



# Commercial SPA Blower Selection Guide



Your Choice. Our Commitment.™



## WHO WE ARE

At AMETEK Dynamic Fluid Solutions (DFS), we don't build the commercial spa, but we make the spa experience enjoyable! Specifically, we provide the air flow (or bubbles), allowing millions of consumers to relax and feel better, both mentally and physically. We offer numerous spa products that fit various applications and designs. If you have concerns about your application our application engineers are available to help you brainstorm a solution for your spa.

Our regenerative blowers are well-crafted, high-performance machines designed to provide years of service. To keep your blower running at peak performance, we will be with you every step of the way. From choosing the proper blower to finding the accessories that will increase the life and reliability of the blower. To keep your blower running in top condition, AMETEK DFS offers a series of peripheral accessories to reduce noise, and prevent unnecessary vacuum or pressure conditions that can result from line restrictions.

Our ability to provide the total solution for spa agitation significantly differentiates us from the competition. In conjunction with our distribution network of sales representatives, dealers and distributors, you can be assured of finding the right solution for your application, your installation, and service in the industry.

## INNOVATIVE PRODUCTS

Our design expertise, advanced technology and state-of-the-art manufacturing enable us to provide high-quality, customizable products that are cost effective.

## CUSTOMER-DRIVEN

We work closely with our customers to ensure that our product's capabilities match the specific requirements of each application. We are committed to our customers' success, providing unparalleled technical support from the design phase to ongoing service support.

## ETHICALLY AND SOCIALLY RESPONSIBLE

We are committed to the highest standards of corporate responsibility and ethical business behavior.

## OUR PEOPLE

Our people are our most important resource. We strive to foster a work environment that treats all colleagues with respect and provide them with opportunities to develop to their fullest potential

## CORPORATE GROWTH

We seek to enhance shareholder value through acquisitions and alliances that will contribute to our internal growth.

## BENEFICIAL PARTNERSHIPS

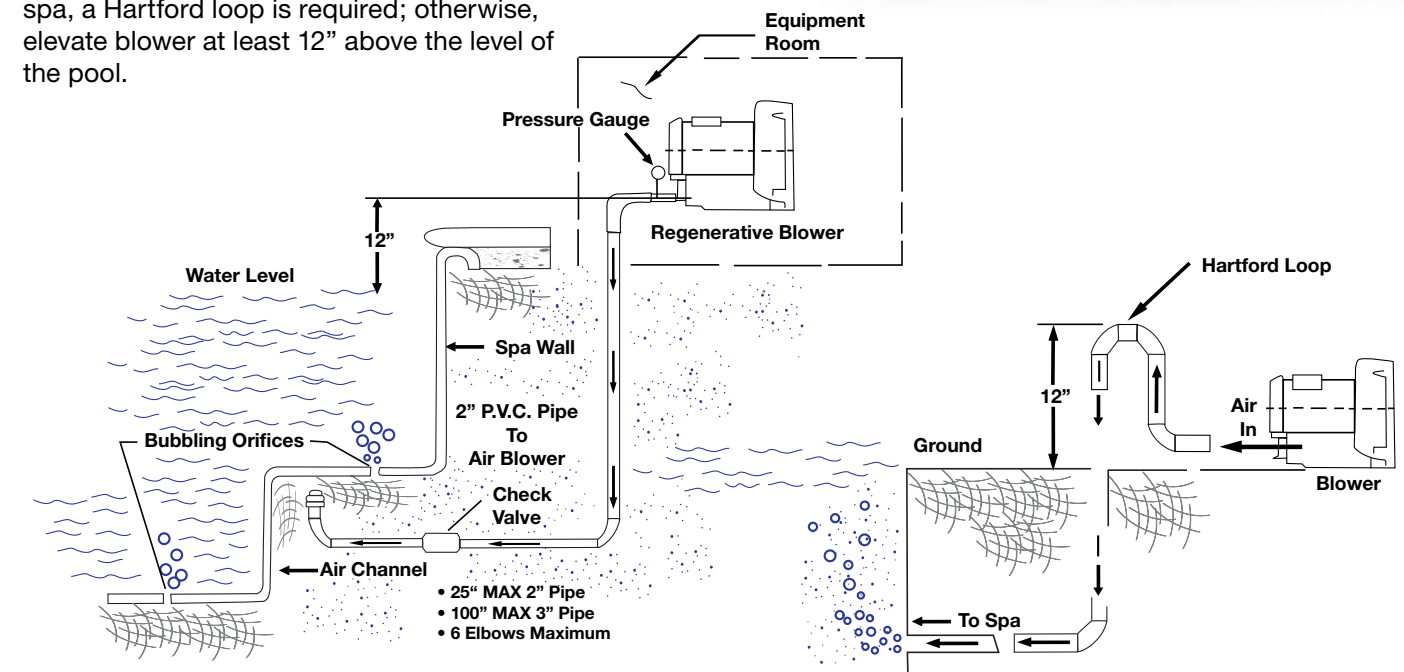
Our suppliers are critical to our success. Our relationships with them are forged on the basis of mutual trust and prosperity.

## SPA System Requirements

There are many variables that must be considered when selecting a blower for spa agitation. The depth of the spa, the size, quantity and location of the air holes and/or jets, and the size and length of the supply line are all important. The requirements of each and every system can be precisely calculated, but this is a long and tedious process. By defining and limiting several of the system parameters, a "standard" selection chart can be created. Blower Selection Chart 1 gives the maximum spa size that can be supplied by each blower.

## Hartford Loop Installation

When blower is located at water level of the spa, a Hartford loop is required; otherwise, elevate blower at least 12" above the level of the pool.



NOTE: Check valve and gauge are required





## INSTALLING YOUR ROTRON REGENERATIVE BLOWER

### Requirements

- Determine the following: Distance from blower to spa (for friction loss calculation), pipe size, power available, and whether or not low-pressure check valve available or Hartford loop is present. Note if water is present in the pipes, the blower has to push water out prior to bubbling. This creates a low-flow situation with the blower. A relief valve and pressure gauge are suggested in this case.
- If standard commercial venturi driven jets are used and typical system requirements are met, use Chart 1 below.
- If holes are used, size blower based on Chart 3 below. The chart is based on water depth of 20". If deeper, use open hole charts and recalculate. Deeper water requires more pressure.

Chart 1 - Jets	
Blower Size	Number of Jets
DR404 (1 HP)	3-6
DR513 (1.5 HP)	5-10
DR454 (1.5 HP)	5-10
DR505 (2 HP)	8-12
DR656 (3 HP)	12-17

Chart 2 - Blower Selection					
Max Recommended SPA Surface Area					
SPA Depth	DR404 (1 HP)	DR513 (1.5 HP)	DR454 (1.5 HP)	DR505 (2 HP)	DR656 (2 HP)
30"	60 sq ft	74 sq ft	88 sq ft	100 sq ft	135 sq ft
36"	50 sq ft	68 sq ft	82 sq ft	95 sq ft	125 sq ft
42"	45 sq ft	64 sq ft	76 sq ft	90 sq ft	115 sq ft
48"	0 sq ft	58 sq ft	68 sq ft	85 sq ft	110 sq ft

Chart 3 - Drilled Holes	
System Requirements by Blower Size	
All Blowers Listed	Supply and bubbler pipe to be 2.0 inch I.D. or greater. Supply pipe to be no longer than 25 ft. with no more than six elbows.
DR404/DR513	Total hole area must be 1.0 square inches or greater but not greater than the cross section of the supply pipe.
DR454	Total hole area must be 1.5 square inches or greater but not greater than the cross section of the supply pipe.
DR505	Total hole area must be 2.0 square inches or greater but not greater than the cross section of the supply pipe.
DR656	Total hole area must be 2.4 square inches or greater but not greater than the cross section of the supply pipe.

Total hole area = (number of holes) X (.785) X (hole diameter)<sup>2</sup> or  
 Total hole area = (number of holes) X (hole area)

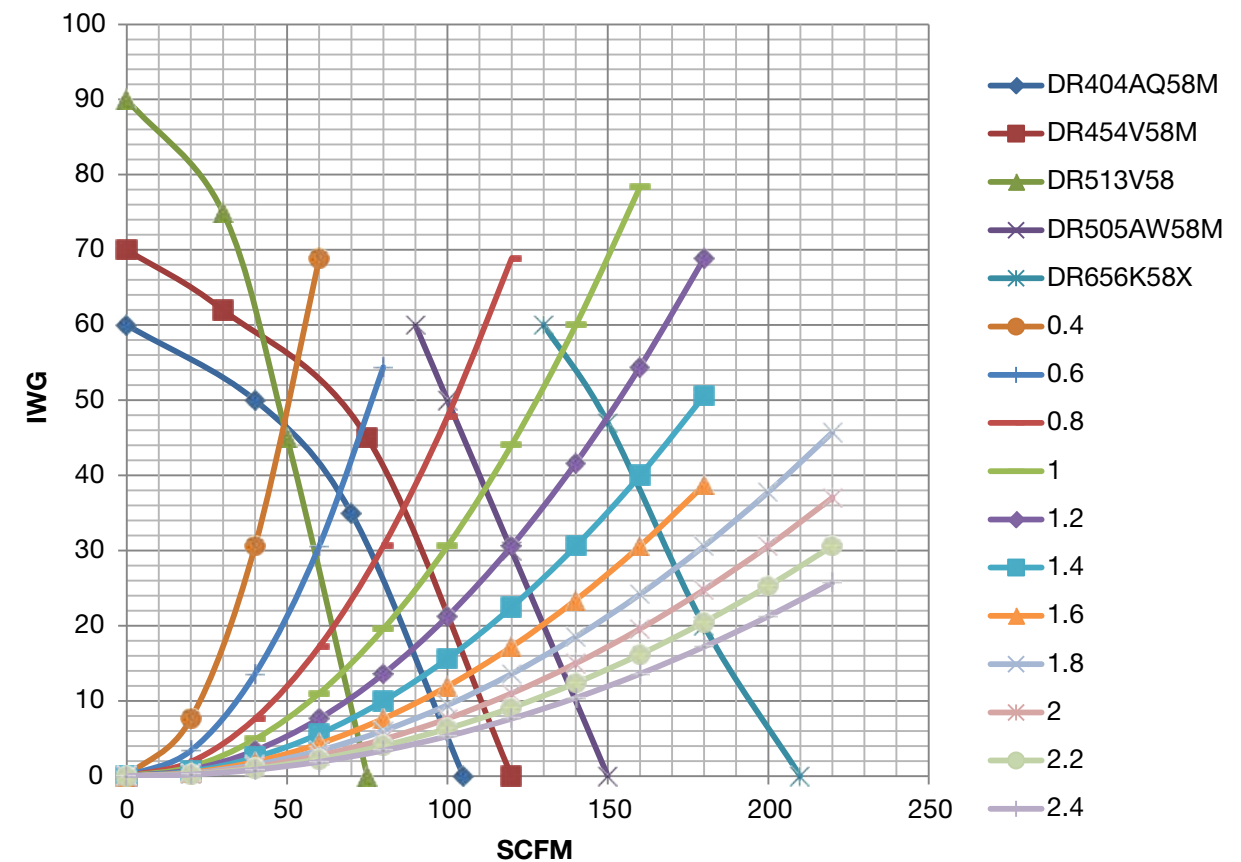
## SIZING YOUR SPA'S AIR AGITATION UNIT

The open hole charts provide a quick and easy method of sizing a spa blower. The chart is used when holes (not jets) are used. Simply find the total open hole area (see formula below), and then with the water depth in inches (Y axis of the chart), move across the chart until the water depth intersects with the total open hole area curve and find the blower that is closest to the intersection of water depth and open hole area.

Total open hole area (in square inches) = # of holes X ( 3.14 X (diameter) X (diameter) ) / 4

ie. a spa with twenty 1/4" dia holes has an open hole area of .98 sq inches.

Ex. A spa with water 40 inches deep, with twenty 1/4" diameter holes would require either a DR656 blower

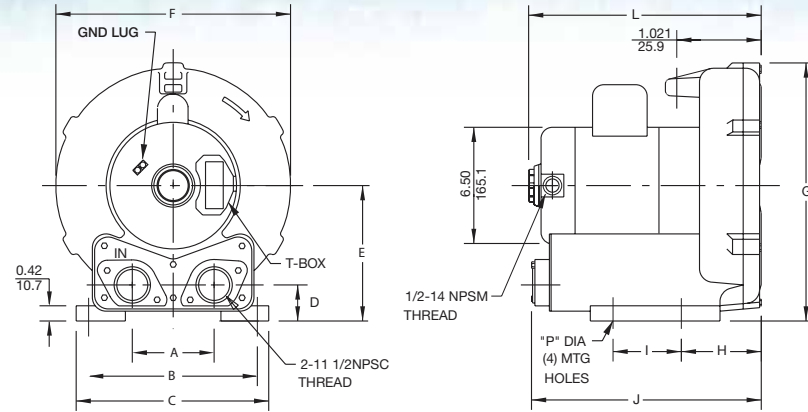


## Our ROTRON Ready SPA Solutions

IN  
MM

### NOTES

- 1 Drawing not to scale, contact factory for scale CAD drawing.
- 2 Contact factory for blower model lengths not shown.



MODEL	A (IN/MM)	B (IN/MM)	C (IN/MM)	D (IN/MM)	E (IN/MM)	F (IN/MM)	G (IN/MM)	H (IN/MM)	I (IN/MM)	J (IN/MM)	K (IN/MM)	L (IN/MM)
DR404AQ58M	4.75/120.7	8.93/226.8	10.12/257	192/48.8	6.28/159.5	11.5/292.1	12.16/308.9	3.0/76.2	3.75/95.3	12.88/327.2	.59/15	12.91/327.9
DR454V58	4.75/120.7	10.30/261.6	11.38/289.1	1.92/48.8	6.98/177.3	12.55/318.8	13.52/343.4	3.25/82.6	4.50/114.3	10.81/274.6	.59/15	14.45/367
DR505AW58M	4.75/120.7	10.30/261.6	11.70/297.2	1.87/47.5	7.26/184.4	13.53/343.7	14.38/365.3	3.56/92.7	4.50/114.3	14.38/365.3	.59/15	15.0/381
DR513V58	4.75/120.7	11.42/290.1	13.0/330.2	2.23/56.6	8.69/220.7	14.21/360.9	15.8/401.3	3.72/94.5	5.50/139.7	13.74/349	.59/15	14.58/370.3
DR656K58X	4.92/125	11.42/290.1	12.8/325.1	2.25/57.2	7.46/189.5	15.42/391.7	15.17/385.3	4.14/105.2	5.5/139.7	15.12/384.1	.59/15	15.51/393.9

Specification	Units	Part/Model Number				
		DR404AQ58M	DR454V58M	DR505AW58M	DR513V58	DR656K58X
Motor Enclosure - Shaft Mtl.	-	SPA (ODP)-CS	SPA (ODP)-CS	SPA (ODP)-CS	SPA (ODP)-CS	TEFC-CS
Horsepower	-	1.0	1.5	2.0	1.5	3.0
Voltage	AC	115/230	115/230	115/230	115/230	115/230
Phase - Frequency	-	Single-50/60 Hz	Single-50/60 Hz	Single-50/60 Hz	Single-50/60 Hz	Single-50/60 Hz
Insulation Class	-	F	F	F	F	F
NEMA Rated Motor Amps	Amps (A)	15/7.5	15.2/7.6	17.6/8.8	15.2/7.6	31/15.5
Service Factor	-	1.4	1.3	1.2	1.3	1.0
Maximum Blower Amps	Amps (A)	8/4	17/8.5	26/13	17/8.5	27.8/13.9
Locked Rotor Amps	Amps (A)	32/16	85/43	106/53	85/43	200/100
Recommended NEMA Start	r Size-	0/00	1/0	1/0	1/0	1.5/1
Shipping Weight	Lbs	64	76	83	90	51
	Kg	29	34.5	37.6	40.8	23.1
Recommended Number of Jets	ts -	3-6	5-10	5-10	12-17	8-12

**Voltage** - ROTRON motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both 208-230/415-460 VAC-3 ph-60 Hz and 190-208/380-415 VAC-3 ph-50 Hz. Our voltage 1 phase motors are factory tested and certified to operate on both 104-115/208-230 VAC-1 ph-60 Hz and 100-110/200-220 VAC-1 ph-50 Hz. All voltages above can handle a ±10% voltage fluctuation.

Special wound motors can be ordered for voltages outside our certified range.

**Operating Temperatures** - Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F-rated motors or 120°C for Class B-rated motors. Blower outlet air

temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

**Maximum Blower Amps** - Corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

### Notes

- The blower should not be stopped/started more than four times an hour.
- Use of relief valve 515092 is required for all blowers 2 HP or greater.

## Our ROTRON Ready SPA Solutions

### FEATURES

- Manufactured in the USA-ISO 9001 and NAFTA compliant
- CE Compliant-Declaration of Conformity on file
- Maximum Flow: 105, 127, 160, 200 or 78 SCFM
- Maximum Pressure: 56, 58, 74, 69, 88 IWG
- Standard Motor: 1.0, 1.5, 2.0, 3.0 HP, SPA Duty ODP
- Cast aluminum blower housing, impeller & cover; cast iron flanges (Threaded)
- Approved motor with permanently sealed ball bearings and Class B rated thermal protection
- Inlet and outlet internal muffling
- Quiet operation within OSHA standards

### MOTOR OPTIONS

- Internal voltage and frequency (Hz)
- Chemical-duty, high-efficiency, inverter-duty or industry-specific designs
- Various horsepowers for application-specific needs

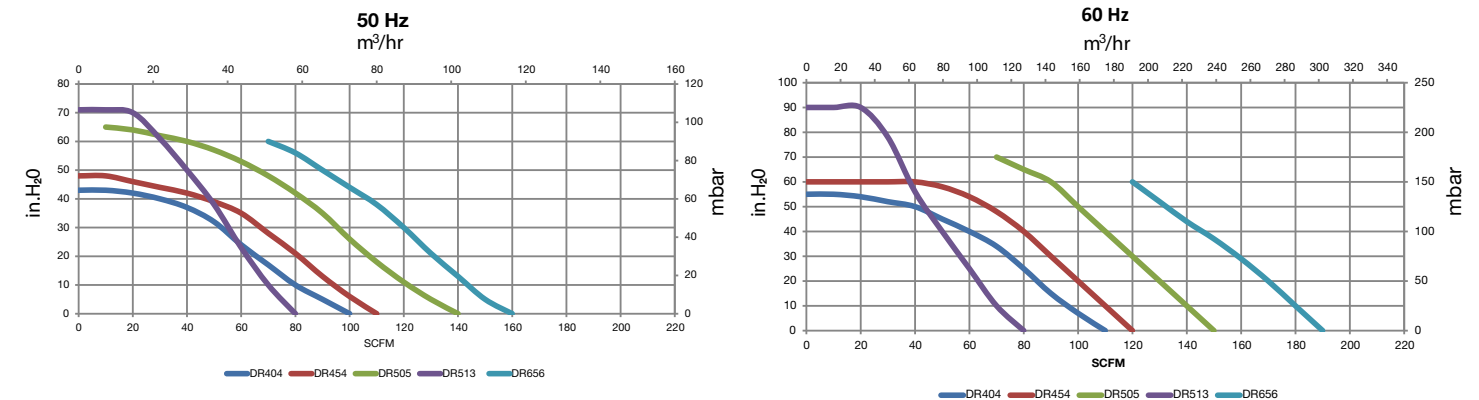
### BLOWER OPTIONS

- Corrosion-resistant surface treatments and sealing options
- Slip-on or face flanges for application-specific needs

Accessories	Benefits To Your ROTRON Regenerative Blower	
Filtration	Inline filter	Protect blower from dust and airborne contaminants
Measurement	Air Flow Meter	Optimize Efficiency
Noise Reduction	Inlet/Outlet Muffler (Single Connection)	Lower blower noise for pressure and vacuum systems
Valves and Gauges	Pressure Regulating Diaphragm Valve	Prevent excessive system pressure or vacuum that could result from line restrictions
Valves and Gauges	Pressure Regulating Diaphragm Valve	Prevent excessive system pressure or vacuum that could result from line restrictions



## Blower Performance at Standard Conditions





## Warranty

1. AMETEK Rotron DR, EN and HiE regenerative direct drive blowers are guaranteed for one full year from the date of installation (limited to 18 months from the date of shipment) to the original purchaser only. Should the blower fail, we will evaluate the failure. If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.
2. AMETEK Rotron Minispiral, Revaflow, Multiflow, Nautilair, remote drive blowers, moisture separators, packaged units, CP blowers, Nasty Gas™ models and special built (EO) products are guaranteed for one full year from date of shipment for workmanship and material defect to the original purchaser only. Should the blower fail and failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.
3. Parts Policy - AMETEK Rotron spare parts and accessories are guaranteed for three months from date of shipment for workmanship and material defect to the original purchaser only. If failure is determined to be workmanship or material defect related, we will at our option repair or replace the part.

**Corrective Action** - A written report will be provided indicating reason(s) for failure, with suggestions for corrective action. Subsequent customer failures due to abuse, misuse, misapplication or repeat offense will not be covered. AMETEK Rotron will then notify customers of their options. Any failed unit that is tampered with by attempting repair or diagnosis will void the warranty, unless authorized by the factory.

**Terms and Conditions** - Our warranty covers repairs or replacement of regenerative blowers only and will not cover labor for installation, outbound and inbound shipping costs, accessories or other items not considered integral blower parts. Charges may be incurred on products returned for reasons other than failures covered by their appropriate warranty. Out-of-warranty product and in-warranty product returned for failures determined to be caused by abuse, misuse, or repeat offense will be subject to an evaluation charge. Maximum liability will in no case exceed the value of the product purchased. Damage resulting from mishandling during shipment is not covered by this warranty. It is the responsibility of the purchaser to file claims with the carrier. Other terms and conditions of sale are stated on the back of the order acknowledgement.

## OUR JOB DOESN'T STOP HERE!

Do you still have questions about your Rotron regenerative blower or need Technical Support? Do you need to return a product to us? Give us a call at the numbers below.

Technical Support	Sales Support
Neil Lynch	Doug Pliszka
914-388-6432	330-677-3326
neil.lynch@ametek.com	doug.pliszka@ametek.com



100 East Erie Street  
Kent, OH 44240 U.S.A.  
Phone: +1 330-673-3452 • Fax: +1 330-677-3306  
www.ametekdfs.com