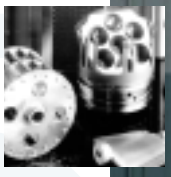
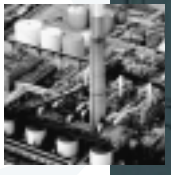
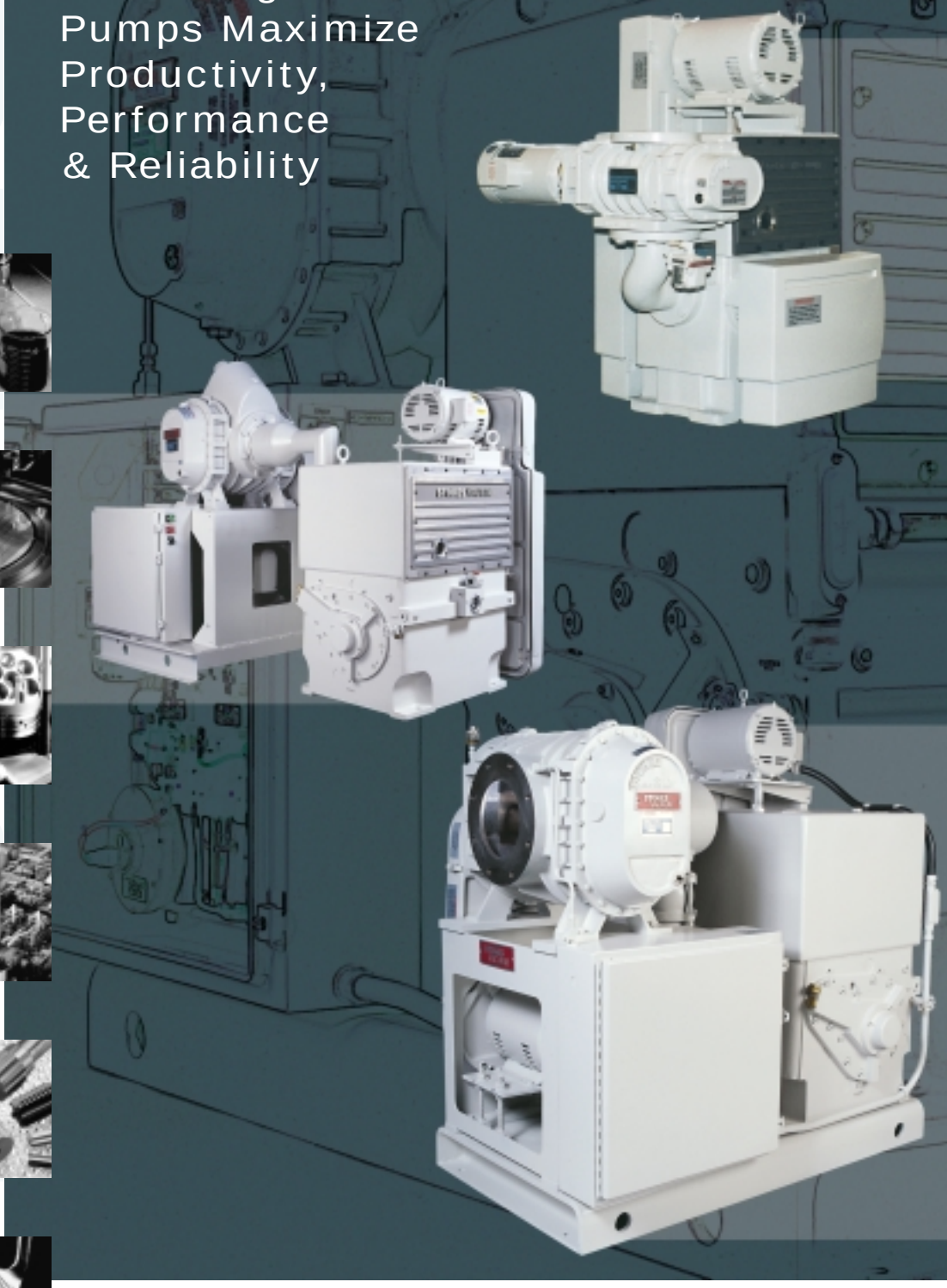
BULLETIN 536-J

Stokes High-Capacity Multi-Stage Vacuum Pumps Maximize Productivity, Performance & Reliability







STOKES® VACUUM Inc.

Stokes®
High-Capacity Pumping Systems Deliver Industry's Best Price-Performance Value

Today's globally competitive manufacturing environment demands peak performance, productivity and uptime. And that's exactly what Stokes Vacuum's in-depth industry knowledge and technical experience adds up to — when you put over a century of real world, field proven technology and know-how to work for you. You'll realize the benefits in the form of the best price performance value the industry has to offer–the Lowest Cost Life Cycle $(LC)^2$ for your operation. Just one glance at the features, benefits, performance and world-class support will show you why Stokes is synonymous with performance and dependability.

Unsurpassed Performance, Productivity

Stokes multistage vacuum systems combine a high-capacity dry-lobe blower with a MICROVAC® single stage vacuum pump. This combination delivers the high capacity needed to achieve faster pump downs. Additionally, these productive pumping systems achieve this task more cost effectively than large, single stage pumps. In fact, depending on the specific application, they can improve blank-off by a factor of ten over large, single stage pumps.

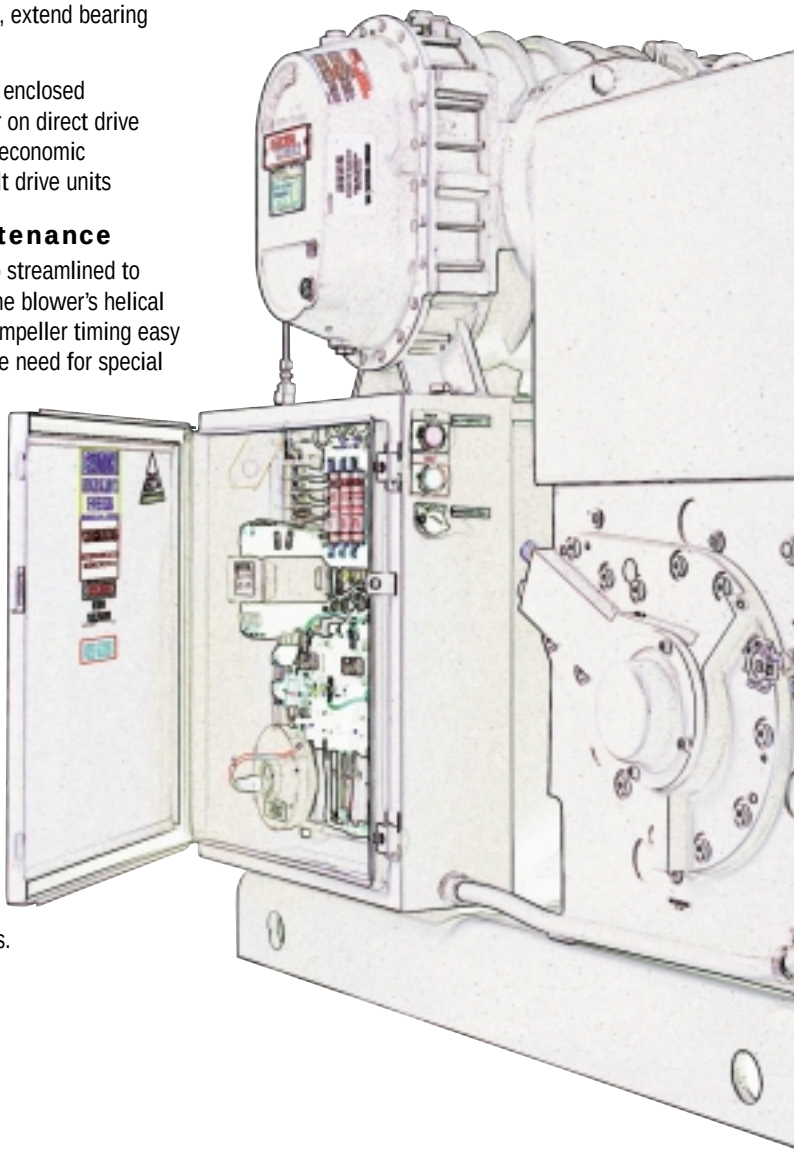
Rugged, Reliable Operation

Every design consideration, feature and detail is thoroughly engineered to maximize uptime and extend operating life. Following are just a few features that testify to the integrity of these rugged multistage vacuum systems.

- Efficient design time proven to deliver ease of maintenance
- Robust cast and ductile iron construction
- Hardened replaceable shaft sleeve enhances wear resistance
- Application specific seals maximize resistance to heat and corrosion while providing protection from gas stream oil contamination
- Oversized antifriction bearings, and water-cooled bearing housing on large blowers, extend bearing and seal life
- Standard, totally enclosed fan-cooled motor on direct drive units provide an economic alternative to belt drive units

Simple Maintenance

Maintenance is also streamlined to maximize uptime. The blower's helical gear design makes impeller timing easy while eliminating the need for special tools, dowels or pins. The oil injection option allows Clean-In-Place (CIP) operations by injecting oil into the blower inlet, removing oil soluble contaminants and solids from the lobes without disassembly. Accessories such as intake filters and vacuum pump oil purifiers extend operating cycles between oil changes.

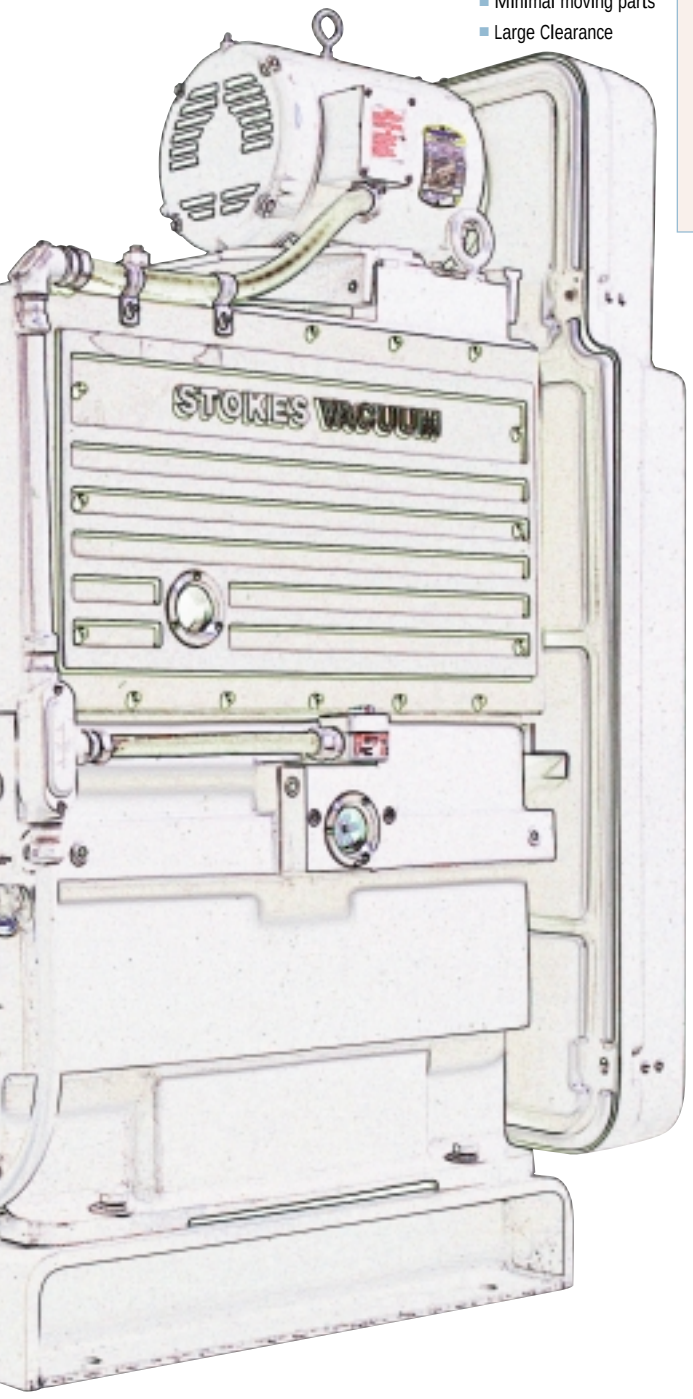


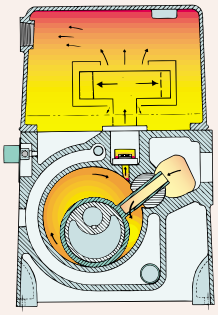


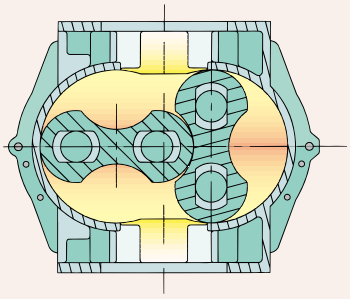



Efficient Design Maximizes Uptime

- Minimal moving parts
- Large Clearance

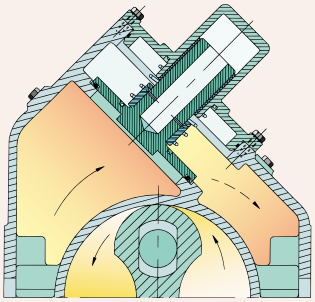






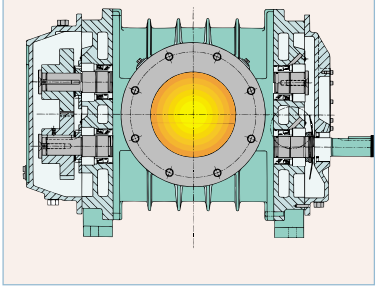
Bypass Technology Option

- Reduces pump down time for increased productivity
- Provides consistent, reproducible processing by eliminating the need for a pressure switch



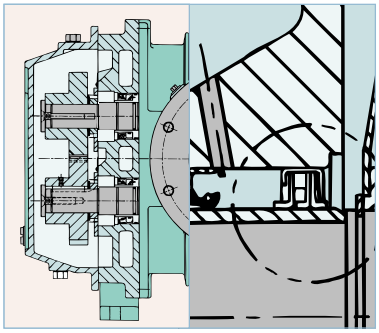
Oversized Antifriction Bearings/Water Cooled Bearing Housings

- Extend bearing and seal life



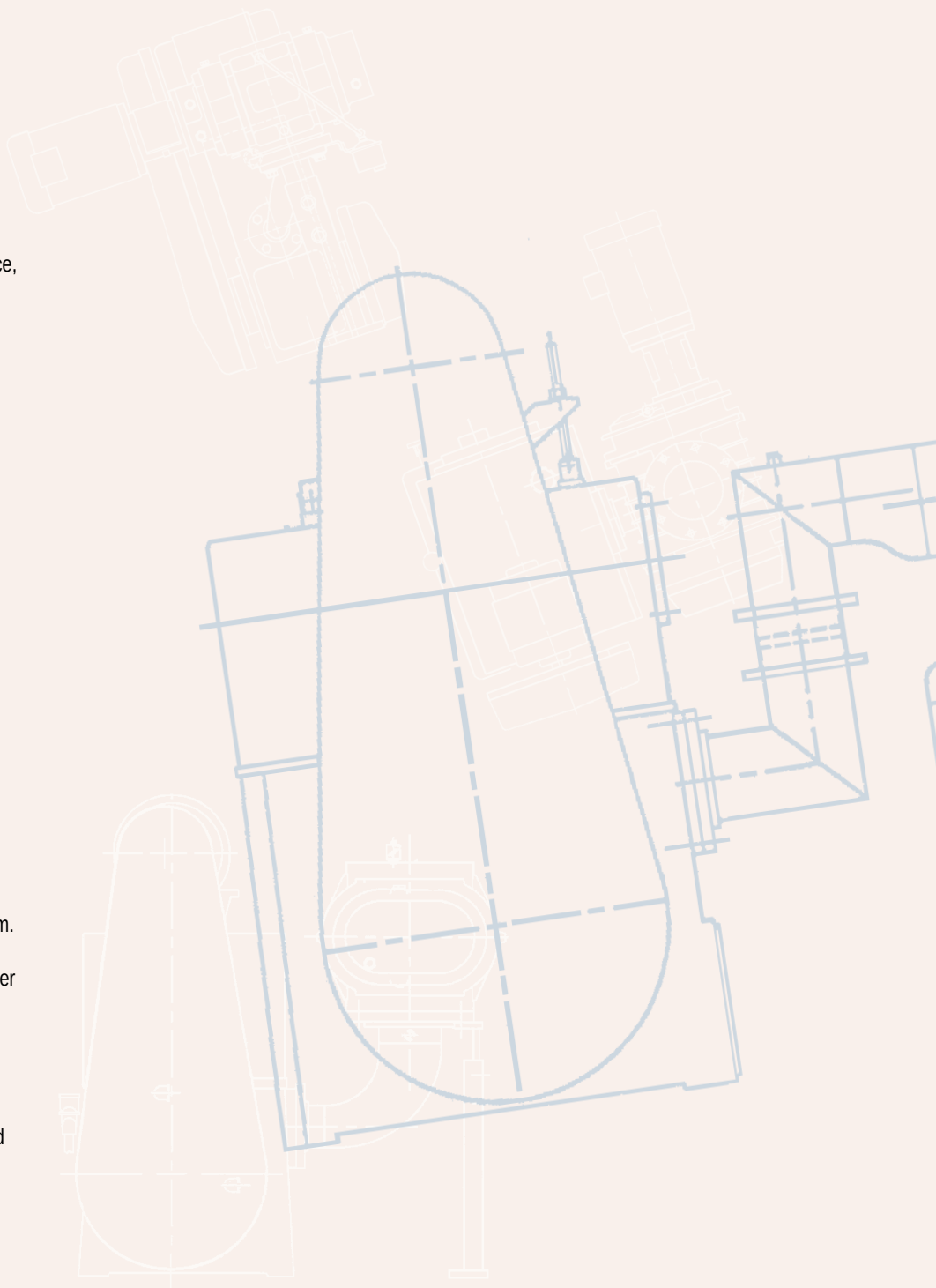
Application Specific Seals

- Maximize resistance to heat and corrosion
- Protect system from gas stream oil contamination



Vacuum Expertise And Technology Assure Optimal Price–Performance Value For Your Specific Application

Whether you operate at low pressures (1 x 10^{-2} torr), handle large gas loads at low pressures, or need increased capacity for your existing pumping systems, Stokes engineers will help you meet your objective. Only Stokes offers you the in-depth industry knowledge, technical experience, and a comprehensive range of sizes, configurations and options to deliver the optimal price performance value.



Pump-down And Calculation of Evacuation (PACE) Program

Stokes has developed proprietary software to insure the optimal price/performance value for your specific application. Stokes engineers apply the program to facilitate initial equipment recommendations, while insuring the best system for your particular production environment.

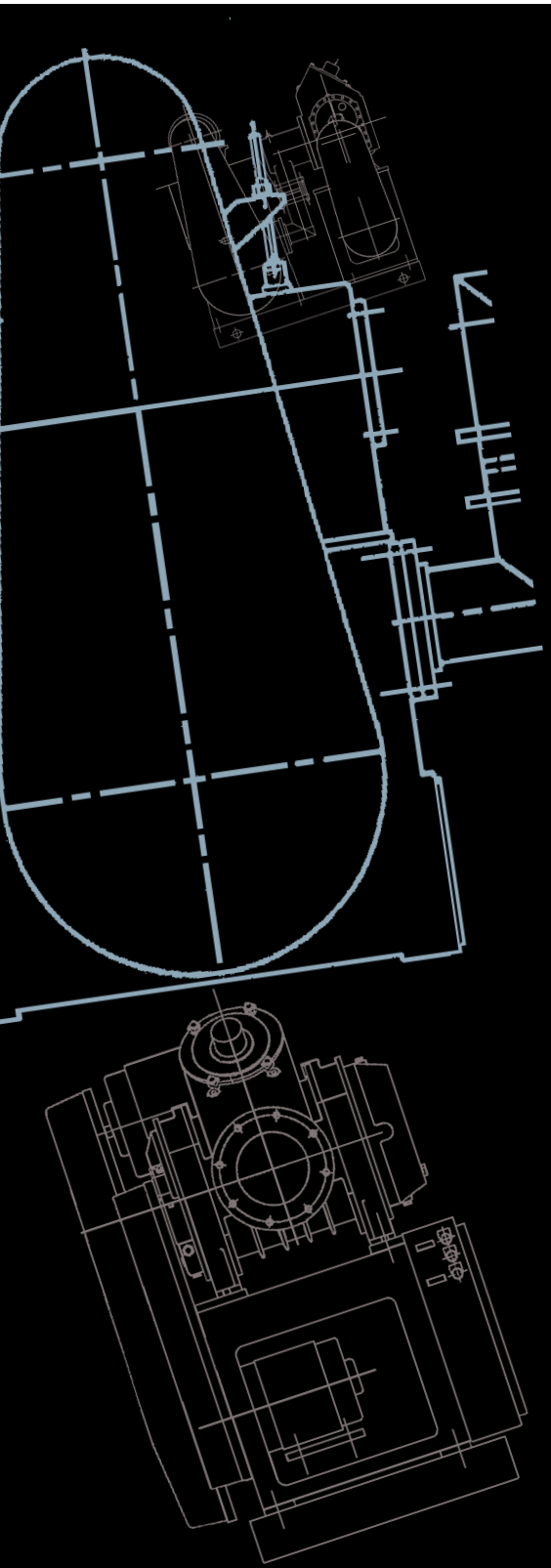
True Technology Transfer

Whether you need to increase the capacity of your existing system or achieve peak performance for a new installation, Stokes makes taking advantage of the latest technology easy. All Stokes high-capacity multi-stage pumping systems are compatible with any make or type of vacuum system. Additionally, Stokes can provide CAD drawings of standard models on computer disk to further enhance and streamline your system design efforts.

Simplified Maintenance and Part Ordering

A detailed instruction manual is shipped with every Stokes system. The easy-to-follow manual provides system schematics complete with clear part number labeling.

World-Class Support Translates Into Industry's Lowest Cost Life Cycle $(LC)^2$ In Any Language



Around the corner or around the world, Stokes has become synonymous with performance and dependability. A reputation established as much by its world-class service as the performance and dependability of its vacuum equipment. Here's why...

Exclusive Two-Year Warranty

This comprehensive line of high-capacity pumping systems is designed to stand up to even your most demanding vacuum requirements. A two-year warranty is just another reason Stokes is known as the industry's work-horse.

Extensive Inventory of Genuine Stokes Original–Equipment Parts

To maximize your uptime, Stokes stocks over 10,000 parts and specially priced repair kits to keep your systems operating like new. Why take a chance on imitations? After all, countless engineering and quality control measures go into designing every part on your Stokes equipment. Insist on the best — insist on genuine Stokes parts.

Strategically Located Service Centers

Stokes maintains strategically located Service Centers throughout the world. Simply ship your equipment to one of these centers and we'll refurbish it like new and return it to you quickly and efficiently. We also have pumps and accessories available for same day delivery on a rental or exchange basis. We even back our service with a minimum 18-month warranty.

Expert Field Service

Complementing Stokes Service Centers is a complete staff of factory-trained field-service engineers to get you up and running quickly.

Custom-Tailored Support Programs

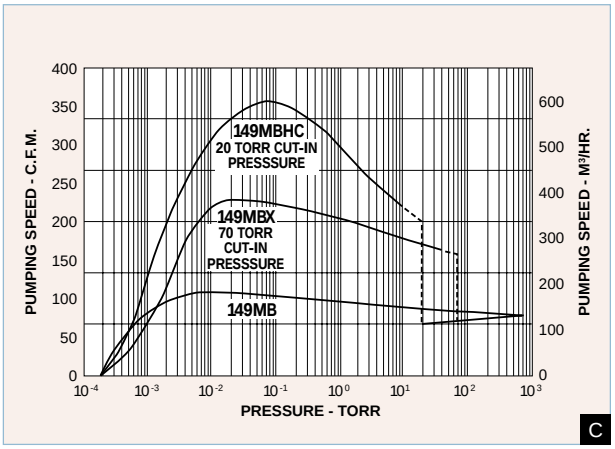
Stokes offers a full range of custom support programs designed to maximize the uptime and performance of your vacuum equipment. Stokes can help you select the best mix of services for your specific needs — from equipment set-up and training sessions, to maintenance courses and full preventive maintenance programs.

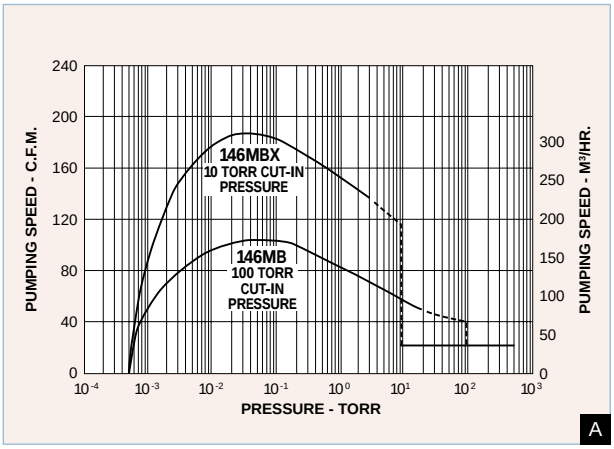
On-Going Technical Support

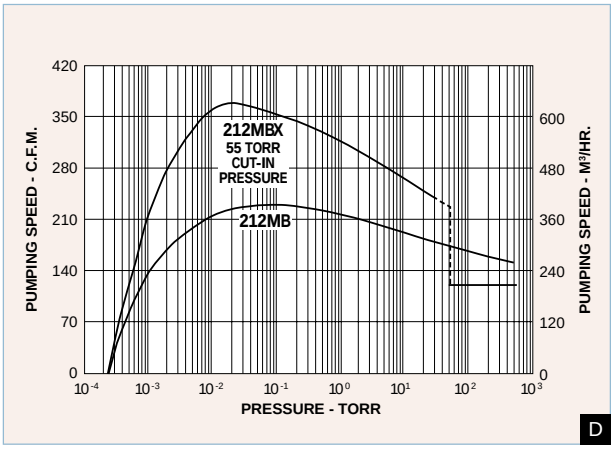
At Stokes we understand that your main focus is your process, not your processing equipment. As your silent partner, Stokes encourages you to call us with any and all of your questions. Experience has shown that, in most cases, our technical staff can pinpoint and solve your problem quickly and efficiently over the phone.

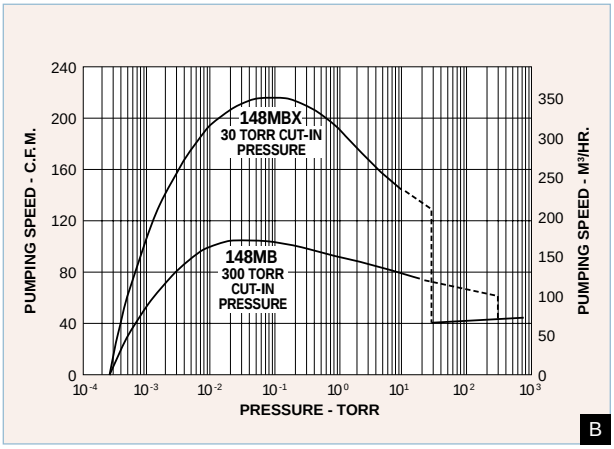
Stokes®
High-Capacity Multi-Stage Vacuum System
Performance Speaks for Itself

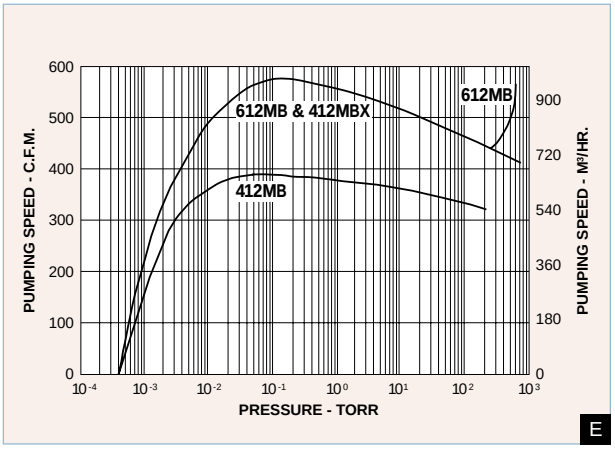
Here are just a few examples of the performance you can expect from Stokes. Just give us a call and we'll be glad to provide a curve for your specific application.





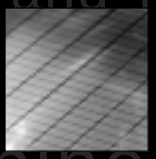






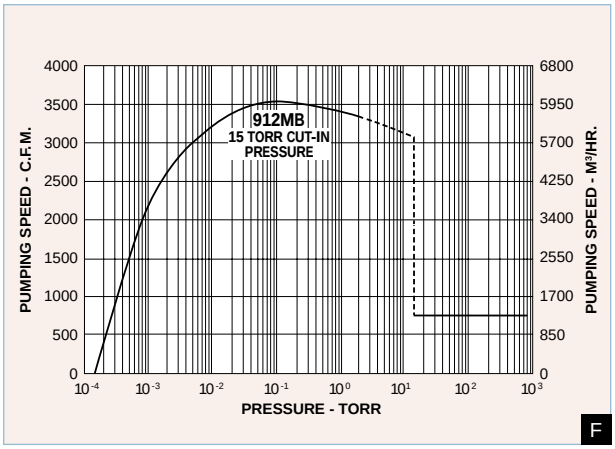




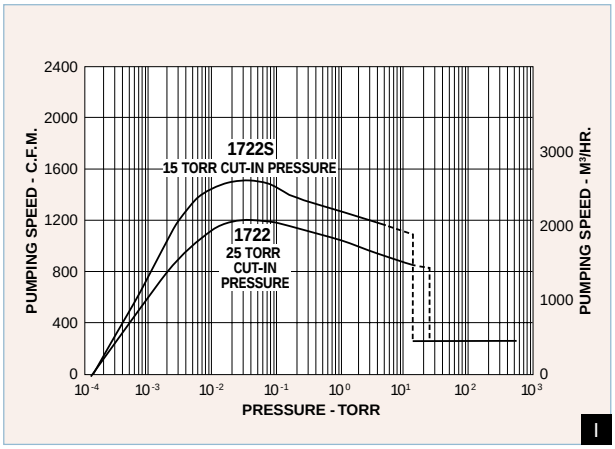



Refineries

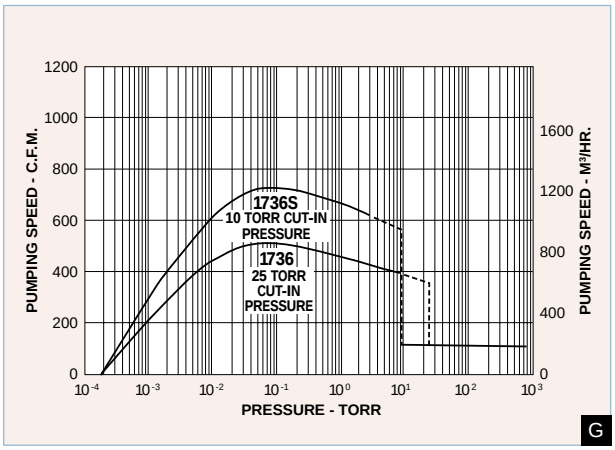
Turbine Blades



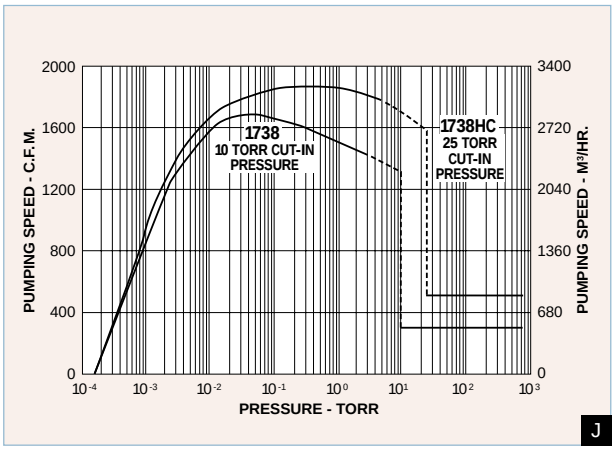
F



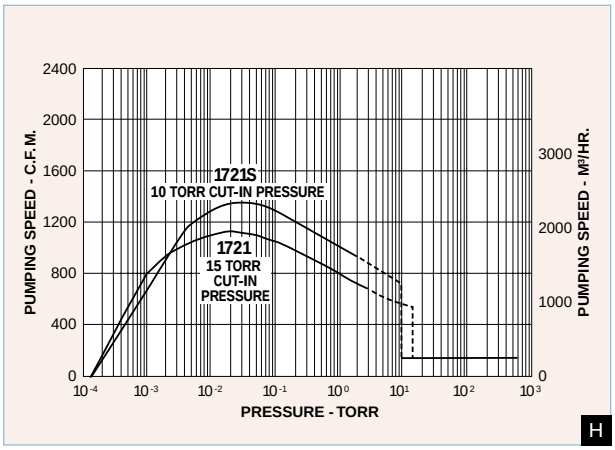
I



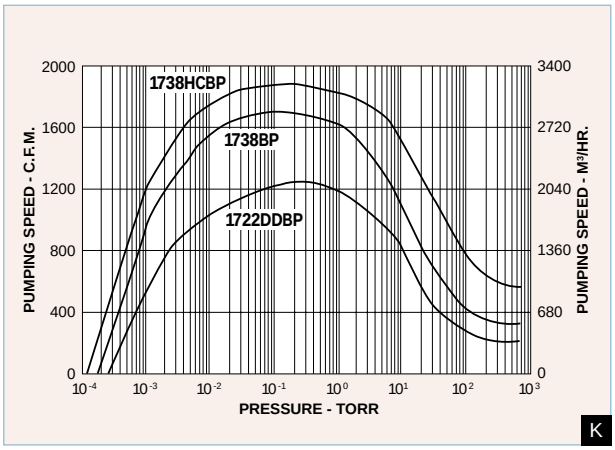
G



J



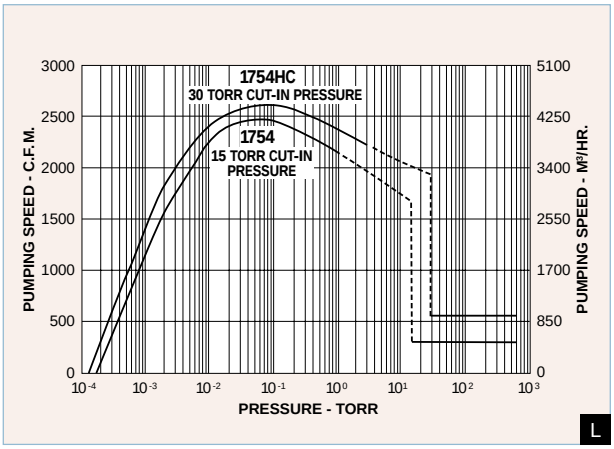
H

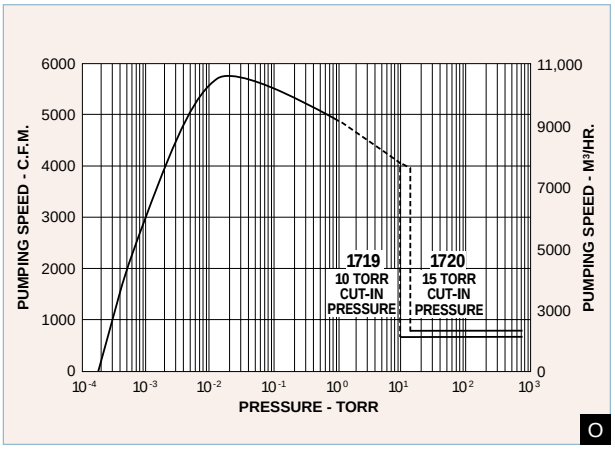


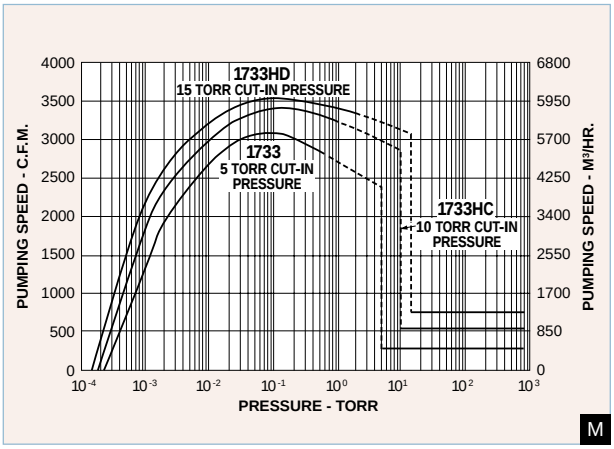
K

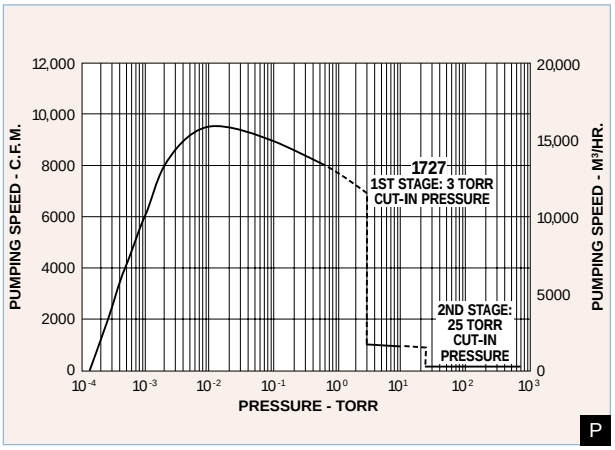
Stokes®

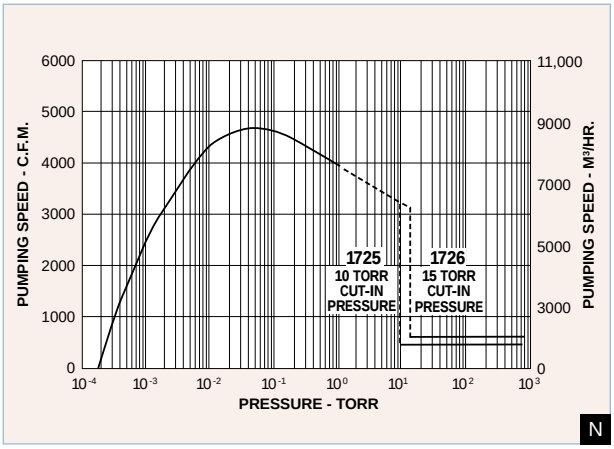
Performance Continues

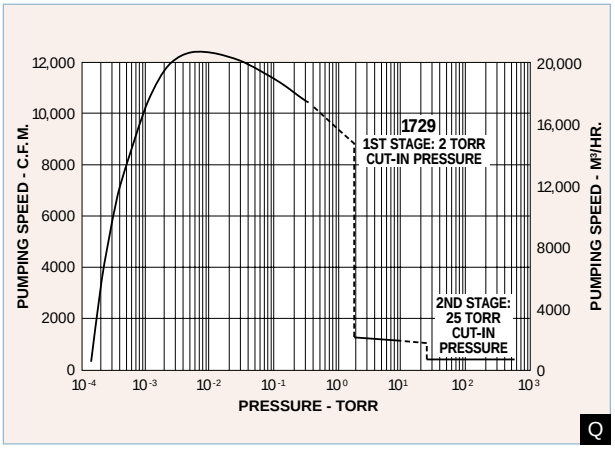












Series MB Mechanical Booster Pump Specifications Chart

MODEL NO.		146 MB	146 MBX	148 MB	148 MBX	149 MB	149 MBX	149 MBHC	212 MB	212 MBX	412 MB	412 MBX	612 MB	912 MB
FIRST STAGE	CFM	125	245	125	245	125	245	400	245	400	400	612	612	3840
DISPLACEMENT	M^3/H	212	416	212	416	212	416	680	416	680	680	1040	1040	6528
SECOND STAGE	CFM	30	30	50	50	80	80	80	150	150	300	300	300*	730
DISPLACEMENT	M^3/H	50	50	85	85	135	135	135	255	255	510	510	510	1240
FIRST STAGE	HP	1.5	2.0	1.5	2.0	1.5	2.0	2.0	5.0	2.0	2.0	20.0	20.0	30.0
DIRECT DRIVE	KW	1.1	1.5	1.1	1.5	1.1	1.5	1.5	3.7	1.5	1.5	14.9	14.9	22.4
SECOND STAGE	HP	1.5	1.5	2.0	2.0	3.0	3.0	3.0	7.5	7.5	10.0	10.0	—	30.0
BELT DRIVE	KW	1.1	1.1	1.5	1.5	2.2	2.2	2.2	5.6	5.6	7.5	7.5	—	22.4
OPERATION FROM ATMOSPHERE WITHOUT PRESSURE SWITCH		NO	NO	NO	NO	YES	NO	NO	YES	NO	YES	YES	YES	NO
BLOWER CUT-IN PRESSURE (TORR)		100	10	300	30	760	70	20	760	55	760	760	760	15
CONTINUOUS OPERATION PRESSURE LIMIT		20	3	20	10	—	40	10	35	—	—	—	—	3
INLET CONNECTION	IN	3	3	3	3	3	3	4	3	4	4	6	6	8
ASA FLANGE	MM	76	76	76	76	76	76	102	76	102	102	152	152	203
EXHAUST CONNECTION	IN (IPS)	1.25	1.25	1.50	1.50	1.50	1.50	1.50	2.00	2.00	3.00	3.00	4.00	5 (FLG)
NPT	MM	32	32	38	38	38	38	38	51	51	76	76	102	127
MAX. COOLING WATER	GPM		AIR COOLED			1.0	1.0	1.0	1.5	1.5	2.0	3.0	3.0	8.0
CONSUMPTION	LPM	—	—	—	—	3.79	3.79	3.79	5.68	5.68	7.57	11.36	11.36	30.30
ELECTRICAL CHARACTERISTICS		STANDARD IS 230/460/60/3: DIRECT DRIVE MB PUMPS DELIVER 5/6TH CFM ON 50 CYCLE OPERATION												
FIRST STAGE	GAL	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	1.16	1.16	1.16
OIL REQUIREMENTS	LITER	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	4.38	4.38	4.38
SECOND STAGE	GAL	0.5	0.5	1.25	1.25	2.5	2.5	2.5	4.0	4.0	12	12	12	20
OIL REQUIREMENTS	LITER	1.9	1.9	4.7	4.7	9.5	9.5	9.5	15.1	15.1	45.4	45.4	45.4	76
HEIGHT — OVERALL	IN	30.00	30.00	32.00	32.00	38.87	38.87	38.87	43.50	43.50	53.75	51.75	56.44	66.25
HEIGHT — OVERALL	MM	756	756	813	813	984	984	984	1130	1130	1365	1314	1434	1683
HEIGHT — TO INLET	IN	28.87	28.87	27.12	27.12	26.75	26.75	26.75	29.87	30.37	34.19	44.56	56.44	42.00
HEIGHT — TO INLET	MM	733	733	689	689	679	679	679	759	772	868	1132	1434	1067
LENGTH	IN	29.31	29.31	29.12	29.12	32.69	32.69	32.69	36.44	36.44	38.31	47.00	46.50	82.00
LENGTH	MM	745	745	740	740	830	830	830	926	926	973	1194	1181	2083
WIDTH	IN	31.62	32.62	31.62	32.62	31.62	32.62	36.62	35.75	36.62	40.25	55.69	40.25	68.50
WIDTH	MM	803	829	803	829	803	829	930	908	930	1022	1414	1022	1740
NET WEIGHT	LB	575	575	620	620	783	783	883	1250	1300	2100	2650	3200	6800
NET WEIGHT	KG	261	261	282	282	355	355	378	568	591	955	202	1451	3085

HC = Faster pump down capability
***612MB has built-in bypass**

Series 1700 Mechanical Booster Pump Specifications Chart

MODEL NO.			1736	1736 S	1721	1721 S	1722	1722 DD	1722 DDBP	1722 S	1738
	FIRST STAGE BLOWER	CFM	612	850	1300	1600	1300	1300	1300	1600	2000
		M^3/H	1040	1444	2209	2718	2209	2209	2209	2718	3398
DISPLACEMENT	MICROVAC® PUMP	CFM	150	150	150	150	300	300	300	300	300
		M^3/H	255	255	255	255	510	510	510	510	510
NORMAL CUT-IN PRESSURE		TORR	25	10	15	10	25	25	760	15	10
CONTINUOUS OPERATION PRESSURE LIMIT		TORR	8	3	3	2	15	15	15	8	3
DRIVE	FIRST STAGE	HP	3	3	7.50	10	7.50	10	10	10	10
		KW	2.24	2.24	5.60	7.46	5.60	7.46	7.46	7.46	7.46
	SECOND STAGE	HP	—	—	—	—	—	—	—	—	—
		KW	—	—	—	—	—	—	—	—	—
	FOREPUMP	HP	7.50	7.50	7.50	7.50	10	10	10	10	10
		KW	5.60	5.60	5.60	5.60	7.46	7.46	7.46	7.46	7.46
CONNECTIONS	SUCTION FLANGE	IN	6	6	8	8	8	8	8	8	8
		MM	152	152	203	203	203	203	203	203	203
	DISCHARGE	IN	2IPS	2IPS	2IPS	2IPS	3IPS	3IPS	3IPS	3IPS	3IPS
		MM	—	—	—	—	—	—	—	—	—
WATER	FIRST STAGE	GPM	1	1	1	1	1	1	1	1	1
REQUIREMENTS		LPM	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79
	SECOND STAGE	GPM	—	—	—	—	—	—	—	—	—
		LPM	—	—	—	—	—	—	—	—	—
	FOREPUMP	GPM	1.50	1.50	1.50	1.50	2	2	2	2	2
		LPM	5.68	5.68	5.68	5.68	7.57	7.57	7.57	7.57	7.57
OIL REQUIREMENTS	FIRST STAGE	GAL	1.16	1.16	0.62	0.62	0.62	0.62	0.62	0.62	0.62
		LITER	4.43	4.43	2.37	2.37	2.37	2.37	2.37	2.37	2.37
	SECOND STAGE	GAL	—	—	—	—	—	—	—	—	—
		LITER	—	—	—	—	—	—	—	—	—
	FOREPUMP	GAL	4	4	4	4	12	12	12	12	12
		LITER	15.1	15.1	15.1	15.1	45.4	45.4	45.4	45.4	45.4
HEIGHT	OVERALL	IN	47.87	47.87	49.62	49.62	56.62	51.75	51.75	56.62	56.62
		MM	1216	1216	1260	1260	1438	1315	1315	1438	1438
	TO INLET	IN	47.87	47.87	40.75	40.75	40.75	44.62	44.62	40.75	40.75
		MM	1216	1216	1035	1035	1035	1133	1133	1035	1035
LENGTH		IN	53.25	53.25	55.87	55.87	55.38	48.00	55.50	55.38	55.38
		MM	1353	1353	1419	1419	1407	1219	1410	1407	1407
WIDTH		IN	27.75	27.75	36.19	36.19	41.25	59.87	59.87	41.25	41.25
		MM	705	705	919	919	1048	1521	1521	1048	1048
NET WEIGHT		LB	1775	1775	2700	2700	3500	2780	2780	3600	3600
		KG	805	805	1225	1225	1588	1264	1264	1633	1633

BP = Bypass
HC & HD = Faster pump down capability
S = Higher-speed blower

1738 BP	1738 HC	1738 HCBP	1754	1754 HC	1733	1733 HC	1733 HD	1725	1726	1719	1720	1727*	1729*
2000	2000	2000	3000	3000	3840	3840	3840	5740	5740	7880	7880	10,600	13,950
3398	3398	3398	5100	5100	6528	6528	6528	9753	9753	13,390	13,390	18,020	23,704
300	600	600	300	600	300	600	730	600	730	600	730	300	300
510	1020	1020	510	1020	510	1020	1240	1020	1240	1020	1240	510	510
760	25	760	15	30	5	10	15	10	15	10	15	3.0 1ST	2.0 1ST
												25.0 2ND	25.0 2ND
—	5	—	1	3	0.6	1	1.5	1.2	1.3	0.8	1.1	0.55	0.45
15	10	15	20	25	20	30	30	30	30	40	40	40	50
11.20	7.46	11.20	14.91	18.64	14.91	22.37	22.37	22.37	22.37	29.83	29.83	29.83	37.29
—	—	—	—	—	—	—	—	—	—	—	—	7.50	7.50
—	—	—	—	—	—	—	—	—	—	—	—	5.60	5.60
10	2@10	2@10	10	2@10	10	2@10	30	2@10	30	2@10	30	10	10
7.46	14.91	14.91	7.46	14.91	7.46	14.91	22.37	14.91	22.37	14.91	22.37	7.46	7.46
8	8	8	8	8	8	8	8	12	12	14	14	18	18
203	203	203	203	203	203	203	203	305	305	356	356	457	457
3IPS	3IPS (2)	3IPS (2)	3IPS	3IPS (2)	3IPS	3IPS (2)	5FLG	3IPS (2)	5FLG	3IPS (2)	5FLG	3IPS	3IPS
—	—	—	—	—	—	—	127	—	127	—	127	—	—
1	1	1	1	1	3	3	3	3	3	3	3	6	8
3.79	3.79	3.79	3.79	3.79	11.36	11.36	11.36	11.36	11.36	11.36	11.36	23.25	30.30
—	—	—	—	—	—	—	—	—	—	—	—	AIR COOLED	
—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	4	4	2	4	2	4	5	4	5	4	5	2	2
7.57	15.14	15.14	7.57	15.14	7.57	15.14	18.93	15.14	18.93	15.14	18.93	7.57	7.57
0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	5.25	5.25	7.75	7.75	10.75	15.0
2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	19.87	19.87	29.34	29.34	40.69	56.78
—	—	—	—	—	—	—	—	—	—	—	—	0.62	0.62
—	—	—	—	—	—	—	—	—	—	—	—	2.37	2.37
12	24	24	12	24	12	24	20	24	20	24	20	12	12
45.4	90.8	90.8	45.4	90.8	45.4	90.8	76.0	90.8	76.0	90.8	76.0	45.4	45.4
59.00	56.62	59.00	57.87	56.62	56.62	56.62	66.25	66.38	66.38	77.12	77.12	85.00	69.00
1499	1438	1499	1470	1438	1470	1470	1683	1696	1696	1959	1959	2160	1753
40.75	40.75	40.75	42.00	42.00	42.00	42.00	42.00	50.00	50.00	59.38	59.38	62.50	42.00
1035	1035	1035	1067	1067	1067	1067	1067	1270	1270	1508	1508	1588	1067
55.38	70.87	70.87	66.75	84.00	66.75	84.00	90.50	87.25	96.50	101.38	109.12	127.00	120.00
1407	1800	1800	1695	2134	1695	2134	2299	2216	2451	2575	2772	3226	3048
41.25	70.00	70.00	43.75	70.00	43.75	70.00	50.50	70.00	56.94	70.00	63.81	74.12	109.00
1048	1778	1778	1111	1778	1111	1778	1283	1778	1446	1778	1621	1883	2769
3650	5300	5400	3770	6100	3770	6100	7800	7900	9600	10,500	12,200	10,500	13,300
1656	2404	2450	8309	2764	8309	2764	3538	3583	4354	4764	5500	4764	6033

Electrical requirements: Full NEMA 12 controls supplied standard on non-direct drive models.
460v/60 Hz/3 hp power with transformer and 115v control circuits are standard.
***Displacement of second stage blower is 1300 cfm (2209 M^3/hr).**

Stokes® Vacuum
Worldwide Service Centers

NORTH AMERICA

Headquarters:
Philadelphia, PA
Cleveland, OH
Dallas, TX
City of Industry, CA
San Jose, CA
Vancouver, WA
Burlington, Canada
Montreal, Canada
Toronto, Canada

MEXICO

Mexico City
Guadalajara
Monterey

SOUTH AMERICA

Sao Paulo, Brazil
Bogota, Colombia
Santiago, Chile

EUROPE

Vienna, Austria
Bolton, England
Roubaix, France
Kamen, Germany
Dublin, Ireland
Mijdrecht, Netherlands
Brno, Czech Republic
Humlebaek, Denmark
Vantaa, Finland
Stuttgart, Germany
Budapest, Hungary
Caravaggio, Italy
Bratislavia, Slovakia
Barcelona, Spain
Stenungsund, Sweden

MIDDLE EAST

Petach Tikwa, Israel

FAR EAST

Singapore
Taiwan R.O.C.
Kowloon, Hong Kong
King Park, Australia
Taman Klang Jaya, Malaysia
Seoul, Korea
Atsugi City, Japan
Shenzhen, China
Calcutta, India

STOKES® VACUUM Inc.

5500 Tabor Road, Philadelphia, PA 19120
Phone: (215) 831-5400 Fax: (215) 831-5420 Web site: http://www.stokesvacuum.com

Bulletin No. 536-J