

POSITIVE FEED DRILLS

Zephyr Automatic and Semi-Automatic Air Powered Positive Feed Drills represent a significant advancement in drilling precision holes for both aerospace and industrial applications. Zephyr positive feed drills incorporate a simple, rugged and highly versatile power and transmission system that results in unmatched performance and reliability whether the application is aluminum, heat treated steel, titanium or advanced composite structure. Straight, tapered, countersunk or counterbored holes, up to three inches in diameter and fifteen inches long, with finish diameter tolerances of .0003 can be drilled at high production rates with Zephyr drill systems.

Zephyr positive feed drills ensure high quality and productivity because of their built-in design features. Zephyr drills produce high quality holes by drilling at a fixed rate of feed with respect to drill rotation. The positive feed system avoids work hardening caused by drill rotation without cutting and premature drill failure due to excess pressure applied by the operator or drill breakthrough. The drilling cycle is fully automatic, the operator needs only to start the drill by a simple button or valve.

Zephyr positive feed drills have been designed to achieve performance levels and unmatched service life with motor sizes and transmission systems significantly smaller than current systems. These features reduce operator fatigue, increase productivity, allow access in severely restricted areas and reduce the use of compressed air.

Zephyr drills have been designed for long service life at high production rates. They require minimum maintenance and will deliver reliable performance under severe operating conditions.

Zephyr positive feed drill systems are available in a wide range of sizes and styles, inline, piggy-back and right angle drills. Feed rates of .0005 to .016 and motor speeds in excess of 3,000 RPM's are available. In addition Zephyr offers a wide range of standard and special accessories such as magnetic bases, lubricators, special nose pieces, offsets, portable gun drills and fully automated systems.

Zephyr has a major ongoing commitment to the development of new drilling concepts, designed to increase both productivity and quality standards.

We would welcome the opportunity to service your special requirements on an individual basis.

ZEPHYR

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POSITIVE FEED DRILLS

DESIGNED AND MANUFACTURED WITH RIGID PRECISION REQUIREMENTS, A MINIMUM OF DETAIL PARTS, PLUS THE USE OF QUALITY MATERIALS, PRESENT A STRONG AND RUGGED UNIT WITH A MINIMUM OF MAINTENANCE NEEDS.

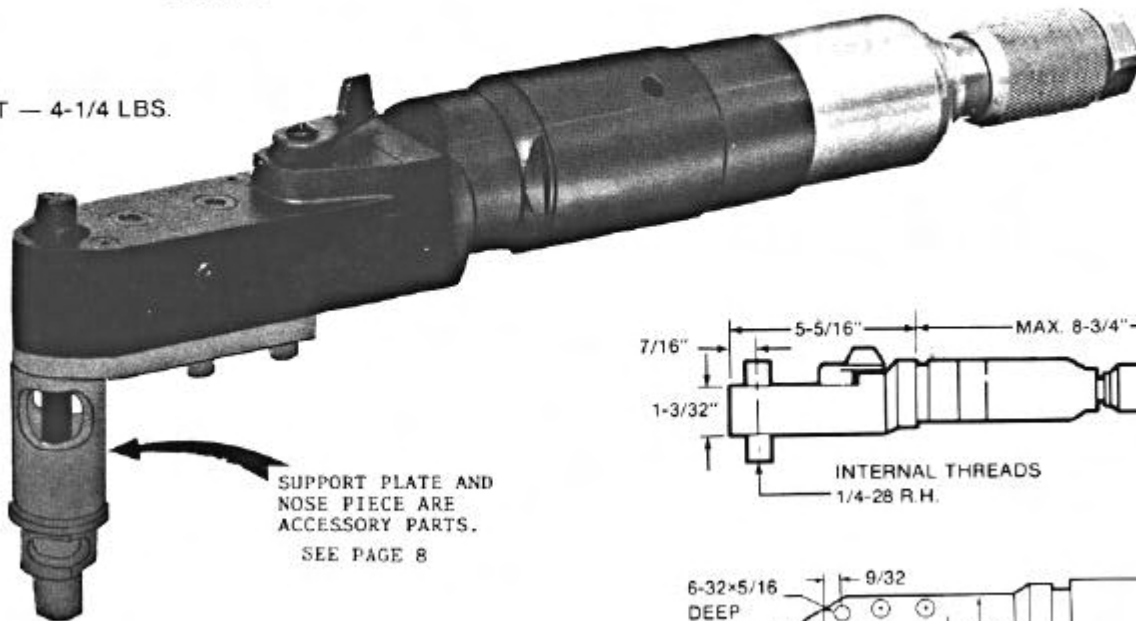
CHECK THESE FEATURES:

- 1. POSITIVE FEED**
- 2. RAPID SPINDLE RETURN**
- 3. FULL AUTOMATIC CYCLE, OR**
- 4. SEMI AUTOMATIC CYCLE, (RESET FOR DRILLING)**
- 5. MINIMUM SPINDLE OFFSET**
- 6. OVERLOAD PROTECTION**
- 7. STROKE LENGTH CONTROL**
- 8. OPTIONAL SPINDLE LENGTH**
- 9. OPTIONAL MOTOR SPEEDS**
- 10. OPTIONAL FEED RATES**
- 11. ACCURATE DEPTH CONTROL FOR COUNTERSINKING**

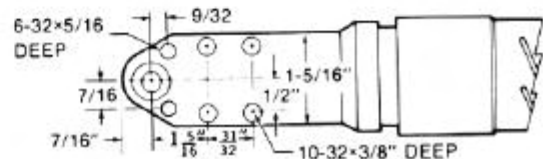
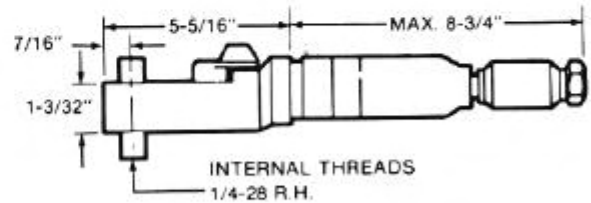
COMPARE THE ABOVE WITH THE TOOLS YOU ARE NOW USING, THEN WRITE AND REQUEST A DEMONSTRATION IN YOUR PLANT.

A 90 DEGREE, MANUALLY OPERATED ANGLE DRILL WITH
MINIMUM SPINDLE OFFSET PERMITS USE IN RESTRICTED
AREAS.

WEIGHT — 4-1/4 LBS.



SUPPORT PLATE AND
NOSE PIECE ARE
ACCESSORY PARTS.
SEE PAGE 8



DRILL CAPACITY

1/2" Dia. in Aluminum
3/8" Dia. in Steel
3/8" Dia. in Titanium

SPECIFICATIONS

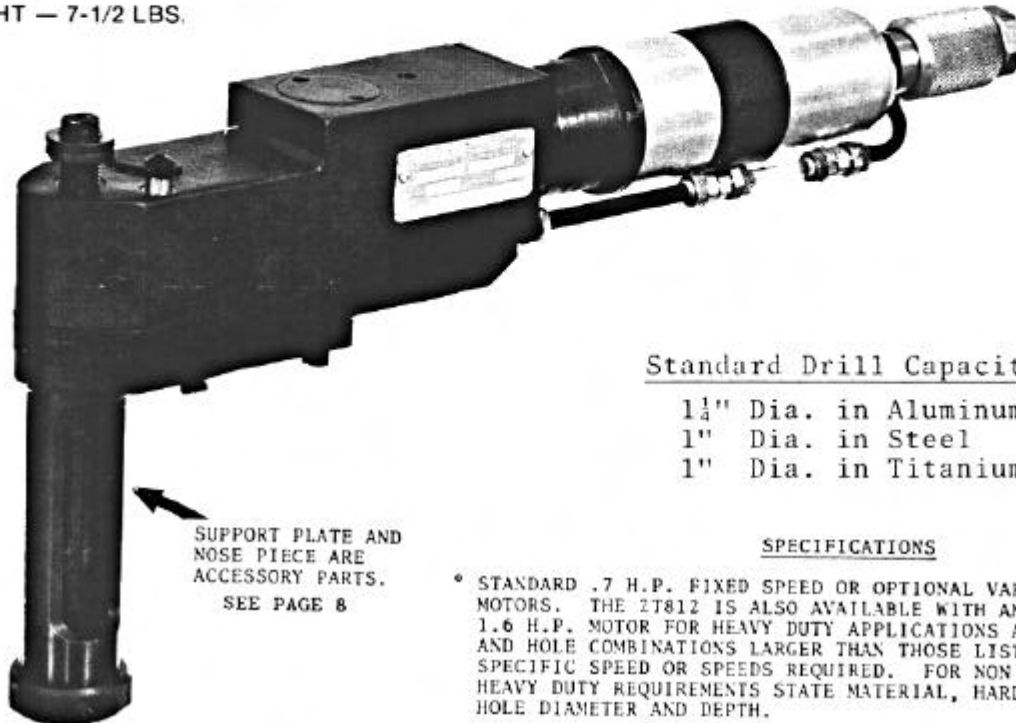
- ° STANDARD .5 H.P. FIXED SPEED OR OPTIONAL VARIABLE SPEED MOTORS. STATE SPECIFIC SPEED OR SPEEDS REQUIRED.
- ° DRILL SUPPLIED WITH STANDARD LENGTH SOLID SPINDLE OR OPTIONAL OIL HOLE SPINDLE THROUGH SPINDLE COOLANT ATTACHMENT AVAILABLE. STATE SPINDLE LENGTH AND STYLE.
- ° STANDARD FEED RATES ARE LISTED. OPTIONAL FEED RATES FROM .0005 TO .016 ARE AVAILABLE. STATE SPECIFIC RATE REQUIRED.
- ° SUPPORT PLATE, NOSE PIECE, AND NOSE LOCK BUSHING ARE ACCESSORY PARTS AND ARE NOT INCLUDED AS STANDARD PARTS. IF REQUIRED, STATE LENGTH, DIAMETER AND NOSE LOCK BUSHING SIZE AND SERIES TYPE.
- ° DRILL AND MOTOR CASES, TRANSMISSION AND MOTORS ARE MACHINED FROM SOLID BAR STOCK AND ARE FULLY HEAT TREATED.
- ° SPINDLE IS SUPPORTED BY HEAVY DUTY BEARINGS.
- ° SHEAR KEY OVERLOAD SYSTEM PREVENTS DAMAGE TO CRITICAL COMPONENTS.
- ° RAPID SPINDLE RETRACTION PERMITS FASTER DRILLING CYCLE.
- ° NO CHANGE IN SPINDLE ROTATION DURING THE RETRACTION CYCLE PRODUCES SUPERIOR HOLES.
- ° MOUNTING DIMENSIONS ARE SHOWN FOR USE ON SPECIAL FIXTURES.
- ° FOR PEAK PERFORMANCE AIR LINE PRESSURES SHOULD BE 90-100 P.S.I. WITH HOSE OF 3/8" INSIDE DIAMETER AND TOOL FITTING OF 9/32".

AVAILABLE SPEEDS	AVAILABLE FEED (AT ANY SPEED) INCH PER REV	STROKE	SPINDLE LENGTH
150 200 300 400 665 1000 1330	.002	1/2"	1-1/2"
		1"	2"
		2"	3"
	.003	1/2"	1-1/2"
		2"	3"
	.004	1/2"	1-1/2"
1"		2"	
2"		3"	
2"		3"	
.006	1/2"	1-1/2"	
	1"	2"	
	2"	3"	
	2"	3"	
.008	1/2"	1-1/2"	
	1"	2"	
	2"	3"	
	2"	3"	

OTHER MOTOR SPEEDS AVAILABLE ON REQUEST.

90 DEGREE ANGLE DRILL WITH SEMI AUTOMATIC CONTROL, SUITABLE FOR CLOSE QUARTER WORK. ZT812 HAS RUGGED CONSTRUCTION FOR USE ON HEAVY WORK SUCH AS HEAT TREATED TITANIUM AND STAINLESS STEELS.

WEIGHT — 7-1/2 LBS.



SUPPORT PLATE AND NOSE PIECE ARE ACCESSORY PARTS. SEE PAGE 8

Standard Drill Capacity

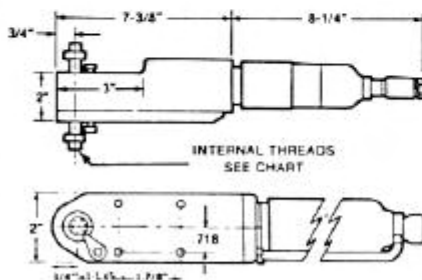
1 1/4" Dia. in Aluminum
1" Dia. in Steel
1" Dia. in Titanium

SPECIFICATIONS

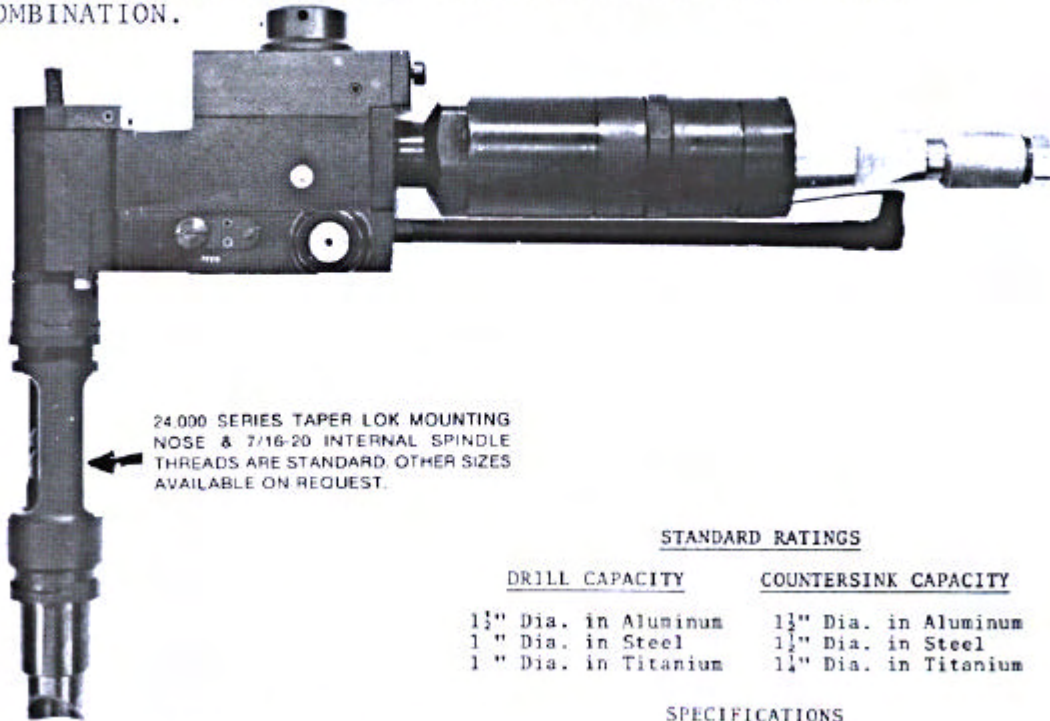
- STANDARD .7 H.P. FIXED SPEED OR OPTIONAL VARIABLE SPEED MOTORS. THE ZT812 IS ALSO AVAILABLE WITH AN OPTIONAL 1.6 H.P. MOTOR FOR HEAVY DUTY APPLICATIONS AND MATERIAL AND HOLE COMBINATIONS LARGER THAN THOSE LISTED. STATE SPECIFIC SPEED OR SPEEDS REQUIRED. FOR NON STANDARD HEAVY DUTY REQUIREMENTS STATE MATERIAL, HARDNESS AND HOLE DIAMETER AND DEPTH.
- DRILL SUPPLIED WITH STANDARD LENGTH SOLID SPINDLE OR OPTIONAL OIL HOLE SPINDLE THROUGH SPINDLE COOLANT ATTACHMENT AVAILABLE. STATE SPINDLE LENGTH AND STYLE.
- STANDARD FEED RATES ARE LISTED. OPTIONAL FEED RATES FROM .0005 to .016 ARE AVAILABLE. STATE SPECIFIC RATE REQUIRED.
- SUPPORT PLATE, NOSE PIECE, AND NOSE LOCK BUSHING ARE ACCESSORY PARTS AND ARE NOT INCLUDED AS STANDARD PARTS. IF REQUIRED, STATE LENGTH, DIAMETER AND NOSE LOCK BUSHING SIZE AND SERIES TYPE.
- DRILL AND MOTOR CASES, TRANSMISSION AND MOTORS ARE MACHINED FROM SOLID BAR STOCK AND ARE FULLY HEAT TREATED.
- SPINDLE IS SUPPORTED BY HEAVY DUTY BEARINGS.
- SHEAR KEY OVERLOAD SYSTEM PREVENTS DAMAGE TO CRITICAL COMPONENTS.
- ADJUSTABLE STROKE LENGTH, SPINDLE TRAVEL CAN BE ADJUSTED TO ± .005 REPEATABILITY FOR DEPTH CONTROL.
- STANDARD ADAPTERS AVAILABLE FOR ALL OTHER FIXED AND DEPTH SENSING NOSE PIECES.
- NO CHANGE IN SPINDLE ROTATION DURING THE RETRACTION CYCLE PRODUCES SUPERIOR HOLES.
- RAPID SPINDLE RETRACTION PERMITS FASTER DRILLING CYCLES.
- MOUNTING DIMENSIONS ARE SHOWN FOR USE ON SPECIAL FIXTURES.
- FOR PEAK PERFORMANCE AIR LINE PRESSURES SHOULD BE 90-100 P.S.I. WITH HOSE OF 3/8" INSIDE DIAMETER AND TOOL FITTING OF 9/32".

AVAILABLE SPEEDS	AVAILABLE FEED (AT ANY SPEED) INCH PER REV	STROKE	SPINDLE LENGTH		
			1/4-28	5-16-24	3/8-24
150 250 500 725 1000 1600	.001	1"	4-1/8"	4-1/8"	4-3/4"
		2"	5-1/8"	5-1/8"	5-3/4"
		3"	6-1/8"	6-1/8"	6-3/4"
	.0025	1"	4-1/8"	4-1/8"	4-3/4"
		2"	5-1/8"	5-1/8"	5-3/4"
		3"	6-1/8"	6-1/8"	6-3/4"
	.004	1"	4-1/8"	4-1/8"	4-3/4"
		2"	5-1/8"	5-1/8"	5-3/4"
		3"	6-1/8"	6-1/8"	6-3/4"
.006	1"	4-1/8"	4-1/8"	4-3/4"	
	2"	5-1/8"	5-1/8"	5-3/4"	
	3"	6-1/8"	6-1/8"	6-3/4"	
.008	1"	4-1/8"	4-1/8"	4-3/4"	
	2"	5-1/8"	5-1/8"	5-3/4"	
	3"	6-1/8"	6-1/8"	6-3/4"	

OTHER MOTOR SPEEDS AVAILABLE ON REQUEST.



90° AUTOMATIC HEAVY DUTY RIGHT ANGLE DRILL FOR PRECISION DRILLING, COUNTERSINKING, OR DRILL AND COUNTERSINKING COMBINATION.



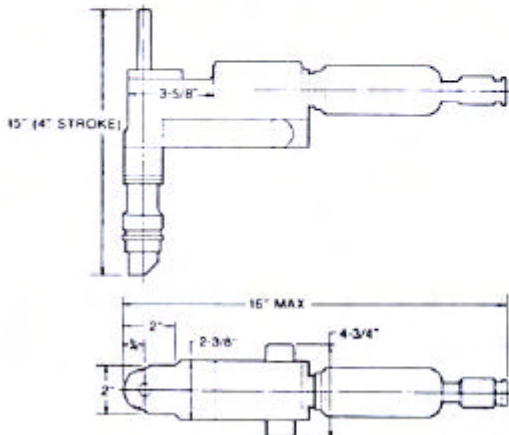
STANDARD RATINGS

DRILL CAPACITY	COUNTERSINK CAPACITY
1 1/2" Dia. in Aluminum	1 1/2" Dia. in Aluminum
1" Dia. in Steel	1 1/2" Dia. in Steel
1" Dia. in Titanium	1 1/2" Dia. in Titanium

SPECIFICATIONS

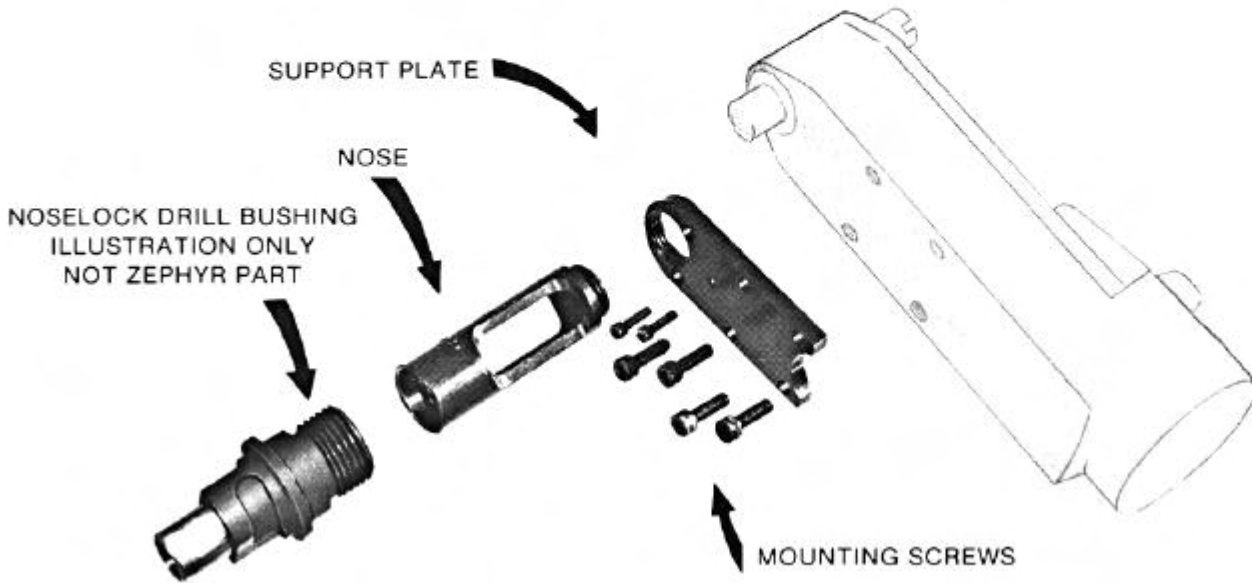
AVAILABLE SPEEDS	AVAILABLE FEED (AT ANY SPEED) INCH PER REV	STROKE	SPINDLE LENGTH
250 500 725 1000 1600	.001	2" 4"	8" 10"
	.0025	2" 4"	8" 10"
	.004	2" 4"	8" 10"
	.006	2" 4"	8" 10"
	.008	2" 4"	8" 10"

OTHER MOTOR SPEEDS AVAILABLE ON REQUEST.



- ° STANDARD 1.6 H.P. GOVERNOR CONTROLLED OR OPTIONAL VARIABLE SPEED MOTORS. STATE SPECIFIC SPEED OR SPEEDS REQUIRED.
- ° DRILL SUPPLIED WITH STANDARD LENGTH SOLID SPINDLE OR OPTIONAL OIL HOLE SPINDLE. THROUGH SPINDLE COOLANT ATTACHMENT AVAILABLE. STATE SPINDLE LENGTH AND STYLE.
- ° STANDARD FEED RATES ARE LISTED. OPTIONAL FEED RATES FROM .0005 TO .016 ARE AVAILABLE. STATE SPECIFIC RATE REQUIRED.
- ° THE ZT862 IS SUPPLIED WITH A STANDARD NOSE AND SENSING SLEEVE. 24,000 SERIES TAPER LOK MOUNTING NOSE AND 7/16-20 INTERNAL SPINDLE THREADS ARE STANDARD. OTHER SIZES AVAILABLE ON REQUEST.
- ° PATENTED FLOATING SENSING SLEEVE WILL COMPENSATE FOR VARIATIONS UP TO 3/4 INCH BETWEEN THE WORK SURFACE AND THE DRILL FIXTURE.
- ° COUNTERSINK DEPTH ACCURACY ± .001.
- ° MANUAL RETRACTION AT ANY POINT OF DRILLING.
- ° FULLY AUTOMATIC CYCLE WITH RAPID RETRACTION.
- ° DRILL AND MOTOR CASES, TRANSMISSION AND MOTORS ARE MACHINED FROM SOLID BAR STOCK AND ARE FULLY HEAT TREATED.
- ° SPINDLE IS SUPPORTED BY HEAVY DUTY BEARINGS.
- ° SHEAR KEY OVERLOAD SYSTEM PREVENTS DAMAGE TO CRITICAL COMPONENTS.
- ° RAPID SPINDLE RETRACTION PERMITS FASTER DRILLING CYCLES.
- ° NO CHANGE IN SPINDLE ROTATION DURING THE RETRACTION CYCLE PRODUCES SUPERIOR HOLES.
- ° OPTIONAL RAPID ADVANCE
- ° FOR PEAK PERFORMANCE AIR LINE PRESSURES SHOULD BE 90-100 P.S.I. WITH HOSE OF 3/8" INSIDE DIAMETER AND TOOL FITTING OF 9/32".

NOSELOCK BUSHING ADAPTORS



USED ON DRILL MODEL	SPINDLE STROKE LENGTH	BUSHING THREADS L. HAND	ASSEMBLY NUMBER	SUPPORT PLATE	NOSE PIECE	MOUNTING SCREWS
ZT802	1"		ZT802099		ZT8010107	ZT449-15
	2"	3/4-16	ZT8020100	ZT8020106	ZT8010108	&
	3"		ZT8020101		ZT8010109	ZT507-2

USED ON DRILL MODEL	STROKE LENGTH	BUSHING THREADS L. HAND	ASSEMBLY NUMBER	SUPPORT PLATE	NOSE PIECE	MOUNTING SCREWS	ALSO REQUIRED
ZT812	1"	3/4-16	ZT8120101	ZT812066	ZT8110247	ZT1884-2	ZT8110204 SPACER
		1-14	ZT8120102		ZT8110207		
		1-1/4-12	ZT8120103		ZT8110269		
		1-1/2-12	ZT8120104		ZT8110170		
	2"	3/4-16	ZT8120105		ZT8110248		ZT8110205 WASHER
		1-14	ZT8120106		ZT8110208		
		1-1/4-12	ZT8120107		ZT8110270		
		1-1/2-12	ZT8120108		ZT8110171		
	3"	3/4-16	ZT8120109		ZT8110249		ZT811-23 BUTTON HEAD SCREW
		1-14	ZT8120110		ZT8110209		
		1-1/4-12	ZT8120111		ZT8110271		
		1-1/2-12	ZT8120112		ZT8110172		

OTHER NOSELOCK BUSHING ADAPTORS ARE AVAILABLE ON REQUEST. THESE ALLOW FOR FINE LENGTH ADJUSTMENTS AND POSITIONING OF THE TOOL IN RELATION TO THE STRUCTURE.