

# Positive Displacement Air Blowers

**HR20,21,22,23** Blower Range:  
287-2432 (M<sup>3</sup>/HR)

## Based on Success

HR Blowers are one of the world's leading air blower manufacturers and have a reputation for quality, innovation and service.

### Design Features

The conservative load carrying capacity of the larger diameter rolling element bearings ensures an extended operating life.

Timing gear life is also extended by controlled lubrication systems.

The computer calculated impeller profiles ensure maximum volumetric efficiency with minimum absorbed power without sacrificing torsional rigidity.

The high rigidity of the impeller / shafts permits a higher pressure rise to be obtained than with other machines of comparable size.

The generous shaft diameter keeps drive stresses low.

Gear and shaft strength is substantially increased by the use of taper mounted gears which do not need keyways for location. Setting of the gear wheels to obtain correct timing of the impellers is simplified, a feature that facilitates field maintenance.

Precision ground and hardened steel gears are used to ensure smooth, silent running and accurate timing of the rotating impellers. A controlled lubrication system is provided to ensure efficient operation without waste of energy in the gearcase.

Specially designed rotary oil seals are used in the gearcase. This feature eliminates maintenance associated with the use of lip seals.

Design and manufacture is in accordance with metric standards.

### Use as an Exhauster

If used as an exhauster and dust or liquids could be drawn into the machine due to inadequate filtration, closed end rotors should be specified. This will minimise risk of loss of dynamic balance due to material inside the rotors.

### Specification

**CASING:** The cylinder and headplates are manufactured from cast iron. The gearcase is manufactured from aluminium.

**IMPELLERS AND SHAFTS:** The impellers are made from SG iron, and cast with integral shafts. The shaft diameter of machines in the HR Blowers range is larger than that of earlier designs, enabling increased operating pressures to be achieved without increasing blower size.

**GEARS:** The precision ground and hardened steel spur gears are taper mounted onto the impeller shafts. The timing of the impellers relative to each other is accurately maintained at all times.

**BEARINGS:** The bearings are of generous proportions to give long operational life. Grease lubricated double row ball bearings are used at the drive end of the blower. In addition to their normal duty of carrying radial loads associated with the differential air pressure on the rotating impellers, the ball bearings provide axial location of the impellers. Parallel roller bearings at the rear end splash lubrication by oil from the gears.

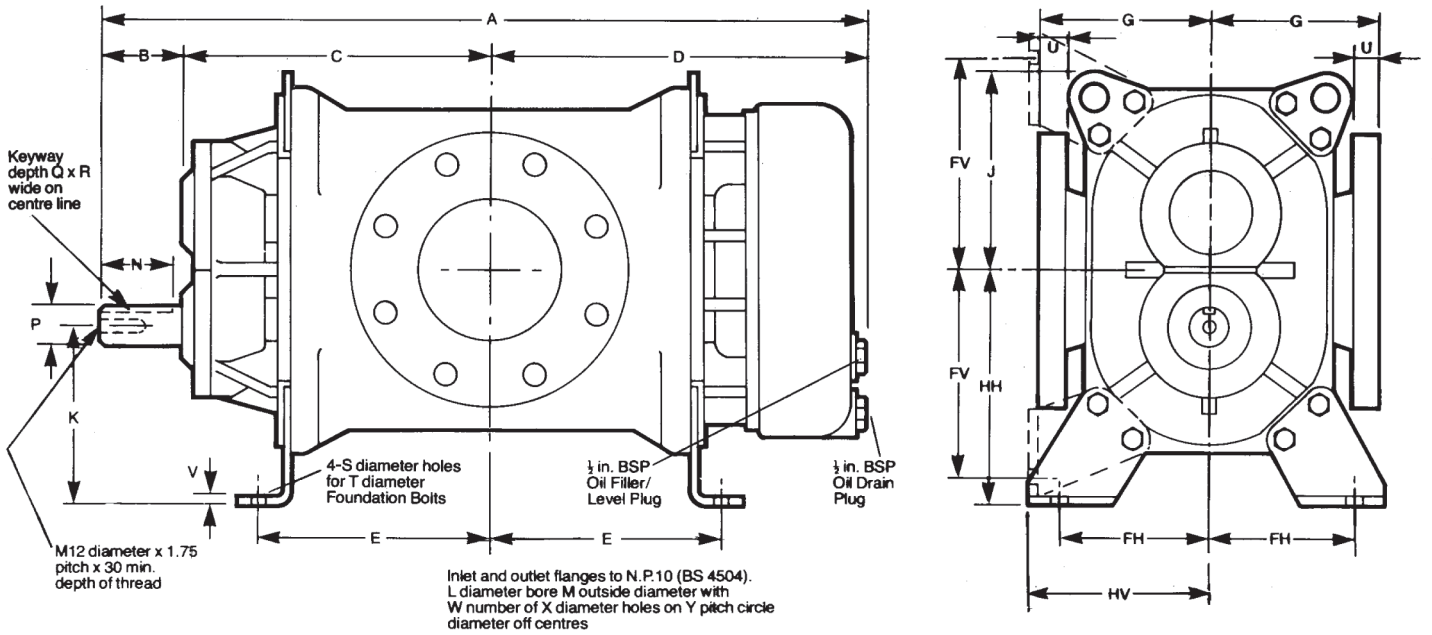
**LUBRICATION:** An advanced design of controlled gear wheel lubrication enables the gears to operate at a high pitch line velocity without the need for an oil pump. Simple, maintenance free oil throwers fitted behind each bearing in the gearcase prevent leakage of oil.

**DIRECTION OF ROTATION:** Detachable mounting feet enable the blower to be positioned for either vertical or horizontal air flow. Standard machines have a right hand drive shaft for vertical air flow, and a bottom drive shaft for horizontal air flow. If machines are required with a left hand or top drive shaft, all that needs to be done is turn the gearcase and trough through 180°. Centre timing permits clockwise or anti-clockwise drive shaft rotation.



### User Benefits

- The delivered air is guaranteed to be oil free because internal lubrication is unnecessary, and because all HR Blowers Positive Displacement Air Blowers are constructed with air gaps which completely isolate bearing and gear lubrication from the compression chamber.
- Noise levels are kept to a minimum. Mechanical noise levels have been reduced by the running accuracy of the taper mounted gears. Air noise is reduced by carefully designed air ports and the elimination of resonant unbraced surfaces.
- The blower can be installed for either vertical or horizontal air flow simply by repositioning the mounting feet. Installation costs can be reduced by versatility of mounting arrangement.
- The generous diameter of the drive shaft permits the use of V-belt drives without the need for a double outer bearing.
- Air blowers can also be used as air exhausters. Performance charts on application.



Dimensions

Size	Horizontal Flow					Vertical Flow					All dimensions in millimetres															
	A	B	C	D	E	F <sub>H</sub>	H <sub>H</sub>	E	F <sub>V</sub>	H <sub>V</sub>	G	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y
HR20	525	83	190	253	113	150	220	113	195	175	173	193	157.5	125	250	80	35.018/35.002	5.0/5.2	9.964/10.00	14	12	23	6	8	18	210
HR21	600		227	290	150			150																		
HR22	700		277	340	200			200																		
HR23	790		322	385	245			245																		

Blower Performance

HR Size	Speed rpm	300 mbar		500 mbar		700 mbar		1000 mbar	
		M <sup>3</sup> /HR	kW	M <sup>3</sup> /HR	kW	M <sup>3</sup> /HR	kW	M <sup>3</sup> /HR	kW
20	3260	953	10.8	914	17.0	884	23.1	846	32.4
	3000	865	10.0	826	15.6	796	21.3	758	29.8
	2700	763	9.0	725	14.1	694	19.2	656	26.8
	2300	627	7.6	589	12.0	558	16.3	521	22.8
	1900	492	6.3	453	9.9	423	13.5	385	18.9
	1500	356	5.0	317	7.8	287	10.6	—	—
21	3260	1362	14.8	1307	23.6	1264	32.4	1210	45.6
	3000	1236	13.6	1181	21.7	1138	29.8	1084	42.0
	2700	1091	12.2	1036	19.5	992	26.8	939	37.7
	2300	897	10.4	842	16.6	799	22.8	745	32.1
	1900	703	8.6	648	13.7	605	18.9	551	26.6
	1500	509	6.8	454	10.8	411	14.9	—	—
22	3260	1923	20.1	1850	32.4	1792	44.7	—	—
	3000	1746	18.5	1673	29.8	1615	41.1	—	—
	2700	1543	16.6	1470	26.8	1412	37.0	—	—
	2300	1271	14.2	1198	22.8	1140	31.5	—	—
	1900	1000	11.7	927	18.9	869	26.0	—	—
	1500	728	9.2	655	14.9	598	20.6	—	—
23	3260	2432	24.8	2344	40.3	Maximum pressure rise for size 23 is 550 mbar. See performance chart for details.			
	3000	2210	22.8	2122	37.0				
	2700	1954	20.5	1867	33.4				
	2300	1613	17.5	1525	28.4				
	1900	1272	14.5	1184	23.5				
	1500	931	11.4	843	18.5				

The volume of air delivered is measured at inlet conditions of 15°C and 1013 mbar absolute

Weight

Net Weight	Size 20: 111kg Size 21: 124kg Size 22: 142kg Size 23: 158kg
------------	--

For accurate performance characteristics please contact HR Blowers