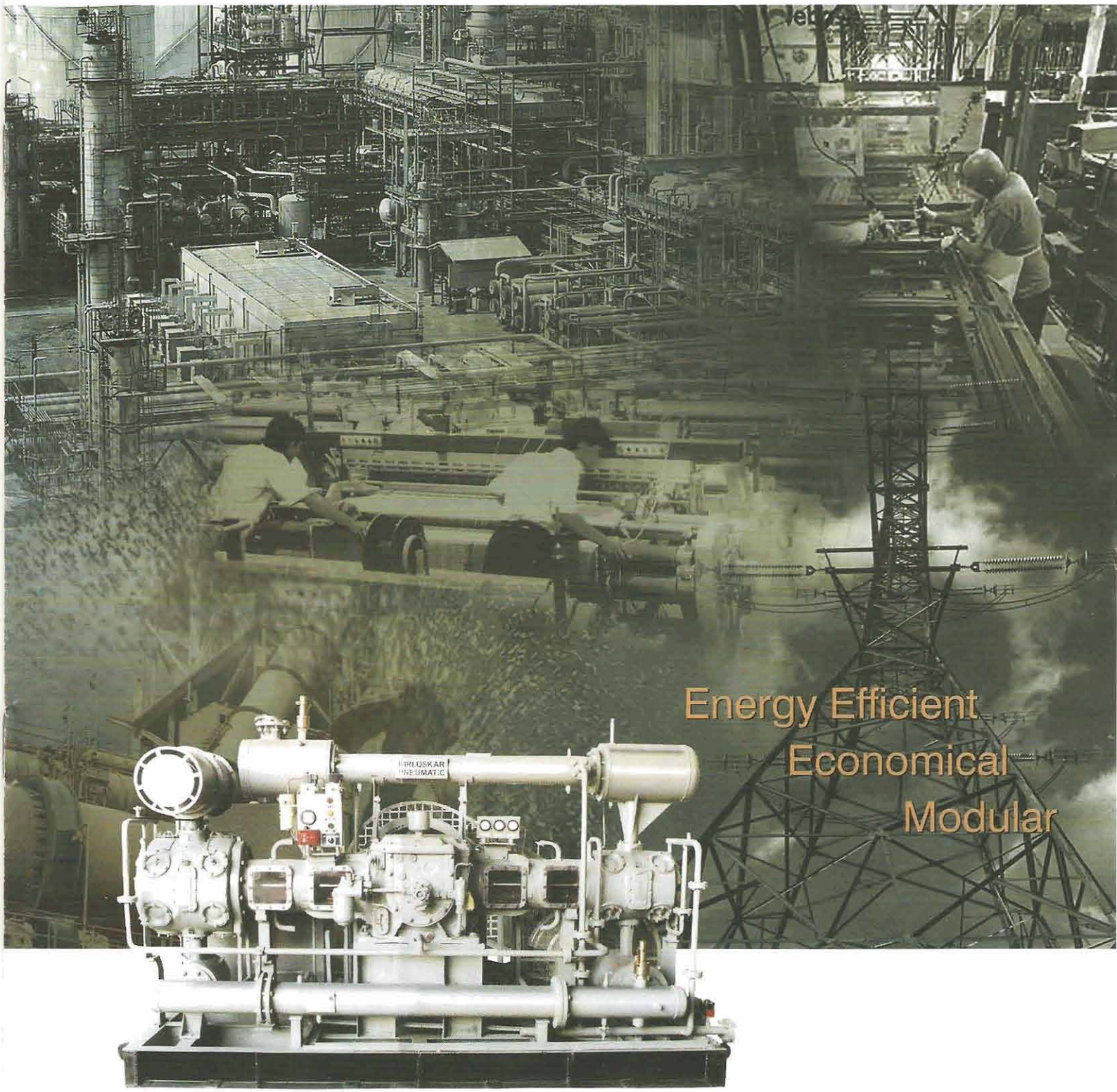
Balanced Opposed Reciprocating Air Compressors Gas Compressors

Enriching Lives



KIRLOSKAR PNEUMATIC CO. LTD.

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With constant focus on Quality and dedicated to satisfy our customers' needs, KIRLOSKAR PNEUMATIC CO. LTD. is today one of the leading manufacturers of Reciprocating compressors with ISO 9001certification, in India.

KIRLOSKAR Horizontal Balanced Opposed Piston Air Compressors are the result of extensive know-how and experience of more than five decades in design, manufacture, supply and installation of air and gas compressors of various designs, capacities and pressures for a number of applications. These units cover a wide capacity range from 3 M^3 / min to 176 M^3 / min and pressure range from 1 Kg / cm^2 to 400 kg / cm^2g.

Compressor upto 6 stages with pressure range upto 400 Kg/cm^2g are also offered as per application requirement.

These compressors have been designed for minimum power consumption, lower operating temperatures and maximum efficiency which make them most economical.

Our proud experience gathered over many years also enables us to design and supply compressor units, adopted to specific customer needs, on Turnkey basis.

At KPC, we have committed ourselves in developing, manufacturing and supplying products which form part of proper and well designed compressed air solution.

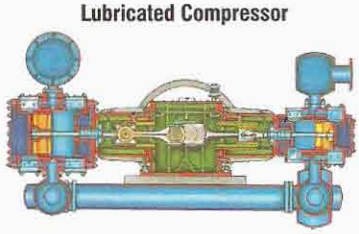
Due to modular design, KIRLOSKAR Horizontal Balanced Opposed Piston Compressors can meet any combination of capacity and pressure in ranges, as indicated in this brochure.

The Compressors can be designed and manufactured, mostly conforming to latest edition of API-618, as per the application requirement.

Highly experienced Engineers in our team provide comprehensive service from initial consultation right through to, on site commissioning.

Oil free Compressor

Lubricated Compressor



Typical cut sectional views of balanced opposed piston compressors

Features

Main Features

Packaged & Ready To Use

KIRLOSKAR Reciprocating, Lubricated, Horizontal Balanced Opposed Piston Air Compressor.

Operational Economy

Perfect intercooling, large flow area in jackets and large area valves make the operation most economical. Compressor has automatic loading and unloading arrangement.

Ease In Maintenance

Automatic cushioned valves are ideally positioned for easy maintenance. Ample space on crosshead guide and frame top cover make inspection and maintenance very easy. Transparent Acrylic covers on crosshead guides offer instant inspection without opening the machine.

Vibration Free Performance

The cylinders are opposed to one another, with crank-throws set at 180°. The weights of the reciprocating parts of opposing cylinders are equalised, therefore there are no horizontal or vertical imbalanced forces.

Due to closely spaced crank-pin centres, the moment (horizontal couple) is very small.

Results :

- Smooth vibration-free running.
- Minimum foundation.
- Low wear of moving parts.

Long Life

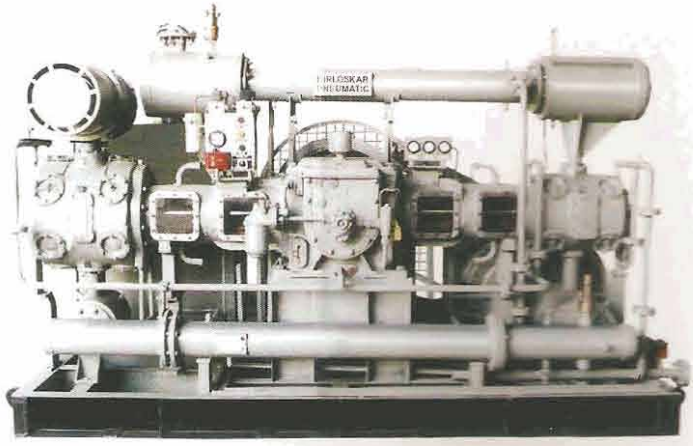
All parts of the compressor are very carefully engineered and designed to ensure long life.

Force Feed Lubrication System

All moving parts are properly lubricated by forced feed system through gear pump driven by crankshaft. In case of lubricated models, measured quantity of fresh oil is delivered from independent mechanical lubricator to each cylinder.

Low Inventory Of Spares

Many of the models have common parts, e.g. connecting rods, bearings, glands, valves, pumps etc. This gives flexibility of selecting only one or more models of different capacities without proportionate addition to spares inventory.

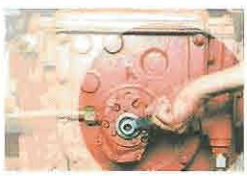


Built - In Salient Features

Gland Packing
Full floating, self adjusting 3 & 6 piece packings are used in pairs which can be removed and fitted without dismantling the piston rod.

Valve Assemblies
Low clearance, low lift, automatic double dampened plate type valves. Two cushion plates with springs in valve assemblies reduce shocks of valve plate impact on valve seat and give longer life.

Bearings
Two main bearings, on drive end, are provided to take load of belt pull, thus extending bearing life.



Hand Priming Arrangement
Ensures proper frame lubrication before starting particularly after long idle periods and Prevents the bearings from running dry.

Oil Free Piston Rings For Non Lubricated Compressors
The piston rings and guide rings are made of carbon filled PTFE. Provision of extra wide guide rings reduces wear and tear of the rings.

One Way Clutch
Drive for oil pump from crankshaft through one way clutch ensures positive lubrication of the frame before starting the compressor in 'B' frames

Transparent Inspection Window Covers
To facilitate instant observation of proper lubrication without opening the machine.

Optional Features

Electro Pneumatic Capacity Control Box
This unit, when mounted on the compressor, controls the capacity i.e. loading / unloading of the compressor in 2 or 3 steps. It keeps the compressor in unloaded condition and bypasses the low oil pressure safety switch during starting. It has built-in selector switch to manually select the load / unload operations, including lamps and hour meter.

Constructional Features

All parts are designed for convenient accessibility and ease of maintenance. Critical working parts are engineered to be replaced easily in minimum time.

Cylinders
Cylinders and cylinder heads are made of dense, Grey Cast Iron castings water jackets are provided for cooling purpose.

Main Frame
Its heavy and ribbed construction provide rugged support for the running gear. Removable oil tight top covers provide generous access to crankshaft and connecting rod.

Crankshaft
Crankshaft is made of S.G. Iron, precision machined with ground journals and pins. It is supported in three or more nos. of Journal bearings depending upon the no. of throws.

Crosshead
Box type cast iron precision fitted crosshead is designed for maximum strength. No adjustment is necessary.

Connecting Rod
Connecting rods are made of SG iron/EN 9 material and designed for maximum strength and minimum weight. They are rifle - drilled for pressure lubrication of small end bearings.

Piston
Pistons are made of Aluminum Alloy casting or Cast Iron Opposed pistons are perfectly balanced to achieve the stability of machine.

Piston Rod
As per application requirement, a hard chrome plated rod upto maximum hardness of 50 RC in packing area can be supplied. The rod is designed to obtain maximum fatigué strength.

Accessories

Non Return Valve
This valve is used for allowing air to pass in one direction only as marked by an arrow on valve. Generally, plate types swing check valve is supplied. The valve is mounted between aftercooler and air receiver which avoids back pressure of air on the discharge valve of compressor.

Air Receiver
Basically used as a storage vessel also acts as a pulsation dampner. It is of vertical welded construction mounted on a suitable stand and complete with safety valve, pressure gauge, drain cock, manhole, and anchor bolt. The receivers generally conform to IS 2825 -1969. The material of construction is IS-2062/IS 2002.

Aftercooler with Moisture Separator
The cooler is shell and tube, removable tube bundle type in horizontal version. Tubes are of solid drawn copper which are expanded at each end into tube sheets.

The air flows through tubes and water passes through shell.

Cooler is provided with in-built baffle type moisture separator for removing moisture content in compressed air.

The unit can be mounted or can be connected overhead, anywhere in pipeline as per convenience of room layout. The coolers generally conform to IS - 4503, however, the coolers can be supplied as per TEMA 'C' / TEMA 'R' codes.

Control Panel
Custom - built control panels are supplied to monitor the operations of performance of single or multiple compressor units to meet specific requirements of the customer. Micro processor / PLC based control panel can also be offered to control the automatic operation of compressed air plant.

7 Nos. Balanced Opposed Piston Air Compressors of 99.60 M^3/min capacity each, installed at NALCO Angul.

Kirloskar Balanced Opposed, Oil free, Air Compressor Package on offshore drilling platform at ONGC.

Technical Specifications

'B' Series

Models for standard capacity pressure range.

	MODEL	CYLINDER DIMENSIONS MM			COMPRESSOR SPEED - RPM		WORKING PRESSURE kg/cm²g		FREE AIR DELIVERY m³/min		RECOMMENDED MOTOR (kW)
		BORE		STROKE							
		LP	HP		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
SINGLE STAGE	BD-NL	2 X 194	–	120	450	850	1.0	4.0	3.88	9.62	30
	BD-ML	2 X255	–	120	450	800	1.0	3.0	8.52	17.28	45
	BD-LL	2 X255	–	150	450	800	1.0	4.0	10.38	21.81	55/75
	BD-JL	2 X316	–	150	450	800	1.0	3.0	16.98	33.61	75/90
	BD-PL	2 X355	–	150	450	800	1.0	2.5	21.04	42.03	110B
	BD-QL	2 X385	–	150	550	800	1.0	4.0	24.42	50.65	160
	BD-RL	2 X470	–	150	550	750	1.0	2.5	46.27	69.19	210
TWO STAGE	BTD-NM	194	130	120	450	850	4.0	8.0	2.49	4.85	22
	BTD-MM	255	160	120	450	800	4.0	10.0	4.44	8.58	37/45
	BTD-LM	255	160	150	450	800	5.0	10.5	5.74	10.77	45/60
	BTD JM	316	194	150	450	800	4.0	8.5	8.89	16.43	60/75
	BTD-PM	355	215	150	450	800	4.0	8.0	10.75	19.12	90/110
	BTD-QM	385	235	150	550	800	5.0	10.0	16.30	24.05	110
	BTD-RM	470	290	150	550	750	5.0	8.5	23.95	33.0	160
TWO STAGE	BTD-MH	255	130	120	450	800	11.0	15.0	4.15	7.54	55/75
	BTD-LH	255	130	150	450	800	11.0	15.0	5.4	9.72	75
	BTD-JH	316	180	150	450	800	9.0	12.0	8.61	15.48	110
	BTD-RH	470	265	150	450	800	10.0	11.5	19.47	34.74	225

DIMENSIONS OF LUBRICATED COMPRESSORS

	MODEL	APPROX. DIMENSIONS, MM			APPROX. WEIGHT
		L	W	H	KG
TWO STAGE	BTD-NM	2055	1250	120	1500
	BTD-MM	2055	1250	1420	1600
	BTD-LM	2330	1400	1490	1800
	BTD-JM	2360	1400	1525	1900
	BTD-PM	2480	1400	1695	2400
	BTD-QM	2600	1700	2055	2850
	BTD-RM	2620	1700	2250	3200

	MODEL	APPROX. DIMENSIONS, MM			APPROX. WEIGHT
		L	W	H	KG
SINGLE STAGE	BD-NL	2100	1250	1420	1550
	BD-ML	2050	1250	1570	1650
	BD-LL	2335	1400	1490	1850
	BD-JL	2400	1400	1525	1850
	BD-PL	2625	1400	1695	1950
	BD-QL	2695	1700	2055	2450
	BD-RL	2750	1700	2250	3000

	MODEL	APPROX. DIMENSIONS, MM			APPROX. WEIGHT
		L	W	H	KG
TWO STAGE	BTD-MH	2075	1250	1420	1370
	BTD-LH	2320	1100	1450	1800
	BTD-JH	2350	1160	1510	1900
	BTD-RH	2620	1700	2250	3200

NOTES :

1) Above performance is given at sea level & 30°c suction conditions. Tolerances as per IS:5456
2) The above models are also available in non-lubricateed version. FAD capacity shall reduce by approx. 3%.
3) Compressors of customized requirement of higher pressures, capacities and process gas applications are also available.
4) Above models are also available at higher speeds, than specified.
5) The standard compressor packages with micro processor based Control panels are also available in water cooled / air cooled versions.

For more details, please contact us.

'H' Series

Models for standard capacity pressure range.

	MODEL	CYLINDER DIMENSIONS MM			COMPRESSOR SPEED - RPM		WORKING PRESSURE kg/cm²g		FREE AIR DELIVERY m³/min		RECOMMENDED MOTOR (kW)
		BORE		STROKE							
		LP	HP		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
HA - SERIES COMPRESSORS											
SINGLE STAGE	1HA2	2 X 250	-	150	400	750	1.0	4.0	9.33	20.50	22 / 75
	1HA2BIS	2 X 280	-	150	400	750	1.0	3.5	11.84	25.75	30 / 90
	1HA2TER	2 X 310	-	150	400	750	1.0	3.0	15.20	31.70	30 / 110
	1HA2Q	2 X 350	-	150	400	750	1.0	2.0	19.66	39.30	45 / 110
	1HA2P	2 X 370	-	150	400	750	1.0	1.5	23.31	44.80	45 / 110
	1HA4	4 X 250	-	150	400	750	1.0	4.0	18.67	41.00	37 / 160
	1HA4BIS	4 X 280	-	150	400	750	1.0	3.5	23.68	51.50	55 / 200
	1HA4TER	4 X 310	-	150	400	750	1.0	3.0	30.40	63.40	75 / 200
	1HA4Q	4 X 350	-	150	400	750	1.0	2.0	39.33	78.60	75 / 200
	1HA4P	4 X 370	-	150	400	750	1.0	1.5	46.61	89.60	90 / 200
TWOSTAGE	2HA2	1 X 250	1 X 160	150	400	750	4.0	8.0	5.31	10.15	22 / 55
	2HA2BIS	1 X 280	1 X 160	150	400	750	4.0	8.0	6.67	12.75	30 / 75
	2HA2TER	1 X 310	1 X 185	150	400	750	4.0	8.0	8.03	15.65	37 / 90
	2HA2Q	1 X 350	1 X 210	150	400	750	4.0	8.0	9.81	18.70	37 / 110
	2HA2P	1 X 370	1 X 230	150	400	750	4.0	7.0	11.33	21.59	55 / 110
	2HA2S	1 X 250	1 X 140	150	400	750	9.0	17.6	4.94	9.55	30 / 75
	2HA2BISS	1 X 280	1 X 160	150	400	750	9.0	12.0	6.24	11.95	37 / 75
HY - SERIES COMPRESSORS											
SINGLE STAGE	1HY2	2 X 185	-	115	400	825	1.0	4.5	3.37	9.07	18 / 37
	1HY2BIS	2 X 215	-	115	400	825	1.0	3.3	5.08	12.35	18 / 45
	1HY2TER	2 X 250	-	115	400	825	1.0	2.5	7.11	16.61	18 / 45
TWO STAGE	2HY2BIS	1 X 215	1 X 140	115	400	825	6.0	8.0	2.83	5.91	18 / 37
	2HY2TER	1 X 250	1 X 140	115	400	825	6.0	8.0	3.60	7.50	18 / 45
	2HY2S	1 X 185	1 X 105	115	400	825	9.0	16.0	1.83	4.03	18 / 30
	2HY2BISS	1 X 215	1 X 140	115	400	825	9.0	9.5	2.80	5.82	18 / 37
HB - SERIES COMPRESSORS											
SINGLE STAGE	1HB2BIS	2 X 450	-	200	350	600	1.0	3.5	37.86	72.10	90 / 250
	1HB2BISN	2 X 500	-	200	350	600	1.0	3.5	44.39	88.00	110 / 280
	1HB2TER	2 X 560	-	200	350	600	1.0	2.5	57.93	109.60	132 / 315
TWO STAGE	2HB2TER	1 X 560	1 X 370	200	350	600	4.0	8.0	30.68	53.50	132 / 315
	2HB2BISS	1 X 450	1 X 245	200	350	600	9.0	15.0	19.51	33.80	132 / 250
	2HB2BISNS	1 X 500	1 X 280	200	350	600	9.0	15.0	23.20	40.50	132 / 280
	2HB2TERS	1 X 560	1 X 310	200	350	600	8.0	13.0	27.53	48.65	200 / 315

DIMENSIONS FOR LUBRICATED COMPRESSORS

	MODEL	APPROXIMATE DIMENSIONS, (MM)			APPROXIMATE WEIGHT
		L	W	H	(KG)
HA - SERIES COMPRESSORS					
SINGLE STAGE	1HA2	2740	1015	2110	1600
	1HA2BIS	2740	1015	2335	1675
	1HA2TER	2740	1015	2350	1850
	1HA2Q	2860	1015	2500	2000
	1HA2P	2860	1015	2500	2100
	1HA4	2740	1860	2335	2715
	1HA4BIS	2740	1860	2350	2865
	1HA4TER	2740	1860	2350	3100
	1HA4Q	2860	1860	2350	3400
	1HA4P	2860	1860	2350	3500
TWO STAGE	2HA2	2740	1015	1995	1550
	2HA2BIS	2740	1015	1995	1625
	2HA2TER	2740	1015	1995	1800
	2HA2Q	2860	1015	2145	2100
	2HA2P	2860	1015	2145	2250
	2HA2S	2740	1015	1995	1550
	2HA2BISS	2740	1015	1995	1625

	MODEL	APPROXIMATE DIMENSIONS, (MM)			APPROXIMATE WEIGHT
		L	W	H	(KG)
HY - SERIES COMPRESSORS					
SINGLE STAGE	1HY2	2800	820	2002	1100
	1HY2BIS	2800	820	2018	1150
	1HY2TER	2800	820	2035	1150
TWO STAGE	2HY2BIS	2800	820	1800	1250
	2HY2TER	2800	820	1800	1250
	2HY2S	2800	820	1800	1200
	2HY2BISS	2800	820	1800	1250
HB - SERIES COMPRESSORS					
SINGLE STAGE	1HB2BIS	4300	1506	2250	6700
	1HB2BISN	4300	1506	2250	6700
	1HB2TER	4300	1506	2250	6900
	1HB4BIS	4300	1506	2250	12200
	1HB4BISN	4300	1506	2250	12500
TWO STAGE	2HB2TER	4300	1506	3000	6500
	2HB2BISS	4300	1506	3000	6500
	2HB2BISNS	4300	1506	3000	6700
	2HB2TERS	4300	1506	3000	7000

NOTES :

1) Above performance is given at sea level & 30°c suction conditions. Tolerances as per IS:5456
2) The above models are also available in non-lubricateed version. FAD capacity shall reduce by approx. 3%.
3) Compressors of customized requirement of higher pressures, capacities and process gas applications are also available.
4) Above models are also available at higher speeds, than specified.
5) HA / HB frame compressors are also available in four throw versions for which the capacity for single stage / two stage designs will be approx. double.

For more details, please contact us.

Spare Parts

As a part of our after sales service policy, we ensure availability of consumables and spare parts at all our dealer outlets, in adequate quantity. In the interest of safety, customers are advised to use only genuine KIRLOSKAR branded consumables and spares.

Testing
All KIRLOSKAR compressors are mechanically tested for its guaranteed performance in our shop having extensive test facilities as per IS - 5456 standard. The prototypes are run to their limits and submitted to a series of tests to ensure that they are robust. Before leaving the factory, each and every compressor undergoes performance and functioning tests.

Customer Service
Highly skilled team of engineers is available to provide emergency engineering and service support at short notice in any part of India.

On-site commissioning is carried out under the supervision of experienced Commissioning Engineers who continues to provide advice and assistance on customer request during and after warranty period.

Applications

INSTRUMENT AIR	:	Light & Heavy Engg., Chemical & Petro-chemical, Food Industry, Paper & Pulp, Fertilizer, Sugar, Textile, Iron & Steel, Cement, Copper & Zinc, Power Plants, Oil & gas, Pharma, Refinery etc.
SERVICE AIR	:	Mining, Construction and Civil Engg., Light & Heavy Engg., Chemical & Petro Chemical, Paper & Pulp, Shipyard & Port Trusts, Rubber, Glass, Textile, Iron & Steel, Automobile, Cement, Power Plants, Defence, Railways etc.
PROCESS AIR	:	Chemical & Petro-chemical, Breweries, Mines, Paper & Pulp, Fertilizer, Sugar, Refinery, Oil & Gas, etc.

Note : Since design and technology improvement is a continuous process with us, the above information / data is subject to change without notice.

Cat. No.: N27.210.000.612.00 09 2008

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A DEPARTMENT OF INDIAN REGISTER OF SHIPPING
MGMT.SYS. RvA C 071

Enriching Lives

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