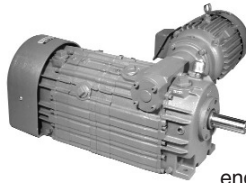
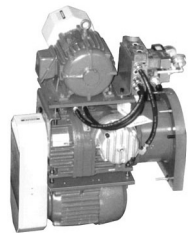
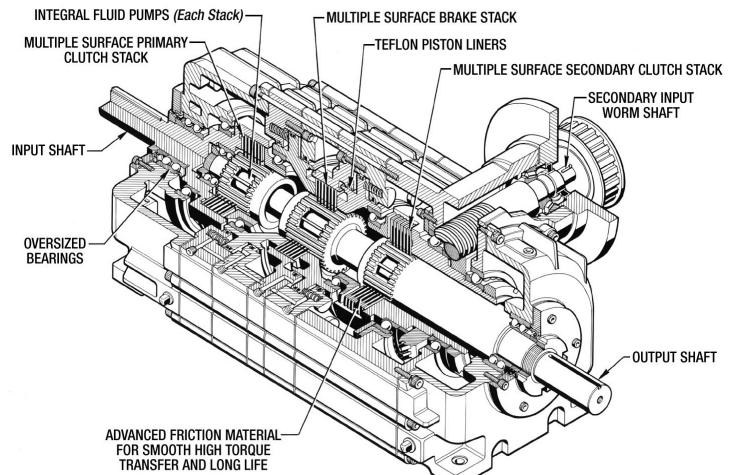


# Section 13 Additional Oil Shear Products



### Posidyne Multi-Speed Drive (MSDr)

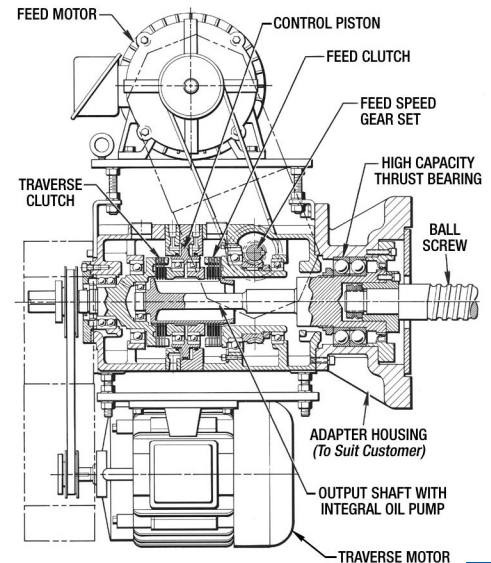
provides a broad range of speed ratios to select from. They usually operate in the same direction of rotation. The **MH Model** has an internal brake and a secondary motor connected through a worm gear set for slow speed output. Selecting engagement of the proper clutch will determine high or slow speed and the brake can be used to stop the drive between speed changes. Reversing the motors will determine the direction of rotation of the output shaft. The **Multi-Speed Drive** is a **Posidyne** with a second clutch connected to a second drive input which is normally a reduction drive using a worm shaft and gear. This adaptable design can be used as a main drive for inching or positioning, mid-stroke slow down for soft touch, slow speed reversing to back out, etc. The exclusive **Posidyne** oil shear technology with fluid recirculation is used in all multi-speed designs. The sealed cast iron housing provides heat dissipation for high cycle loads and protects the multiple disc clutch and brake stacks from contamination in hostile environments.



### Posidyne Multi-Speed Mechanical Feed Drive

These **Posidyne Multi-Speed Drive Units** were originally developed to provide a high speed and inching speed in a single drive package for operation of lift or transfer drives in the automotive fabrication and assembly plants. Mounting kits have now been developed to adapt to ball screw slide units produced by a variety of machine tool manufacturers. The **Posidyne** low inertia, multiple disc and oil shear units can provide traverse rates up to 600 in. per min., feed rates ranging from 1 to 200 in. per min. and thrust ratings up to 17,000 lbs. operating a 1/2" lead ball screw. The same basic unit may be used with various adapters to retrofit many different makes of slides providing a common drive for all units in service.

- **Direct Replacement** - Installation is a simple bolt-on procedure. Slide bases do not require any modification.
- **Faster Acting and Improved Repeatability** - Oil shear clutch design disconnects traverse motor and pulley inertia when shifting from traverse to feed speed. Tooling can be positioned closer to the part.
- **Thrust Limiting** - Oil shear clutches are designed to limit torque smoothly and consistently at the end of the feed stroke. External adjustment of thrust is possible with a simple actuation pressure change.
- **Reduced Shock Loading** - Oil shear clutch and brake reactions induce less stress to the ball screw than planetary drives with dry friction brakes.
- **Reduced Maintenance Costs** - Long life, low cost friction discs and drive plates take the wear and tear. Expensive planetary gearing is eliminated.
- **Straight Forward Mechanical Units** - Standard motors and simple controls. Easy to troubleshoot and repair.

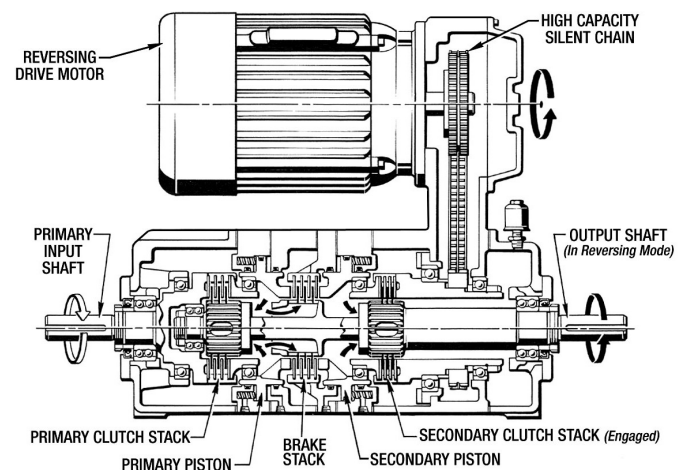


### Posidyne High Speed Reversing Drive (HSRvD)

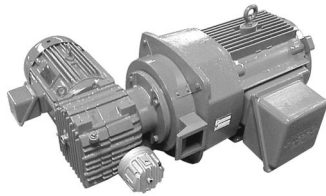
The **High Speed Reversing Drive** uses the dual clutch concept to provide rapid reversing without undo strain on the motor or drive system.

In a reversing application the load must be accelerated in the forward direction, stopped, and then accelerated in the opposite direction. This activity consumes large amounts of power and generates heat which must be absorbed. If the drive motor is reversed each cycle the major inertia load is most often the motor rotor itself.

The **Type II High Speed Reversing Drive** dual clutch **Posidyne** eliminates stopping, starting and accelerating the motor. One motor rotating in a forward direction is connected through the primary clutch and a second motor in a reverse direction is connected through the secondary clutch. By actuation of the proper clutch and brake, the reversing is handled within the **Posidyne** while the motors run continuously.



Contact Force Control Industries, Inc. for additional information concerning Available Sizes, Operating Specifications, Dimensions, Usage and Ordering Information.



**Posidyne Two Speed Drive (TSDr)**

The operation of the *Two Speed Drive Type II and Type III* centers around the bearing mounted four lug shaft with attached worm gear. The multiple disc stack carried by the

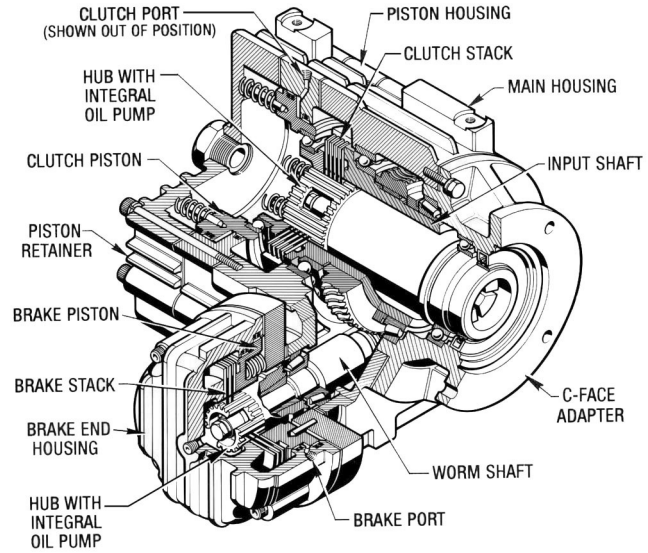
four lugs controls the interface between the high speed, low speed, braking and torque limiting operations of the drive.

**In high speed mode**, the multiple disc spring-set stack is released by pressurized air entering the main piston housing. This disengages the main motor from the rest of the two speed drive permitting the main motor to run at high speed.

**Braking mode** occurs as the high speed main motor is de-energized and the spring-set multiple disc stack is engaged by exhausting the air pressure. A spring-set brake, mounted on the input shaft of the worm gear set prevents the four lug shaft from rotating.

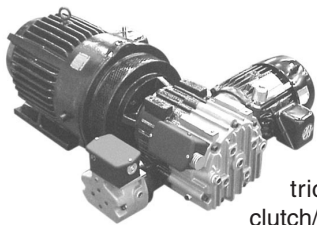
**Low speed mode** is initiated by dis-engaging the spring-set brake and energizing the feed motor. The worm gear set then rotates the four lug shaft and engaged multiple disc stack to drive the main motor and controlled load.

The multiple disc stack is enhanced by Force Control's unique oil recirculation feature. This increases the capacity of the multiple stack to dissipate heat, which enhances the life of the drive.



*The Force Control Two Speed Drive, Type II and Type III* offers a viable solution for the most demanding transfer and lift drive applications. Capabilities include low speed mode for initial setup requirements. Excellent repeatability allows design flexibility and in many applications can eliminate the need for mechanical stops.

Reliability is imperative to a successful design and Force Control stands behind its products with a two (2) year limited warranty on approved applications.

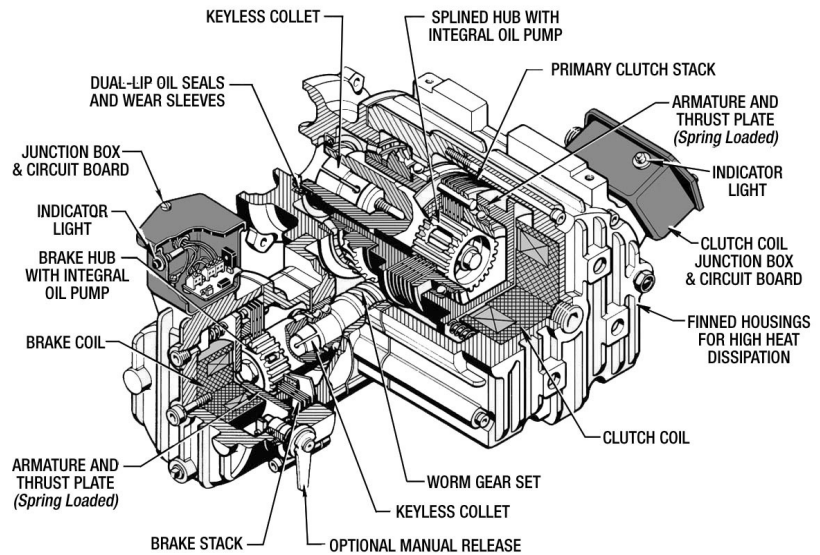


**MagnaShear Two Speed Drive (Fully Electric)**

The *MagnaShear Two Speed Drive* is a fully electric, two speed oil shear clutch/brake. It can be operated in high speed, low speed and spring-set braking mode.

High speed and low speed modes are selected by energizing the appropriate electronically controlled coils. The spring-set braking mode is selected when both coils are de-energized, allowing the springs to engage both disc stacks to stop the drive system.

Applications include transfer systems, lift systems, rotary components or any applications that require high speed motion with precise positioning and low speed setup capabilities.



**Features...**

- 115 VAC electric actuating system.
- Oil shear spring-set braking.
- Internal surge protection.
- Proven long-life friction material for repeatable positioning.
- Sealed from harsh environments.
- Standard NEMA motor mounting.
- Standard electrical connections.
- Modular assembly design.
- Wide range of gear ratios.
- Low speed capabilities for set-up and precise positioning.
- Excellent service and engineering

Contact Force Control Industries, Inc. for additional information concerning Available Sizes, Operating Specifications, Dimensions, Usage and Ordering Information.



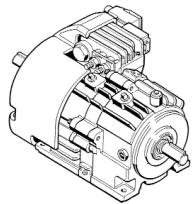
## Posidyne Electro-Hydraulic Clutch/Brakes

There are times when compressed air is unattainable or not feasible (cold ambient temperatures, etc.) for actuation of the Clutch/Brake Unit. The **Electro-Hydraulic Posidyne** was developed for these applications. The fluid in the unit is pumped under pressure to the actuation piston and by-passed back into the unit through pressure regulators.

On the smaller size EL-02 the pump is internal. For the larger EH sizes, the pump is external and can be driven from the input shaft of the *Posidyne* Clutch/Brake or motor driven.

- **Does not require compressed air** - Completely controlled by electricity which eliminates the problems of low air pressure, freezing, long air lines for outdoor applications, etc.
- **Long Life** - No air with normal moisture content in the piston chamber eliminates piston seal leakage due to rust and early spring breakage. The fluid filter removes carbon build-up in the fluid reducing friction disc and drive plate wear.
- **Quick Response** - Reduced piston volume with higher hydraulic pressures (500 PSI Max.) allows the same quick response as the air actuated units

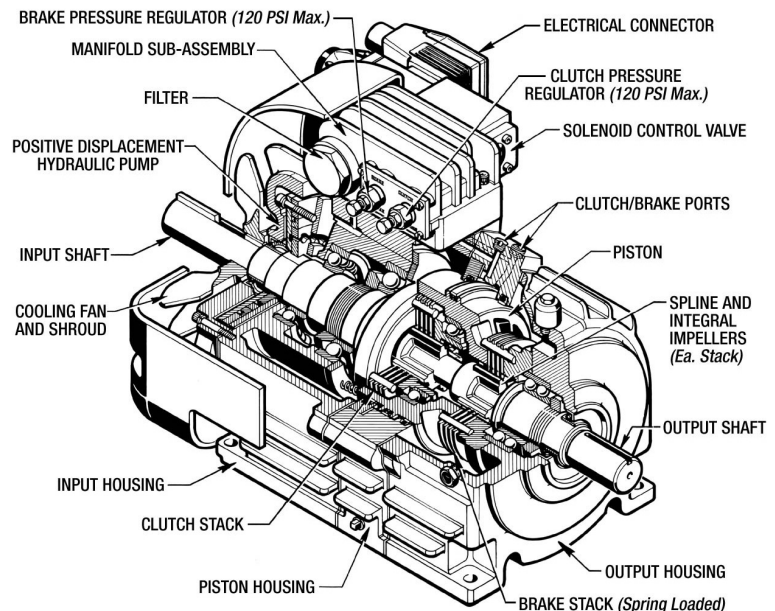
### Posidyne EL Series (Internal Hydraulic Pump)



The Size **EL-02 Posidyne** has an internal Hydraulic pump mounted on the input shaft. Fluid is pumped through a filter, solenoid valve and into the actuation piston. Regulators are used to set the actuation pressure and relieve into the sump.

This is a self-contained unit and requires no external equipment except the electrical signal to activate the solenoid valve.

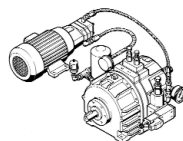
This unit is multi-directional but not recommended for applications requiring a reversing input.



### Posidyne EH Series (External Hydraulic Pump)

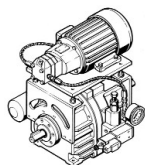
The larger units (**EH Series**) requires an external hydraulic actuation pump. A small hydraulic pump is used to pump the fluid from the unit sump through a filter, system pressure regulator, solenoid valve and into the piston actuation chamber. A pressure relief valve by-passes the fluid back into the unit sump. The pump

can be belt driven from the *Posidyne* input shaft or by a separate drive motor. Hydraulic pressure can be adjusted for the clutch and brake independently. This external hydraulic pump also allows for reversing applications.



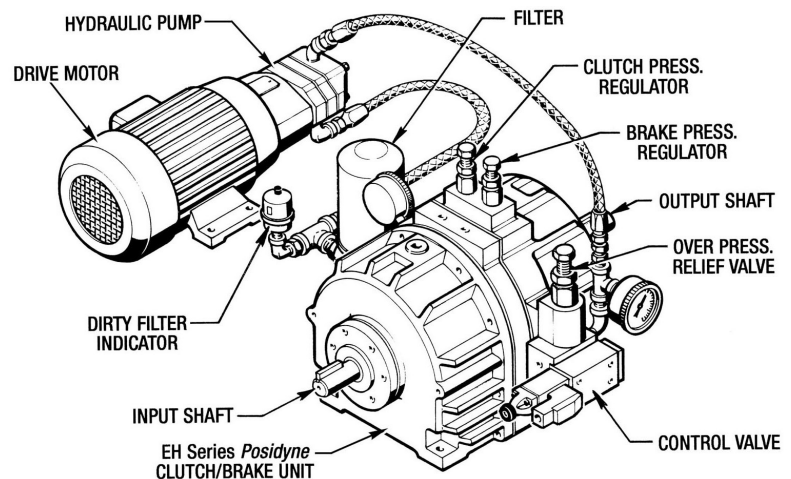
#### Side Mounting-Motor Driven Pump

The hydraulic pump and drive motor is mounted on the side of the *Posidyne* unit, usually on a common base which is customer furnished unless otherwise specified.



#### Piggyback Mounting-Motor Driven Pump

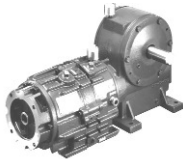
The hydraulic pump and drive motor is piggyback mounted above the *Posidyne* unit for an **efficient and compact design**.



## Posidyne Packaged Machine Drives (PMD)

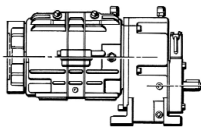
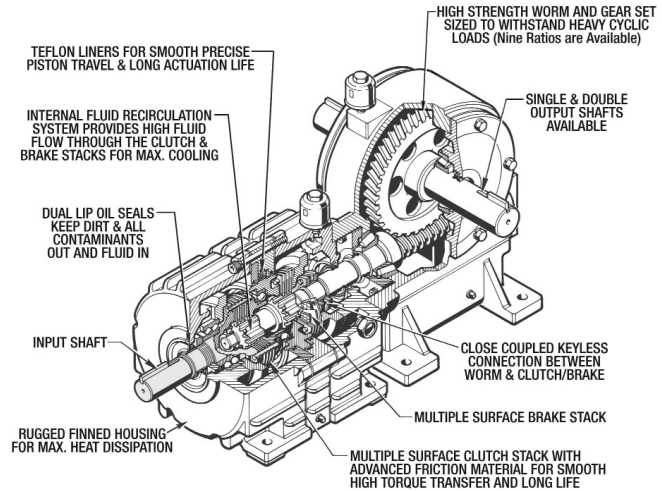
Many applications that use a **Posidyne Clutch/Brake** also requires a gear reduction unit. As the **Posidyne Clutch/Brake** is often most efficient at higher speeds, the gear reducer is subjected to the oscillating loads of starting and stopping of the output shaft. Many standard reducers that are sized to motor horsepower will not provide reasonable life under these conditions. The shaft quill connection is also a weak area where fretting and rolling of the key are constant sources of problems.

The **Posidyne Packaged Machine Drive** is a combination of a Clutch/Brake with a Gear Reducer integrally mounted. This arrangement eliminates the shaft quill connection and the associated problems. Also the gearing is designed to be as low inertia as possible, as well as providing a long trouble-free life comparable to the **Posidyne Clutch/Brake**. Three basic types are covered in this section. (A) Worm Gear Reducer; (B) Helical Gear Reducer; (C) Planetary Gear Reducer.



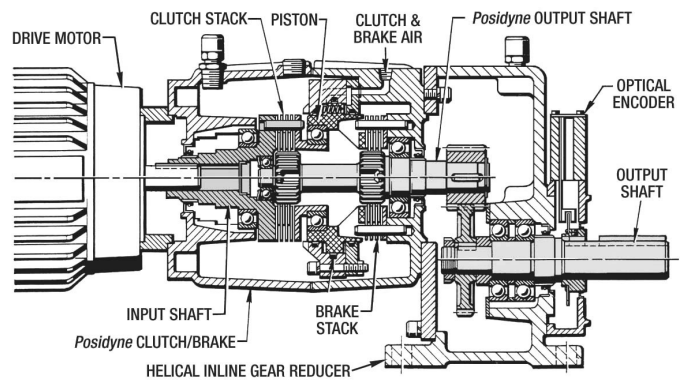
### Posidyne PMD 1500-W and PMD 2000-W (Worm Gear Reducer)

The **PMD-1500-W** uses a **1.5 Posidyne** and the **PMD 2000-W** uses an **02 Posidyne Clutch/Brake** unit. It is integrally mounted with a **Worm Gear Reducer** to provide a compact **Packaged Machinery Drive** made to withstand the high loading of normal cyclic applications. The unique keyless coupling arrangement to the reducer input is compact and provides reliable torque transfer. Nine gear ratios are available from 9:1 to 60:1 to fit various applications. The optional C-Face input can utilize a C-Face motor providing motor, clutch/brake and reducer in one integrated package. An **Encoder** can also be furnished to give you a complete system that accurately stops/starts to position your product where it's needed and when it's needed.



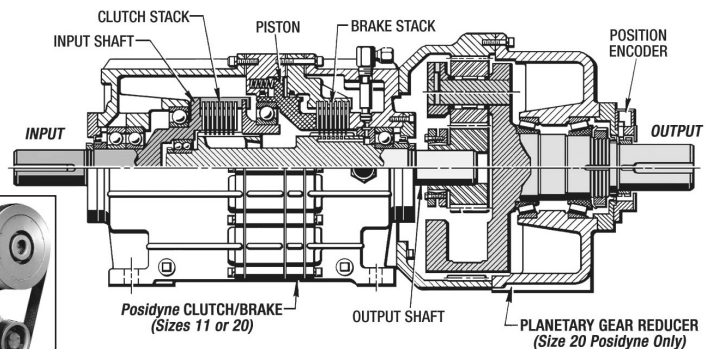
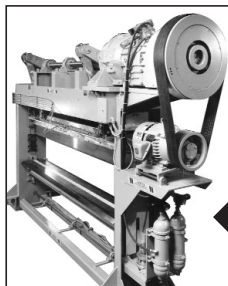
### Posidyne PMD 1500-H and PMD 2000-H (Inline Helical Gear Reducer)

The **PMD 1500-H** uses a **1.5 Posidyne** and **PMD 2000-H** uses an **02 Posidyne Clutch/Brake** unit. Both sizes are integrally mounted to an **Inline Helical Gear Reducer** to provide a compact **Packaged Machinery Drive** made to withstand the high loading of normal cyclic applications. The unique Split Quill and Locking Ring arrangement for the C-Face input to the drive motor is compact and provides reliable torque transfer. Eleven gear ratios are available from 1.52:1 to 5.74:1 to fit various applications. The optional C-Face input can utilize a C-Face motor providing motor, clutch/brake and reducer in one integrated package. An **Encoder** can also be furnished to give you a complete system that accurately stops/starts to position your product where it's needed and when it's needed.



### Posidyne PMD 20,000-P (Planetary Gear Reducer)

The **PMD 20,000-P** utilizes a **20 Posidyne Clutch/Brake**. It is integrally mounted to an **Inline Planetary Gear Reducer** to provide a compact **Packaged Machinery Drive** made to withstand the high loading of normal cyclic applications. An **Encoder** can also be furnished to give you a complete system that accurately stops/starts to position your product where it's needed and when it's needed.



One common and typical application of the PMD 20,000-P is an Insulation Shear or commonly referred to as the "Whopper Chopper". This unit is made for a high production rate and is proven to be reliable and dependable over a long period of time.

Contact Force Control Industries, Inc. for additional information concerning Available Sizes, Operating Specifications, Dimensions, Usage and Ordering Information.