ROOTS Blowers & Vacuum Pumps

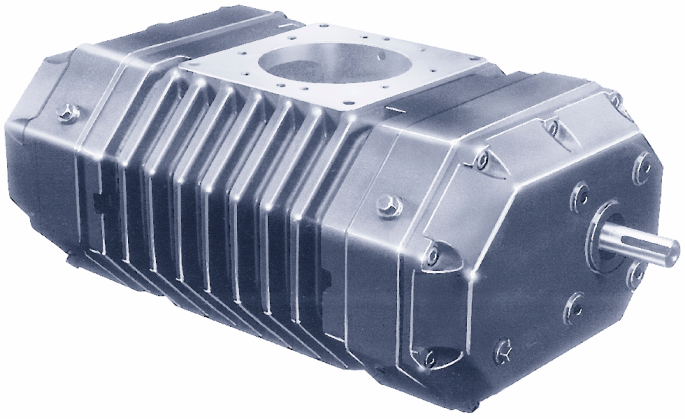
DRESSER

HV SERIES

VACUUM BOOSTER PUMPS **SIZES HV500–5000**

Design Features

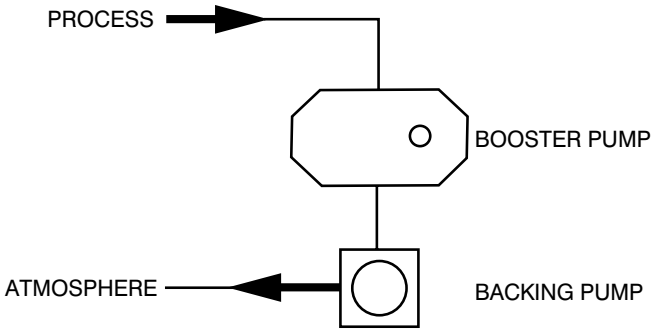
- Wide range of sizes
- Compatible with all types of backing pump
- Ultimate pressures better than 5 x 10^{-3} millibars
- Horizontal or vertical gas flow
- Compact, robust design
- Flange-mounted motor or vee-belt drive
- 50 Hz or 60 Hz operation



Options Available

- Internally-sealed model prevents gas contamination
- Ultimate pressures better than 1 x 10^{-3} millibars
- Internal nickel plating provides high corrosion resistance
- Oil coolers for high temperature applications
- Inlet and outlet flange adaptors available
- Base frame available

TYPICAL ARRANGMENT OF PUMPING SET



Installation Arrangements

The HV range of vacuum booster pumps is very adaptable in installation.

- Boosters can be supplied bare shaft so that a vee-belt drive can be fitted to facilitate precise pumping speeds.
- For compactness, a flange-mounted, direct coupled electric motor can be fitted.
- Boosters up to HV5000 can be supported by sufficiently rigid pipework.
- Alternatively, boosters can be mounted on base rails.
- Choice of vertical flow with pipe connections top and bottom or horizontal flow with pipe connections at the sides.

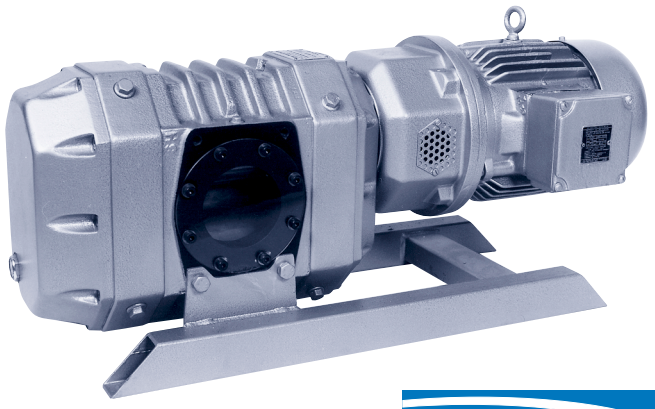
Applications

- Vacuum packaging
- Metalizing
- Metal casting
- Vapour recovery
- Industrial lasers
- Distillation
- Process engineering
- Solvents recovery

Capacities

Booster Size	2880 RPM (50 Hz)		3450 RPM (60 Hz)		Weight	Recommended
	M³/hr	CFM	M³/hr	CFM	(kg)	Motor Size
HV 500	500	300	600	350	60	2.2
HV 700	700	400	800	470	79	3
HV 1000	1000	580	1200	700	98	3
HV 1250	1250	725	1500	875	112	4
HV 2000	2000	1150	2400	1400	163	5.5
HV 3000	3000	1750	3500	2000	250	7.5
HV 4000	4000	2300	4800	2750	290	11
HV 5000	5000	3000	6000	3500	315	15

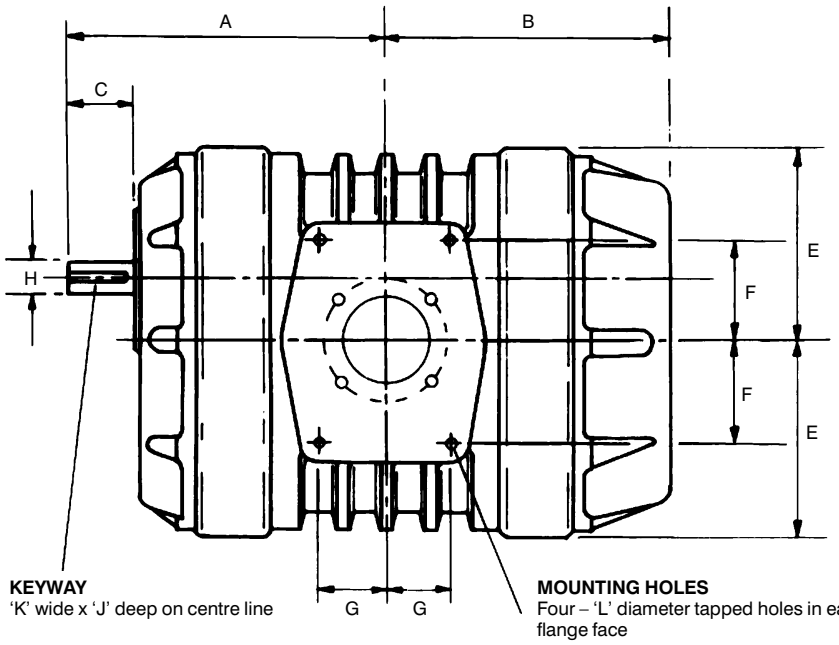
Capacities are approximately proportional to rotational speed. Eg; a 10% reduction in rpm will result in a 10% reduction in capacity. Maximum speed for 500 – 5000 boosters is 3450 rpm



DRESSER
Measurement

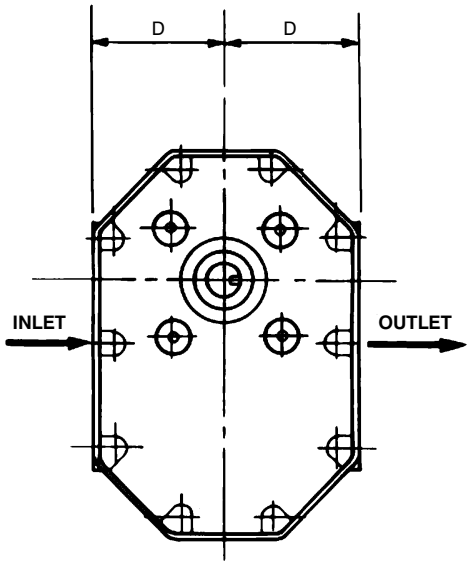
NOTE: Clockwise rotation viewed on shaft end

For Horizontal Flow (as shown) Top Shaft Drive
For Vertical Flow (downwards) Right Hand Shaft Drive



KEYWAY
'K' wide x 'J' deep on centre line

MOUNTING HOLES
Four – 'L' diameter tapped holes in each flange face



INLET† 'M' dia. bore with 'N' number of 'P' dia. tapped holes on 'Q' pitch circle dia. "off centres"

OUTLET† 'R' dia. bore with 'S' number of 'T' dia. tapped holes on 'U' pitch circle dia. "off centres"

† Inlet and Outlet facings are to ISO vacuum standard

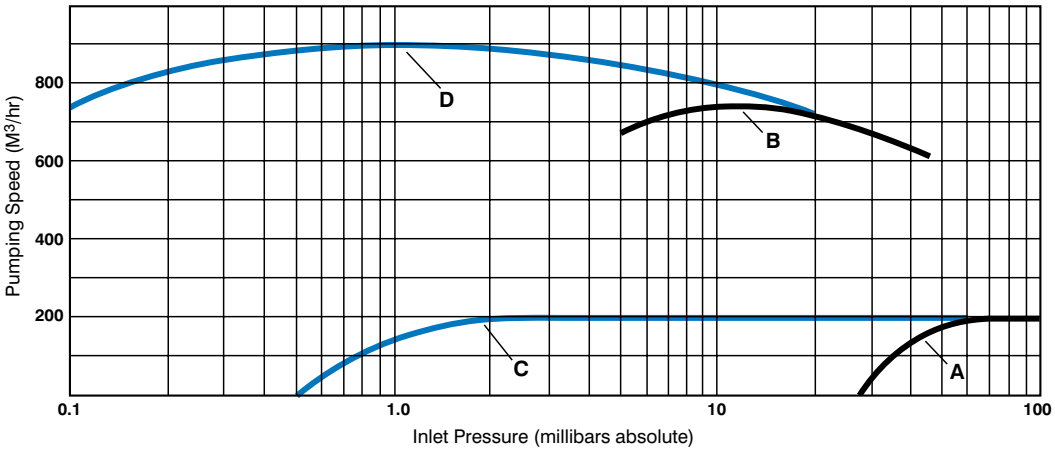
Dimensions

Booster Size	A	B	C	D	E	F	G	*H (J6)	J nominal	K nominal	L	M	N	P	Q	R	S	T	U
HV 500	235	220	50	110	160	75	55	28	4.0	8.0	M12	70	4	M8	110	70	4	M8	110
HV 700	260	245	50	110	160	85	55	28	4.0	8.0	M12	102	8	M8	145	70	4	M8	110
HV 1000	305	290	50	110	160	100	100	28	4.0	8.0	M12	153	8	M10	200	102	8	M8	145
HV 1250	340	325	50	110	160	100	100	28	4.0	8.0	M12	153	8	M10	200	102	8	M8	145
HV 2000	360	340	50	135	198	100	100	28	4.0	8.0	M12	153	8	M10	200	102	8	M8	145
HV 3000	398	348	75	170	250	135	115	45	5.5	14.0	M16	153	8	M10	200	102	8	M8	145
HV 4000	468	418	75	170	250	135	135	45	5.5	14.0	M16	261	12	M10	310	153	8	M10	200
HV 5000	525	475	75	170	250	135	135	45	5.5	14.0	M16	261	12	M10	310	153	8	M10	200

* ISO Shaft tolerances BS4500: Part 1: 1969

Performance

A vacuum booster pump does not have a performance of its own. It is used to extend the performance of the backing pump with which it is combined. The performance of the combination (pumping set) depends on the characteristics of the backing pump. An example of this is given in the diagram below, where the performance of the same HV 1000 booster pump is seen to be very different when backed by a liquid ring pump, from its performance when backed by an oil sealed vane pump. When properly matched with an appropriate backing pump, a Roots type vacuum booster pump can be expected to have an actual pumping speed of between 70 and 85 per cent of its rated maximum capacity.



A – Performance of liquid ring backing pump.

B – Performance of booster pump HV1000 backed by liquid ring pump.

C – Performance of oil sealed vane type backing pump

D – Performance of booster pump HV1000 backed by vane type pump.

The original **ROOTS** *blower*™

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Measurement

ROOTS Blowers & Vacuum Pumps

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HV SERIES

VACUUM BOOSTER PUMPS **SIZES HV7000 & 13000**

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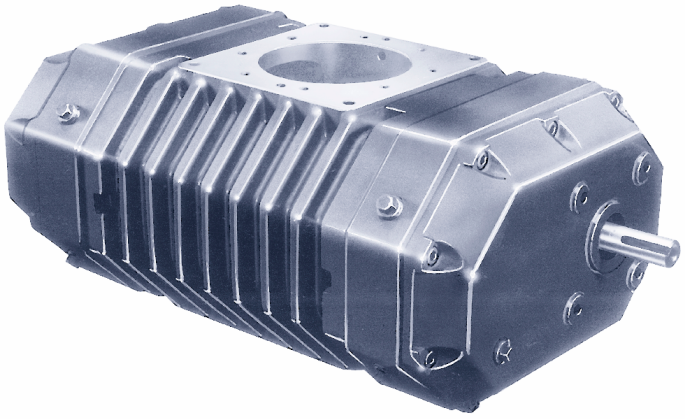

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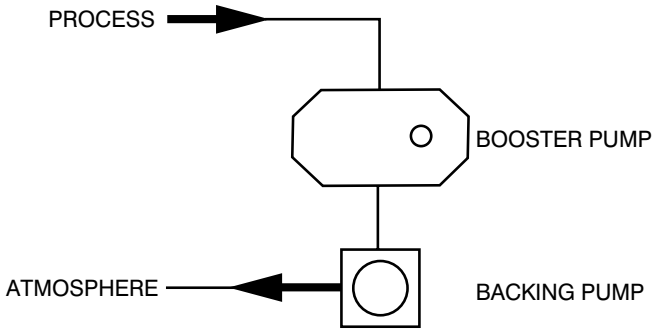

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- For compactness, a flange-mounted, direct coupled electric motor can be fitted.
- Boosters can be mounted on base rails.
- Choice of vertical flow with pipe connections top and bottom or horizontal flow with pipe connections at the sides. The HV 13000 is traditionally installed for horizontal flow.

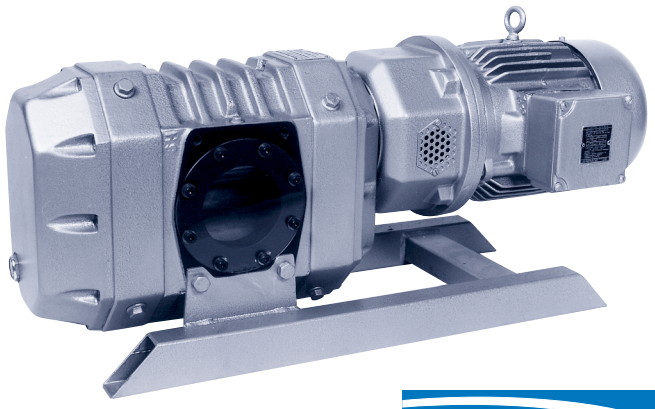
Applications

- Vacuum packaging
- Metalizing
- Metal casting
- Vapour recovery
- Industrial lasers
- Distillation
- Process engineering
- Solvents recovery

Capacities

Booster Size	2080 RPM (50 Hz)		2300 RPM (60 Hz)		Weight (kg)	Recommended Motor Size
	M^3/hr	CFM	M^3/hr	CFM		
HV 7000	7000	4120	7600	4473	711	15
Booster Size	**1480 RPM (50 Hz)**		**1780 RPM (60 Hz)**			
	M^3/hr	CFM	M^3/hr	CFM		
HV 13000	12700	7650	15200	8946	1510	18.5

Capacities are approximately proportional to rotational speed. Eg; a 10% reduction in rpm will result in a 10% reduction in capacity.



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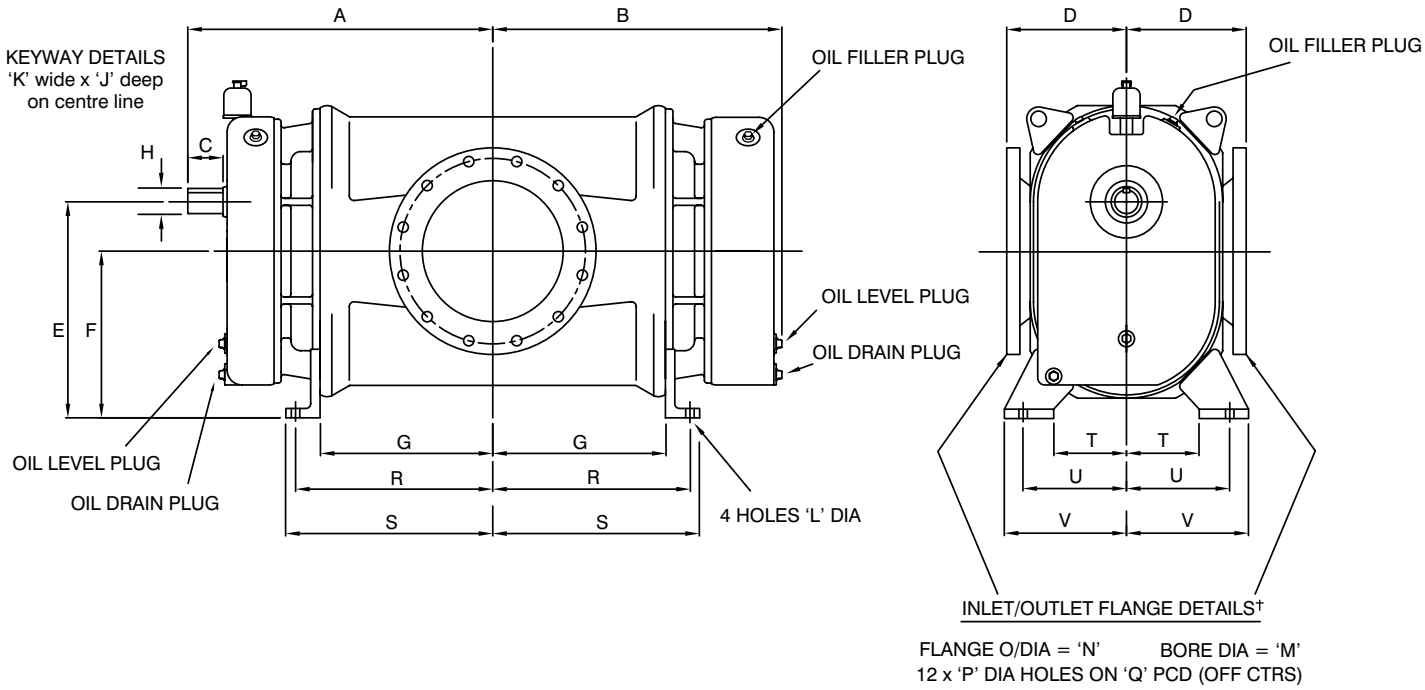
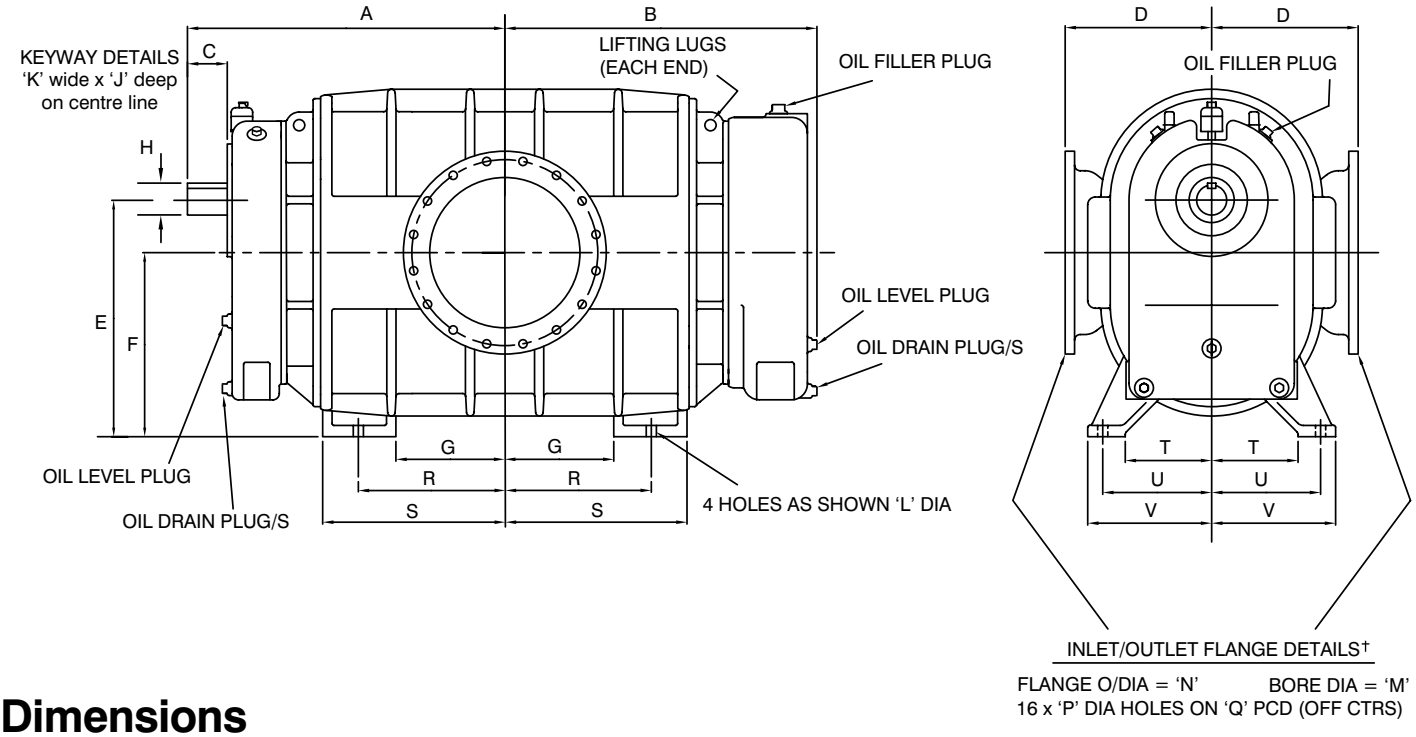
HV7000



HV13000



Dimensions

Booster Size	A	B	C	D	E	F	G	*H (J6)	J nominal	K nominal	L	M	N	P	Q	R	S	T	U	V
HV 7000	650	616	75	255	460	355	368	50	5.5	14	18	300	440	22	395	420	443	155	220	260
HV 13000	845	830	105	390	630	490	290	80	9	22	27	400	540	22	495	390	485	230	290	330

* ISO Shaft tolerances BS4500: Part 1: 1969. † Inlet and Outlet facings are to ISO vacuum standard.

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