Total Quality

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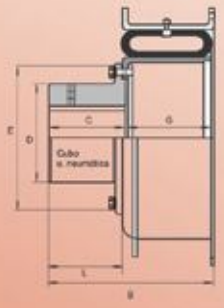
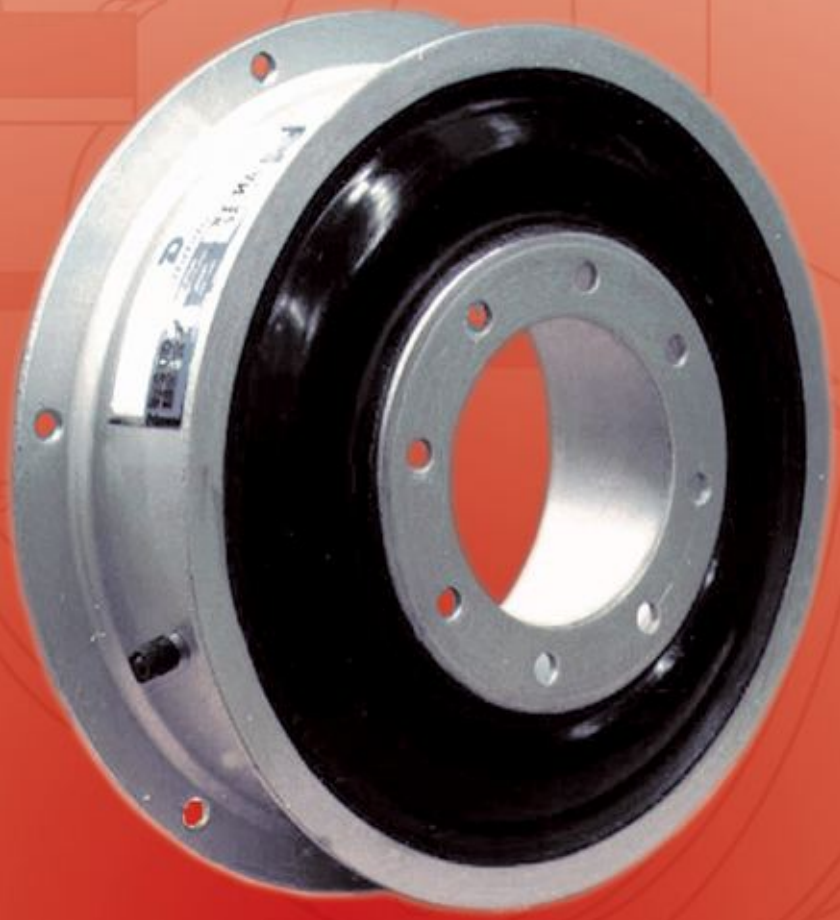
DNV Certification B.V., The Netherlands

GUMMI

Pneumatic couplings
Type AN





Pneumatic Coupling

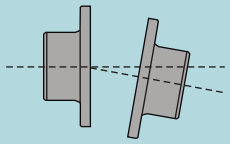
Catalog Nº: AN / A002

Contents

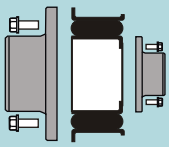
General characteristics

The Gummi pneumatic coupling has been specifically designed to protect the driving and driven machinery for the adverse and destructive effects of high torque fluctuations and torsional movements that are associated with reciprocating pumps, combustions, engines, compresors, mills, as well as various applications inthe marine industry.

Benefits of the Gummi AN pneumatic coupling



Misalignments absorption
Due to the flexibility of the rubber pneumatic chamber, it can accommodate radial, angular and axial misalignments.

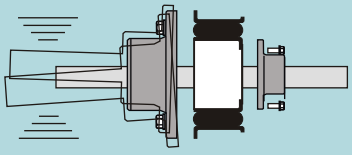


Simple installation
Because of the concentration of its components, it facilitates the alignment and the assembly, it is not necessary the use of special tools.

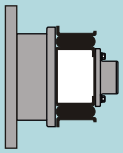
Noise Insulator
It notably aids to reduce the transfer of noises from one machine to the next.

Total Quality

Total Quality
It was manufactured under ISO 9001:2000 Quality systems, using only the best raw materials.



Dampensvibrations and shocks
It acts as a shock reducer,and a vibration dampener taking advantage of the natural resilience of the rubber pneumatic chamber.



Different & versitle models
There are 13 combinations of the AN Coupling assembly that can be made with a standard element, as well as the dual (tandem) design, and the floting shaft design.

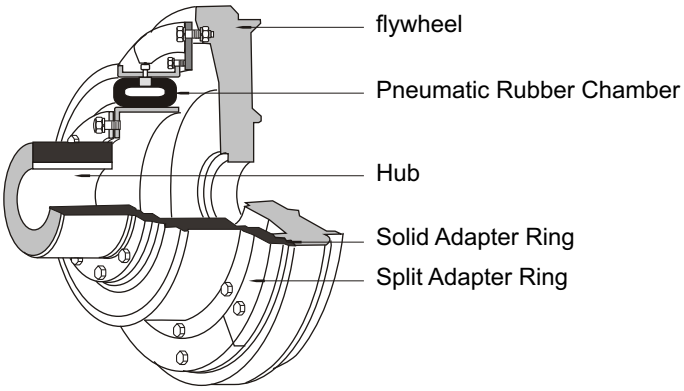
No lubrication necessary
Because of its constructive characteristics, no lubrication is required.

Permanent technical assistance
Through our official distributors or our web site:

www.gummiusa.com - www.gummi.com.ar - www.gummi.com.br

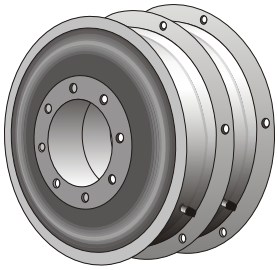
With flywheel adapter:

This design simplifies the installation onto a flywheel of an industrial engine, and also allows for a simplified removal of the coupling with out disturbing any of the equipment.
The Gummi AN coupling consists of a solid and split adanter ring which are directly bolted to the engine flywheel. The outer rim of the AN Coupling is bolted to the split adapter ring and the inner rim to the couplin hub on the driven shaft.



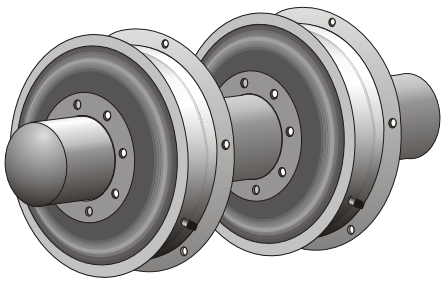
Dual (tandem) design:

The main characteristic of the Gummi AN coupling with this configuration, is that can be made with the twice the deflection and one half the rigidness of a single AN coupling.



Floating shafts:

This is formwd by the combination of 2 standard Gummi AN couplings and a intermediate floating shaft. This combination takes advantage of the basic self centering traits of the gland assembly, and allows for a reasonable angular misalignment of the connection shaft.



Constructive characteristics: Gummi AN

The special resilient rubber pneumatic chamber is treated in order to prevent losses of air pressure and is made up of a combination of dense layers of rubber and durable nylon cords. The steel inner and outer rims are bonded to the rubber chamber. The chamber and also be bolted directly to a flange on the connected equipment, or even to the shaft using the adapter plate and hub.

The sizing of the Gummi AN coupling depends on the load that is going to be transmitted, and the power and speed at which it must operate. As soon as the power and the speed have been established, determine the kind of load according to the following procedure:

A - Determine the factor of service fs

1a- Use table 1, for engines of electronic equipment, which involve moderate and constant load.
2a- For applications of motive equipment, thermal or turbines use **fs** of table 2, with fluctuating load.
3a-For equipment, engines and machinery not included in this classification consult to the factory for its recommendation.

B - Determine the "K" factor.

1b- From table 3 and knowing the **rpm,** you can determine the k factor that takes part in the basic calculation of capacity.

C - Calculate the basic CB capacity

1c- Basic capacity

D - Selection of the size of the AN coupling

1d- It will be determine the size in table 4, according to the CB value, equal or greater as the calculated one.

E - Verify maximum of speed.

Verify in table 4, maximum of speed for each size; consult to the factory if the wished speeds are in excess of those.

F - Determine the configuration.

Select the best assembly option between the 13 standard versions. Pay a particular attention to the maximum diameter that can place the hubs.

TABLE 1 — SERVICE FACTORS (For General Applications)

BLOWERS	
Centrifugal.	1.50
Lobe or Vane.	2.00
CAR DUMPERS	1.50
CAR PULLERS	2.50
COMPRESSORS.	
Centrifugal.	1.50
Rotary, Lobe, Vane	2.00
Reciprocating:	
1 cylinder, single effect.	6.00
1 cylinder, double effect.	5.00
2 cylinders, single effect.	5.00
2 cylinders, double effect.	4.00
4 or more cylinders, single effect.	3.50
3 or more cylinders, double effect.	3.00
CONVERYORS	
Apron, Assembly, Belt, Chaing, Ifight, Screw	1.00
Bucket	1.25
Live Roll, Shafker and Reciprocating	3.00
CRANE AND HOISTS.	
Main Hoist.	2.50
Skip Hoist.	3.00
Slope.	2.50
Bridge, Travel or Trolley	2.20
CRUSHERS	
Ore	3.00
Mineral or stones	3.50
DYNAMOMETER. VENTILATORS.	1.50
Centrifugal.	1.50
Cooling Tower.	3.00
Forced.	2.50
Induced.	3.00
Large (Industrial, mining, etc).	2.50
FEEDERS	
Apron, Belt, Disc, Screw	2.20
Reciprocating	2.50
GENERATORS.	
Uniform Even load.	1.50
Crane, Hoist or Railway Service.	2.20
Welder Load	3.00
HAMMER MILLS (High yield crushing)	2.50
TOOLS MACHINES.	
Auxiliaries and Traverse Drives	1.50
Bending Roll	2.50
Main drive.	2.00
Notching Press	2.50
Punching Press, Planer, Plate	2.50
Reversing	1.50
METAL FORMING MACHINES	
Draw Bench Carriage & Main Drive	3.00
Extruder	3.00
Forming Machine.	2.50
Silters. .	2.50
Wire stretch machine and flatten machine.	3.00
Wire Winders	2.50
MILLS (rotating).	
Bags to stones directs or to:	3.00
LS shaft of Reducer.	3.00
HS shaft of Reducer.	2.50
Dryer and cooler.	2.50
Bar and tube direct or to:	3.50
LS reducing axis.	3.50
HS reducing axis.	3.00
Tumbling Mill or Barrel	2.50
MIXERS.	
Concrete (continuous).	2.50
Concrete (intermittent).	2.20
Sledgehammer crushing machine type Simpson.	2.00
PULVERIZERS	
Hammer Mill (high yield)	2.50
Wood crushing machine	3.00
Rollers	2.00
PUMPS.	
Centrifugal	1.50
Constant Speed	2.50
Gear or Rotary	2.00
Reciprocating:	
1 cylinder, single or double action.	3.00
2 cylinders, single action.	3.00
2 cylinders, double action.	2.50
3 or more cylinders.	2.50

MACHINES SERVICE FACTORS

TABLE 1 — SERVICE FACTORS (For General Applications)

CLAY WORKING INDUSTRIES.	
Brick-Press, Briquette Machine. Pug Mill. Clay Working Machine	2.50
DREDGES.	
Cable Reel .	2.50
Conveyors.	2.00
Jig Drive.	3.00
Cutter.	3.00
Maneuvering Winch.	2.50
Pumps (uniform load).	2.50
Screen Drive, Stacker.	2.50
Utility Winch.	2.50
Service freight elevator.	2.20
SIFTER , SCREENS	
Air Washing	1.50
Rotary Coal or Sand	2.00
Vibrating	3.50
Water	1.50
LUMBER	
Band Resaw	2.00
Circular Resaw, Cut Off	2.50
Head Rig, Edger	
Wood Crusher	3.00
Log Haul Transport	3.00
Mechanical brush	2.50
Rollers, non-reversing	2.0
Reversing Rolls	3.0
Sawdust Conveyor	1.8
Slab Conveyor	2.5
Sorting Table	2.0
OIL and PETROCHEM INDUSTRY.	
Cooler/ Chiller.	1.80
Oilwell Pumping.	3.00
(do not surpass 150% of maximum torque).	
Paraffin Filter Press.	2.00
PAPER FACTORIES.	
Barker, Auxiliary, Hydraulic	3.00
Barker, Mechanical	3.00
Barking Drum	3.50
Pulp and Beater	2.50
Bleachers	4.00
Log Haul	3.00
Pulp grinder	3.00
Supplier	2.00
Stock, Chest Washer, Thickener.	2.20
RUBBER INDUSTRY	
Mixing Mill	3.50
Calendar	3.00
Laminator	3.00
Tires Assembly machine.	3.00
Tire and Tube Press Opener	
of rubber and chambers (max. torque).	1.50
Tuber, Strainer, Pelletizer	2.50
Heating mill	3.00
Washer	3.50

Table 2 — Engine Service Factor

Number of Cylinders	Service Factor
1	*
2	*
3	3.5
4	3.0
5	3.0
6	2.5
7	2.0
8	2.0
9	2.0
10 or more	1.5

Table 3 — K Factor

RPM	K	RPM	K	RPM	K
3600	.034	950	.114	380	.235
3300	.037	900	.118	340	.263
3000	.041	850	.124	320	.270
2800	.044	800	.130	300	.285
2600	.047	750	.137	280	.300
2400	.051	700	.145	260	.320
2200	.056	650	.154	240	.340
2000	.061	600	.164	220	.362
1900	.064	580	.168	200	.390
1800	.068	560	.172	180	.422
1700	.072	540	.178	160	.470
1600	.075	520	.183	140	.520
1500	.078	500	.190	130	.550
1400	.084	480	.196	120	.582
1300	.088	460	.200	100	.675
1200	.095	440	.210	60	1.000
1100	.101	420	.217	30	1.820
1000	.109	400	.225	10	4.461

Table 4	CAPACITIES, DIAMETERS AND SPEEDS				
Size	Basic capacity (BC)	Diameters		Maximum speed	
		Ø gross	Ø máx.	Standard	Special Bal.
11 AN	4.8	3/4	21/2	1800	3600
13 AN	6.0	7/8	13/4	1800	3600
15 AN	9.6	7/8	21/2	1800	3600
16 AN	15.0	11/8	21/2	1800	3000
18 AN	24	13/8	27/8	1800	3000
21 AN	38	13/4	31/4	1800	2400
24 AN	60	13/4	41/4	1800	2400
28 AN	96	21/4	51/4	1600	2200
33 AN	150	23/4	61/4	1200	2000
39 AN	240	23/4	71/4	1000	1750
46 AN	384	33/4	81/4	900	1500
53 AN	600	41/4	91/2	750	1250
62 AN	960	43/4	10 3/4	650	1000
72 AN	1500	53/8	12	500	850
85 AN	2400	63/4	13 1/4	450	750

For a speed greater than the indicated one in special balance, consult to the factory.

Examples

The following examples will illustrate a typical selection of couplings.

Requirements.

A coupling to connect an electrical engine from 50 HP to 750 RPM to a mixer (heavy service).
Motive axis Ø 70.6 mm and Ø lead shafts 60 mm.

Selection

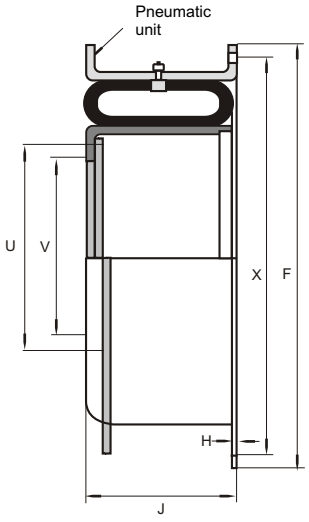
From table 1 settles down **fs** mixer = 3,5. In table 3 **k** factor for 750 RPM is of 137.
Applying the formula **CB = HP x fs x K**

50 x 35 x .137 = 23,97

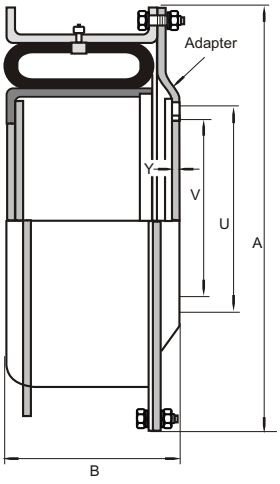
The Gummi AN coupling to use is according to table 4 the 18A.
The maximum shafts diameter that places each hub of the size 18A is of 74 mm, that satisfies the requirement of the engine as of the mixer. As the coupling will operate to 750 RPM, it will not be necessary a special balance (see table 4).

Dimensions for assembly
in SAE steering wheel

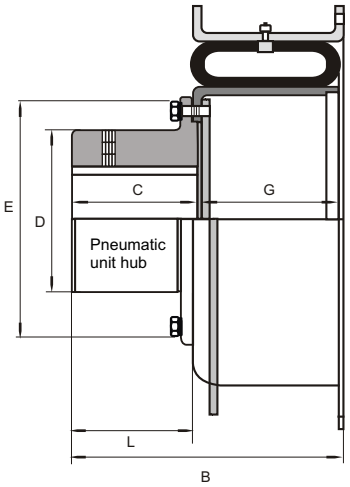
ASSEMBLY 1



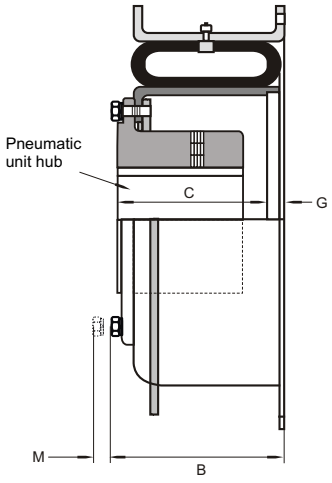
ASSEMBLY 2



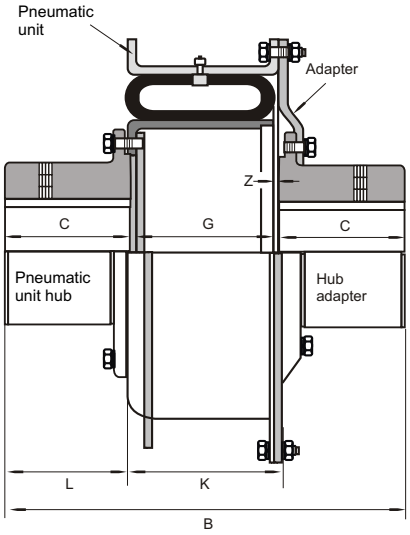
ASSEMBLY 3



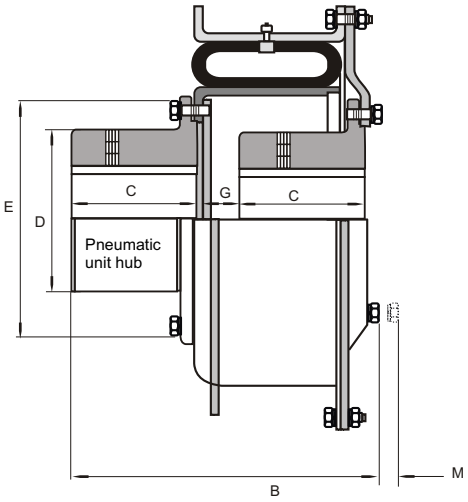
ASSEMBLY 4



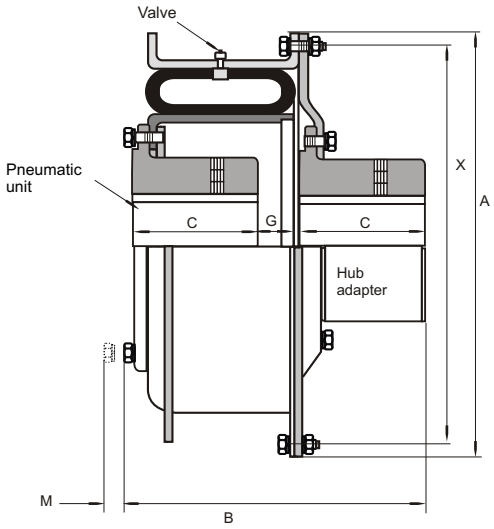
ASSEMBLY 5



ASSEMBLY 6



ASSEMBLY 9

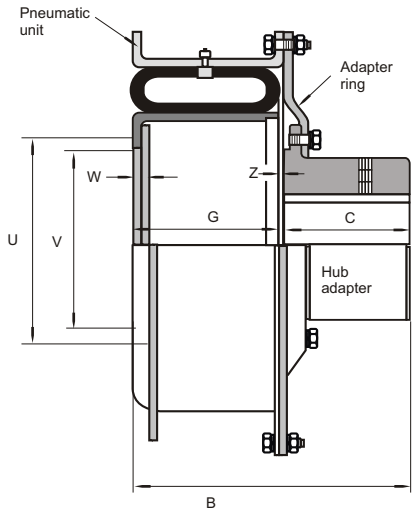


SIZE	A	Dimensions in millimeters																			
		B										C	D	E	F	G					
		Mtg. 2	Mtg. 3	Mtg. 4	Mtg. 5	Mtg. 6	Mtg. 9	Mtg. 10	Mtg. 11	Mtg. 12	Mtg. 13					Mtg. 3	Mtg. 4	Mtg. 5	Mtg. 6	Mtg. 9	Mtg. 10
15AN	295.0	110.2	166.6	106.4	253.2	201.6	192.0	173.7	121.4	189.7	128.2	82.5	89.0	141.2	288.9	84.0	17.5	88.0	21.3	21.3	91.0
16AN	320.5	116.5	179.3	112.7	272.2	214.3	204.7	186.4	127.7	202.4	134.6	89.0	95.0	152.4	314.3	40.4	17.5	99.9	21.3	21.3	97.5
18AN	362.0	223.0	192.0	119.0	286.7	227.0	217.4	199.0	134.0	215.0	141.0	45.0	111.2	168.0	353.9	96.7	17.5	100.8	21.3	21.3	103.5
21AN	398.5	132.5	201.6	127.0	307.0	246.0	233.4	208.8	146.5	230.8	156.4	101.6	130.0	200.0	390.5	100.0	17.5	103.8	21.3	21.3	107.0
24AN	441.0	145.2	227.0	139.7	345.0	271.5	258.8	234.0	159.2	256.2	169.0	114.3	158.7	235.0	433.3	127.7	17.5	116.5	21.3	21.3	119.8
28AN	498.0	158.0	250	154.0	391.4	304.8	292.0	261.0	174.7	288.0	187.7	133.3	200.0	285.7	490.5	120.6	9.6	124.7	13.4	13.4	127.7
33AN	583.0	175.5	289.0	170.0	445.2	341.3	327.0	296.0	192.0	324.6	205.2	152.4	228.6	336.5	574.6	136.6	6.3	140.4	10.4	10.4	143.7
39AN	673.0	207.2	352.5	201.6	521.4	401.5	382.5	347.0	226.5	281.7	242.8	177.8	266.7	393.7	665.1	162.0	9.6	165.8	13.4	13.4	169.1
46AN	775.0	226.3	378.0	378.0	578.6	434.6	420.6	395.2	245.6	419.8	261.8	196.8	304.8	470.0	766.7	180.8	9.6	185.0	13.4	13.4	188.2
53AN	888.0	273.0	439.6	263.6	574.6	522.2	498.3	450.8	297.6	496.8	320.2	228.6	349.2	533.4	876.3	221.0	17.5	217.4	23.8	23.8	222.2
62AN	1035.0	306.3	496.8	295.0	757.0	581.0	555.7	508.0	331.0	555.7	353.5	254.0	393.7	628.6	628.6	242.8	23.8	249.0	30.2	30.2	250.0
72AN	1187.0	347.7	552.4	334.8	839.7	650.7	627.0	566.6	378.0	620.7	407.0	273.0	438.0	723.9	1174.7	273.0	38.0	280.9	45.9	45.9	287.0
85AN	1378.0	373.0	603.2	365.0	916.0	701.5	678.0	617.4	403.3	671.5	432.5	304.8	482.6	898.6	1365.2	298.4	38.0	306.3	45.9	45.9	312.6

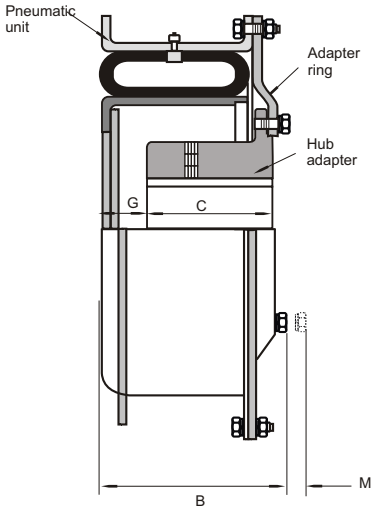
The dimensions are exclusively as reference and are subject to changes without previous warning.

Dimensions for assembly
in SAE steering wheel

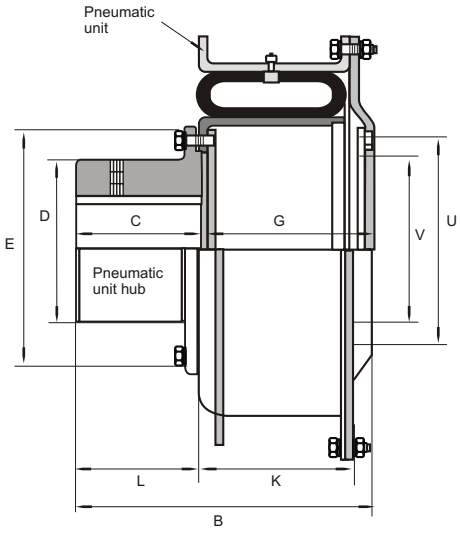
ASSEMBLY 10



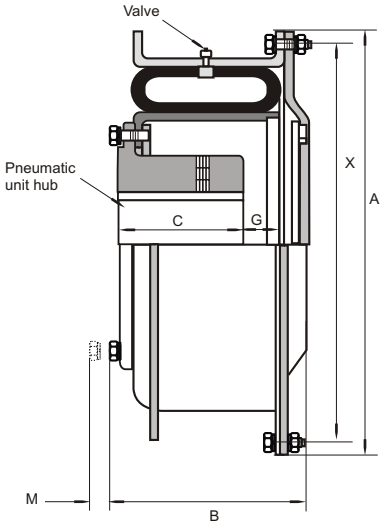
ASSEMBLY 11



ASSEMBLY 12

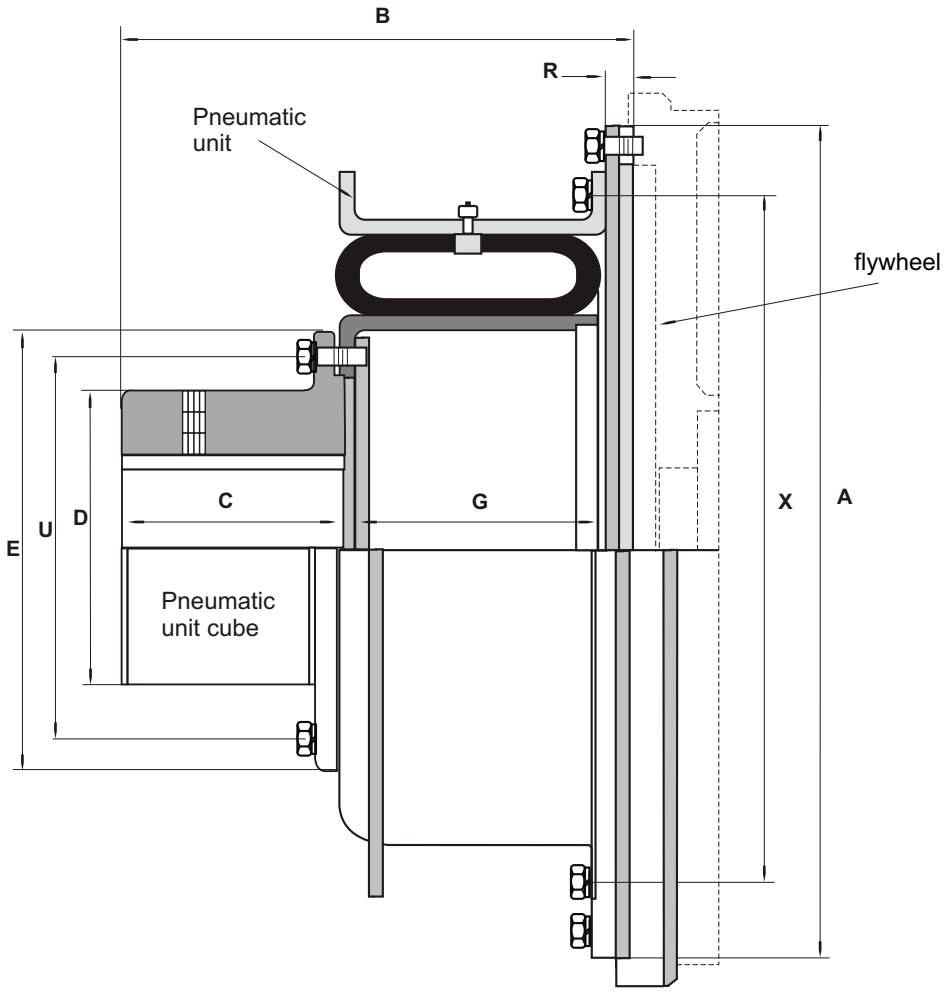


ASSEMBLY 13



Dimensions in millimeters																		SIZE
G			H	J	K	L	M					U	V	W	X	Y	Z	
Mtg. 11	Mtg. 12	Mtg. 13					Mtg. 4	Mtg. 6	Mtg. 9	Mtg. 11	Mtg. 13							
24.6	107	40.3	4.3	87.3	93.7	79.2	14.2	17.5	14.2	17.5	14.2	119	93.6	10.4	268.2	6.3	4	15AN
24.6	113	40.3	4.8	93.7	100.0	85.8	14.2	17.5	14.2	17.5	14.2	130	103.2	11.2	293.6	6.3	4	16AN
24.6	119	40.3	4.8	100.0	106.0	92.0	14.2	17.5	14.2	17.5	14.2	146	119.0	11.2	327.0	6.3	4	18AN
24.6	129	46.7	4.8	103.0	111.0	98.5	17.5	19.0	17.5	19.0	17.5	171	139.7	13.4	363.0	9.6	4	21AN
24.6	142	46.7	4.8	115.8	124.0	111.2	17.5	19.0	17.5	19.0	17.5	203	166.2	13.4	406.4	9.6	4	24AN
16.7	154	43.6	4.8	124.0	133.0	130.0	20.5	23.8	20.5	23.8	20.5	250	209.5	15.7	463.5	11.0	4	28AN
13.4	172	42.2	6.3	139.7	149.0	149.0	20.5	23.8	20.5	23.8	20.5	298	244.4	15.7	541.0	12.7	4	33AN
16.7	204	51.5	6.3	165.0	178.0	174.0	22.3	23.8	22.3	23.8	22.3	349	292.0	19.0	633.0	15.7	4	39AN
17.2	223	51.5	7.8	184.0	197.0	193.0	22.3	23.8	22.3	23.8	22.3	422	362.0	19.0	733.5	15.7	4	46AN
28.4	268	74.6	15.7	216.0	235.0	223.0	33.2	30.0	33.2	30.0	33.2	482	422.0	28.0	831.8	20.5	6	53AN
35.0	301	82.5	15.7	247.0	266.0	249.0	33.2	30.0	33.2	30.0	33.2	571	504.0	28.0	971.5	22.3	6	62AN
52.3	341	106.4	15.7	279.0	301.0	273.0	38.0	33.2	38.0	33.2	38.0	654	571.0	30.0	1117.6	22.3	8	72AN
52.3	366	106.4	22.3	304.8	327.0	293.0	38.0	33.2	38.0	33.2	38.0	825	762.0	35.0	1305.0	22.3	8	85AN

Dimensions for assembly
in SAE steering wheel



Dimensions in millimeters												
flywheel SAE		Coupling Size	Weight s/ a	A	B	C	D	E	G	R	U	X
Clutch in inches	Ø E/c a...											
11.5	333.3	16AN	21	360.1	201.6	89	95	152	90.4	25.4	130.0	293.6
14	438.1	21AN	38	475.0	227.0	101	130	200	100.0	28.4	171.4	363.4
16	188.9	24AN	52	525.7	252.4	114	158	235	112.7	28.4	203.2	406.4
18	542.9	28AN	77	579.6	279.4	133	200	285	120.6	28.4	250.9	463.5
21	641.3	33AN	120	681.2	343.4	152	228	336	136.6	32.0	298.4	541.2
24	692.1	33AN	132	741.6	343.4	152	228	336	136.6	32.0	298.4	541.2

* For another kind of steering wheel, consult to factory.

The dimensions are exclusively as reference and are subject to changes without previous warning.

How to request the Gummi AN pneumatic coupling

The following information is necessary to measure a Gummi pneumatic coupling correctly.

1- Connection size.

a) Nominal power and conductor maxim (hp, Kw, CV)

b) Conductor speed (rpm)

c) Kind of impelling machine (electrical engine, turbine, combustion engine), include number of cylinders.

d) Daily time of service, frequency of starting.

e) Kind of impelling machine (reciprocal, oscillating movement), indicate number of cylinders.

2- Shafts diameters.

a) Consult in factory.

3- Configuration.

a) Kind of assembly: in the standard version are available 13 different configurations, if you need another kind, consult in factory.

NOTE:

All the size of the Gummi AN pneumatic coupling are provided pressurized with fluid to 100 psi and sealed from factory. Once started it is recommended to control the pressure after an initial period of work.