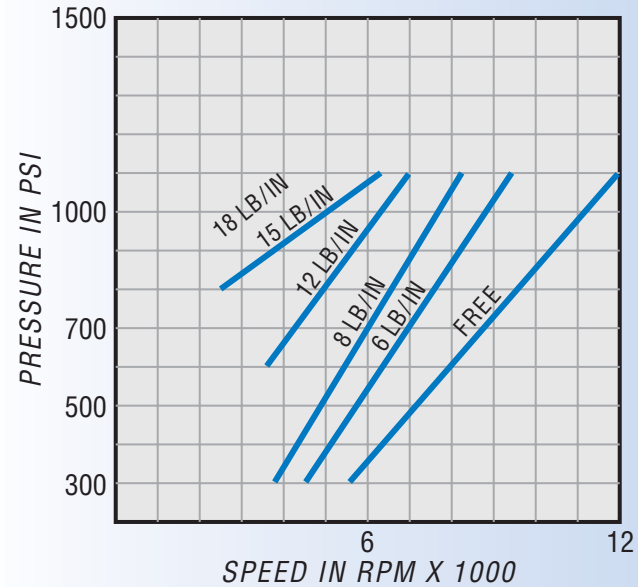
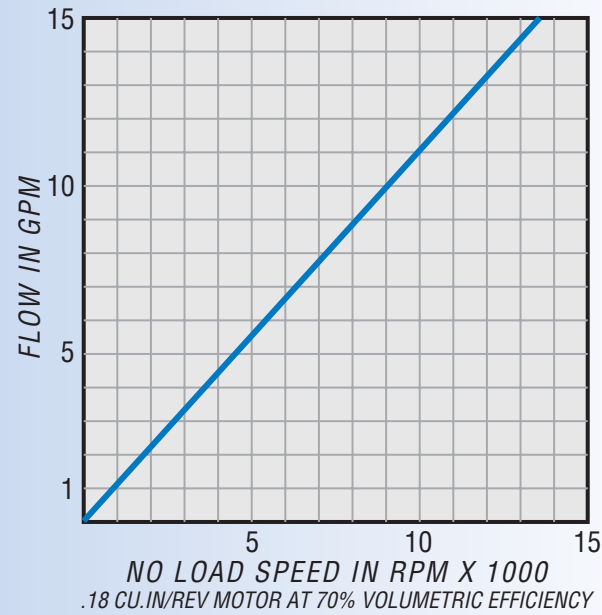


Performance Data



Speed is based on flow

At approximately 70% volumetric efficiency the .18 cu. in/rev ball piston motor will rotate at about 900 rpm per gpm flow (231 x .7/.18).

To calculate theoretical horsepower:

$$\frac{\text{Pressure in PSI} \times .019 \times (\text{Flow in GPM} \times 900)}{63025} = \text{Horsepower}$$

Torque is based on pressure

Under test conditions, the ELTOOL ball piston motor develops 1.9 inch pounds of torque per each 100 psi of coolant pressure. Many things affect actual performance including the viscosity of the coolant and condition of the motor itself. The chart below shows speed (rpm) at various coolant pressures under various load conditions.

How to Order

Order example:
 A CAT50, Size 2 (Medium) drilling head, standard length tool for a through-the-spindle machine using an ELTOOL Spindle would be part number **CV-50-2-D-1-1-3**.

CV CAT STD SS Straight SP Other	40 40 Taper 50 50 Taper 1 1/4 1 1/4" (SS Dia) SP Other	1 Small 2 Medium 3 Large 0 Special	D Drilling M Milling 0 Special	1 Standard 2 Extended 9 In-Line 0 Special	1 Thru Spindle 0 Special	1 Taperlock 2 ER-11 Spindle 3 ELTOOL Spindle 4 ER-16 Spindle 5 Weldon Spindle 0 Special
Shank Type	Shank Size	Head Size	Head Type	Head Length	Coolant Delivery	Spindle Type

For Technical Assistance
 call toll-free
 1-877-4ELTOOL (435-8665)

Stay up-to-date by
 visiting our website at
www.eltool.com

For a free video demo
 on CD-ROM, email us at
info@eltool.com

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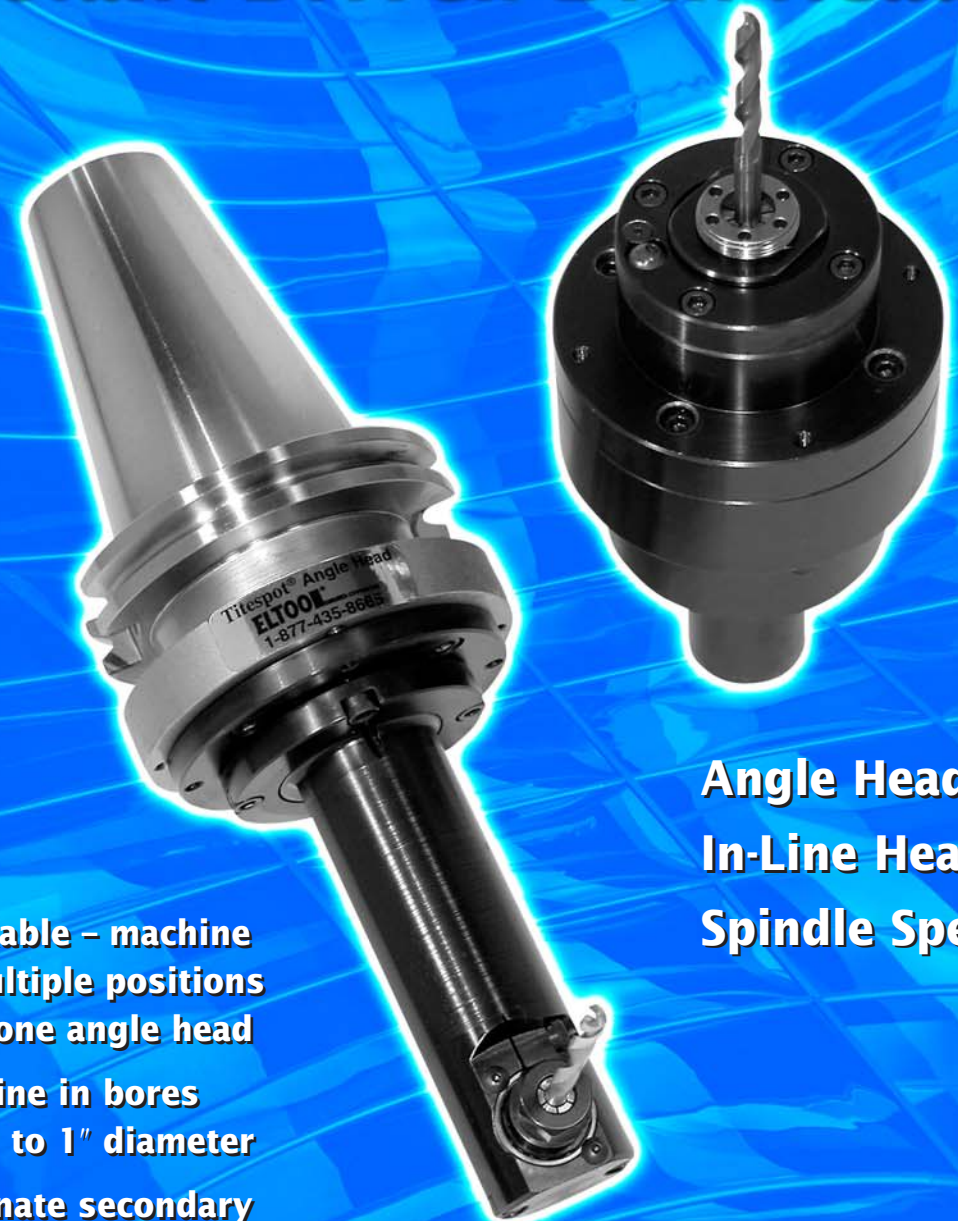
ELTOOL Corporation 1665 Central Ave. Cincinnati, OH 45214
 Ph: 513 723-1772 Fax: 513 721-8974 Email: info@eltool.com

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Made in USA

TITESPOT[®]

Coolant Driven Drill Heads



Angle Heads
 In-Line Heads
 Spindle Speeders

- ▼ Indexable - machine at multiple positions with one angle head
- ▼ Machine in bores down to 1" diameter
- ▼ Eliminate secondary operations, multiple angle heads, expensive part indexers

ELTOOL

Made in USA

Catalog T-2

A New Technology Solution

Coolant Driven Drill Heads—How They Work

Proliferation in the use of high pressure coolant systems as a machining aid fostered the development of Titespot® Coolant Driven Drill Heads by Eltool Corporation.

Unlike mechanically driven heads, Titespot Drill Heads do not depend upon spindle rotation for power. Instead, they utilize your high-pressure coolant system (200 to 1500 PSI depending on the “load” of the application) to drive an integral positive displacement ball piston motor. They clamp rigidly in the tool spindle or lathe turret and load easily from an automatic tool changer. Manufactured to exacting standards, Titespot Drill Heads feature hardened spiral miter gears for efficient power transfer and durability.

Angle Heads

- ▼ Eliminate secondary operations
- ▼ Improve accuracy
- ▼ Reduce tool and set-up costs

Titespot Coolant Driven Angle Heads are a new technology solution to the old problem of right angle machining in confined areas and/or at multiple radial positions. When compared to conventional mechanically driven heads, Titespot Angle Heads offer these important advantages:

Indexability: Spindle rotation is not required to drive a

Titespot Angle Head. Your spindle is free to function as an indexer, allowing multi-position machining with one angle head and one set-up. It's like adding a new axis of motion to your machining center.

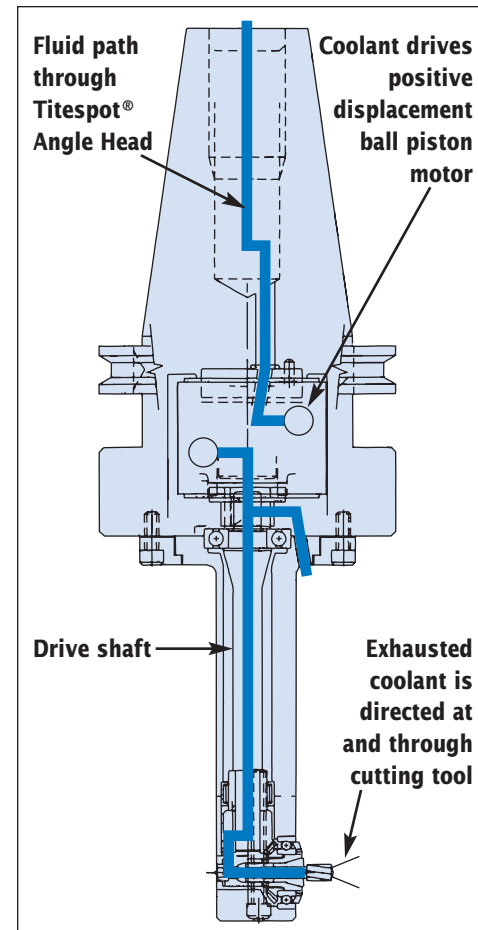
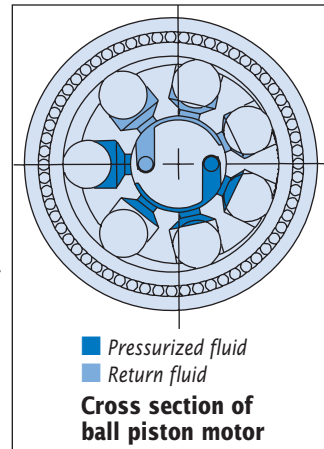
Accessibility: Eltool's proprietary elliptical head design allows machining in areas not accessible to mechanically driven heads. Titespot Angle Heads can machine radially in bores or cavities as small as one inch in diameter, and within one-half inch of a base, shoulder, or wall.

Rigidity: Titespot Angle Heads do not depend on large bearings for housing support as do mechanically driven heads. Bearing “play” is eliminated. System rigidity, durability, and accuracy are improved.

Durability: High volume coolant flow through the Titespot Angle Head eliminates destructive heat buildup commonly associated with mechanically driven heads. Our angle heads have been tested at 13,500 rpm, 100% duty cycle for 100 hours with no measurable motor wear.

In-Line Heads

The In-Line version of our coolant driven drill head provides a low cost way to convert an ordinary lathe to live tooling. Capable of speeds up to 13,500 RPM, the In-Line head also functions as a spindle speeder on machining centers.



Benefits vs. Mechanical Heads

Compact head profile

Eliminate secondary operations
Reduce handling-improve accuracy
Reduce cycle times

Indexable

Eliminate need for multiple angle heads or expensive index tables

Solid design from shank to tool spindle

Improve rigidity, accuracy and repeatability

“Cool” operation

Increase duty cycles, reduce maintenance cost and downtime

Typical applications

- ▼ Drilling piston ports in a hydraulic motor
- ▼ Drilling bleeder holes in door closers
- ▼ Milling keyways and oil grooves in bushings
- ▼ Drilling air holes in vacuum molds

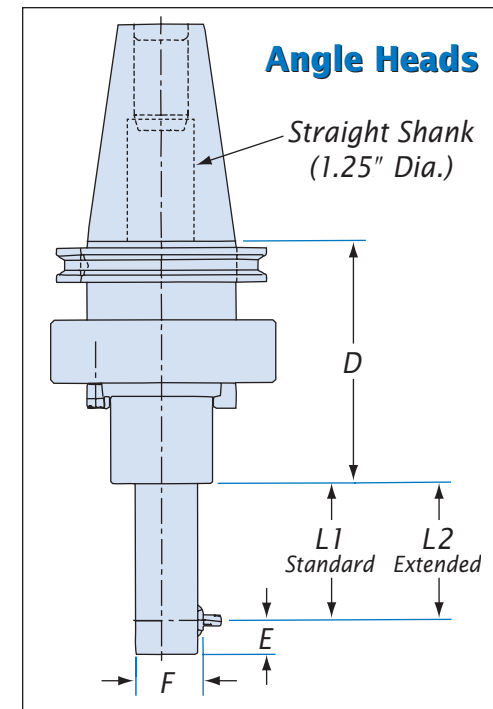
Drilling radial holes on a CNC machine



Milling slots on a turning center



Sizes and Dimensions

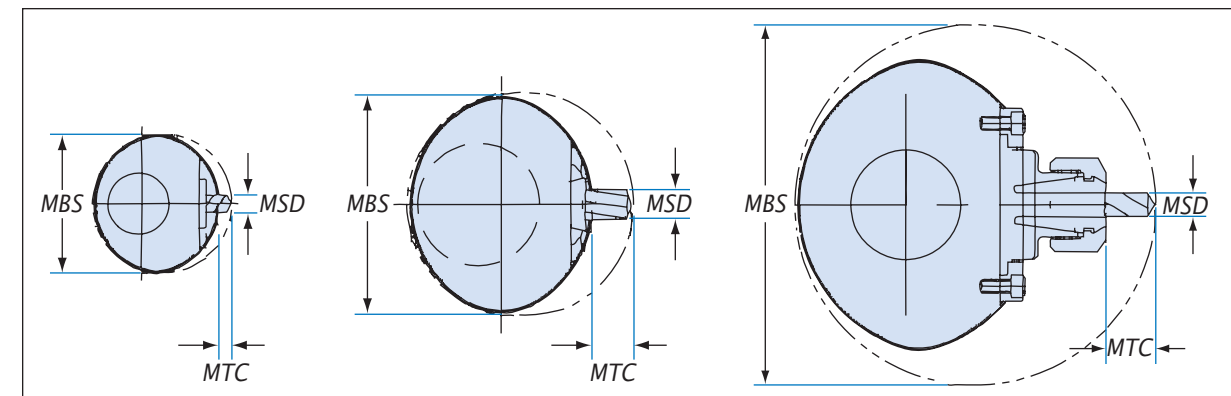


Head Size	Spindle	L1	L2	E	F	MBS	MSD	MTC
1	Taperlock	1.500	3.000	0.500	0.813	1.000	0.156	0.094
	1/8" Weldon	1.500	3.000	0.500	0.813	1.000	0.156	0.094
2	Eltool ER-11	2.500	4.000	0.625	1.127	1.625	0.156	0.281
	Weldon	2.500	4.000	0.625	1.656	1.875	0.275	0.140
2M Milling ¹	Eltool ER-11	2.500	4.000	0.625	1.375	1.750	0.156	0.250
	Weldon	2.500	4.000	0.625	1.938	2.250	0.275	0.250
3	Eltool ER-11	3.500	5.000	0.688	1.890	2.375	0.156	0.375
	Weldon	3.500	5.000	0.688	2.450	2.875	0.275	0.390
3M Milling ¹	ER-16	3.500	5.000	0.688	2.625	3.000	0.406	0.250
	Weldon	3.500	5.000	0.688	2.188	2.625	0.500	0.250

MBS – Minimum Bore Size MSD – Maximum Shank Diameter MTC – Maximum Tool Clearance

“D” Dimension:

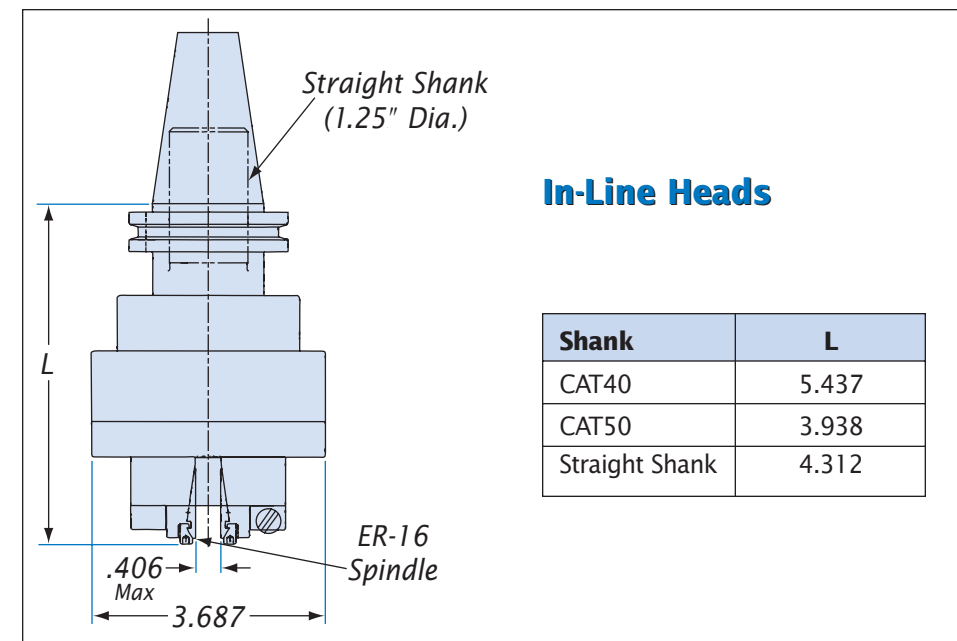
Shank	Size 1, 2, 2M	Size 3, 3M
CAT40	4.125	4.531
CAT50	2.687	3.093
Straight Shank	3.025	3.431



Size 1 Head with Taperlock² or 1/8 Weldon Spindle

Size 2, 2M or 3 Head with Eltool² Spindle, and Size 2M and 3M Head with Weldon³ Spindle

Size 2, 2M or 3 Head with ER-11 Spindle, and Size 3M Head with ER-16 Spindle



Shank	L
CAT40	5.437
CAT50	3.938
Straight Shank	4.312

Notes:

1. Milling heads are recommended for heavier duty milling applications. They incorporate two pre-loaded angular contact bearings on the front for improved performance and durability in side load applications.

2. “Taperlock” and “Eltool” Spindles are proprietary spindles designed to minimize the profile of the angle heads.

3. Please specify the size of Weldon spindle when ordering.

Please call our Application Engineering Department for Angle Heads with:

- ▼ Custom Angles
- ▼ Special sizes and lengths
- ▼ Din B or external coolant delivery
- ▼ HSK, Capto, ABS and other shank styles