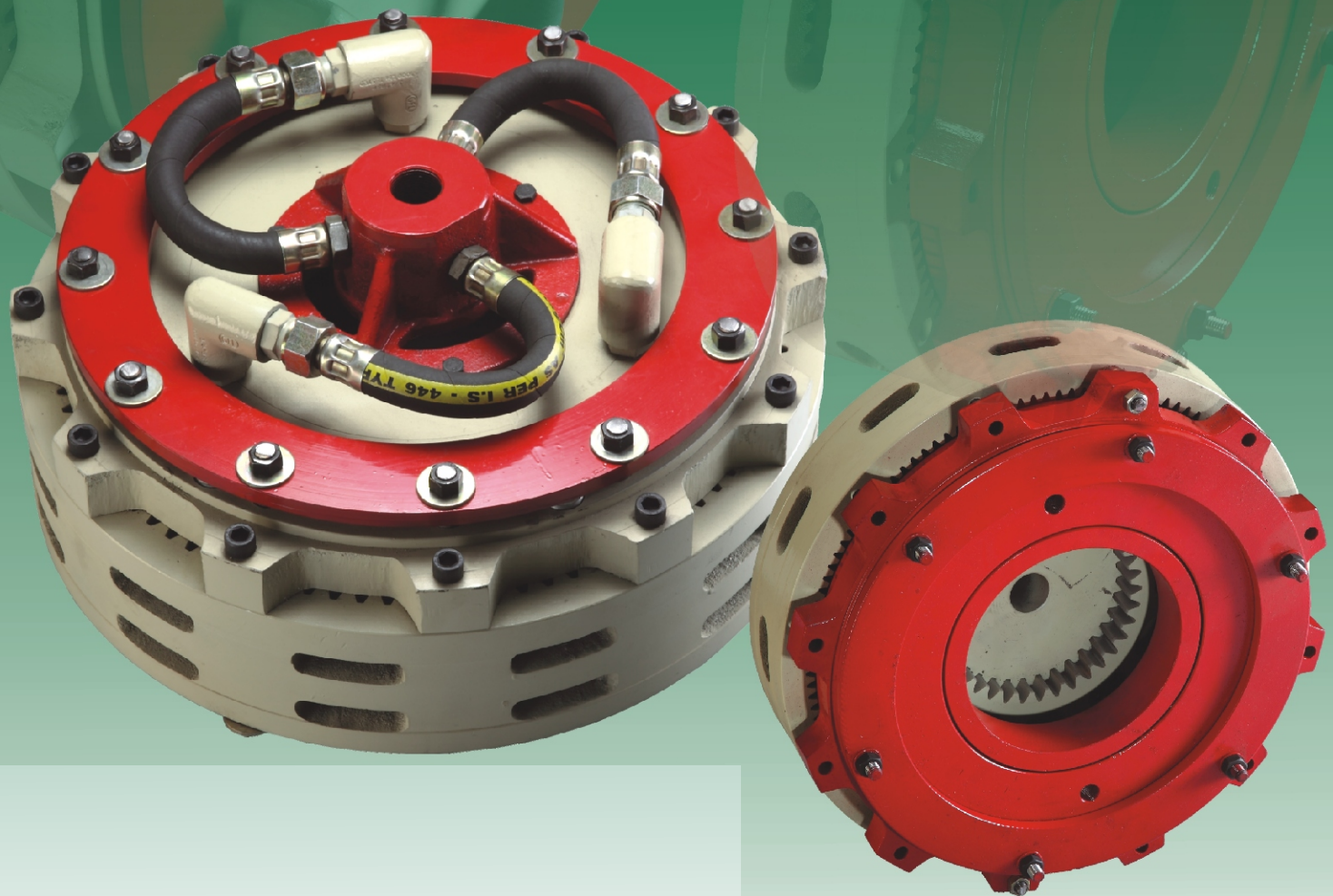


AIRTORQ

PNEUMATIC MULTI-DISC CLUTCHES & PNEUMATICALLY RELEASED SPRING APPLIED FAIL SAFE BRAKES

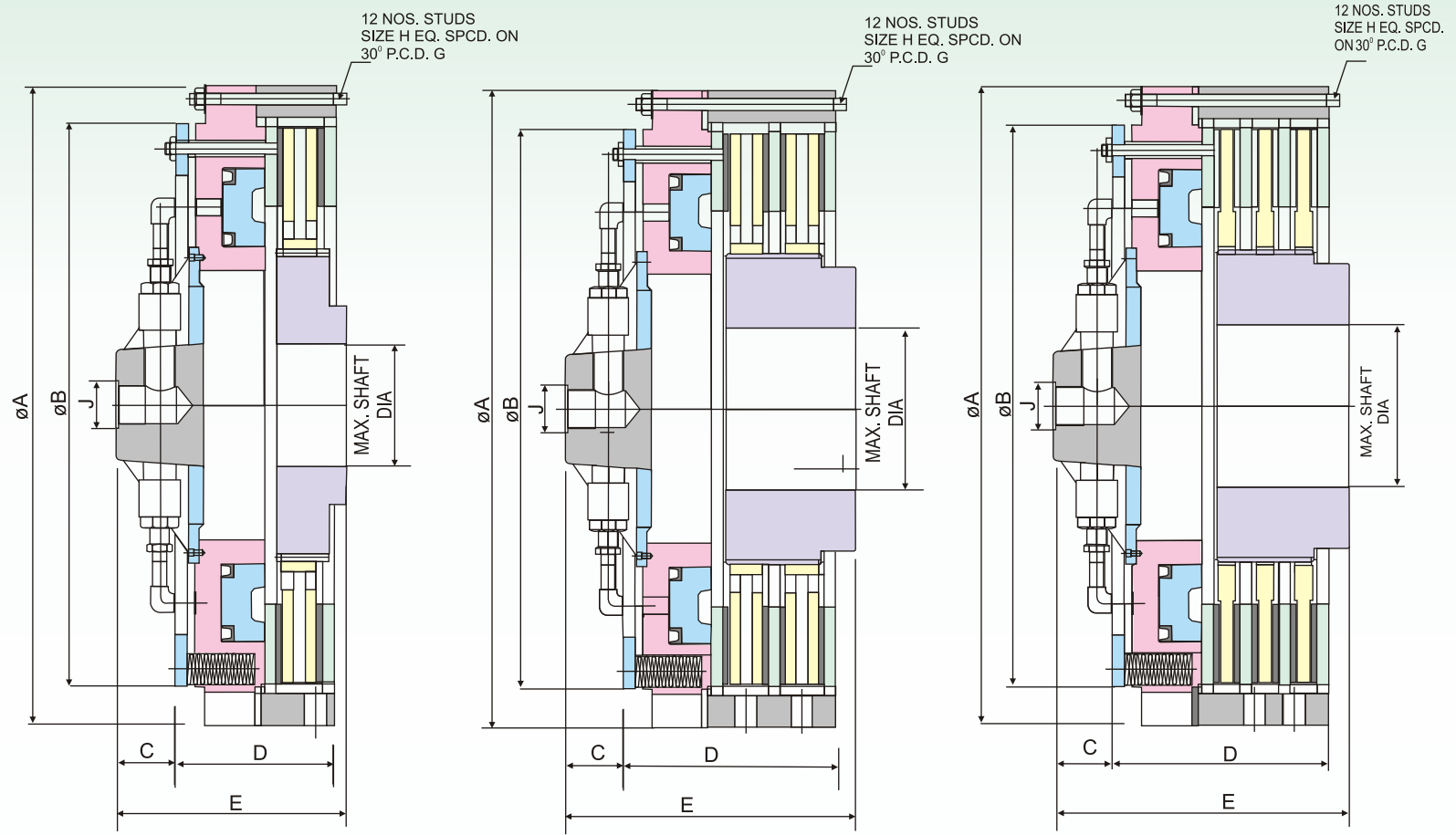


'AIRTORQ' Pneumatically actuated single Double & Tripple Disc Clutches and Spring applied air Released Brakes are used in Heavy Machinery as highly reliable drive components. These units are best suitable for applications requiring large masses to be accelerated or decelerated (Stop), but the engagement frequency is not very high.

ADVANTAGES

- Power Presses
- Shearing Machines
- Press-Brakes
- Wood working machine
- Winches
- Oil well drilling equipments

PNEUMATIC MULTI-DISC CLUTCH/BRAKES

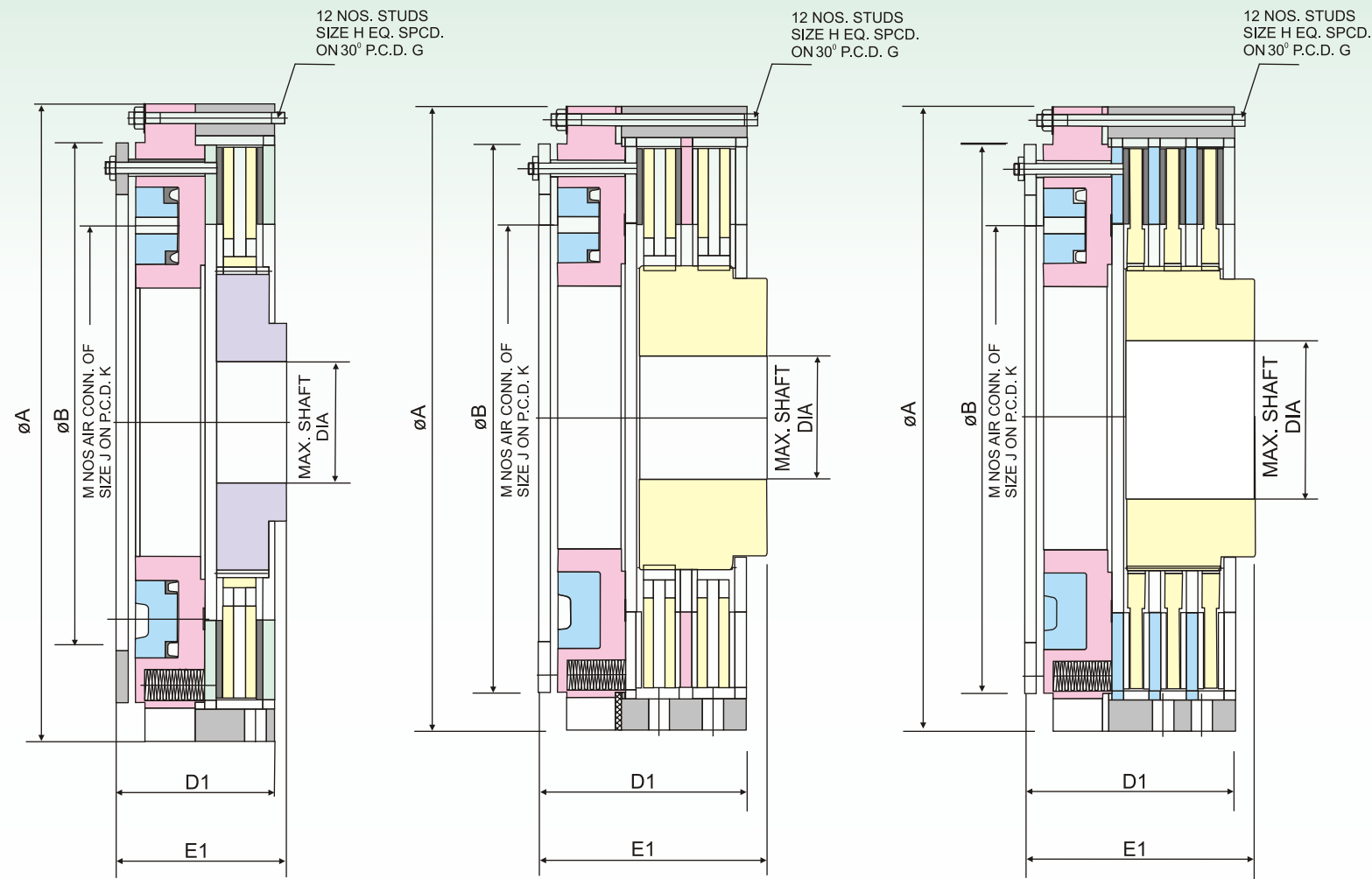


SINGLE DISC CLUTCH/BRAKE DOUBLE DISC CLUTCH/BRAKE THREE DISC CLUTCH/BRAKE

MODEL No.	AT 5.5 BAR	AT 6.0 BAR	MAX. SPEED RPMs.	MAX. SAFT DIA.	øA	øB	C	D	E	G	H	J
	CLUTCH TORQUE NM.											
AMD-260-1	940	1050	1700	100	300	260	31	88.5	137.5	284	M8	1/4" BSP
AMD-260-2	1850	2100	1700	100	300	260	31	119.6	168.5	284	M8	1/4" BSP
AMD-260-3	2800	3050	1700	100	300	260	31	119.5	168.5	284	M8	1/4" BSP
AMD-350-1	2900	3000	1250	155	410	360	38	140	178	390	M10	3/8" BSP
AMD-350-2	5600	6200	1250	155	410	360	38	200	238	390	M10	3/8" BSP
AMD-350-3	8300	9400	1250	155	410	360	38	200	238	390	M10	3/8" BSP
AMD-430-1	5600	6200	1000	205	505	440	55	132	320	480	M12	3/4" BSP
AMD-430-2	11100	12300	1000	205	505	440	55	181	256.5	480	M12	3/4" BSP
AMD-430-3	16400	18700	1000	205	505	440	55	181	256.5	480	M12	3/4" BSP
AMD-500-1	7400	8200	850	225	590	503	70	158	255	562	M14	1"BSP
AMD-500-2	14600	16400	850	225	590	503	70	213	302	562	M14	1"BSP
AMD-500-3	22300	24600	850	225	590	503	70	213	302	562	M14	1"BSP
AMD-650-1	14600	16400	670	275	740	650	68	182.5	264	708	M16	1-1/4"BSP
AMD-650-2	29300	33000	670	275	740	650	68	247.5	337.5	708	M16	1-1/4"BSP
AMD-650-3	44000	49200	670	275	740	650	68	247.5	337.5	708	M16	1-1/4"BSP
AMD-830-1	29300	33300	510	325	950	840	86.5	235	340	910	M20	2" BSP
AMD-830-2	58600	66600	510	325	950	840	86.5	320	454	910	M20	2" BSP
AMD-830-3	88000	10000	510	325	950	840	86.5	320	454	910	M20	2" BSP

Max. Operating Pressure =6.0 bar, For Dry running Only. Keep Friction Surfaces free of Lubricants

PNEUMATIC MULTIDISC SPRING SET AIR RELEASED FAIL SAFE BRAKES



SINGLE DISC BRAKES

DOUBLE DISC BRAKES

THREE DISC BRAKES

MODEL No.	AT 2.0 BAR	AT 4.0 BAR	MAX. SPEED RPMs.	MAX. SAFT DIA.	øA	øB	D1	E1	G	H	J	K	M
	CLUTCH TORQUE NM.												
AMD-260-1S	350	700	1700	100	300	260	88.5	106.5	284	M8	1/4"BSP	180	2
AMD-260-2S	670	1400	1700	100	300	260	119.5	137.5	284	M8	1/4"BSP	180	2
AMD-260-3S	1000	2000	1700	100	300	260	119.5	137.5	284	M8	1/4"BSP	180	2
AMD-350-1S	900	1800	1250	155	410	360	137.5	141	390	M10	1/2"BSP	332	2
AMD-350-2S	2000	4000	1250	155	410	360	196.5	200	390	M10	1/2"BSP	332	2
AMD-350-3S	3100	6000	1250	155	410	360	196.5	200	390	M10	1/2"BSP	332	2
AMD-430-1S	2100	4200	1000	205	505	440	132	165	480	M12	3/4"BSP	285	3
AMD-430-2S	4200	8000	1000	205	505	440	181	201	480	M12	3/4"BSP	285	3
AMD-430-3S	6300	12500	1000	205	505	440	181	201	480	M12	3/4"BSP	285	3
AMD-500-1S	2800	5500	850	225	590	503	158	185	562	M14	1"BSP	360	3
AMD-500-2S	5300	10500	850	225	590	503	213	232	562	M14	1"BSP	360	3
AMD-500-3S	8000	16000	850	225	590	503	213	232	562	M14	1"BSP	360	3
AMD-650-1S	5500	11000	670	275	740	650	182.5	196	708	M16	1/4" BSP	430	3
AMD-650-2S	10600	22000	670	275	740	650	247.5	270	708	M16	1/4" BSP	430	3
AMD-650-3S	16000	33000	670	275	740	650	247.5	270	708	M16	1/4" BSP	430	3
AMD-830-1S	10650	12100	510	325	950	840	235	253	910	M20	2" BSP	430	3
AMD-830-2S	21300	24200	510	325	950	840	317	347	910	M20	2" BSP	430	3
AMD-830-3S	32000	36300	510	325	950	840	406.5	453.5	910	M20	2" BSP	430	3

Max. Operating Pressure =6.0 bar, For Dry running Only. Keep Friction Surfaces free of Lubricants

AIR SUPPLY

The size of compressors is decided by the air consumption of the clutch. Table 1 gives the cylinder volumes of the different sizes. The volume of supply line between the clutch & the control volume must be added. The required free air can be calculated as follow :

$Q = 1.5 \text{ V.P.Z.} = \text{Compressor capacity at atmospheric pressure in litres / min.}$

$V = \text{Volume of Cylinder and Connection Pipe.}$

$P = \text{Working Pressure in bar.}$

$Z = \text{Max. number of engagement per minute.}$

$1.5 = \text{Leakage factor depending on operating conditions}$

If more than one unit is incorporated into the supply Line, this must be taken into account in the above calculations.

NOTE : Use Filtered & Lubricated Air only.

Rotating air inlet

The connection of the air inlet to the shaft should be adequately sealed & well aligned. Accurate performance & long life can only be attained if the inner part is running true with the shaft. Air supply, pipes must be connected to the air inlet by a flexible hose of at least 300mm length to prevent excessive load on the bearing.

AIR ACCUMULATOR

Especially with high engagement figures. The eccentric pressure or similar. It is recommended to use a pressure compensating tank (accumulator) of suitable size in order to avoid a drop in pressure engagement. The connection pipeline should be kept as short as possible.

A pressure switch can be incorporated to prevent engagement at too low pressure which might cause the Clutch to slip.

The volume of the accumulator should be at least 3-4 times the max. Cylinder volume (with worn linings) plus line volume times working, pressure.

$V_a = 3 \text{ to } 4 \text{ PV}$

During engagement the pressure in the supply line just before the clutch should not fall below 90% of normal valve.

Min. Operating Pressure 5.5 bar • Max. Operating Pressure 6.0 bar

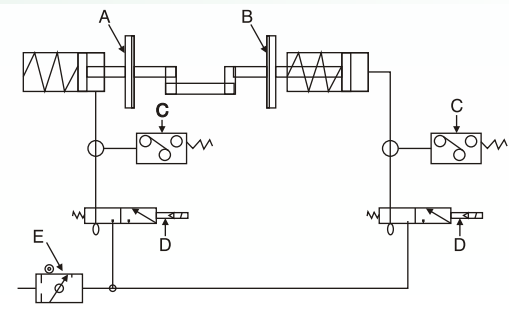
Control of pneumatically spring applied brake used in combination with multi disc clutch

The clutch & brakes must not overlap during the cycle, this would lead to the over heating & excessive plate/linear wear, when the air is released from the cylinder, the brake is engaged by the springs. compressed air acting on cylinder disengages the brakes.

Alternative control system are outlined below.

(a) Using one Valve (Equal Clutch & Brake Spring Return pressure). Actuation of the valve fills both the Clutch & Brakes cylinders with air, in order to prevent overlap, the brakes return pressure must be equal to (or up to 0.2 bar less than) the clutch spring return pressure, the clutch will then get engaged when the brake has dis-engaged.

(b) Using the one Valve (un-equal clutch & brake return pressures). If the spring return pressure of the brake is greater than the clutch, overlap can be avoided by using pressure switches to control the valve. fig. 2 shows an arrangement using separate way solenoid valves for clutch & brakes. pressure switches can be fitted to control the circuit between valve & clutch or brake, which only actuate at pre-set pressure & thus control the timing of the other units (clutch or brake).



A - BRAKE, B - CLUTCH, C - PRESS SWITCH, D - 3/2 WAY VALVE, E - MONITOR

Fig. 2

PIPE LINES

To achieve accurate performance in rapidly working presses etc. it is necessary to use min. pipe dimensions as listed in table 2. The lubricator must be set to give a oil feed of 2 to 3 drops per m^3 of Air.

1. FILTER
2. PRESSURE REGULATOR
3. LUBRICATOR
4. AIR ACCUMULATOR (TANK)
5. FLEXIBLE HOSE
6. THREE WAY SOLENOID VALVE
7. AIR INLET ROTARY JOINT
8. CLUTCH/BRAKE COMBINED UNIT
9. CHECK VALVE

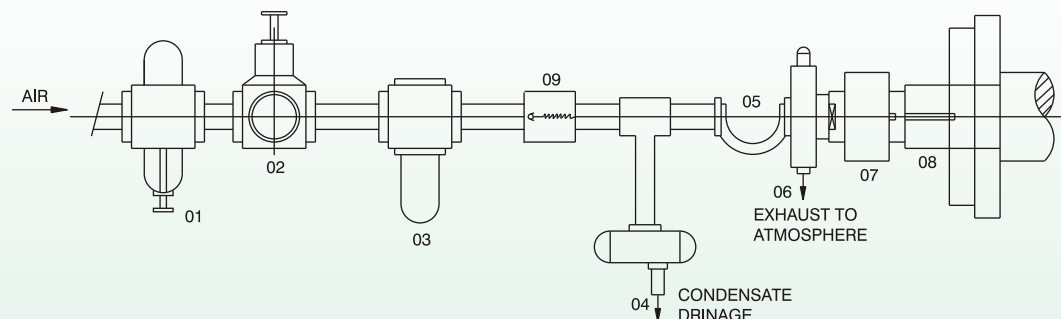


DIAGRAM OF COMPRESSED AIR SYSTEM

AIRTORQ INDIA

(An ISO 9001:2000 Certified Company)

Shed No. 3, Gali No. 9, Station Road, Opp. Krishna Vatika, Samaipur, Delhi-110042 (INDIA)
Tel. : 27835798 Fax : 91-11-27834798 E-mail : airtorqin@yahoo.co.in Website : www.airtorq.com