

*REGENERATIVE  
BLOWERS*

# TOPICS

- *QUALITY*
- *REGENERATIVE BLOWER BENEFITS*
- *REGENERATIVE BLOWER THEORY*
- *REGENERATIVE PRODUCTS (Standard/Custom Built)*
- *FLOW RATE / PRESSURE TERMINOLOGY*
- *PERFORMANCE (Performance Curve + Matrix)*
- *ELECTRICAL (Voltage / Amps + World Voltages)*
- *BLOWER SIZING (Pressure + Flow)*
- *TROUBLESHOOTING*

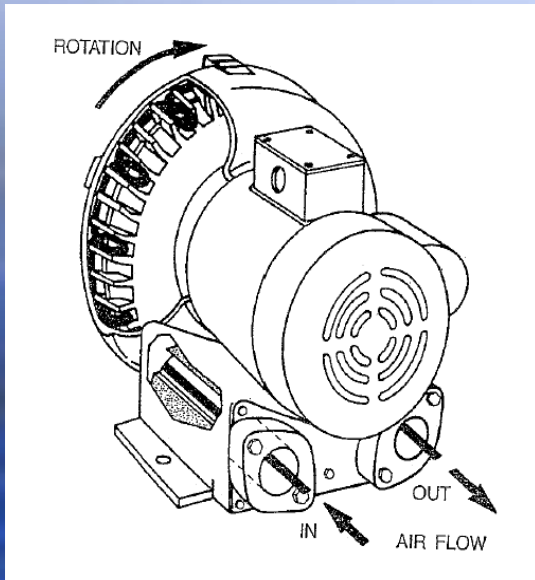
# QUALITY

- **'WORLD VOLTAGE' MOTORS**
  - 110/230/460/580
  - 1 PHASE / 3 PHASE
  - 50 HZ / 60 HZ
- **UL, CSA & TUV MOTORS + CE & ATEX MOTOR AND BLOWER COMBO FOR EUROPE**
- **SEALED BEARING WITH HIGH TEMP. GREASE**
- **NO CONTACTING PARTS**
- **SIMPLE, ROBUST DESIGN**

# REGENERATIVE BLOWER BENEFITS

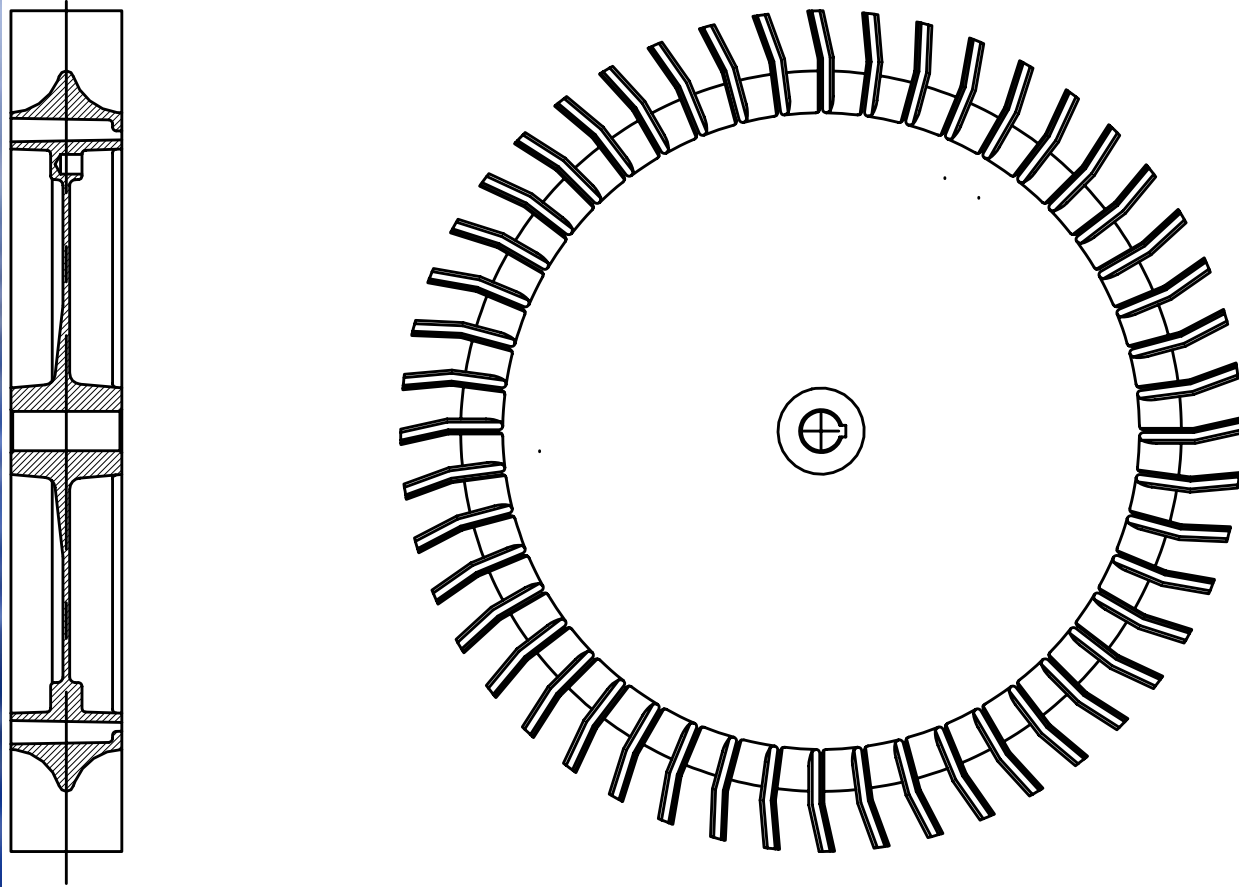
- ***SIMPLE OPERATION***
- ***MINIMAL MAINTENANCE***
- ***BROAD PERFORMANCE RANGE***
  - *350 Models Available (From 1/16 HP To 60+ HP)*
- ***DIFFERENT OPTIONS TO HANDLE ANY APPLICATION***
- ***Oil-Free OPERATION***
- ***Low Noise Level***
  - *From 60 dBA To 90 dBA (Dependent On Horsepower)*
  - *Test Performed “Average At 1m, 4 Places Around Blower*

# REGENERATIVE BLOWER THEORY



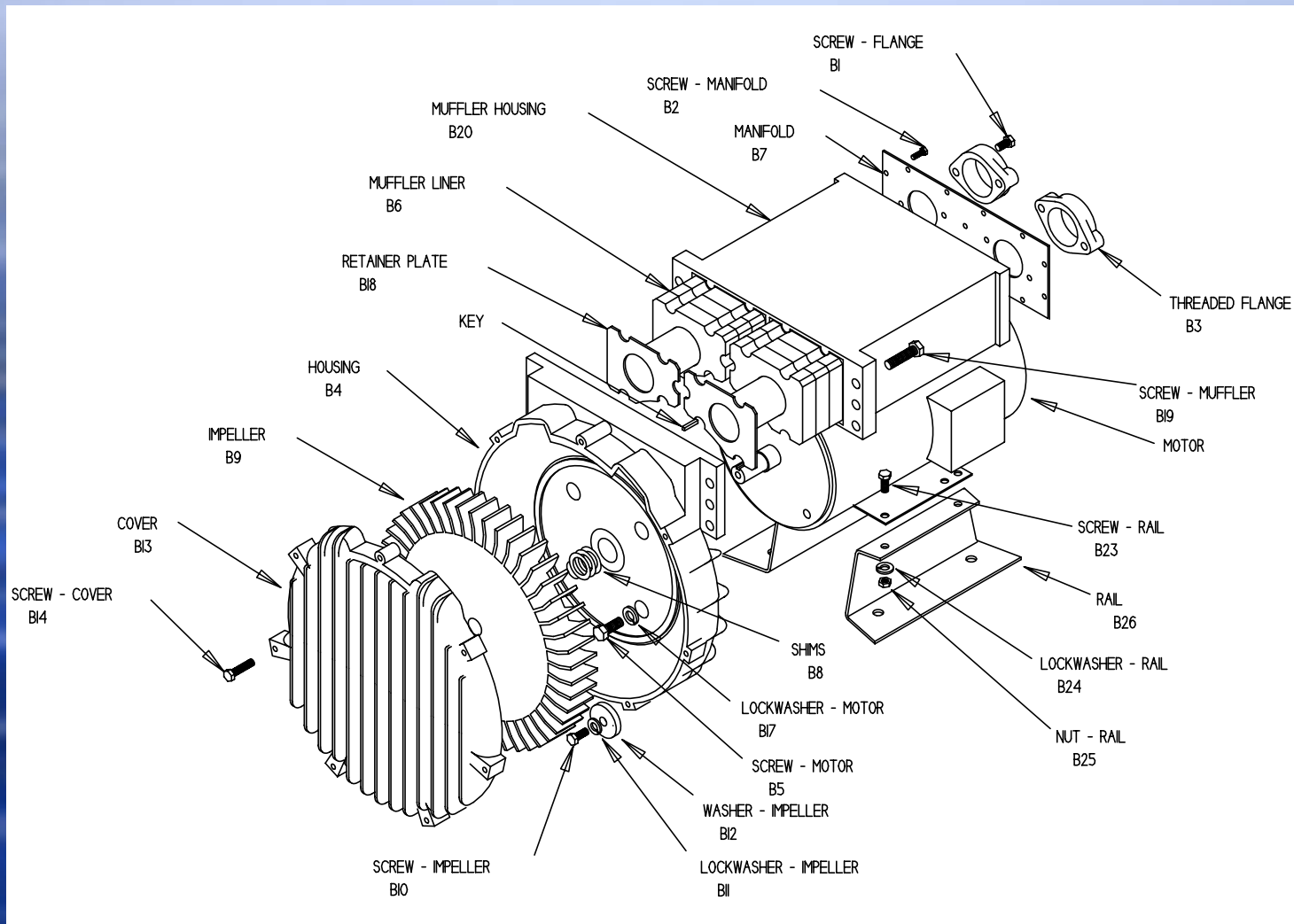
- The Impeller Blades Passing The Inlet Port Draw Air Or Other Gasses Into The Blower
- The Impeller Blades Then, By Centrifugal Action, Accelerate The Air Out-Ward And Forward
- The “Regenerative” Principle Takes Effect As The Air Is Turned Back By The Annular Shaped Housing To The Base Of The Following Blades Where It Is Again Hurlled Outward
- Each “Regeneration” Imparts More Pressure To The Air. When The Air Reaches The Stripper Section At The Outlet, The Air Is “Stripped” The Impeller And Diverted Out Of The Blower

# REGENERATIVE IMPELLER





# BLOWER (EXPLODED VIEW)



# PRODUCTS

- DR (*Domestic Regenerative*)
- EN (*Environmental*)
- CP (*Chemical Processing*)
- RD (*Remote Drive*)
- ACCESSORIES
- PACKAGES





# CUSTOM BUILT PRODUCTS

- **MOTORS**

- *HiE Motors*
- *Direct Mount Use Approved Sources*

- **CONNECTIONS**

- *Face Flanges*
- *Fittings & Couplings*

- **SPECIAL TREATMENTS**

- *Chemical Resistance (ChemTough)*
- *Corrosion Resistant / Tropicalized Coatings*

# FLOW RATE / PRESSURE TERMS

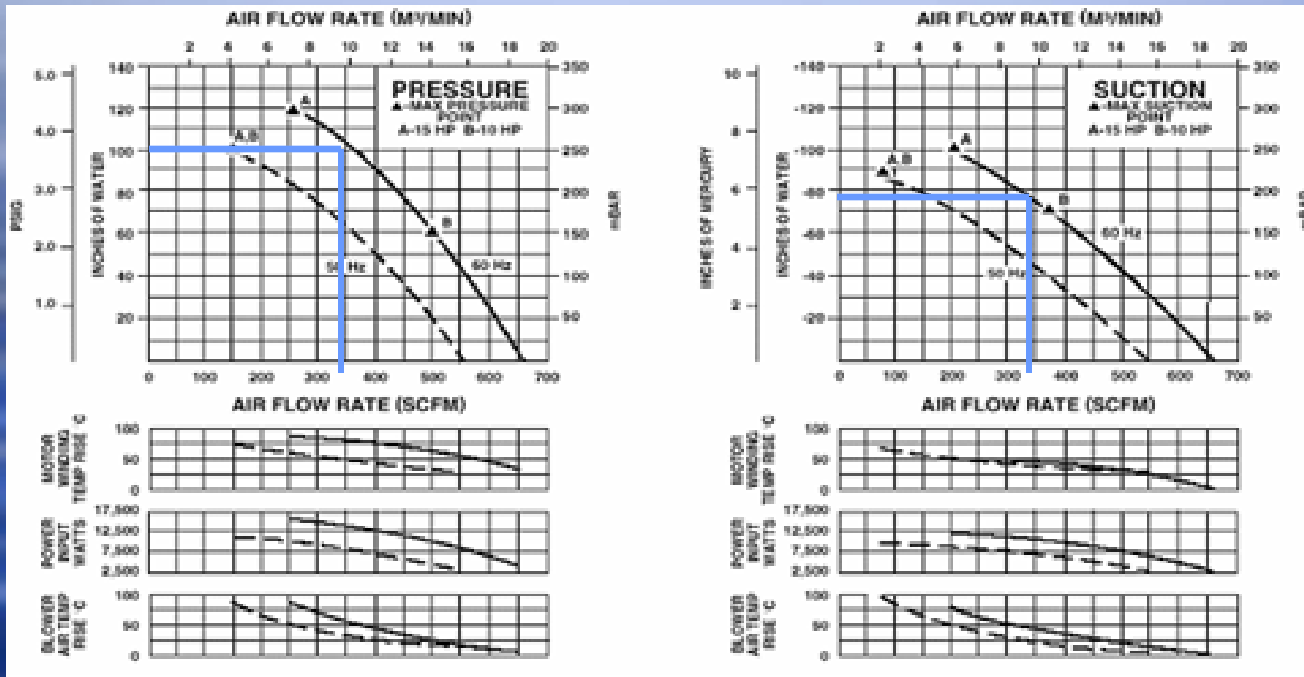
## FLOW RATE

- *SCFM = Standard Cubic Feet/Min*
  - *Air At Sea Level & 68° F*
- *ACFM = Actual Cubic Feet/Min*
  - *All Conditions Must Be Given*

## PRESSURE

- *IWG (Inches Of Water Gauge)*
  - *27.7" IWG = 1 PSI*

# PERFORMANCE CURVE



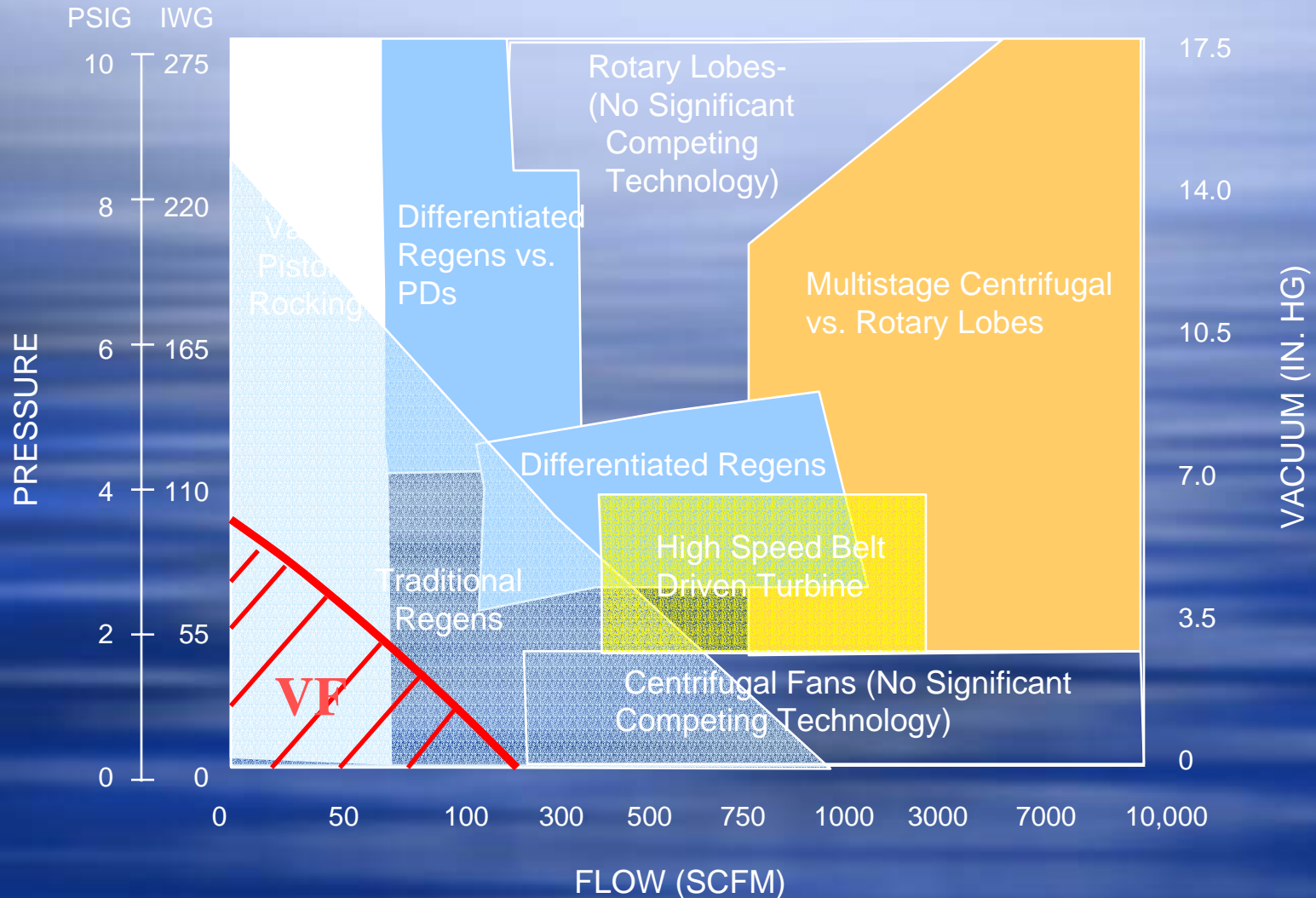
**PRESSURE**

- 350 CFM @ 100" IWG

**VACUUM**

- 345 CFM @ 77" IWG

# PERFORMANCE MATRIX



# VOLTAGES / AMPS

- *DESIGNED FOR WIDE RANGE OF WORLD VOLTAGES*
- *STANDARD CATALOGED TEFC 3 PHASE*
  - *208-230/415-460 Volt 60 Hz*
  - *190-208/380-415 Volt 50 Hz*
  - *575 Volt 60 Hz*
- *STANDARD CATALOGED TEFC 1 PHASE*
  - *104-115/208-230 Volt 60 Hz*
  - *100-110/200-220 Volt 50 Hz*
- *LOCKED ROTOR AMPS - AMP DRAW AT START-UP*
  - *Need For Sizing Fuses*
- *BLOWER AMPS*
  - *Where Blower/Motor Operating On Performance Curve*



# **BLOWER SIZING - PRESSURE I**

- **HYDROSTATIC HEAD**
  - *Depth Of Deepest Tank(s) / Exhibit(s)*
- **DIFFERENTIAL PRESSURE**
  - *Pressure Required To Evacuate Air From Diffusion Device(s) - Varies From Diffusion Device*
- **PIPE FRICTION LOSS**
  - *Pressure Drop From All Piping In System (Dependant On Lengths Of Pipe,  $\emptyset$  Of Pipe, Ell's/ Tee's In System)*



# **BLOWER SIZING - PRESSURE II**

- ***CHECK VALVES (FOR BLOWERS IN PARALLEL)***
  - *Pressure Drop Of Check Valves In Multiple Blower Installation*
- ***ALTITUDE***
  - *Blower Pressure Will Change Based On Operating Altitude (Blower Curves Are At Sea Level)*

# **BLOWER SIZING - FLOW**

- ***FLOW IS BASED ON TOTAL AIR REQUIREMENT***
  - *Type OF Diffuser Being Used*
    - a. Perforated pipe (Air Curtain)*
    - b. Stone Diffuser (Silica or Alumina)*
    - c. Fine Pore Diffuser*
    - d. Medium Pore Diffuser (Tubing)*
- ***CALCULATE TOTAL AIR REQUIREMENT***
  - *Flow Range Requirements Vary - 0.1 cfm / Inch To 5 cfm / Inch, etc.*
  - *Get Total Air Requirement By Air Requirement (cfm x Qty Of Diffusers)*

# PERIPHERAL EQUIPMENT

- *INTAKE FILTER/SILENCER*
  - *PRESSURE GAUGE*
  - *PRESSURE RELIEF VALVE*
  - *CHECK VALVE (Units In parallel)*
- 
- *DISCHARGE SILENCER*
  - *AIR FLOW METER*
  - *PRESSURE SWITCHES*
  - *VFD'S (Variable Frequency Drive)*

# QUICK TROUBLESHOOTING

- **INGESTION**

- *Foreign Objects - Can Cause Impeller Failure, Impeller Vibration, Bearing (Motor) Wear, Low Flow*

- **VOLTAGE**

- *Wired Wrong, Low Voltage, Inverter Issues*

- **AIR TEMPERATURE ISSUES**

- *Max. Outlet = 140° C (284° F)*

- **MOTOR TEMPERATURE FAILURES**

- *Max. Motor Temperature = 140° C (284° F)*

- **SERVICING ISSUES**

- *Intake Filter/Silencer, Other Components That Can Reduce Flow - Increase Backpressure*