

## **Product Guide**

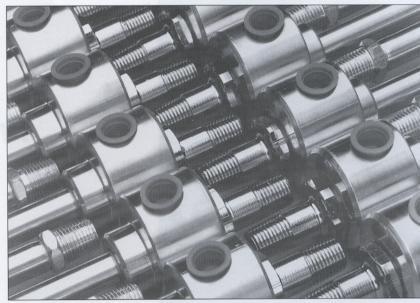


## Who We Are

In 1961, ITW Vortec became the first company to develop technology for converting the vortex tube phenomenon into practical, effective cooling solutions. Since then, ITW Vortec has continued to refine and expand vortex tube applications as well as develop other ways to use compressed air efficiently.

ITW Vortec products — for spot and enclosure cooling, blowoff and conveying — increase equipment efficiency, improve manufacturing methods and eliminate more costly methods for cooling, increasing airflow or controlling static.

All ITW Vortec products are designed to enhance your operation's productivity.



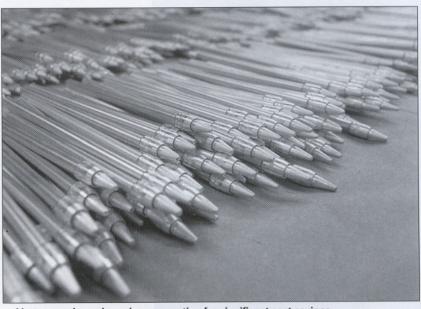
Vortex tubes effectively cool parts and processes.

## For Additional Information

Request brochures for complete information about our products. If you need more information on any of our products or have a particular production problem, call your local ITW Vortec distributor or one of our experienced Application Engineers at 1-800-441-7475. Or, visit our web site at http://www.vortec.com.



Due to a policy of continuous development, we reserve the right to change specifications without notice.



Vortec nozzles reduce air consumption for significant cost savings.

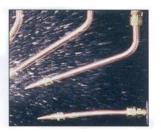
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# Products for **Spot Cooling**

ITW Vortec's vortex tube products have been solving industrial cooling problems for years. Using only filtered, factory compressed air as a power source, they convert ordinary compressed air into two air streams — one hot and one cold. At 100 PSIG (6.9 Bar) and 70°F (21°C) inlet temperature, a vortex tube can produce refrigeration up to 6000 BTUH (1512 kcal/H) or temperatures to -40°F (-40°C).

Choose one of our Cold Air Guns for quick, easy installation or the model from our complete vortex tube line that best fits the specific needs of your application.

### **Cold Air Guns**

Cold Air Guns incorporate a vortex tube in a system designed to fit the needs of many common vortex tube applications.

#### Features:

- Cool without refrigerants (CFCs/HCFCs) or moving parts for reliable, troublefree operation.
- Use no electricity intrinsically safe, no RF interference.
- Include an integral muffler for quiet operation within OSHA noise specifications.
- · Are powered by filtered compressed air.

### Model 610 Adjustable Cold Air Gun

The Model 610 Adjustable Cold Air Gun is ideal for use in machining applications and for cooling parts and industrial processes. Model 610's adjustable feature allows you to set the cold airflow rate (BTUH) at optimum levels for your application. The Adjustable Cold Air Gun's maximum temperature drop is 100F° (55.6C°) below inlet air temperature and the maximum cooling capacity is 900 BTUH (227 kcal/H). Model 610's compressed air supply requirement is 15 SCFM (425 SLPM) at 100 PSIG (6.9 Bar).

Model 610 comes complete with a flexible nozzle for directing cold air and a magnetic base for quick, easy installation and use.

### Model 608 Mini Cold Air Gun

ITW Vortee's Mini Cold Air Gun is designed to shave hours off your dry surface grinding operations. By providing a contamination-free source of cooling, it effectively cools parts to reduce normalization time, hold tighter tolerances, reduce wheel loading and improve surface finish quality. Its adjustable magnetic base allows instant installation and positioning near the wheel for maximum cooling performance. Its compact size won't interfere with grinding operations. Model 608's compressed air supply requirement is 8 SCFM (227 SLPM) at 100 PSIG (6.9 Bar).

### Models:

MODEL NO.	DESCRIPTION
610	Adjustable Cold Air Gun, includes Magnetic Base and 5-micron Auto-Drain filter
610-1	Adjustable Cold Air Gun only
608	Mini Cold Air Gun, includes Adjustable Magnetic Base and 5-micron Auto-Drain filter

### Options:

MODEL NO.	DESCRIPTION
611-FNU	Frost-Free Nozzle Upgrade Kit
610-30	Dual-Point Flexible Nozzle (two cold air outlets)



Use the Model 610 Adjustable Cold Air Gun to increase feed rates and tool life, or spot cool parts and industrial processes.



Drastically reduce dry surface grinding production times with the Model 608 Mini Cold Air Gun.



# Products for **Spot Cooling**

### Model 424 Thread Guard® Needle Cooler

Watch your piece rate jump with ITW Vortec's Model 424 Thread Guard®. Thread Guard delivers a continuous stream of cold air onto the sewing machine needle to virtually eliminate downtime caused by needle breakage and thread burning caused by overheating. It's effective even in the most challenging sewing operations including belt loops and tough materials. Cooling also prevents holes caused by hot needles burning synthetic fabrics. Model 424's compressed air supply requirement is 4 SCFM (113 SLPM) at 100 PSIG (6.9 Bar).

### **Vortex Tubes**

Vortex Tubes are available in a wide range of sizes to meet the needs of many process and spot cooling applications. Vortex Tubes offer cooling capacities beyond those available from our Cold Air Guns.

#### Features:

- Cool without refrigerants (CFCs/HCFCs) or moving parts for reliable, troublefree operation.
- Use no electricity intrinsically safe, no RF interference.
- Compact and lightweight for easy installation even in tight areas.

### Vortex Tube Models and Performance Specifications:

	COMPRESSED A	IR PRESSURE -	100 PSIG	COMPRESSED	AIR PRESSURE -	-6.9 BAR
MODEL NO.	SCFM CONSUMPTION	TEMP. DROP °F*	втин	SLPM CONSUMPTION	TEMP. DROP °C*	KCAL/H
106-2-H	2	61	100	57	34	25
106-4-H	4	80	255	113	44	64
106-8-H	8	81	400	227	45	101
208-11-H	11	84	640	312	47	161
208-15-H	15	84	900	425	47	227
208-25-H	25	67	1500	708	37	378
308-35-H	35	76	2650	992	42	668
328-50-H	50	79	3000	1416	44	756
328-75-H	75	85	4500	2125	47	1134
328-100-H	100	78	6000	2833	43	1512

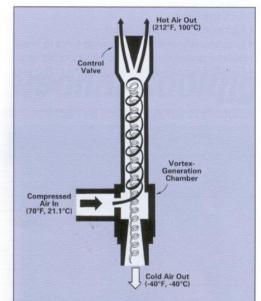
BTUH (kcal/H) capacity based upon 70°F (21°C) compressed air dried to a dewpoint of -40°F (-40°C).

#### Accessories:

MODEL NO.	DESCRIPTION
106GEN	Individual Generator for 106 Vortex Tube — specify 2, 4 or 8 SCFM
106MC	Cold End Muffler for 106 Vortex Tube
208GEN	Individual Generator for 208 Vortex Tube — specify 11, 15 or 25 SCFM
208MC	Cold End Muffler for 208 or 308 Vortex Tubes
208MH	Hot End Muffler for 106 or 208 Vortex Tubes
308MH	Hot End Muffler for 308 Vortex Tube
328M	Cold or Hot End Muffler for 328 Vortex Tube
328XB	Individual Generator for 328 Vortex Tube — specify 50, 75 or 100 SCFM



Vortex Tubes are available in many sizes offering a range of cooling capacities.



### **Vortex Tube Phenomenon**

The vortex tube was discovered in 1930 by French physicist Georges Ranque. Vortec was the first company to develop this phenomenon into practical, effective cooling solutions for industrial applications. Here's how it works.

Fluid that rotates about an axis - like a tornado is called a vortex. A vortex tube creates a vortex from compressed air and separates it into two air streams - one hot and one cold. Compressed air enters a cylindrical generator which is proportionately larger than the hot (long) tube where it causes the air to rotate. Then, the rotating air is forced down the inner walls of the hot tube at speeds reaching 1,000,000 rpm. At the end of the hot tube, a small portion of this air exits through a needle valve as hot air exhaust. The remaining air is forced back through the center of the incoming air stream at a slower speed. The heat in the slower moving air is transferred to the faster moving incoming air. This super-cooled air flows through the center of the generator and exits through the cold air exhaust port.



<sup>\*</sup> Airflow temperature can be dropped up to an additional 20°F (11°C). Colder airflow temperatures are produced by adjusting the needle valve to increase the hot airflow. The needle valve is located in the hot exhaust. Vortex Tubes produce less airflow at colder temperatures and have less BTUH (kcal/H) capacity.

# Products for **Enclosure Cooling**

### Vortex Cooler™ Enclosure Coolers

Today's compact, multi-function electronic controls, variable speed drives and servos are extremely sensitive to heat and contamination while their confined enclosures make temperature control difficult. Excessive heat causes components to cook, digital displays to misread, starters and breakers to trip below rated loads and controls to drift. Fans often provide inadequate cooling and commonly pull in dirty, humid air creating another source of failure.

ITW Vortec's Vortex Cooler™ Enclosure Coolers are the low-maintenance alternative for keeping enclosures cool and clean — without Freon or other refrigerants.

#### Features:

- · Eliminate downtime caused by dirty, overheated controls.
- · Replace hot, dirty air in the enclosure with cool, clean air.
- May be thermostatically-controlled to operate only when necessary to save energy.
- Use a vortex tube to generate cold air without Freon or other refrigerants (CFCs/HCFCs).
- Compact size, easy to install.
- · Exceptionally reliable, no moving parts to break.
- · Maintenance-free, no compressors or filters to clean.
- Cooling capacities up to 5000 BTUH (1250 kcal/H).

#### Models

All models listed below include a 5-micron filter and ducting kit.

MODEL NO. WITH WITHOUT		CAI	CAPACITY CONSUMPTION			THERMOSTAT	NEMA
THERMOSTAT*	THERMOSTAT	BTUH	KCAL/H	SCFM	SLPM	FACTORY SET	TYPE
750	760	400	101	8	227	90°F ± 2°/32°C ± 1°	12
740	730	900	225	15	425	90°F ± 2°/32°C ± 1°	12
790	780	1500	378	25	708	90°F ± 2°/32°C ± 1°	12
770**	_	1500	378	25	708	80 - 122°F/27 - 50°C	4
795	785	2500	625	35	991	90°F ± 2°/32°C ± 1°	12
7970	7870	5000	1250	70	1981	90°F ± 2°/32°C ± 1°	12
7975	7875	5000	1250	70	1981	90°F ± 2°/32°C ± 1°	4
7975SS	7875SS	5000	1250	70	1981	90°F ± 2°/32°C ± 1°	4X
797-35H	787-35H	2500	625	35	991	90°F ± 2°/32°C ± 1°	4
797SS-35H	787SS-35H	2500	625	35	991	90°F ± 2°/32°C ± 1°	4X
797	787	1700	425	25	708	90°F ± 2°/32°C ± 1°	4
797SS	787SS	1700	425	25	708	90°F ± 2°/32°C ± 1°	4X

<sup>\*</sup> See Figure 1 for components included with these systems.

### VorCool™ Enclosure Cooling System

VorCool™ takes enclosure cooling to new heights by adding temperature monitoring and alarm capabilities to the Vortex Cooler. All components are housed in a compact enclosure designed for easy installation.

#### Features:

- · LED enclosure temperature display.
- · Visual alarm and remote alarm relay.
- · User-adjustable thermostat control.
- 1500 BTUH (378 kcal/H).

### Models:

MODEL NO.	INPUT VOLTAGE	FREQUENCY	TEMPERATURE DISPLAY
796-1	110	60	Fahrenheit
796-6	220/240	50/60	Celsius

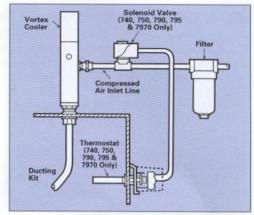
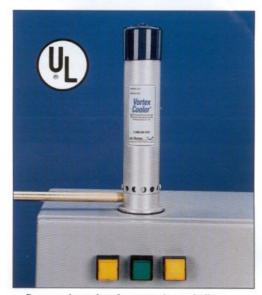


Figure 1. Vortex Cooler System. ( NEMA 12 shown).



Prevent downtime from overheated, dirty controls with Vortex Coolers. (NEMA 4 shown).



VorCool adds monitoring and alarm capabilities to the Vortex Cooler.



<sup>\*\*</sup>Provides rough thermostatic control with a non-adjustable thermostat — electrical connections are not required.

# Products for *Enclosure Cooling*

### Cold Pump® Cooling Systems

Our Cold Pump® Cooling Systems continuously recirculate and cool air inside control cabinets to keep out dirt and dust. Cold Pumps feature a closed-loop design and use CFC-free HFC-134a coolant. Cold Pumps are designed for easy retrofit installation and operate on 115V/60Hz single phase power.

#### Models:

	CAP	ACITY	ROOM TEMPERATURE	
MODEL NO.	втин	KCAL/H	OPERATING REQUIREMENTS	
515*	1500	378	50°F - 110°F (10°C - 43°C)	
560VT	6000	1512	70°F - 125°F (21°C - 52°C)	

<sup>\*</sup> Specify top, right side or left side installation.



The Model 515 Cold Pump uses a closed-loop system to cool enclosures while keeping out dirt and dust.

# Products for **Personal Cooling**

ITW Vortec's Personal Cooling and Heating Systems keep workers comfortable in extremely hot or cold environments. These vortex tube powered systems convert compressed air to cold or warm air up to 60F° (33C°) below or above the air inlet temperature.

### Features:

- Worn with ITW Vortec's Model 855 Diffuse-Air Vest.
- · Easy temperature adjustment.
- · No moving parts.
- · Virtually maintenance-free with easily-replaceable parts.

### Models:

MODEL NO.	22815	22825	22835	220
Temperature Range	Cooling	Cooling	Cooling	Heating/Cooling
Output Airflow	6-15 SCFM (170-425 SLPM)	16-25 SCFM (453-708 SLPM)	19-34 SCFM (538-962 SLPM)	6-12 SCFM (170-340 SLPM)

ITW Vortec's Personal Cooling and Heating Systems are intended to provide worker comfort in hot or cold environments. They are not intended to protect a worker from hazardous conditions. A separate source of respiratory protection must be provided.



ITW Vortee's Personal Air Conditioners, coupled with a Diffuse-Air Vest, keep workers cool or warm in indoor or outdoor environments.



## Products for *Cleaning*

### Air Nozzles and Jets

ITW Vortec's blowoff nozzles and jets are designed to reduce compressed air consumption and noise drastically, compared to open jets.

To accomplish these impressive air savings, we incorporate the proven Transvector\* amplification principle in our nozzle and jet designs. The result is airflow volume up to 25 times more than compressed air supplied.

### Reduce your operating costs significantly with our nozzles and jets. For example:

	VORTEC MODEL 1200 NOZZLE	1/4" X 1' LENGTH COPPER TUBE
Air consumption	9 SCFM	42 SCFM
Annual operating cost/8 hour shift	\$324	\$1512
Annual cost savings	\$1	188

Data based on 100 PSIG operating pressure and \$0.30 SCF/1000 compressed air cost.

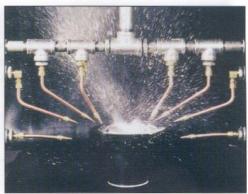
### Features:

- Reduce compressed air consumption drastically.
- · Help meet OSHA noise specifications.
- Meet OSHA dead-end pressure specifications even when supplied with 150 PSIG (10.5 Bar).
- Wide range of styles and thrust performance meet specific application requirements.

### Nozzle Models:

All specifications are at 100 PSIG (6.9 Bar).

MODEL NO.	DESCRIPTION	THRUST (POWER) OZ. AT 12"	AIR CONSUMPTION SCFM (SLPM)	FEATURES
1200 Nozzle 1200 N Nozzle 1200 SS Nozzle	Adjustable output flow and thrust. 1/8" NPT(M) fitting.	3 to 21	8 (226) to 26 (736)	Threaded connection—ideal for installing on blowguns and manifolds. Available in aluminum(1200), nylon(1200 N) or stainless steel (1200 SS).
1201 Nozzle	1/4" OD	6	9 (255)	Compact size. Permanently mounted on copper tubing – can be bent, flared, used with compression fittings or soldered.
1202 Nozzle	1/4" OD, high thrust.	20	23 (651)	Compact size. Permanently mounted on copper tubing – can be bent, flared, used with compression fittings or soldered.
1203 Nozzle	3/8" OD	9	13 (368)	Permanently mounted on copper tubing – can be bent, flared, used with compression fittings or soldered.
1204 Nozzle	3/8" OD, flexible rubber shaft. 1/8" NPT(M) fitting.	9	13 (368)	Permanently mounted on flexible hose. Holds position under full line pressure. Excellent replacement for flex-line used for blowoff. Use 1204E to extend length.
1205 Nozzle	3/8" OD, high thrust.	28	31 (877)	Permanently mounted on copper tubing – can be bent, flared, used with compression fittings or soldered.
1206 Nozzle	3/8" OD, high thrust, flexible rubber shaft. 1/4	28	31 (877)	Permanently mounted on flexible hose. Holds position under full line pressure. Excellent replacement



Use ITW Vortec's nozzles to significantly reduce noise and air consumption.



The adjustable Model 1200 Nozzle allows a wide range of flow and thrust settings.



ITW Vortec's Blowoff Products include versatile Transvector Jets, ideal for airwipe applications.



## Products for *Cleaning*

### Jet Models:

All specifications are at 100 PSIG (6.9 Bar).

All jets are brass.

MODEL	DESCRIPTION	THRUST (POWER) OZ. AT 12"	AIR CONSUMPTION SCFM (SLPM)
909 Jet	Adjustable output flow and thrust. 1/8" NPT(M) fitting.	2 to 17	5 (142) to 21 (594)
901 Jet	1/8" NPT(M) fitting.	6	8 (226)
901B Jet	1/8" NPT(M) fitting.	6	8 (226)
901D Jet	1/8" NPT(M) fitting.	14	17 (481)



The Model 9401 Blow Gun includes a quiet, air-saving nozzle.

### Model 9401 Blow Gun

The well-constructed design of our blow gun makes it comfortable to hold and includes a convenient hang-up hook. Includes a Model 1200 Adjustable Nozzle.

### Air Knives

### Curtain Transvector® and Ionizing Curtain Transvector® Air Amplifiers

ITW Vortec Curtain Transvectors® provide a powerful, laminar flow of air to efficiently blowoff wide surfaces and handle high-speed drying applications in a broad range of manufacturing operations. Since Curtain Transvectors are air amplifiers, they use a small amount of compressed air to deliver a powerful, high-velocity laminar sheet of air over wide areas such as moving webs, sheets, strips, auto bodies and other large objects.

lonizing Curtain Transvectors add the ability to neutralize static electricity and prevent electrostatic discharge.

### Features:

- Compared to competitive designs, provide increased thrust and velocity, reduced noise and excellent uniformity get more power with less compressed air.
- No moving parts maintenance-free.
- Output easily controlled.
- · Instant on/off.
- · No electricity, explosion hazard or RF interference.
- No guards or safety hazards.
- Quiet meet OSHA noise requirements.
- Compact ideal for limited space applications.

### Models:

LENGTH	ALUMINUM CURTAIN TRANSVECTOR MODEL NO.	STAINLESS STEEL CURTAIN TRANSVECTOR MODEL NO.	IONIZING CURTAIN TRANSVECTOR MODEL NO.*	
6" (152mm)	921-6	921SS	981-6	
12" (305mm)	921-12	922SS	981-12	
18" (457mm)	921-18	924SS	981-18	
24" (610mm) 921-24		923SS	981-24	

<sup>\*</sup> Require Model No. F167 (2 cable, 115V, 50/60 Hz) or D167RY (4 cable, 115V, 50/60 Hz) power supply.



Curtain Transvectors are ideal for air-wipe applications.



# Products for **Conveying**

## Round Transvector® Air Amplifiers

Round Transvector® Air Amplifiers are ideal for conveying, removing scrap, ventilation, drying and cooling. Since air amplifiers move large volumes of air using only a small amount of compressed air, they are economical to operate.

Round Transvectors are used in both ducted and unducted applications. In ducted applications, they can produce airflows up to 2400 SCFM (67920 SLPM).

### Features:

- No moving parts maintenance free.
- · Airflow and output easily adjusted with pressure regulator.
- · Intrinsically safe.
- · No guards or safety hazards.
- · Instant on/off.
- Quiet meet OSHA noise requirements.
- · Easily mounted, ducted, moved.
- · Significantly less expensive than variable-speed blowers or fans.

### Models:

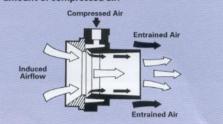
"XSS" models are stainless steel.

Model 901B is brass.

Other models are aluminum or zinc/aluminum.

MODEL NO.	THROAT DIAMETER	100 PSIG (SCFM)	(6.9 BAR) (SLPM)	AMPLIFICATION	DUCTE	D OUTPUT
901B	0.41" (10mm)	8	235	4:1	32 SCFM	(906 SLPM)
901XSS	0.39" (10mm)	9	255	5:1	45 SCFM	(1358 SLPM)
902/902XSS	0.79" (20mm)	17	482	12:1	204 SCFM	(5773 SLPM)
903/903XSS	1.57" (40mm)	25	708	19:1	475 SCFM	(13443 SLPM)
904	3.00" (76mm)	71	2012	20:1	1420 SCFM	(40186 SLPM)
905	5.00" (127mm)	117	3311	20:1	2400 SCFM	(67920 SLPM)

Transvectors use the impulse principle to achieve amplified airflows. When compressed air enters the Transvector, it fills a chamber that has only one exit path — a 0.002" (0.051mm) orifice. As the air is forced out of the orifice, it accelerates and collides with surrounding air entraining a great volume of free, ambient air. The result is a large volume of output air in return for a small amount of compressed air.





Round Transvectors effectively remove trim and scrap.

## Products for **Plant Maintenance**

## Spill Pick-Up System®

ITW Vortec's Model 2201 Spill Pick-Up System® picks up virtually any non-volatile industrial spill quickly, completely and conveniently. The Spill Pick-Up System has no motors to burnout or moving parts to break for years of reliable operation.

#### Features:

- Picks up non-volatile liquids. May also be used to pickup wet absorbent.
- · Eliminates absorbent, sock and pad disposal costs.
- Powered by filtered factory air (25 SCFM/708 SLPM at 80 PSIG/5.6 Bar).
- · Automatic safety shut-off prevents overflows.
- Includes 5-gallon canister, swivel suction hose connection and wand with squeegee.
- Components are resistant to most non-volatile industrial chemicals.

### Models:

MODEL NO.	DESCRIPTION
2201	Spill Pick-Up System complete with canister, wand, squeegee and ball valve.

The Model 2201 Spill Pick-Up System is not intended for use with flammable or volatile liquids such as gasoline, alcohol, kerosene, aviation fuel, mineral spirits or any materials that have a low flash point.



ITW Vortec's Spill Pick-Up System cleans up non-volatile industrial spills.



## Products for **Plant Maintenance**

### Transvector® Vacuum Pumps

ITW Vortec's Transvector® Vacuum Pumps pull liquids directly into 55 gallon drums quickly and efficiently. Drum-emptying capabilities may be added with Vortec's Dual Mode TVP™ Transvector Vacuum Pump.

### All Vortec Transvector Vacuum Pumps feature:

- Fast setup install on drum in less than a minute.
- No moving parts; constructed with materials designed for years of reliable operation.
- Automatic safety shut-off valve to prevent overflows.
- Durable aluminum and steel tools plus heavy-wall, smooth-bore PVC hose with quick-release coupling.
- Optional wand and squeegee (Model 2102) to add spill pick-up capabilities.

### The Dual Mode TVP Transvector Vacuum Pump offers these additional features:

- · Switch between empty and fill modes in less than 10 seconds.
- Spring-loaded pressure relief valve.

### Models:

	INLET PRESSURE	AIR CONSUMPTION	VACUUM (INCHES	WATER FLOW	V RATE (GPM)
MODEL NO.*	PSIG (BAR)	SCFM (SLPM)	OF MERCURY)	FILL	EMPTY
2101	100 (6.9)	22.5 (637)	8.7	40.0	_
2104	100 (6.9)	22.0 (623)	10.5	29.5	45.0

\* Includes pump, ball valve, safety shut-off valve, 1.5" (4cm) I.D. vacuum hose (10" (3m) length) with coupling, 18" (46cm) aluminum wand and evacuation tube (Model 2104 only).

40 to 100 PSIG (2.8-6.9 Bar) compressed-air source required for operation.

The TVP and Dual Mode TVP are not intended for use with flammable or volatile liquids such as gasoline, alcohol, kerosene, aviation fuel, mineral spirits or any materials that have a low flash point.

### Hand-E-Vac™ Industrial Cleaning Guns

Vacuuming or blowoff is fast and efficient with the Hand-E-Vac™ Industrial Cleaning Gun. Hand-E-Vac is powerful yet economical and easy-to-use. The compressed-air-powered Hand-E-Vac switches from a vacuum to a blow gun in seconds simply by reversing the nozzle insert. A complete range of Hand-E-Vac accessories is available for total industrial cleaning versatility.

Use Hand-E-Vac DH to remove chips from deep holes after drilling.

All Hand-E-Vac models are made of impact-resistant materials for durability and have no moving parts to break.

### Models:

Choose the Hand-E-Vac Gun and Accessory Kit that best fits your application:

MODEL NO.	DESCRIPTION	
2001	Hand-E-Vac gun only.	
2007	Hand-E-Vac DH Deep-Hole gun only.	
2004	Hand-E-Vac Accessory Kit, includes 2 Extension Rods, Crevice Tool, Skimmer Tool and Bru	
2010	Hand-E-Vac Conveying Kit, includes Extension Rod, 10' (3m) Hose and Clamp.	
2011	Hand-E-Vac Bag Kit, includes Extension Rod, Dust Bag and Clamp.	
2012 Hand-E-Vac Waste Containment Kit, includes Extension Rod, 10' (3m) Hose, Di Hose Clamps and Clip.		



Dual Mode TVP fills drums to 30 GPM and empties to 45 GPM.



Hand-E-Vac Conveying Kit is ideal for cleaning up metal chips.



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ITW Vortec An Illinois Tool Works Company



