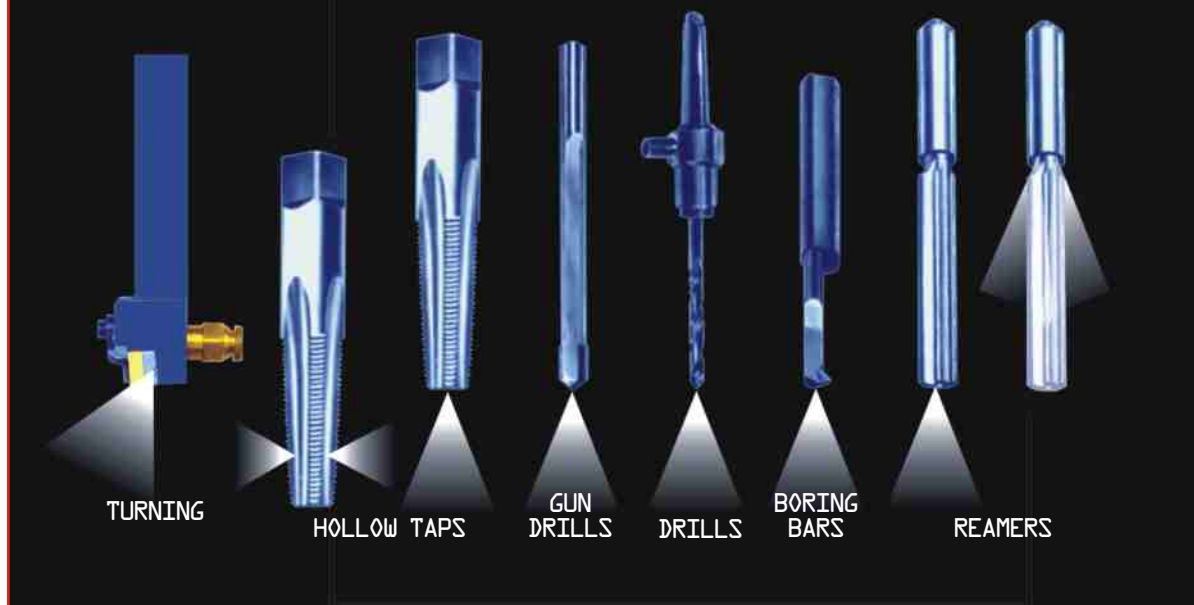


THRU~~THE~~**TOOL**

CONTROLLED AIR/FLUID DELIVERY SYSTEMS FOR COOLANT FED TOOLING



Some Facts About Thru-The-Tool Systems

In recent years, the range of tools with internal coolant routing has dramatically increased. The advent of high efficiency “clean” lubricants has enhanced the advantages of applying a fluid in spray form in any Thru-The-Tool coolant application. Unist is cognizant of this revolution and has been manufacturing a range of minimal fluid application systems that most effectively and inexpensively apply minute but adequate coolants and lubricants. The use of Thru-The-Tool Systems allows the coolant/lubricant to be applied directly at the tool-work interface.

All Unist systems can be directly operated by existing NC or CNC machine control.

Thru-The-Tool Systems offer benefits including:

- Improved housekeeping.
- No recycling maintenance, or costly disposal of flood coolants.
- Expanding compressed air cools tooling and helps remove chips from the cutting interface.
- Mist coolant or lubricant application “leads” the tools cutting edge throughout the cutting cycle.
- High efficiency lubricants stand up to the tremendous pressures exerted in high speed operations such as gun drilling, boring, etc.
- High efficiency lubricants cling to the cutting surface longer than ever, drastically reducing the generation of heat.
- Lubricants lubricate the flutes, holes, and chips, improving hole quality in drilling.
- Replacement of high pressure flood systems with our IN-THE-SPINDLE fluid spray system (Patent Pending)
- Often dramatic improvements in tool life, Improved surface finish with no speed or feed limits.

Water Soluble or High Efficiency Lubricant Application System?

Water soluble coolants are used:

1. To increase cooling properties due to the heat absorption of water vapor evaporation.
2. To maintain compatibility with a flood coolant that is used on the same machine.
3. For other considerations such as machined material, machining operations, subsequent processing, etc.
4. To reduce heat.

Suggested Water Soluble Systems are on page 4.

High efficiency lubricants are used:

1. On portable air tools because of the small reservoir required.
2. On aluminum, titanium, and composites primarily, but are also effective on nearly all materials in nearly every machining operation.
3. Where possible discoloration, subsequent cleaning, surface finish, and production speed are important considerations.

Suggested High Efficiency Lubricant Application Systems are on pages 5-7.

UNIST HAS THE ABILITY TO DESIGN AND BUILD ANY SIZE CENTRAL SYSTEM EMPLOYING:

- **Water Based Fluids • High Efficiency Lubricants • External Nozzle Mixing Systems**
- **Thru-The-Tool Systems - or any combination of the above.**

Coolant Inducers

Coolant inducers are one way of getting the fluid and air to the drill tip using a rotating spindle. The coolant inlet remains stationary while the spindle turns. Coolant inducers are very versatile in that they can be used in conjunction with drills, reamers, taps, gun drills, and many other cutting tools. Coolant inducers are available in a wide variety of sizes and shanks through a number of industrial supply houses. *Contact UNIST for a list of vendors that can supply the proper inducer for your system.*

Coolant-Fed Bushings

Coolant-fed bushings are the latest addition to Thru-The-Tool cooling systems. The coolant does not flow directly through the drill itself but surrounds it through the supporting bushing. The bushing actually serves a three-fold purpose: 1. It locates the drill - 2. It maintains drill straightness - 3. It routes and directs the mist down the drill flutes. *Coolant-fed bushings are available through a number of industrial supply outlets.*

Coolant-Fed Spindles

Unist has the ability to supply any coolant/lubricant in the "Near Dry" concept through horizontal and vertical spindles. The fluid and compressed air are always retained in separate conduits until reaching the tool. Check valve(s) in the fluid line are optional. UNIST WILL MODIFY OR SUPPLY ANY inlet rotary coupling to a co-axial configuration. There are no tool size or type limitations. A minimal fluid system thru-the-spindle will usually provide the same end results (finish, tool life, cycle time) as a high pressure flood system without the coolant maintenance, filtration floor space, power and initial system cost.

Coolant-Fed Turning Tool Holders

Because turning is one of the more difficult operations to efficiently apply coolant lubricant (flood or Near-Dry), it needs special considerations. Unist and some tool holder suppliers will modify or supply stock tool holders to continuously direct the spray directly to the insert/workpiece interface. This can be accomplished on "stand alone" machines or turret type machines designed for flood coolants. Retrofitting a machine is common and inexpensive. This method has been found very effective in all turning operations. Unist can provide a system to feed minimal fluid and compressed air thru a turret to either a coolant fed tool or spray externally as the tool changes.

The Revolutionary Metalworking Lubricant



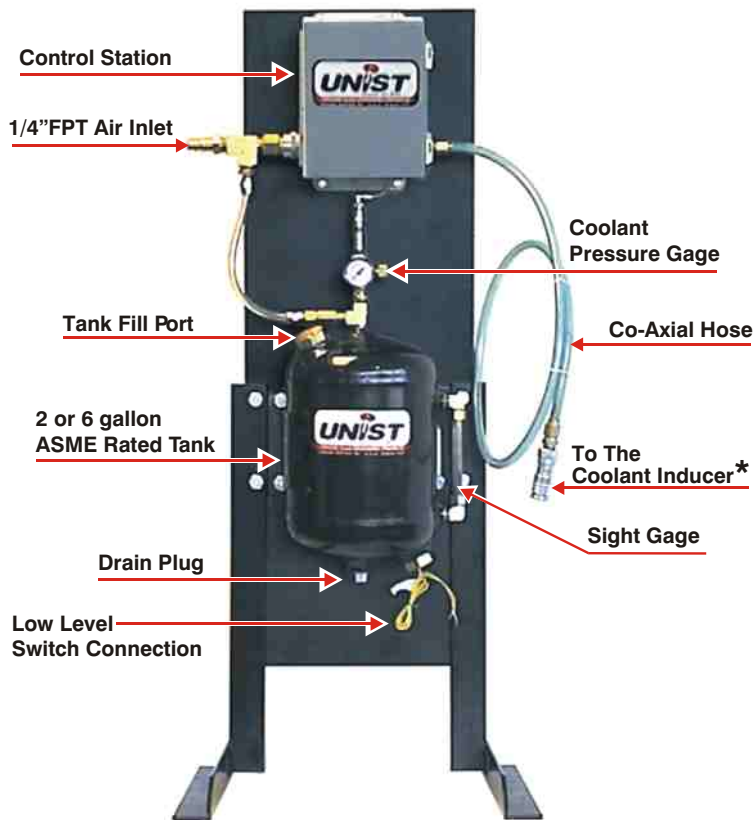
Coolube 2210 metalworking lubricant replaces flood coolants and lubricants. You get less reworking of parts because of exit burrs, oversize holes, and rough finishes. Tools stay sharper much longer and during extreme pressure is when this product really shines. After cleaning up with a solvent or warm water and detergent, you can plate, paint or seal over a surface exposed to Coolube. Do away with costly coolant disposal charges. Use drops instead of gallons and save.
WORKS GREAT ON: Aluminum, Magnesium, Steel, Stainless Steel, Titanium, and many other exotic and nonexotic materials.

Uses:

Forming
Drilling
Tapping
Reaming
Sawing
Sanding
Grinding
Milling
Punching
Stamping
Shearing
Forging
Swaging
Broaching
Turning
Press Fitting
-And lots More-

Advantages:

Non-Toxic
Non-Polluting
Non-Drying
Non-Staining
Contains No Chlorine
Permits Plating and Painting
With No (minimal) Clean-up
Seal Compatibility
Extreme Pressure Capability
Contains No Silicones
Contains No Petroleum Products
Extremely Cost Effective
Biodegradable



*NOTE: For Thru-Spindle applications there are separate air and coolant lines.

NOTE: A central supply storage tank can feed numerous control stations. Consult factory for further information.

NOTE: Automatic operation by a flow sensing valve for use with portable air tools is also available. (Includes separate tool air hose and cutting tool mist hose).

9040 POWERCOOL SYSTEM

High Velocity, Thru-The-Tool System For Fixed Machine Tools using Coolant Inducers or Hollow Spindles with water based fluids

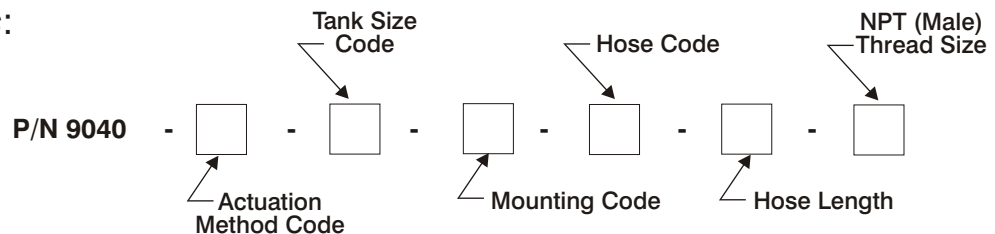
Special Features:

- System actuated by ball or sleeve valve, solenoid valve, or air pilot valve
- Tank sizes 2, 6 or 15 gallon
- Adjustable coolant flow
- Dependable and consistent mist flow
- Several mounting arrangements including: Independent-(Separate tank and control stations) Bracketed-(Tank and station bracketed together) and Free Standing-(Tank and station mounted together with leg brackets as shown).

Powercool Stands Alone

Powercool is the only mist coolant system of it's kind. The system's compact design and simple construction lends itself to virtually any coolant-fed tooling application. A single air supply source at 80-100 psi operates the system, feeding coolant from the supply tank to the control station and then in regulated amounts through a co-axial hose to the coolant inlet at the tool or spindle. An air regulator controls the system air pressure and a needle valve controls coolant output. A 3-way sleeve valve depressurizes the tank to facilitate quick and easy refilling.

Ordering Instructions:



Part No. Code Information

METHOD OF ACTUATION		TANK SIZE		MOUNTING		HOSE (15'-0 long) (Standard unless specified)		
Description	Code	Gal. Cap.	Code	Description	Code	Dia.	MPT	Code
Ball or Sleeve Valve	M	2	2	Free Standing**	F	1/4	1/4	4
Solenoid* Valve	S*	6	6			3/8	3/8	6
Air Pilot Valve	P	15	15	Independent	I	1/2	1/2	8

* Specify voltage **Not available with 15 gallon tank

*For tools 3/8" and under, and coolant fed bushings, the Unist Coolubricator series should be used - See Unist Catalog No.U-996-3



WHIRLWIND *Spindle Coolant/Lubricant Spray Systems*

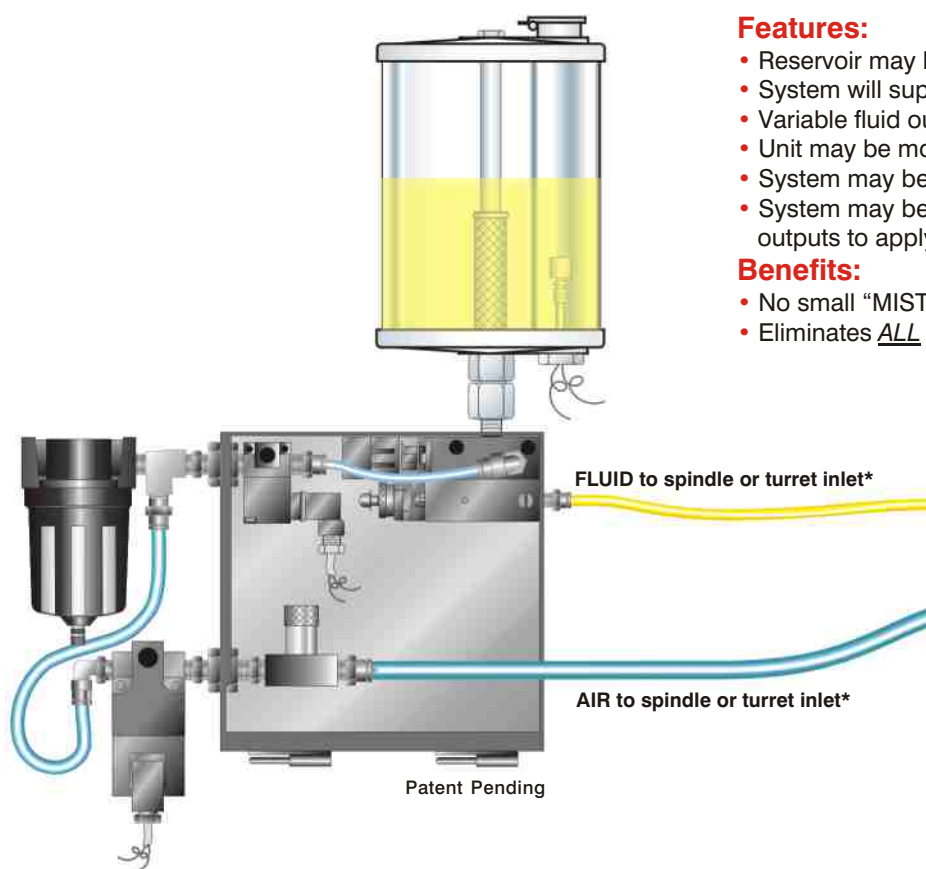
Special Features & Benefits

Features:

- Reservoir may be any size - Pressurized or Gravity
- System will supply any size tool
- Variable fluid output per tool optional feature
- Unit may be mounted at any elevation within 25 feet of tool
- System may be controlled by machine controls
- System may be combined with one or more additional outputs to apply fluid externally to nozzles

Benefits:

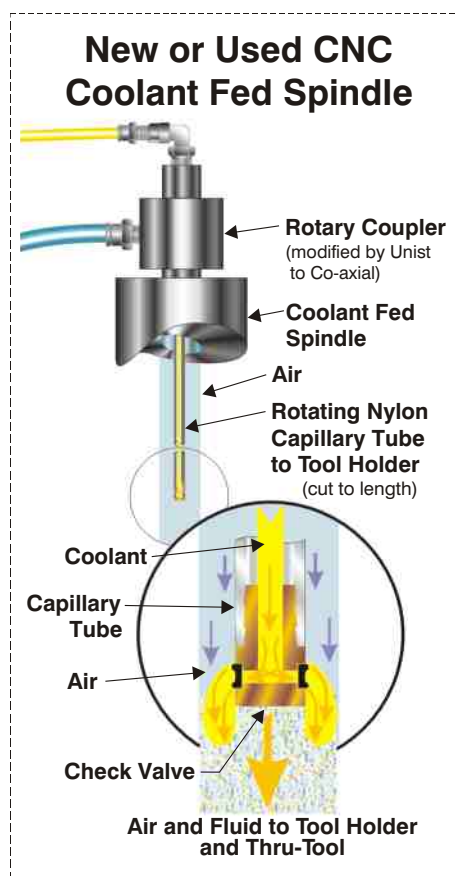
- No small "MIST" particles
- Eliminates ALL flood coolant considerations



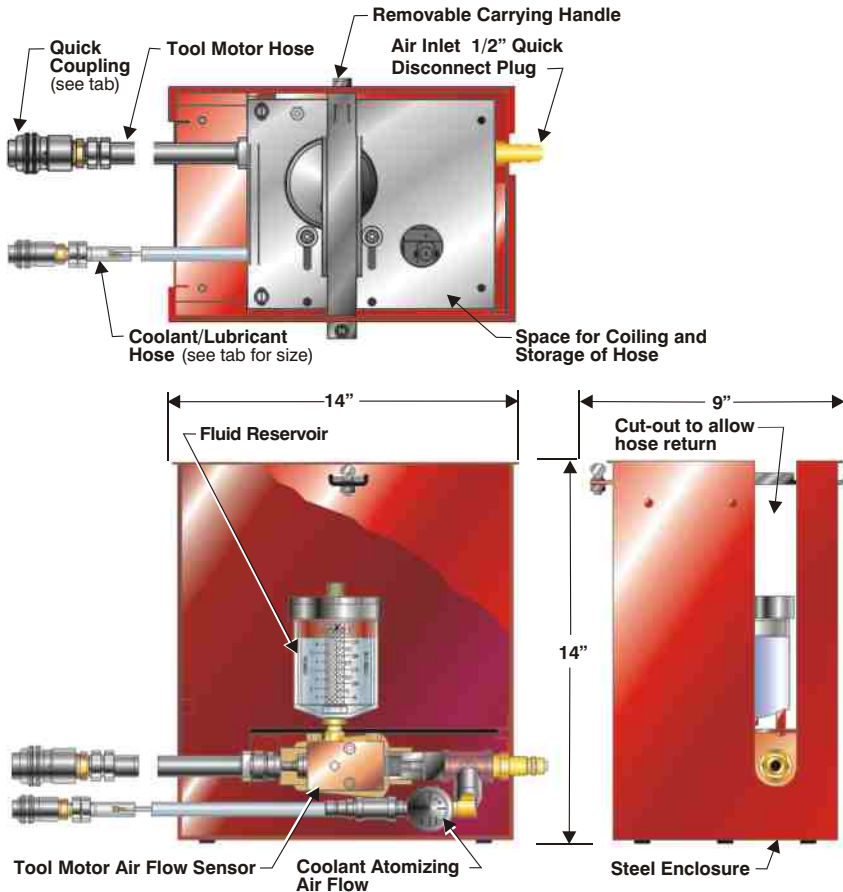
HOW THE SYSTEM WORKS

The Whirlwind System is designed primarily to be used on all makes and models of vertical and horizontal computer controlled machining centers. It may also be used on some "stand-alone" machines. This system applies fluids in minimal quantities combined with compressed air directly and consistently to the tool/workpiece interface. The Whirlwind system primarily reduces heat generation - but also absorbs heat and transfers heat out of the generated area.

This system produces fluid particles that are large enough to wet-out and penetrate the heat generating tool/workpiece interface. This reduces heat in the tool, provides better finishes, slightly lubricates chips, etc. while eliminating all flood coolant cost.



*Attachment fittings vary by machine - Consult factory for proper fittings



How To Order:

P/N = 85-4050 - 1

See chart below for suffix

85-4050 TYPHOON SYSTEM

Portable, Automatic Flow Sensing
System For Portable Air Tools

Special Features:

- Automatic system actuation with air tool operation
- Hoses coil inside enclosure for convenient storage
- Entire system easily removed from enclosure for adjustment and servicing
- Various Size Reservoirs
- Adjustable mist density and mist air flow rates
- Optional Air Motor Lubrication

How the System Works

The 85-4050 Typhoon System is intended for use with air tools where automatic instant on-off application of the coolant/lubricant to the cutting tool is required.

Every time the tool is triggered the system senses the air flowing to the tool and automatically starts operating. Fluid density and air flow rates are both independently adjustable. The 1/2" tool motor hose is for non-lubricated tool air only. The 3/8" lubricant hose delivers mist at rates anywhere from 1-200 drops/min. With hoses coiled inside the box, the entire unit can be hand carried to different locations, or stacked for convenient storage.

Tabulation Chart

Suffix	Mist Hose Diameter	Mist Hose Length	Mist Hose Coupling Size	Tool Motor Hose Diameter	Tool Motor Hose Length	Tool Motor Coupling Size
-1	3/8"	10'	3/8"	1/2"	10'	1/2"
-2	3/8"	10'	1/4"	1/2"	10'	1/2"
-3	3/8"	6'	3/8"	1/2"	6'	1/2"
-4	3/8"	6'	1/4"	1/2"	6'	1/2"

NOTE: Other hose lengths, sizes, or coupling sizes available. Consult factory.
Contact UNIST, Inc. for numerous other models and central system capabilities.

...About Near Dry Turning

UNIST will convert any turning machine to a Near Dry operation. The system could employ Thru-The-Tool holder outlets and/or external nozzles.

Consult the factory for recommendations on your machine(s)

Pricing for items in this catalog are on quotation basis only

LOCAL REPRESENTATIVE

