR6	30	846	21	1640	0,45	125	20	13	15/156
WCM 114/MR8/LC	28	752	21	1640	0,45	125	20	13	20/208
WCM 114/MR8	40	1128	21	1640	0,45	125	20	13	20/208
WCM 114/MR10/LC	35	940	21	1640	0,45	125	20	13	25/260
WCM 114/MR10	50	1410	21	1640	0,45	125	20	13	25/260
WCM 114/LC	100	1620	21	1640	0,45	125	20	13	125/700
WCM 114	100	2435	21	1640	0,45	125	20	13	125/700
WCM 214	200	4870	33	1640	0,325	145	30	21	125/700
WCM 116/LC	110	2530	27	1430	0,495	168	28	18	160/920
WCM 116	110	3360	27	1430	0,495	168	28	18	160/920
WCM 216	220	6780	38	1430	0,72	250	55	25	160/920
WCM 118/LC	200	3815	33	1270	0,75	195	36	21	250/1400
WCM 118	200	5705	33	1270	0,75	195	36	21	250/1400
WCM 218	400	11410	42	1270	0,7	260	50	32	250/1400
WCM 121/LC	230	4915	34	1090	1,6	265	52	30	300/1600
WCM 121	230	7755	34	1090	1,6	265	52	30	300/1600
WCM 221	460	15500	46	1090	1,15	315	80	48	300/1600
WCM 124/A/LC	300	5645	36	950	2,85	360	80	45	300/1600
WCM 124/A	300	8470	36	950	2,85	360	80	45	300/1600
WCM 224/A	600	16940	50	950	2,8	465	130	67	300/1600
WCM 124H/LC	500	9240	36	950	2,85	375	80	45	490/2600
WCM 124H	500	13575	36	950	2,85	375	80	45	490/2600
WCM 224H	1000	27150	50	950	2,8	480	130	67	490/2600
WCM 324H	1500	40725	65	950	4,2	600	180	90	490/2600
WCM 127	570	15260	40	850	5	395	89	57	490/2600
WCM 227	1140	30520	52	850	9,2	560	—	90	490/2600
WCM 130H	1100	29630	43	765	9,65	615	—	65	960/5100
WCM 230H	2200	59230	57	765	18	935	—	105	960/5100
WCM 136	1700	44920	(5)	640	—	—	—	90	1800/6800
WCM 236	3400	89840	(5)	640	—	—	—	145	1800/6800
WCM 142	2400	64160	(5)	545	—	—	—	110	2100/8000
WCM 242	4800	128320	(5)	545	—	—	—	180	2100/8000
WCM 248	9500	237600	(5)	475	—	—	—	250	3550/13500

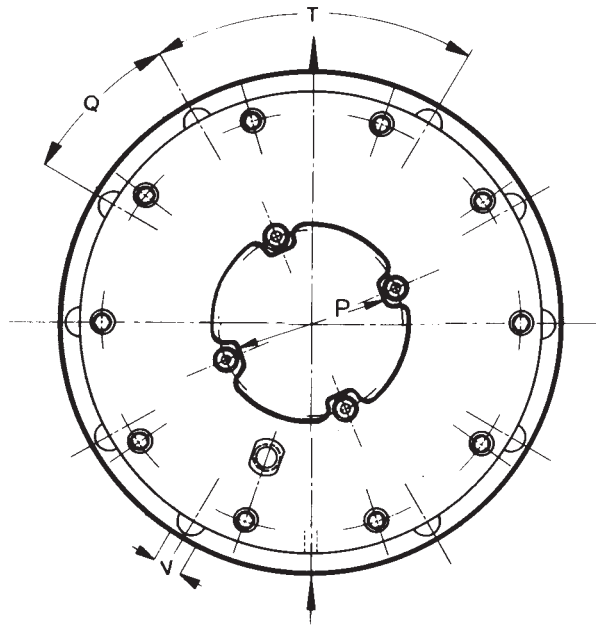
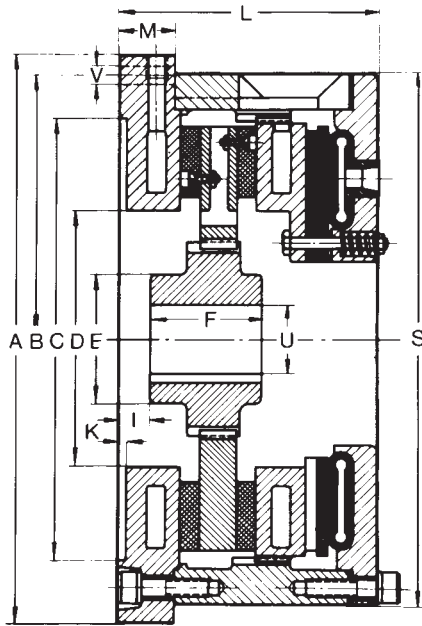
#### Selection Guide — Service Conditions

- (1) Torque Rating. Dynamic torque ratings may be used in selection for applications such as tension control. Service factors vary for more arduous applications, but as a general guide, use 75% brake torque Air Pressure. Note — Torque is directly proportional to the air pressure applied. MR (multi-range) options are also available on WCM 116 and larger.
- (2) Heat transfer. For constant running reduce table rating by 30%.
- (3) High speed. Maximum speed ratings can be exceeded in many applications, for advice consult your Wichita Engineer.
- (4) Water flow. Table ratings are for max heat capacity, water flow requirement may be lower use 0.64 litre per min/kW.
- (5) Consult your Wichita Engineer.

# Wichita

## WATER COOLED BRAKE

### Dimensions



WCM Brake

MODEL	A	B	C <sup>(1)</sup>	D	E	F	I	K	L	M	P	Q	S	T	U <sup>(2)</sup>		V <sup>(3)</sup>
															Min	Max	
WCM 104	180	165	140	51	45	22	32	4	102	62	51	90°	180	90°	15	25	4×Ø9
WCM 104H	180	165	140	51	45	22	32	4	107	62	51	90°	200	90°	15	25	4×Ø9
WCM 106	220	203	190	80	68	51	19	3	145	32	51	90°	224	90° <sup>(4)</sup>	15	45	4×Ø9
WCM 206	220	203	190	80	68	112	33	3	198	32	51	90°	224	90° <sup>(4)</sup>	15	45	4×Ø9
WCM 108	310	280	220	118	89	51	29	6	171	38	57	60°	283	120°	25	57	4×Ø14
WCM 208	310	280	220	118	89	101	29	6	225	38	57	60°	283	120°	25	57	4×Ø14
WCM 111	400	375	295	146	102	70	19	6	188	38	83	60°	375	120°	25	64	4×Ø18
WCM 211	400	375	295	146	102	122	19	6	241	38	83	60°	375	120°	25	64	4×Ø18
WCM 114	470	445	370	211	140	95	27	6	213	44	127	45°	445	90°	25	90	6×Ø18
WCM 214	470	445	370	211	108	143	43	6	293	44	127	45°	445	90°	25	90	6×Ø18
WCM 116	540	510	410	240	152	102	24	6	219	44	152	30°	508	60°	35	102	10×Ø18
WCM 216	540	510	410	240	178	143	24	6	285	44	152	30°	508	60°	35	120	10×Ø18
WCM 118	590	560	470	279	178	102	27	6	226	44	203	30°	559	60°	35	120	10×Ø18
WCM 218	590	560	470	279	151	165	41	6	285	44	203	30°	559	60°	35	100	10×Ø18
WCM 121	685	648	540	343	229	102	32	6	244	45	235	30°	632	60°	50	152	10×Ø18
WCM 221	685	648	540	343	—	165	32	6	302	45	235	30°	632	60°	50	143	10×Ø18
WCM 124	760	730	620	343	229	102	35	6	254	44	235	30°	737	60°	50	152	10×Ø18
WCM 224	760	730	620	343	203	203	35	6	314	44	235	30°	737	60°	50	143	10×Ø18
WCM 124H	760	730	620	343	229	102	35	6	254	44	260	30°	737	60°	50	152	10×Ø18
WCM 224H	760	730	620	343	203	203	35	6	314	44	260	30°	737	60°	50	143	10×Ø18
WCM 127	830	800	700	387	229	115	30	6	254	47	337	22.5°	788	45°	65	165	14×Ø18
WCM 227	830	800	700	387	229	241	30	6	307	47	337	22.5°	788	45°	65	165	14×Ø18
WCM 130H	940	900	775	464	406	127	35	6	283	51	381	20°	883	40°	65	267	16×Ø22
WCM 230H	940	900	775	464	—	203	49	6	421	51	381	20°	883	40°	65	267	16×Ø22
WCM 136	1105	1065	925	572	305	143	29	6	302	57	476	20°	1041	40°	150	230	16×Ø22
WCM 236	1105	1065	925	572	305	279	29	6	441	57	476	20°	1041	40°	150	230	16×Ø22
WCM 142	1320	1250	1070	730	406	143	29	6	302	57	616	15°	1250	30°	200	250	22×Ø26
WCM 242	1320	1250	1070	730	406	286	29	6	442	57	616	15°	1250	30°	200	250	22×Ø26
WCM 248	1490	1440	1220	749	550	321	13	6	483	60	641	15°	1441	30°	250	370	22×Ø26

(1) Dimension "C" is a nominal value. The applicable tolerance is ISO H8.

(2) Bore dimensions "U" refer to the standard design. Larger bores are available on certain units.

(3) The mounting holes in the backplate are not equally spaced due to the position of water inlet and outlet connections. For actual positions refer to angular dimensions "Q" and "T".

(4) On the WCM 106 and WCM 206 the first mounting hole is positioned 13° clockwise from the vertical axis.  
The sketches and dimension table do not include the hose assemblies for water circulation.

#### DIMENSIONS

The dimensions given in the table above are for WCM brakes with metric flange mounting. Details of models WC with imperial mounting dimensions are available on request.

Certified prints with exact dimensions are sent with all order acknowledgements, and these should always be obtained before finalising any design details.

# Wichita

## WATER COOLED BRAKE (WCM) KOPPER COOLED BRAKE (CSM)

### Water Supply

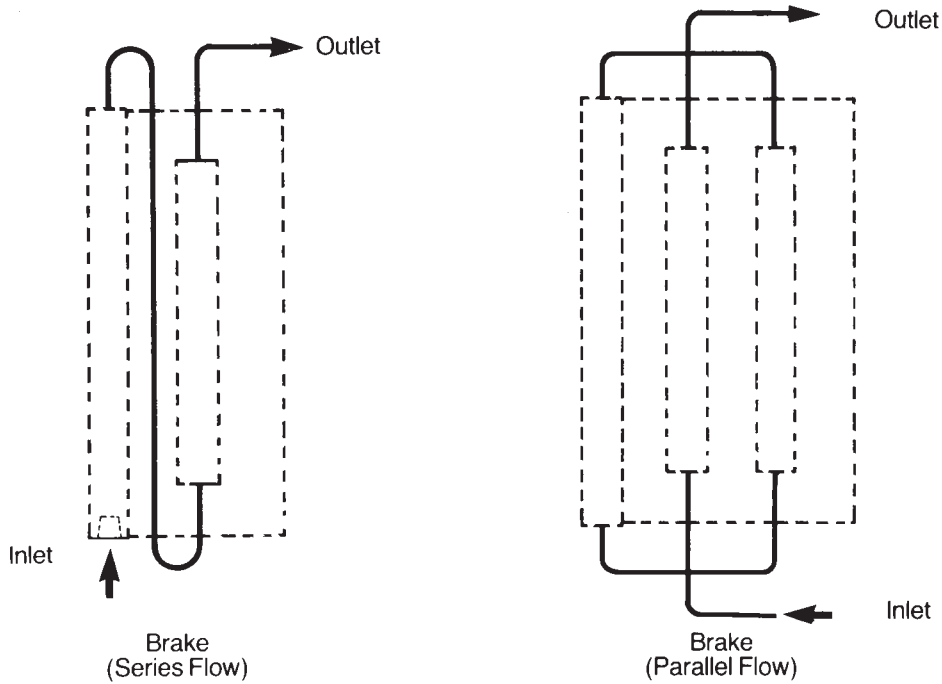
#### (1) DESCRIPTION

Brakes are supplied complete with hoses and fittings ready to be connected to inlet and outlet pipes.

Where the outlet pipe connects directly into the “floating plate” water jacket at the airtube end of the brake, a flexible hose must be used. Ensure that the inlet hose is positioned at the bottom of the brake.

#### (2) FLOW CONFIGURATION

Smaller brakes are piped up for series flow. On larger models parallel flow is used to avoid excessive backpressure.



Details of flow configuration and port sizes are given below.

#### (3) BRAKE DATA (WCM & CSM)

BRAKE SIZE	FLOW CONFIGURATION		INLET/OUTLET PIPE THREADS		MINIMUM PIPE BORE (1) (mm)		SYSTEM BACKPRESSURE (2) (3) (Bar)	
	WCM	CSM	WCM	CSM	WCM	CSM	WCM	CSM
106	Series	Series	1" BSPT female/male	1" BSPT female/male	9	12		0,3
206	Series	Series	1/4" BSPT female/male	1/4" BSPT female/male	9	12		0,9
108	Series	Series	3/8" BSPT female/male	3/8" BSPT female/male	16	16	0,1	0,3
208	Series	Series	1" BSPT female/male	3/8" BSPT female/male	16	16	0,25	0,9
111	Series	Series	1/2" BSPT female/male	3/8" BSPT female/male	16	16	0,3	0,6
211	Series	Series	1/2" BSPT female/male	3/8" BSPT female/male	19	19	0,8	1,5
114	Series	Series	1" BSPT female/male	1" BSPT female/male	19	19	0,35	0,5
214	Series	Series	1/2" BSPT female/male	1" BSPT female/male	19	19	0,9	2,0
116	Series	Series	1/2" BSPT female/male	1" BSPT female/male	19	19	0,5	0,8
216	Series	Parallel	1" BSPT female/male	3/4" BSPT female/female	19	19	1,2	0,8
118	Series	Series	1/2" BSPT female/male	1/2" BSPT female/male	19	19	0,75	1,7
218	Parallel	Parallel	3/4" BSPT female/female	3/4" BSPT female/female	25	25	0,3	1,2
121	Parallel	Parallel	3/4" BSPT female/female	1" BSPT female/female	25	25	0,3	0,4
221	Parallel	Parallel	3/4" BSPT female/female	1 1/4" BSPT female/female	25	32	0,55	1,3
124	Parallel	Parallel	3/4" BSPT female/female	1" BSPT female/female	25	25	0,7	1,1
224	Parallel	Parallel	3/4" BSPT female/female	1 1/4" BSPT female/female	25	25	1,4	2,0
324	Parallel	Parallel	Twin 1" BSPT female/female	Twin 1" BSPT female/female	25	32	2,0	
127	Parallel	Parallel	3/4" BSPT female/female	1" BSPT female/female	25	25	1,1	
227	Parallel	Parallel	3/4" BSPT female/female	1 1/4" BSPT female/female	25	32	2,0	
130	Parallel	Parallel	3/4" BSPT female/female	For these models pipe direct to inlets and outlets on each water jacket.	25	25	1,2	
230	Parallel	Parallel	1 1/2" BSPT female/female		32	32	2,2	
136		Parallel		2 inlets on 1 plate unit		32		
236		Parallel		4 inlets on 2 plate unit		39		
336		Parallel		6 inlets on 3 plate unit		50		

(1) The minimum bore also applies to all fittings. Keep pipework as short as possible with minimum bends.

(2) Maximum inlet pressure is 4.5 bar (65 psi) for WCM and 2.7 bar (39 psi) for CSM.

(3) Backpressure values are approximations based on optimum system with a total inlet and outlet pipe length of 20m. There is no allowance for back pressure caused by returning the water to a ring main.

# Wichita

## WATER COOLED BRAKE KOPPER COOLED BRAKE

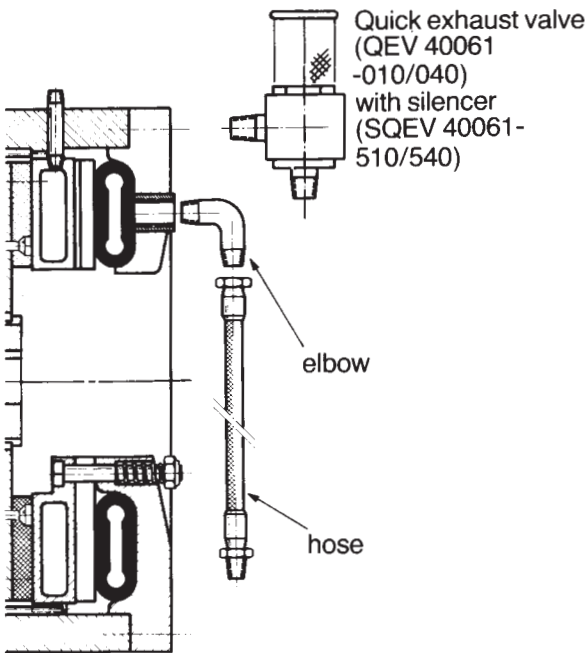
### Air Sets

#### DESCRIPTION

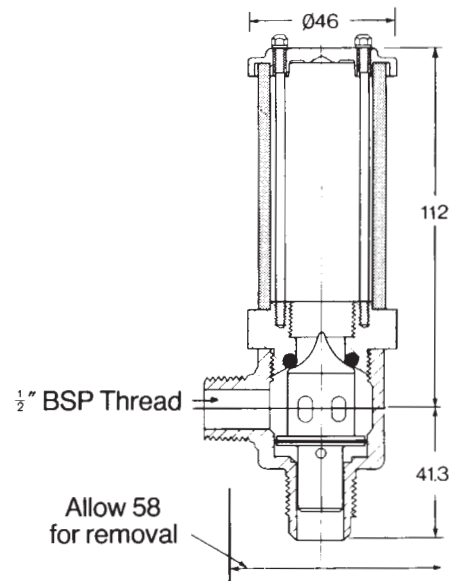
Air sets are optional and consist of elbows or quick exhaust valves, hoses and pipe fittings. For tension control duties customers generally pipe direct to the airtube connections without using an air set. Where there are two inlets, one can be plugged. The thread is  $\frac{1}{2}$ " NPT/BSPT. For fast response or cycling duties an air set comprising elbows, hoses and fittings can be supplied.

Silenced quick exhaust valves (SQEV's) can be used in place of elbows on sizes 108 and 111 to give a further, although small, improvement in response times.

Where noise is not a problem, quick exhaust valves without silencers (QEV's) can be used.



#### SILENCED QUICK EXHAUST VALVE

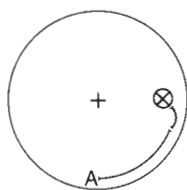


#### HOSES AND INLET CONNECTIONS

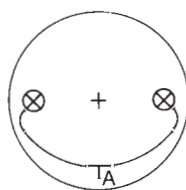
Brake	Quantity of hoses	Inlet Connection 'A'
104	1	$\frac{1}{8}$ " NPT/BSPT male
104H-208	1	$\frac{1}{8}$ " NPT/BSPT male
111-316	2	$\frac{1}{2}$ " BSPT female
118-321	3	$\frac{3}{4}$ " BSPT female
124H-327	3	$1\frac{1}{2}$ " BSPT female
130H-230H	4	$1\frac{1}{2}$ " BSPT female

For larger sizes refer to your Wichita Engineer.

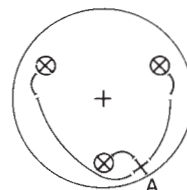
#### HOSE CONFIGURATION



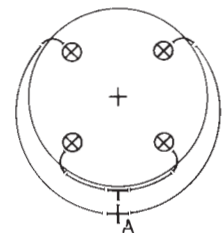
1 hose



2 hoses



3 hoses



4 hoses

#### AIR SET NUMBERS

These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up an air set.

Air Set Coding Example: Air Set No. 332 - 18 - SQX			
Quantity of air inlets	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
3	3	2	- 18 -
SQX E = elbows Q = QEV's SQ = silenced QEV's X = pipe cross T = pipe tee			

WCM  
CSM

# Wichita

## KOPPER COOLED BRAKE

### Performance

MODEL (BRAKE)	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)		HEAT TRANSFER CAPACITY (Intermittent Operation) (kW) (2)	MAX SPEED (rev/min) (3)	INERTIA $J = mr^2$ HUB AND CENTRE PLATE (kgm <sup>2</sup> )	WEIGHT (kg)		WATER FLOW REQUIRED FOR MAX HEAT TRANSFER (litre/min) (4)	AIR TUBE DISPLACE- MENT VOLUME (cm <sup>3</sup> ) NEW/WORN
	Minimum @ 0,2 bar	Maximum @ 5,5 bar				TOTAL BRAKE	HUB AND CENTRE PLATE		
CSM 106/MR2	4	116	7,5	3990	0,01	23	3	4	5/52
CSM 106/MR4	8	232	7,5	3990	0,01	23	3	4	10/104
CSM 106/A	6	230	7,5	3990	0,01	23	3	4	20/100
CSM 106	6	400	7,5	3990	0,01	23	3	4	30/195
CSM 206	12	800	15	3990	0,015	37	6	8	30/145
CSM 108/MR2	6	162	15	2830	0,01	40	4	8	5/52
CSM 108/MR4	12	324	15	2830	0,01	40	4	8	10/104
CSM 108/MR6	18	486	15	2830	0,01	40	4	8	15/156
CSM 108/B	10	310	15	2830	0,01	40	4	8	20/100
CSM 108/A	10	540	15	2830	0,01	40	4	8	30/195
CSM 108	10	660	15	2830	0,01	40	4	8	55/300
CSM 208	20	1320	30	2830	0,02	70	8	16	55/300
CSM 111/MR2	7	200	26	2290	0,06	86	8	13	5/52
CSM 111/MR4	14	400	26	2290	0,06	86	8	13	10/104
CSM 111/MR6	21	600	26	2290	0,06	86	8	13	15/156
CSM 111/MR8	28	800	26	2290	0,06	86	8	13	20/208
CSM 111/A	25	805	26	2290	0,06	86	8	13	55/300
CSM 111	25	1375	26	2290	0,06	86	8	13	90/500
CSM 211	50	2750	52	2290	0,12	105	16	26	90/500
CSM 114/MR2	9	256	36	1800	0,13	138	15	19	5/52
CSM 114/MR4	18	512	36	1800	0,13	138	15	19	10/104
CSM 114/MR6	27	768	36	1800	0,13	138	15	19	15/156
CSM 114/MR8	36	1024	36	1800	0,13	138	15	19	20/208
CSM 114/MR10	45	1280	36	1800	0,13	138	15	19	25/260
CSM 114/A	50	1625	36	1800	0,13	138	15	19	90/500
CSM 114	85	2350	36	1800	0,13	138	15	19	125/700
CSM 214	170	4700	72	1800	0,16	188	30	38	125/700
CSM 116	130	3375	49	1530	0,18	174	25	25	160/920
CSM 216	260	6750	98	1530	0,28	295	50	50	160/920
CSM 118	190	5400	58	1410	0,23	215	30	30	250/1400
CSM 218	380	10800	116	1410	0,35	300	60	60	250/1400
CSM 121	255	7500	75	1200	0,43	290	50	38	300/1600
CSM 221	510	15000	150	1200	0,58	365	100	76	300/1600
CSM 124	410	10800	98	1070	1,0	410	80	50	410/2100
CSM 224	820	21600	196	1070	1,4	550	160	100	410/2100
CSM 127	530	15000	130	945	2,8	445	—	67	490/2600
CSM 227	1060	30000	260	945	4,6	580	—	134	490/2600
CSM 130	820	22200	172	840	5,4	515	—	88	750/4000
CSM 230	1640	44400	344	840	9,0	840	—	176	750/4000
CSM 136	1845	47200	260	640	15,3	916	—	192	1800/6800
CSM 236	3690	94400	520	640	—	1475	—	384	1800/6800
CSM 336	5535	141600	780	640	—	—	—	576	1800/6800
CSM 236H	4050	103650	746	640	33,3	1724	416	192	3200/7375
CSM 336H	6080	155470	1120	640	49,3	2291	597	384	3200/7375
CSM 436H	8100	207300	1492	640	66	2860	780	576	3200/7375
CSM 248	10240	250000	1000	475	—	—	—	740	3550/13500
CSM 348	15360	375000	1500	475	—	—	—	1110	3550/13500

#### Selection Guide — Service Conditions

##### (1) Torque Rating

Dynamic torque ratings may be used in selection for applications such as tension control.  
Service factors vary for more arduous applications, but as a general guide, use 75% brake torque.  
Air Pressure – Torque is directly proportional to the air pressure applied.  
MR (multi-range) options are also available on CSM 116 and larger.

##### (2) Heat transfer

For constant running reduce table rating by 30%.

##### (3) High speed

Maximum speed ratings can be exceeded in many applications, for advice consult your Wichita Engineer.

##### (4) Water flow

Table ratings are for max heat capacity, water flow requirement may be lower use 0.51 litre per min/kW.

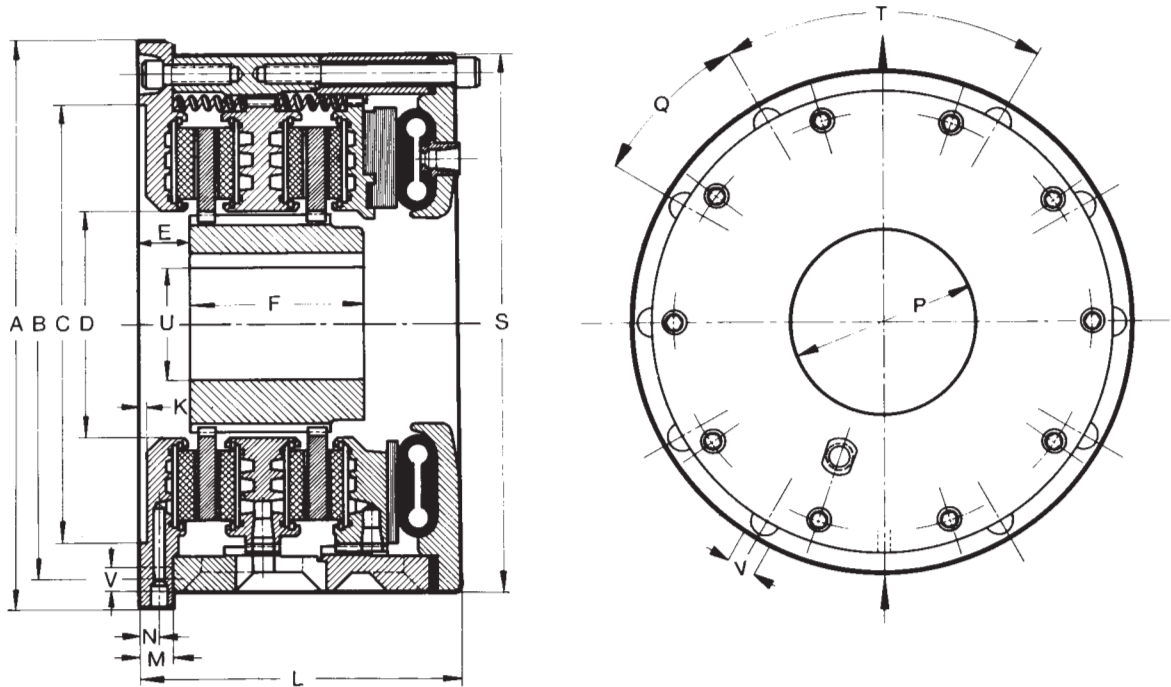
For advice on speed or service factors etc. consult your Wichita Engineer.



# Wichita

## KOPPER COOLED BRAKE

### Dimensions



CSM Brake

MODEL	A	B	C <sup>(1)</sup>	D	E	F	K	L	M	N	P	Q	S	T	U <sup>(2)</sup>		V <sup>(3)</sup>
															Min	Max	
CSM 106	220	203	190	75	19	51	3	126	26	13	50	90°	224	90° <sup>(4)</sup>	15	45	4×Ø9
CSM 206	220	203	190	75	19	117	3	190	26	13	50	90°	224	90° <sup>(4)</sup>	15	45	4×Ø9
CSM 108	310	280	220	111	28.5	51	6	147	35	17.5	95	60°	300	120°	25	57	4×Ø14
CSM 208	310	280	220	111	28.5	108	6	212	35	17.5	95	60°	300	120°	25	57	4×Ø14
CSM 111	400	375	295	136	19	73	6	156	29	16	130	60°	375	120°	25	75	4×Ø18
CSM 211	400	375	295	136	19	155	6	241	29	16	130	60°	375	120°	25	75	4×Ø18
CSM 114	470	445	370	187	27	83	6	177	38	19	175	45°	445	90°	35	110	6×Ø18
CSM 214	470	445	370	187	43	149	6	270	38	19	175	45°	445	90°	35	110	6×Ø18
CSM 116	540	510	410	219	32	102	6	190	38	21	220	30°	508	60°	35	120	10×Ø18
CSM 216	540	510	410	219	32	178	6	283	38	21	220	30°	508	60°	35	120	10×Ø18
CSM 118	590	560	470	238	41	92	6	206	38	19	248	30°	559	60°	50	140	10×Ø18
CSM 218	590	560	470	238	41	181	6	307	38	19	248	30°	559	60°	50	140	10×Ø18
CSM 121	685	648	540	289	32	115	6	220	44	24	289	30°	632	60°	50	178	10×Ø18
CSM 221	685	648	540	289	38	201	6	330	44	24	289	30°	632	60°	50	165	10×Ø18
CSM 124	760	730	620	317	35	127	6	229	44	22	346	30°	735	60°	50	195	10×Ø18
CSM 224	760	730	620	317	35	219	6	347	44	22	346	30°	735	60°	50	195	10×Ø18
CSM 127	832	800	700	330	35	127	6	229	44	22	384	22.5°	788	45°	65	203	14×Ø18
CSM 227	832	800	700	330	35	219	6	349	44	22	384	22.5°	788	45°	65	203	14×Ø18
CSM 130	940	900	775	400	35	117	6	243	51	27	441	20°	883	40°	65	230	16×Ø22
CSM 230	940	900	775	400	35	235	6	365	51	27	441	20°	883	40°	65	230	16×Ø22
CSM 136 <sup>(5)</sup>	1105	1065	925	571	28	143	6	305	57	27	476	20°	1041	40°	150	230	16×Ø22
CSM 236 <sup>(5)</sup>	1105	1065	925	571	28	279	6	463	57	27	476	20°	1041	40°	150	230	16×Ø22

(1) The Dimension "C" is a nominal value. The tolerance on all sizes is ISO H8.

(2) Dimension "U" is the minimum possible finished bore (MIN) and the maximum possible in the standard design.

(3) The mounting holes in the backplate are not equally spaced due to the position of water inlet and outlet connections. For actual positions refer to angular dimensions "Q" and "T".

(4) On the CSM 106 and CSM 206 the first mounting hole is positioned 45° clockwise from the vertical axis.  
The hose assemblies for water circulation are not shown on the dimension table.

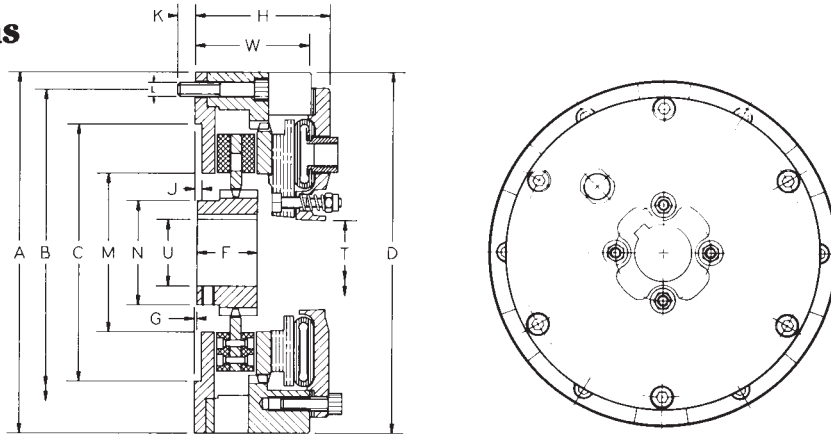
(5) For Dimensions of 36H and 48 models please consult Wichita.

#### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita HIGH PERFORMANCE BRAKE

## Dimensions



HPM Brake

MODEL	A	B	C <sup>(1)</sup>	D	F	G	H	J	K	L	M	N	T	U <sup>(2)</sup>		W
														Min	Max	
HPM 104	180	165	140	184	22	20	80	4	12	4×M8	76	45	51	15	25	62
HPM 106	220	203	190	224	51	0	105	2	11	4×M8	92	68	51	15	45	69
HPM 108	310	280	220	310	51	0	114	6	14	6×M12	136	89	57	25	57	98
HPM 111	400	375	295	410	60	0	138	9.5	25	6×M16	178	100	82	25	65	116

- (1) Dimension "C" is given as a nominal figure. The applicable tolerance is ISO H8.  
 (2) The bore dimensions "U.MIN" are those held in stock and are the minimum produceable. The tolerance is +, 00 -, 10.  
 The bore dimensions "U.MAX" are the maximum for the standard design. Larger bores may be possible with special designs.  
 Dimensions in mm unless stated.

### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

## Performance

MODEL (BRAKE)	DYNAMIC SLIPPING TORQUE CAPACITY (Nm) (1)		MAXIMUM SPEED (rev/min) (2)	INERTIA OF HUB AND CENTREPLATES (J = $mr^2$ ) (kgm <sup>2</sup> )	WEIGHT (kg)		AIRTUBE DISPLACEMENT VOLUME (cm <sup>3</sup> ) NEW WORN
	MINIMUM @ 0,2 bar	MAXIMUM @ 5,5 bar			TOTAL BRAKE	HUB + CENTREPLATE	
HPM 104/LC	1	38	5250	0,0015	7	0,88	15/55
HPM 104	1	57	5250	0,0015	7	0,88	15/55
HPM 106/MR2/LC	3	83	3520	0,0078	14,6	2,75	5/52
HPM 106/MR2	5	124	3520	0,0078	14,6	2,75	5/52
HPM 106/A/LC	3	115	3520	0,0078	14,6	2,75	20/100
HPM 106/A	3	176	3520	0,0078	14,6	2,75	20/100
HPM 106/MR4/LC	6	166	3520	0,0078	14,6	2,75	10/102
HPM 106/MR4	10	248	3520	0,0078	14,6	2,75	10/102
HPM 106/LC	6	225	3520	0,0078	14,6	2,75	30/195
HPM 106	6	340	3520	0,0078	14,6	2,75	30/195
HPM 108/MR2/LC	4	108	2870	0,032	26,3	3,70	5/52
HPM 108/MR2	8	162	2870	0,032	26,3	3,70	5/52
HPM 108/MR4/LC	8	216	2870	0,032	26,3	3,70	10/104
HPM 108/MR4	12	324	2870	0,032	26,3	3,70	10/104
HPM 108/A/LC	8	330	2870	0,032	26,3	3,70	30/195
HPM 108/A	10	405	2870	0,032	26,3	3,70	30/195
HPM 108/MR6/LC	12	324	2870	0,032	26,3	3,70	15/156
HPM 108/MR6	18	486	2870	0,032	26,3	3,70	15/156
HPM 108/LC	10	405	2870	0,032	26,3	3,70	55/300
HPM 108	10	620	2870	0,032	26,3	3,70	55/300
HPM 111/MR2/LC	5	145	2090	0,074	53	9,5	5/52
HPM 111/MR2	8	218	2090	0,074	53	9,5	5/52
HPM 111/MR4/LC	10	290	2090	0,074	53	9,5	10/104
HPM 111/MR4	16	436	2090	0,074	53	9,5	10/104
HPM 111/A/LC	15	555	2090	0,074	53	9,5	55/300
HPM 111/A	22	826	2090	0,074	53	9,5	55/300
HPM 111/MR6/LC	15	435	2090	0,074	53	9,5	15/156
HPM 111/MR6	24	654	2090	0,074	53	9,5	15/156
HPM 111/MR8/LC	20	580	2090	0,074	53	9,5	20/208
HPM 111/MR8	32	872	2090	0,074	53	9,5	20/208
HPM 111/LC	25	940	2090	0,074	53	9,5	90/500
HPM 111	25	1400	2090	0,074	53	9,5	90/500

### Selection Guide — Service Conditions

- (1) Torque Rating.  
 Dynamic torque rating may be used in selection for application such as tension control.  
 Service conditions vary but as a guide to selection, for cycling applications use 60% of torque rating  
 Air Pressure.  
 Note: Torque is proportional to air pressure applied.
- (2) High Speed  
 Maximum speed ratings can be exceeded in many applications. Consult your Wichita Engineer.

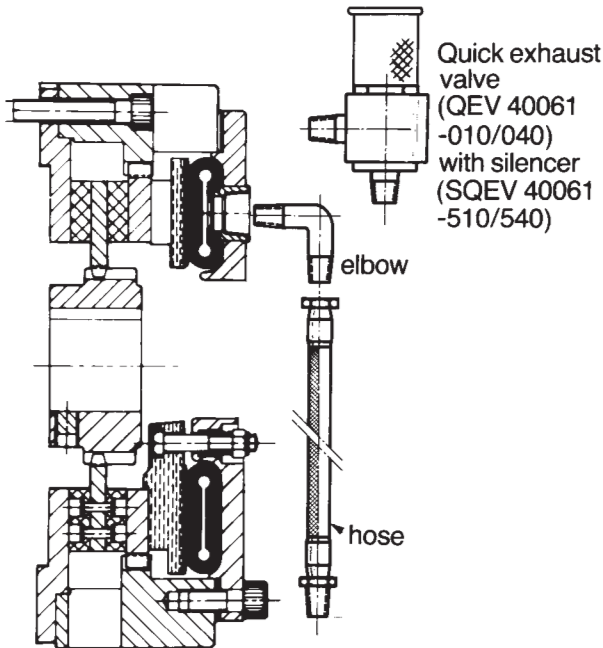
# Wichita HIGH PERFORMANCE BRAKE Air Sets

## DESCRIPTION

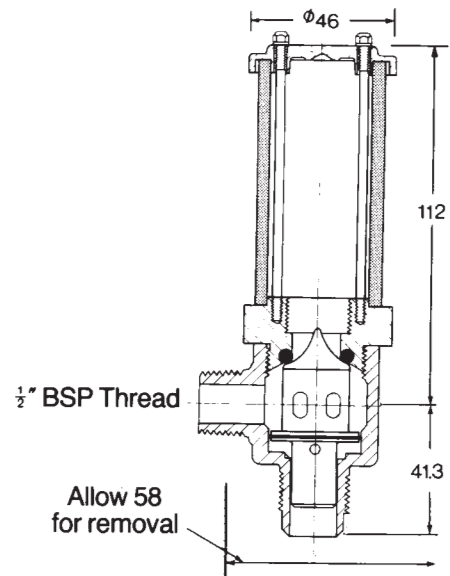
Air sets are optional and consist of elbows or quick exhaust valves, hoses and pipe fittings. For tension control duties customers generally pipe direct to the airtube connections without using an air set. Only one inlet is necessary, the remainder can be plugged, thread is  $\frac{1}{2}$ " NPT/BSPT female.

For cycling duties and fast response, silenced quick exhaust valves (SQEV's) should be used. Note, however (a) quick exhaust valves without silencers (QEV's) can be used where noise is not a problem (b) QEV's cannot be fitted to the water cooled 104 and offer no real advantage on the 106-206 units.

Where fast response is less important, the air set can be supplied with elbows.



## SILENCED QUICK EXHAUST VALVE

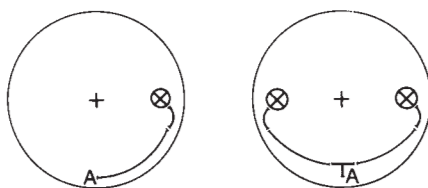


## HOSES AND INLET CONNECTIONS

BRAKE SIZE	QUANTITY OF HOSES	INLET CONNECTION 'A'
104, 106B, 106, 106A	1	$\frac{1}{2}$ " NPT/BSPT Male
108, 108A, 108B	1	$\frac{1}{2}$ " NPT/BSPT Male
111	2	$\frac{1}{2}$ " BSPT Female
111A, 111B	1	$\frac{1}{2}$ " NPT/BSPT Male

For larger sizes refer to your Wichita Engineer.

## HOSE CONFIGURATION



1 hose

2 hoses

## AIR SET NUMBERS

These are descriptive numbers used in quotations and acknowledgements to denote the elements that make up the air set.

Air Set Coding Example: Air Set No. 222 - 11 - ET			
Quantity of air inlets	Quantity of fittings	Quantity of hoses	Approx. hose length in inches
2	2	2	- 11 -
ET E = elbows Q = QEV's SQ = silenced QEV's T = pipe tee			

# Wichita MAGNUM BRAKE Performance

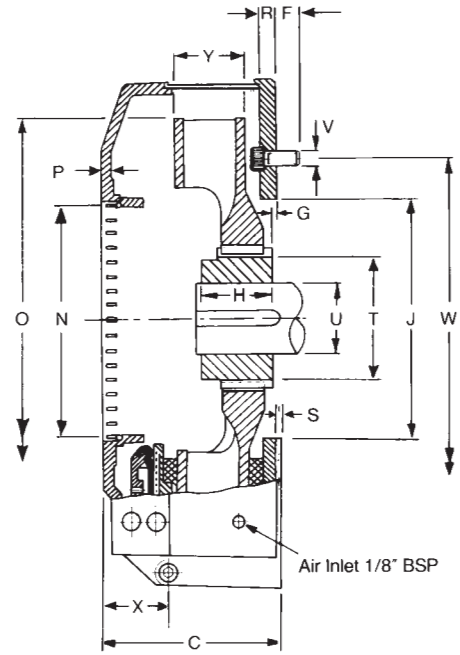
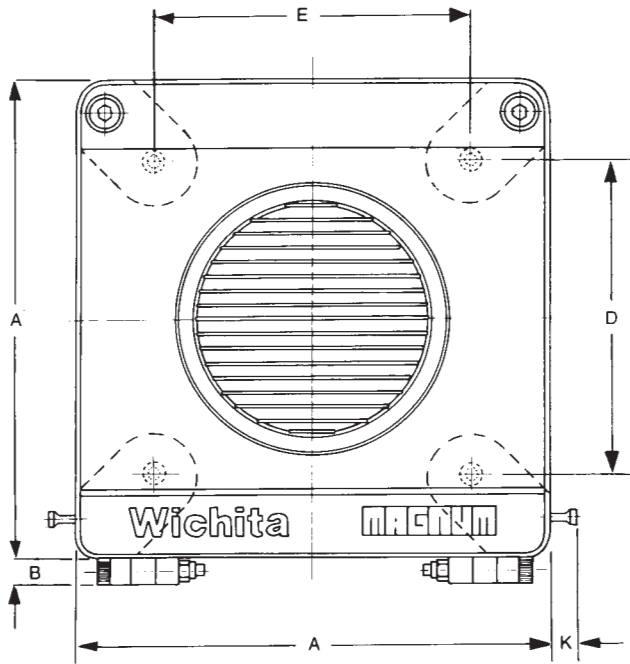


Magnum Brake

MODEL	DYNAMIC SLIPPING TORQUE CAPACITY Nm (1)		HEAT TRANSFER CAPACITY FOR CONTINUOUS OPERATION kW (2)				MAXIMUM SPEED (rpm)		Inertia J= m <sup>2</sup> of brake disc + hub (kgm <sup>2</sup> )	WEIGHT	
	Min 0,2 bar	Max 5,5 bar	HEAT TRANSFER CAPACITY FORCED COOLED BY FAN				Medium Speed brake disc (rpm)	High Speed brake disc (rpm)		Total Brake (kg)	Brake disc + hub (kg)
			at 50rpm	at 100rpm	at 200rpm	at 500rpm					
MAGNUM 260/1LC 260/1 260/2LC 260/2 260/3LC 260/3 260/4LC 260/4	2 3 5 7 7 10 10 13	67 90 135 180 200 270 270 360									
			1.0 +' 1.3	1.1 +' 1.6	1.4 + 2.1	2.2 +' 3.0	2530	4427	0,031	14	6,2
MAGNUM 340/1LC 340/1 340/2LC 340/2 340/3LC 340/3 340/4LC 340/4 340/5LC 340/5 340/6LC 340/6	4 5 8 10 11 15 15 20 19 25 23 30	105 140 210 280 315 420 420 560 525 700 630 840									
			1.7 'B' 2.7 +' 2.9	2.0 'B' 3.0 + 3.2	2.6 'B' 3.6 + 3.8	4.2 'B' 4.2 + 4.3	2040	3570	0,10	23	12,5
MAGNUM 400/2LC 400/2 400/3LC 400/3 400/4LC 400/4 400/5LC 400/5 400/6LC 400/6 400/7LC 400/7 400/8LC 400/8	10 13 15 20 20 26 25 33 29 39 34 46 39 52	270 360 405 540 540 720 675 900 810 1080 945 1260 1080 1440									
			2.6 'B' 3.7 +' 4.5	3.0 'B' 4.2 +' 5.2	3.9 'B' 5.2 +' 6.3	6.6 'B' 6.6 +' 7.0	1712	2996	0,24	34	18,7
MAGNUM 500/2LC 500/2 500/3LC 500/3 500/4LC 500/4 500/5LC 500/5 500/6LC 500/6 500/7LC 500/7 500/8LC 500/8	13 17 20 26 26 35 33 44 39 52 46 61 52 70	360 480 540 720 720 960 900 1200 1080 1440 1260 1680 1440 1920									
			3.5 'B' 7.5 +' 8.0	4.5 'B' 8.5 + 9.0	6.5 'B' 9.2 + 10.0	11.0 'B' 11.0 + 12.5	1308	2289	0,72	56	32,7

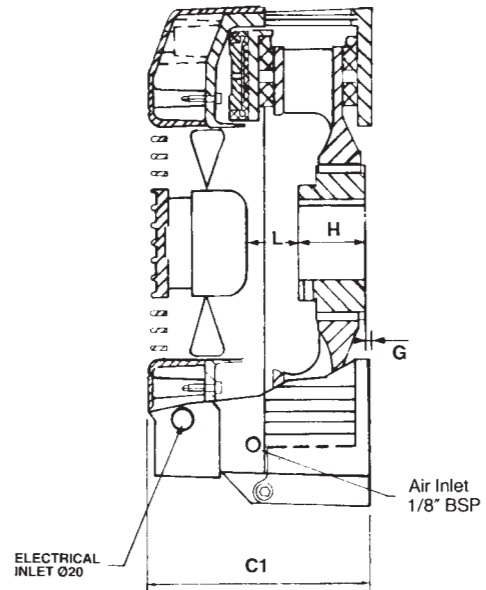
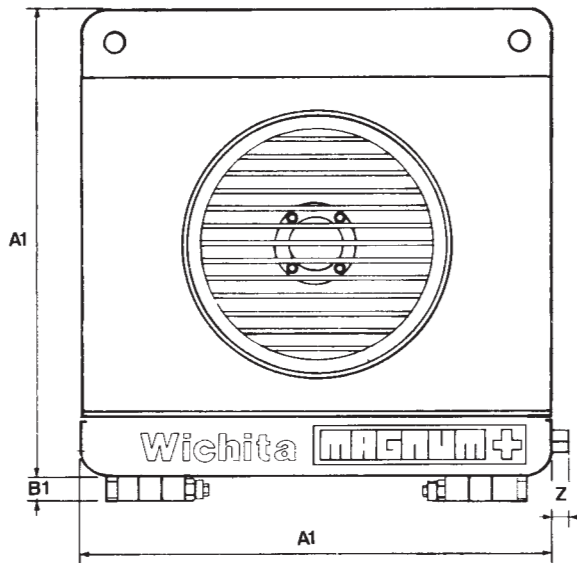
- (1) The dynamic slipping torque range for a given brake model can be changed by switching the actuators in or out by means of the hand slide valves provided e.g. a 340/3 to a 340/2 or a 340/1.
- (2) The heat transfer ratings in the above chart assume a forward rotation of the brake disc. For reverse rotation the heat ratings of models Magnum 260 and Magnum 340 should be reduced by 15%. If in doubt please contact your Wichita Engineer.

# Wichita MAGNUM BRAKE and MAGNUM 'B' Dimensions



(MAGNUM 'B' has a fan incorporated in front casing of standard MAGNUM brake)

## MAGNUM PLUS Dimensions



MODEL	A	A1	B	B1	C	C1	D	E	F	G	H	J	K	L
MAGNUM 260	264	270	25	20	145	195	176.8	176.8	20	5	55	100	23	50
MAGNUM 340	346	350	25	20	145	205	140.0	242.5	22	5	55	175	23	50
MAGNUM 400	406	410	25	20	145	195	265.2	265.2	27	5	60	200	23	25
MAGNUM 500	506	510	28	20	150	205	339.4	339.4	30	5	60	320	23	25

MODEL	N	O	P	R	S	T	U		V	W PCD	X	Y	Z
							MIN	MAX					
MAGNUM 260	95	230	6	15	5	62	15	45	4 off- M12 x 35	250	50	60	12
MAGNUM 340	140	280	6	13	7	92	25	57	4 off- M12 x 30	280	50	59	12
MAGNUM 400	200	340	8	13	3	119	35	65	4 off- M16 x 40	375	52	60	12
MAGNUM 500	283	445	11	15	2	140	35	102	4 off- M20 x 45	480	55	59	12

### DIMENSIONS

Certified prints showing exact dimensions are sent with every order acknowledgement, and these should always be obtained before finalising any design details.

# Wichita MAGNUM PLUS

Design options offer wider scope in control, and improved performance through Fan cooling, whilst retaining Magnum's good looks.

## Features

### OPTION ONE

Integral Fan  
Integral Electrical Junction  
Box  
Fully Guarded

### Benefits

Improved performance, compact design retaining aesthetic appeal.  
Easy connections to approved European Standards.  
Safe — needs no additional guard. Thermal cut out for added safety.

### OPTION TWO

Remote Control of Multi-Range Facility  
Remote Switch Panel Display  
Emergency Stop  
Integral Junction Box

### Benefits

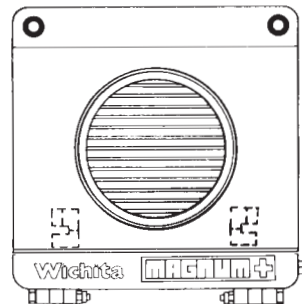
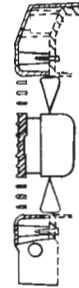
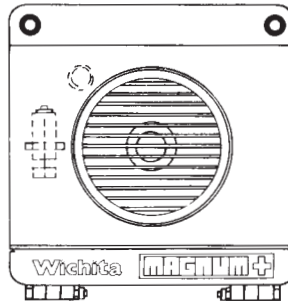
Ease of operation, in switching brake setting, especially when brakes are sited away from the operations central control point. Using the brake's inbuilt control valves can often be inconvenient.  
Simple to operate — Panel or Bulkhead mounting.  
Facility for direct override utilizing full brake torque for emergency stop.  
Simple connection using single multi-line conduit into internal junction, approved European Standards.

### OPTION THREE

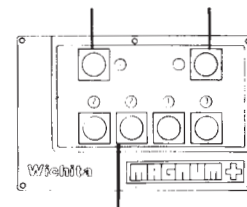
Full Automatic Operation in tandem with Micro Controller  
Automatic Brake Set-Up  
Auto Range

### Benefits

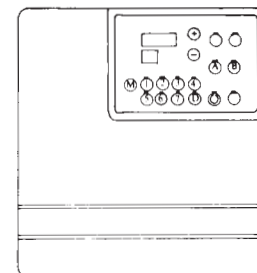
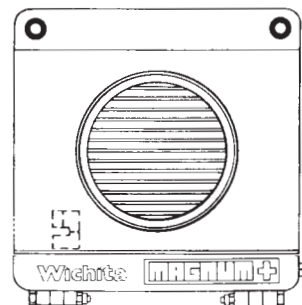
Automatically sets up at preset points selecting optimum brake torque from brake's inbuilt multi-range facility.  
Automatically resets brake during machine run, as reel decreases, at predetermined air pressures, assuring brakes are operating at an ideal pressure for torque/tension required.



Light for Thermal Warning      Mains Electricity Supply "ON" Light



Four Switches with Actuator Quantity shown



# Wichita

## MAGNUM BRAKE

### Installation

Back tension brakes are usually mounted directly on the reelstand. The brake is on a stubshaft which is connected to the reel core by means of a coupling, cones or expanding mandrel. In some cases, it is necessary to use one brake on each side of the reel to give maximum versatility or to provide load sharing where a shaftless reel is used. In some applications it may be attractive to backgear the brake. The brakes are also mounted on pinch rolls where additional tensioning of the material web is required at an intermediate stage in the process machine.

### Air Supply

Air to the Magnum brake is by one single connection. Your compressed air supply should be filtered to 25 microns or better. Performance of the Magnum brake is best without airline lubrication. Maximum supply pressure 5.5 bar (80 psi).

The multi-range facility of the Magnum brake is achieved by means of sliding valves. These valves are situated on the side of the brake and are an integral part of the brake's design.

PLEASE CONSULT YOUR WICHITA ENGINEER SHOULD YOU REQUIRE NON STANDARD AIR CONNECTIONS.

## TYPICAL UNWIND APPLICATION

The following information is required for brake selection.

- Maximum and minimum reel diameters D d (mm)
- Maximum and minimum web widths Wmax Wmin (mm)
- Maximum and minimum tensions Tmax Tmin (N/mm)
- Maximum and minimum line speeds Vmax Vmin (m/min)
- Air pressure available AP (bar)
- How is brake to be mounted?
- Quantity of brakes per reel.

### Selection Procedure

The following is an example of brake selection.

#### Operation Conditions

D = 1200mm	Tmax = 0.4 N/mm	AP = 5.5 bar
d = 100mm	Tmin = 0.3 N/mm	Brake mounted on reelshaft
Wmax = 1000mm	Vmax = 300 m/min	1 Brake per reel
Wmin = 600mm	Vmin = 50 m/min	

- |   |  |
|---|--|
| <b>1 Maximum Pull P max</b><br>$= W_{max} \times T_{max}$<br>$= 1000 \times 0.4 = 400 \text{ N}$  | <b>2 Minimum Pull P min</b><br>$= W_{min} \times T_{min}$<br>$= 600 \times 0.3 = 180 \text{ N}$  |
| <b>3 Maximum Torque</b><br>$= \frac{P_{max} \times D}{2000}$<br>$= \frac{400 \times 1200}{2000} = 240 \text{ Nm}$   | <b>4 Minimum Torque</b><br>$= \frac{P_{min} \times d}{2000}$<br>$= \frac{180 \times 100}{2000} = 9.50 \text{ Nm}$                      |
| <b>5 Maximum Heat</b><br>$= \frac{P_{max} \times V_{max}}{60\,000}$<br>$= \frac{400 \times 300}{60\,000} = 2.0 \text{ kW}$                                  | <b>6 Maximum Speed</b><br>$= \frac{V_{max} \times 1000}{d \times \pi}$<br>$= \frac{300 \times 1000}{100 \times \pi} = 955 \text{ rpm}$ |
| <b>7 Effective Cooling Speed</b> $= \frac{2V \times 1000}{\pi \times (D + d)} = \frac{2 \times 300 \times 1000}{\pi \times (1200 + 100)} = 147 \text{ rpm}$ |  |

### Selection

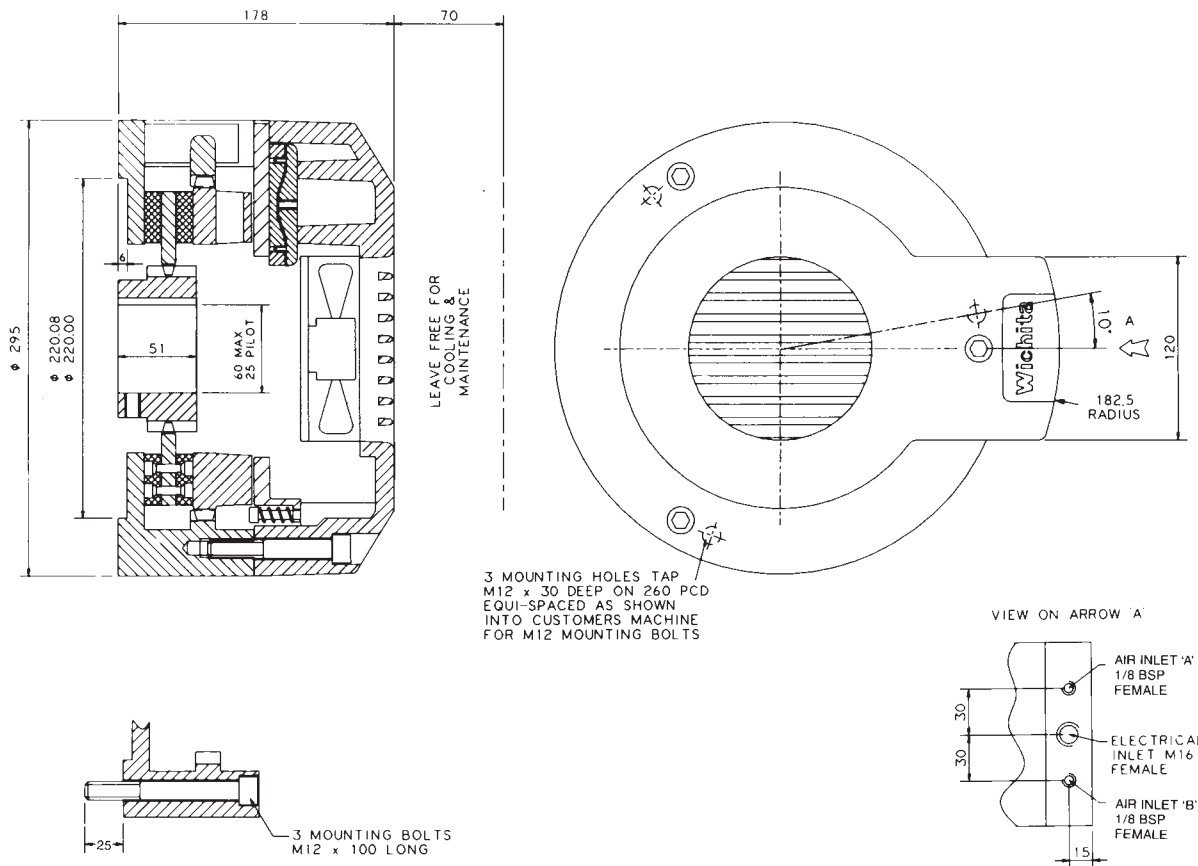
- a) Based on heat transfer capability of brake at effective cooling speed.
- b) Based on maximum and minimum torques.
- c) Based on maximum speed.

A MAGNUM 340/2 suits all of the above parameters.

The above example of brake selection is for your guidance only. A Wichita engineer will be pleased to fully investigate your requirements and advise you of the most suitable brake for your application.

# Wichita

## MISTRAL BRAKE



MODEL	DYNAMIC SLIPPING TORQUE CAPACITY (Nm)		HEAT TRANSFER CAPACITY		MAXIMUM SPEED (rev/min)	INERTIA $J = mr^2$ OF ROTATING PARTS (kgm <sup>2</sup> )	WEIGHT		FAN POWER RATING (W)
	MIN 0.2 BAR	MAX 5.5 BAR	FOR CONTINUOUS OPERATION (kW)	FOR 30 MIN ON/ 30 MIN OFF OPERATION (kW)			TOTAL BRAKE (kg)	ROTATING PARTS (kg)	
Mistral 200/2/LC	4	200	2.4	2.6	2860	0.032	35	4.5	20
Mistral 200/2	5	300							
Mistral 200/4/LC	8	400							
Mistral 200/4	10	600							
Mistral 200/6/LC	12	600							
Mistral 200/6	15	900							

Fan electrical supply is either 220V 50/60Hz, 115V 50/60Hz or 24V DC — Please specify when ordering.

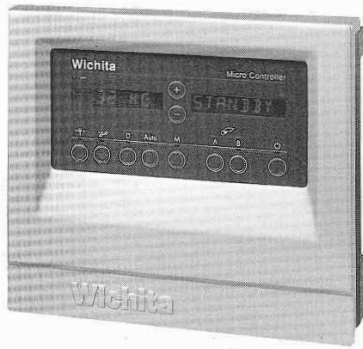
- Air inlet 'A' — is connected to 2 actuators.
- Air inlet 'B' — is not connected within a Mistral 200/2.
- is connected to 2 actuators within a Mistral 200/4.
- is connected to 4 actuators within a Mistral 200/6.

Mounting template available on request.



# Wichita

## WEB TENSION CONTROL



International Micro Controller



Compact Micro Controller



Tension Monitor System

Wichita Web Tension Control systems are designed to maintain the required tension throughout the unwinding (or rewinding) of a reel of paper, film, foil, metal or similar material.

Wichita's range of controllers is from the basic Roll-Follower type to the versatile Micro electronic models.

Roll-Follower Arm controller is an open-loop pneumatic controller for general applications. This unit adjusts the air pressure in proportion to the reel diameter.

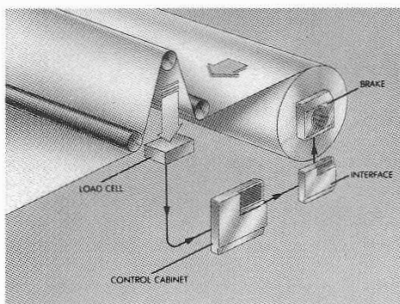
Micro Electronic Web Tension Control System is available in the full controller offering 7 memories and splice facility for the more versatile machines or the Compact Micro Controller for more specialised machines.

A choice of sensing devices including Load Cell, Dancer-Roll or Sonic head are available.

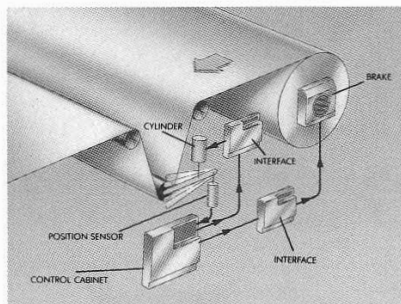
The Tension Monitor System, also using Micro processor technology, monitors upto eight individual inputs.

**PLEASE CONTACT YOUR WICHITA ENGINEER FOR FURTHER INFORMATION ON WICHITA WEB TENSION CONTROL SYSTEMS.**

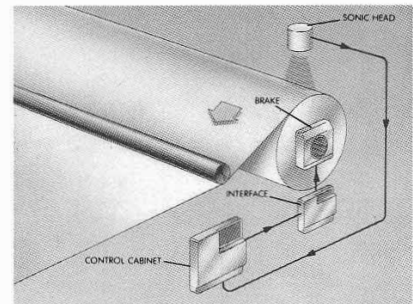
LOAD CELL CONTROL SYSTEM



DANCER-ROLL CONTROL SYSTEM



SONIC CONTROL SYSTEM



TEN-  
SION

CUSTOMER'S NAME .....  
 ADDRESS .....  
 TELEPHONE ..... FAX .....  
 CONTACT ..... DATE .....

For your clutch or brake application the following data is required. This data sheet is designed to be photocopied.

**CUSTOMER'S PROJECT REF**

**GENERAL APPLICATIONS**

DESCRIPTION OF DRIVEN MACHINE .....  
 TYPE OF UNIT REQUIRED (brake or clutch) .....  
 TYPE OF MOUNTING (coupling, through shaft or end shaft) .....  
 DESCRIPTION OF PRIME MOVER .....  
 CAPACITY OF PRIME MOVER ..... kW ..... rev/min  
 SPEEDS BEFORE ENGAGEMENT Input ..... rev/min Output ..... rev/min  
 ACCELERATION/DECELERATION TIME REQUIRED ..... sec  
 NUMBER OF ENGAGEMENTS PER MINUTE ..... /min  
 INERTIA ( $J = mr^2$ ) OF PARTS TO BE ACCELERATED OR DECELERATED (referred to clutch-or  
 brake shaft) ..... kgm<sup>2</sup>  
 SHAFT DIA. FOR CLUTCH OR BRAKE Input Shaft ..... mm  
 Output Shaft ..... mm  
 AIR PRESSURE AVAILABLE Max ..... bar Min ..... bar  
 CAN AIR BE FED TO CLUTCH FROM SHAFT END? .....  
 AIR FED TO CLUTCH THROUGH DRIVING OR DRIVEN SHAFTS? .....

**PRESS & SHEAR APPLICATIONS**

TYPE OF MACHINE .....  
 MAXIMUM LOAD ON RAM OR KNIFE ..... tonnes  
 CRANK ANGLE AT WHICH MAX. LOAD ACTS (from B.D.C) ..... degrees  
 CRANK THROW OR RADIUS ( $\frac{1}{2}$  stroke) ..... mm  
 CONNECTING ROD LENGTH ..... mm  
 MAX. NO. STROKES PER MINUTE .....  
 MAX. STOP/START CYCLES PER MINUTE .....  
 CRANKSHAFT SPEED ..... rev/min  
 SPEED OF INTERMEDIATE SHAFT (if any) ..... rev/min  
 FLYWHEEL SPEED (if back geared) ..... rev/min  
 INERTIA ( $J = mr^2$ ) OF PARTS TO BE ACCELERATED AND DECELERATED (EXCLUDING CLUTCH  
 & BRAKE) REFERRED TO CLUTCH ..... kgm<sup>2</sup>  
 ACCELERATION ANGLE AT CRANK ..... degrees  
 STOPPING ANGLE AT CRANK ..... degrees  
 AIR PRESSURE AVAILABLE Max ..... bar Min ..... bar  
 GENERAL DESCRIPTION AND SKETCH OF OPERATING REQUIREMENTS .....

**SLIP CLUTCH & SLIP BRAKE APPLICATIONS**

MAXIMUM ROLL DIAMETER ..... mm  
 CORE DIAMETER ..... mm  
 MINIMUM STOCK WIDTH ..... mm  
 MAXIMUM STOCK WIDTH ..... mm  
 MINIMUM TENSION ..... N/mm  
 MAXIMUM TENSION ..... N/mm  
 MINIMUM LINE SPEED ..... metres/min  
 MAXIMUM LINE SPEED ..... metres/min  
 GEAR RATIO BETWEEN BRAKE/CLUTCH AND UNWIND/REWIND SHAFT .....

**ADDITIONAL INFORMATION FOR SLIP CLUTCH**

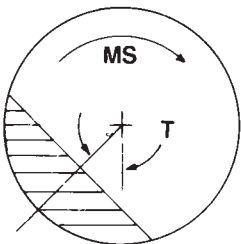
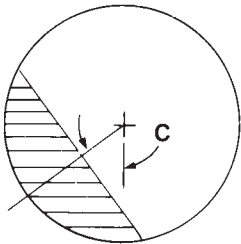
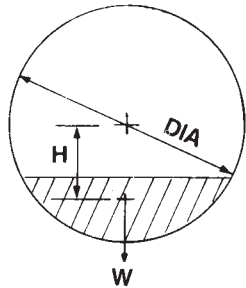
MAXIMUM POWER INPUT ..... kW  
 INPUT SHAFT SPEED ..... rev/min  
 GENERAL DESCRIPTION AND SKETCH OF OPERATING REQUIREMENTS .....

DATA

CUSTOMER'S NAME .....  
 ADDRESS .....  
 ..... TELEPHONE ..... FAX .....  
 CONTACT ..... DATE .....  
**CUSTOMER'S PROJECT REF**

**HEAVY DUTY GRINDING MILLS**

In order that Wichita can carry out a computer simulation of a clutch engagement on a Ball, Rod or Autogenous type Mill, the following data is required.



**STATIC CONDITION**

- |   | Values | Units            |
|---|--------|------------------|
| 1. Inertia ( $J= mr^2$ ) OF MILL EMPTY (Ref to mill) .....                                |        | kgm <sup>2</sup> |
| 2. Inertia ( $J= mr^2$ ) OF CHARGE (Ref to mill) .....                                    |        | kgm <sup>2</sup> |
| 3. BREAKAWAY TORQUE (Ref to mill)<br>(Nominal torque required to overcome stiction) ..... |        | Nm               |

**EITHER**

- |   |    |
|---|----|
| 4. WEIGHT OF CHARGE .....               | kg |
| 5. LOAD C. OF G. FROM MILL CENTRE ..... | mm |

**OR**

- |                               |                   |
|-------------------------------|-------------------|
| 6. MILL LENGTH .....          | mm                |
| 7. MILL INSIDE DIAMETER ..... | mm                |
| 8. PERCENTAGE FILL .....      | %                 |
| 9. DENSITY OF CHARGE .....    | kg/m <sup>3</sup> |

**STARTING CONDITION**

- |   |        |
|---|--------|
| 10. CASCADE ANGLE<br>(Nominal angle at which charge begins to tumble) ..... | Degree |
|---|--------|

**RUNNING CONDITION**

- |  |         |
|--|---------|
| 11. TERMINAL ANGLE<br>(Nominal angle of the charge once running) ..... | Degree  |
| 12. RUNNING SPEED OF MILL .....  | rev/min |
| 13. NOMINAL MOTOR POWER .....  | kW      |
| 14. MOTOR OVERLOAD LIMIT .....   | %       |
| 15. CLUTCH SHAFT SPEED .....   | rev/min |

**MARINE PROPULSION**

POWER AND SPEED OF PRIME MOVER .....kW..... rev/min  
 FIXED OR VARIABLE PITCH PROPELLOR? .....  
 MOUNTING (e.g. QUILL SHAFT/WITH COUPLING/ SHAFT TO SHAFT) .....  
 ANY OVERSPEED REQUIREMENT .....  
 SURVEY REQUIREMENT .....

**FOR MORE DETAILED SELECTION**

INERTIAS TO BE ACCELERATED (REF CLUTCH)  
 INCLUDING ENTRAINED WATER ..... kgm<sup>2</sup>  
 BREAKAWAY TORQUE OF SHAFTING ..... Nm  
 ENGAGEMENT/IDLE SPEED OF PRIME MOVER ..... rev/min  
 TORQUE CURVE FOR F.P. PROPELLOR — please provide sketch

**WINCHES**

MOTOR POWER AND SPEED .....kW ..... rev/min  
 DRUM DIAMETERS (MAX AND MIN) ..... mm ..... mm  
 GEAR RATIOS .....  
 STALL TORQUE ..... Nm  
 MAX CABLE PULL ..... N  
 CABLE PAYOUT/INHAUL SPEEDS ..... m/min ..... m/min  
 MOUNTING ARRANGEMENT — please provide sketch

# Worldwide distributors

Worldwide support and distribution

## Australia – Warner Electric Australia

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Email: rita.verde@warnerelectric-ap.com

## Austria – Bibus Austria GmbH

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Email: info@bibus.at

## A.Z. Hollink b.v.b.a.

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Email: info@azhollink.be

## Czech Republic – Bibus s.r.o.

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## Denmark – AVN Automation AS

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Email: avn.automation@avn.dk

## Egypt – Itaco

Tel: + 20 2272 5754 Fax: + 20 2273 7245  
Email: itaco@link.net

## Eire – Torsion Dynamics

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Email: torsion@iol.ie

## Finland – Knorring Oy Ab

Tel: + 358 9 56 041 Fax: + 358 9 565 2463  
Email: knorring@knorring.fi

## France – Domange SA

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Email: mesure@domange.fr

## France – Wichita Company Limited

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## Germany – Warner Electric Verwaltungs GmbH

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## Greece – Dimitrious Deliyannis

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## Hungary – Bibus Kft

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## India – Francis Klein & Co. Pvt. Ltd.

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## Indonesia – Warner Electric Singapore Pte. Ltd.

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## Israel – Larom Marketing

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## Italy – Bianchi Cuscinetti, Trasmissioni E

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## Japan – Japan Wichita Co Ltd

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## Malaysia – Warner Electric Singapore Pte. Ltd.

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## Norway – Betamo AS

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## Poland – Bibus Menos Sp. z.o.o.

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## Portugal – Pinhol Gomes & Gomes Lda

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Email: import.export@pinhol.com.pt

## Republic of South Africa – Stone Stamcor (Pty) Ltd.

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## Slovakia – Bibus SK s.r.o.

Tel: +38 513818004 Fax: + 38 513818005  
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## Spain – Sociedad Ind. de Transmisiones SA (SIT)

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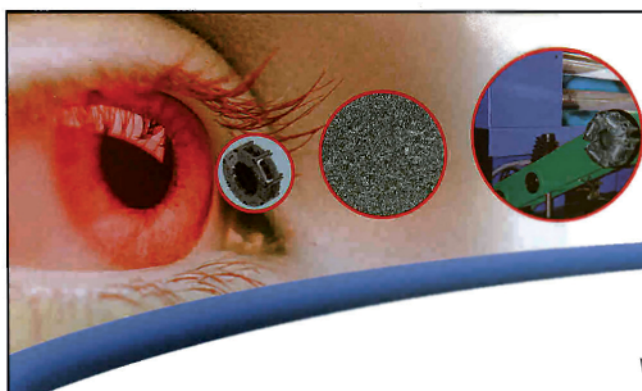
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## United States of America – Warner Electric U.S.A.

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## United States of America – Industrial Clutch Products

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