



*FRICITION PRODUCTS &
POWER TRANSMISSIONS FOR INDUSTRY*

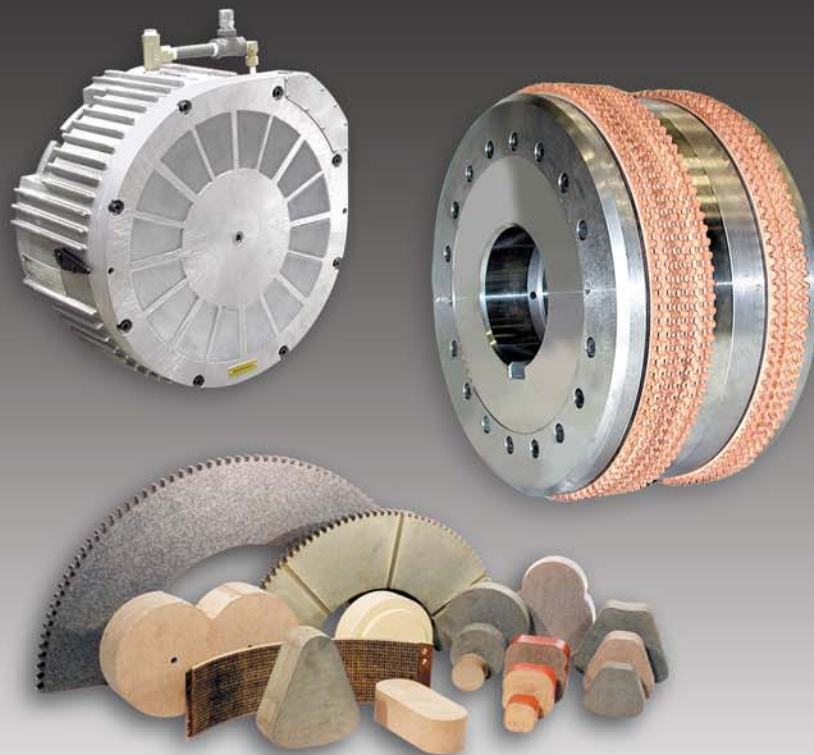


Table Of Contents

Table of Contents

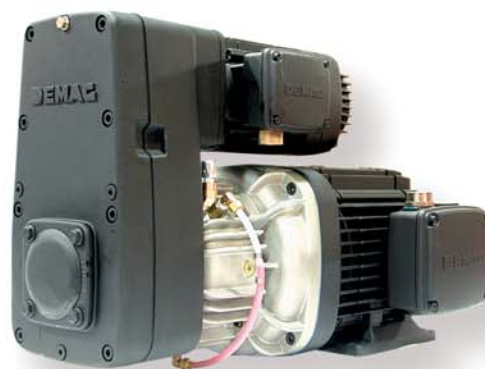
Friction Material	3
Bonding Services	4-9
Friction Products	10-11
Flywheel Brakes	12
Diaphragms	12
Hydraulic Caliper Brakes	12
Oil Shear Press Drives	13-22
Electric Motor Brakes	23-26
Oil Shear Clutch/Brakes	27
Demag™ Microspeed Drives	28
Eaton® Airflex® Clutches & Brakes	29
Clutch/Brake Repair	30



Friction Material
Page 3



Press Pac® Oil Shear Press Drives
Pages 13-22

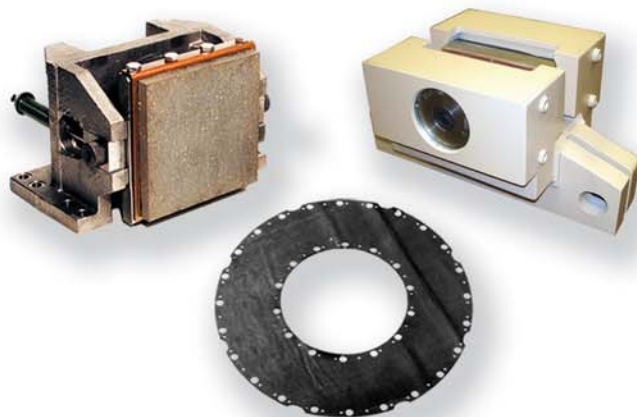


Demag™ Microspeed Drives
Page 28

Table Of Contents



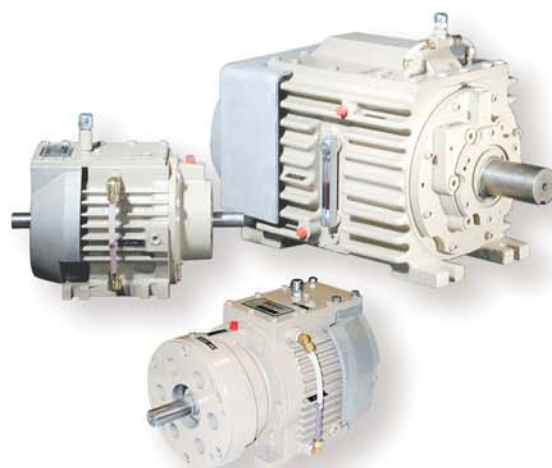
Bonding Services & Friction Products
Pages 4-11



Flywheel Brakes, Diaphragms & Caliper Brakes
Page 12



Electro Shear® Motor Brakes
Pages 23-26



Som Pac® Oil Shear Clutch/Brake
Page 27



Eaton® Airflex® Clutches & Brakes
Page 29



Clutch/Brake Repair
Pages 30

Friction Products & Bonding Services

Friction Material Manufacturing

Whatever your friction requirements, Midwest Brake offers a solution tailored to your custom friction needs. We develop and produce a complete line of non asbestos friction materials used in a variety of industries by original equipment manufacturers. With over thirty different friction formulations, Midwest Brake offers a variety of frictions designed to meet individual customer requirements. Midwest Brake is valued OEM supplier offering high quality, on time delivery and superior customer support.



Capabilities

- Custom Material Formulations
- Major OEM Supplier
- Prototype Parts
- Small and Large Quantities
- Engineering and Design Capabilities
- Tooling and Mold Manufacturing

Industrial Friction Products

- Custom Molded Parts
- Flat Sheets
- Integrally Molded Parts
- Gear Tooth Facings
- Flat Sheets
- Flexible Molded Rolls
- Flexible Woven Rolls



Large Stock of Industrial Friction Material

Midwest Brake® stocks a wide variety of on non asbestos, industrial friction material.

• Flat Sheets

We offer a variety of 30" x 30" flat sheets varying thickness from 1/8" to 3".

• Flexible Woven Rolls

Flexible woven material supplied in rolls or segments 13" width from 1/8" up to 3/4" thickness.

• Flexible Molded Rolls

Flexible molded material supplied in rolls or segments 13" width from 1/8" up to 1/2" thickness.



Friction Products & Bonding Services

Friction Blocks & Bonded Assemblies

Midwest Brake® manufactures complete bonded assemblies. If your part requires multiple processes to finish complete, we can provide your part finished to reduce costs.

- **OEM Parts – Finished Assemblies**
- **Clutch & Brake Plates**
- **Integrally Molded Parts**
- **Fabrication & Machined Parts**

Processes available are bonding, integrally molding, machining, heat treat, stress relieve, gear cutting, laser cutting, inspection and testing.



Bonded Brake Band Assemblies

We can manufacture brake bands complete to your specifications, prints or samples. We work with cast iron, ductile iron, rolled steel, and welded assemblies.

- **OEM Supplier – New Brake Bands**
- **Finished Assemblies**
- **Fabrications or Cast Iron**

Processes can include machining, welding and stress relieving. Whether your band is a one piece rolled steel, steel weldment or cast iron, Midwest Brake can fabricate the entire band, including clevis and pin arrangement.

Additionally, we will inspect and qualify the part to your specifications. We provide timely deliveries and will help you reduce your overall part cost.



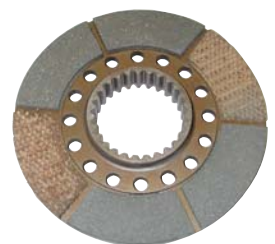
Bonded Clutch Plate Assemblies

Midwest Brake® is a valued supplier to OEM customers who require high quality bonded clutch plate assemblies. Clutch plates are manufactured complete to print or sample. Whether you require one part or one thousand parts, Midwest Brake® can meet your requirements.



- **OEM Supplier of Bonded Clutch Plates**
- **Machining, Bonding & Assembly**
- **High Quality Parts**
- **Inspection**

Midwest Brake® offers machining, bonding, assembly and inspection services all in house.



Friction Products & Bonding Services

Industrial Bonding Services

Midwest Brake® is the premier industrial brake bonding company in North America. With over 50 years of experience with thermal adhesive bonding technology, Midwest Brake® provides the highest quality, most reliable brake bond available in the industry.

- **Superior Bonding Technology**
- **High Quality Parts & Service**
- **Quick Turnaround**
- **Machining Services**

Our equipment incorporates state of the art controls into the process. We use a resin based thermal adhesive that assures high impact resistance and tensile strength that will perform under the most stringent conditions.



Bonding Assembly

Relining & Remanufacturing

1. Inspection of Used Part

Wear on all surfaces and gear teeth are checked and inspected. Parts are checked for cracks and structural integrity of part.



4. Bond New Lining

New friction material is coated with a thermal adhesive. Proper cycle time, pressure and temperature is applied to complete the bonding process. Midwest Brake® utilizes state of the art bonding presses and equipment to monitor this process, which produces a high quality, consistent bond.



2. Removal of Old Lining

State of the art industrial debonding ovens are utilized to burn off used linings, adhesives, grease and oil. Fast and safe, your part is ready to be cleaned and prepared for bonding.



5. Machining

Midwest Brake® will machine clutch plates to an overall thickness upon request. Clutch plates are machined to $\pm .002$ parallel allowing for better surface contact, thus increasing the life and performance of the clutch or brake.



3. Cleaning & Surface Preparation

Cleaning the surface of your part, which is one of the most important steps to achieving a high quality bond, is accomplished through mechanically abrading and degreasing the surface.



6. Inspection & Documentation

A strict quality control process is followed where every step is documented and checked during the processing of your part. Parts are given a final inspection, stamped, labeled and carefully packaged for shipping.



Friction Products & Bonding Services

Bonding Technology

Thermal Adhesive Technology

Midwest Brake® utilizes state of the art, thermal adhesive bonding technology. The highest quality adhesives are used to provide the strongest bond strength.

Automated Bonding Press Technology

State of the art bonding ovens and platen presses provide a quality bond that is consistent every time.

Computer Controlled Automation

All aspects of the bonding process are monitored and recorded by a computer controlled interface that records the cycle time, temperature and pressure during the bonding cycle. By insuring that the adhesive is properly cured and set, we set the standard in the industry for quality and reliability.

Capacity

Our equipment is state of the art and provides the ability to bond clutch plates up to 114" in diameter. With over 15 state of the art presses and ovens, Midwest Brake can accommodate all sizes of clutch plates and brake bands quickly and easily.

Quality

Only the highest quality industrial bonding adhesives and friction materials are used in our bonding process.

Consistency

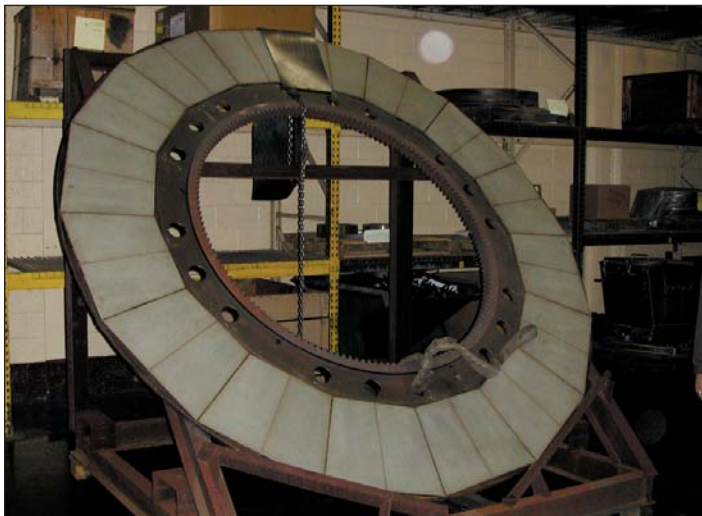
Our quality control assures that the bond and friction material are manufactured to precise specifications 100% of the time. Lot numbers and batch numbers are stamped on the parts and recorded in the paperwork as part of our quality check. This provides additional assurance that every part that is approved and meets specifications.



Finished Clutch Plates in Stock



114" Clutch Plate Bonded With Thermal Adhesive Bonding Technology



114" Clutch/Brake Plate Bonded and Ready for Shipping



Finished 2-Piece Brake Band

Friction Products & Bonding Services

Bonding Versus Riveting

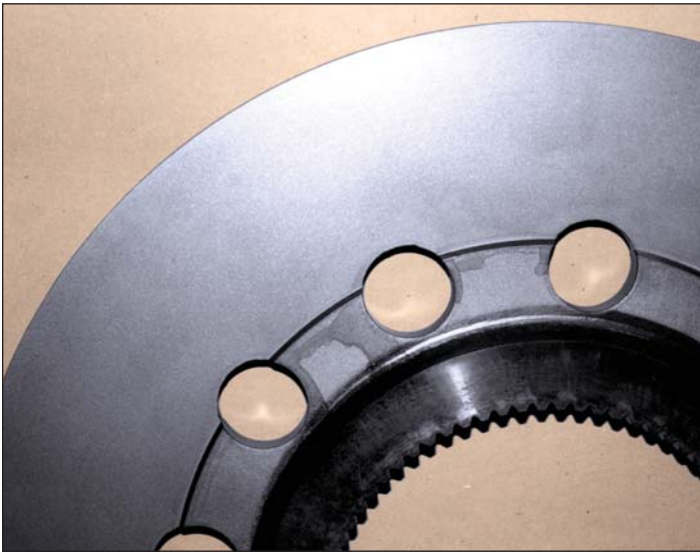
Bonding is more effective than riveting as a means of fastening friction material to an opposing mating surface. Bonding produces a higher tensile strength, reduces the chance of a lining failure and increases the uptime and reliability of your machinery.

- **Superior Structural Integrity**
- **Bonding Produces Higher Quality Parts**
- **Increased Friction Material Life**
- **Lower Life Cycle Costs**



Damaged Riveted Plate

Bonding



Bonded Plate in For Reline – Structural Integrity Intact

Riveting



Riveted Plate in For Reline – Weakened Structural Integrity

Thermal adhesive contacts 100% of the plate surface.

Structural fibers in the friction material remain intact.

Thermal adhesive provides 100% surface contact on mating surface.

Longer friction material surface life and no possibility of metal to metal contact.

Clutch plate and brake band surface remain structurally sound.

Riveted lining is attached only with the rivet and is thus a weak link.

Drilled holes through the lining weaken the structural integrity of the lining.

Riveted holes are counter sunk thus reduced surface area of friction material.

Friction material exposes rivet head and leads to exposed rivets which can core or gouge.

Multiple drilled holes in metal surface structurally weaken the integrity of the clutch plate of brake band.

Friction Products & Bonding Services

Custom Bonded Assemblies



Lift Truck Shoes



Integrally Molded Parts



Bonded Tubular Assemblies



Brake Pads



Cones



Clutch Facings

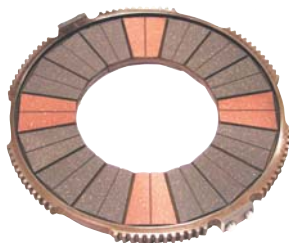


Bonded Aluminum Slugs

Black & Red

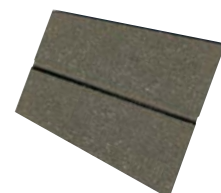
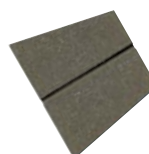
Black & Red, commonly known as “B & R” in the industry, is different from most friction materials on the market today. The combination of “B & R” material fights surface deterioration and creates a consistent friction for the life of the plate.

The Black Material is formulated for superior wear resistance. Our Red Material is compounded with special resins and additives that allow the friction material to perform at a constant Coefficient Of Friction (COF) throughout the life of the clutch plate. The Red material acts as a scrubber block which cleans the wear surface when used in combination with our Black Material.



Most industrial brake linings use a single component material where high wear, glazing of the mating surface and heat are often characteristics of normal use. Dirt, grease, oil and other common contaminants in the operational environment contribute to accelerated surface deterioration by inhibiting the capability of the friction material to dissipate heat.

Midwest Brake® B & R friction technology fights friction surface deterioration, glazing and premature wear.



Friction Products & Bonding Services

Bonded Clutch & Brake Plate Assemblies

If you are looking for a partner that can handle small and large quantities of bonded clutch plates, Midwest Brake has the experience necessary to handle your complete assembly from start to finish. We have experience with all types of plate assemblies.

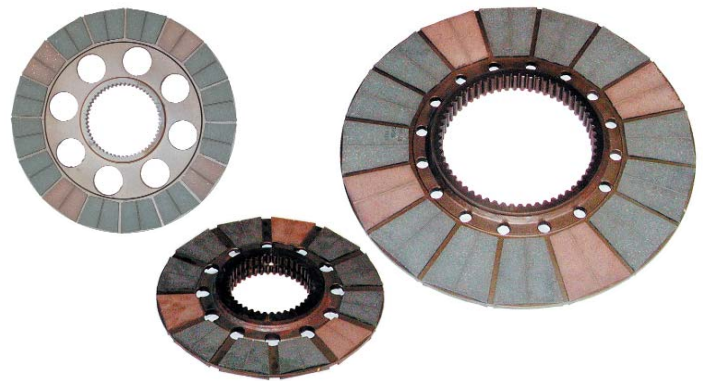
- Steel Welded Plates
- Cast Iron Plates
- Laser Cut Plates
- Stamped Plates



Steel Welded Plates

We use only the highest quality steel and our welders produce consistent, high quality welds that offer superior strength and reliability.

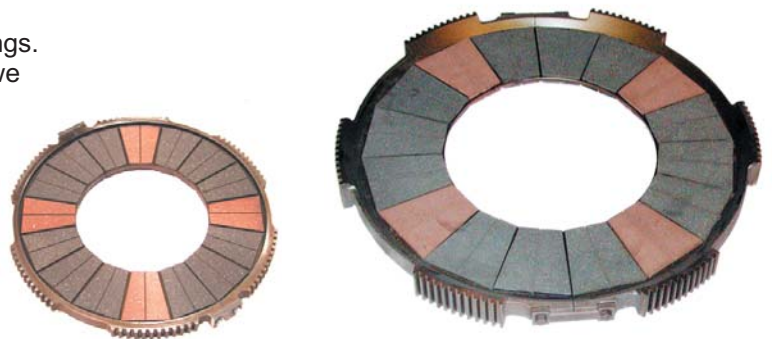
We offer quality gear cutting for inner or outer hubs. We inspect our parts during various processing steps to confirm parts are within tolerance and to customer specifications.



Cast Iron Plates

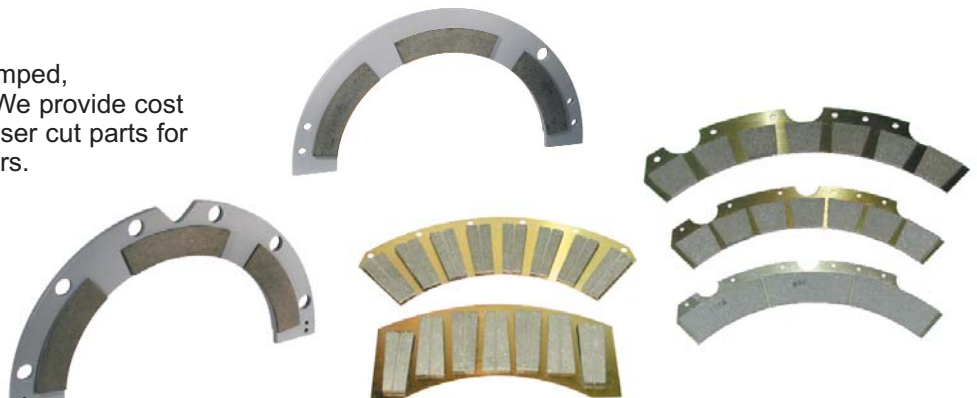
We have an ample base of supply for high quality castings. Machining and gear cutting services are available and we produce accurate, consistent parts.

- Castings
- Machinings
- Gear Cutting



Laser Cut & Stamped Plates

If your parts need to be laser cut or stamped, Midwest Brake® can meet your needs. We provide cost effective, high quality stampings and laser cut parts for leading original equipment manufacturers.



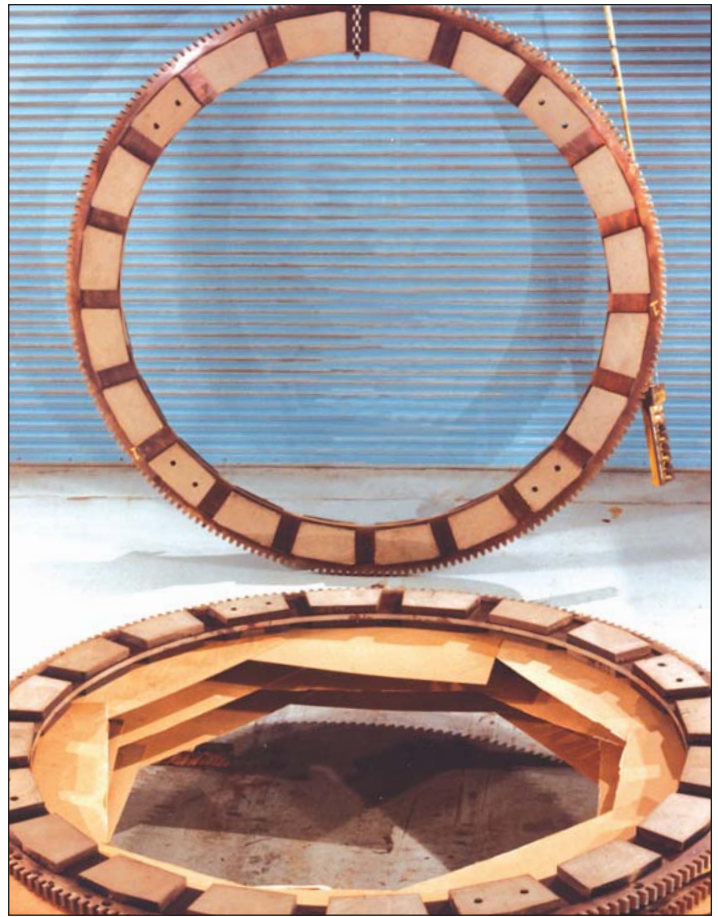
Friction Products & Bonding Services

Industry Leader In Bonding Large Diameter Forging Plates

- Over 50 Years Experience
- Highest Quality In Industry
- Technology Leader



Bonding Capacity Up To 114" In Diameter



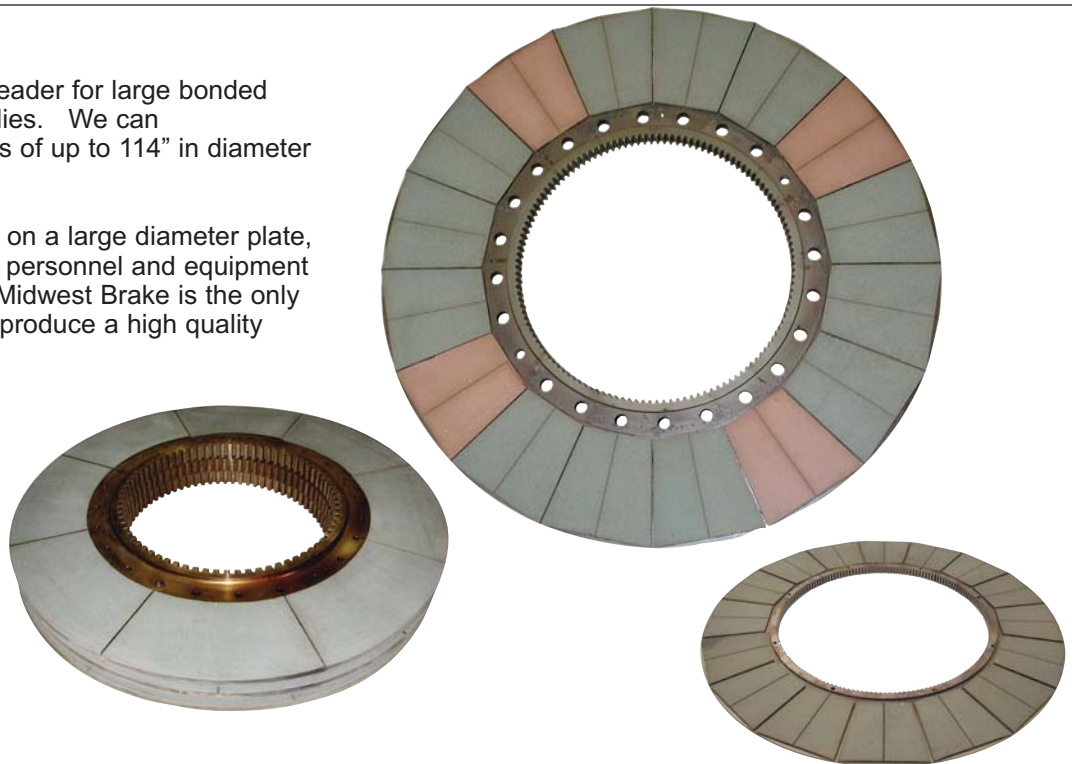
Quick Turn Around On Large Parts

Clutch Plates

Midwest Brake is the industry leader for large bonded clutch and brake plate assemblies. We can accommodate the largest plates of up to 114" in diameter or larger.

To produce a high quality bond on a large diameter plate, you must have the experience, personnel and equipment necessary to do the job right. Midwest Brake is the only company that can consistently produce a high quality bond, quickly and reliably.

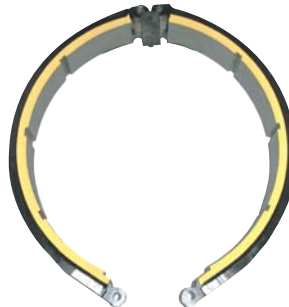
Midwest Brake is a trusted source that can be relied on for using only the highest quality materials and consistent processing techniques to insure safe operation and trouble free operation of your machinery.



Friction Products & Bonding Services

Bonded Brake Bands

- Steel and Cast Iron Brake Bands
- Single, Two and Three Piece Designs
- Finished Assemblies
- Bonding Services for Large & Small Sizes



2000 Ton Brake Band
8" x 98"



3-Piece Brake Band

Riveted and Bolted Brake Bands

Midwest Brake® will provide riveted or bolted linings, completely finished, inspected and painted brake band assemblies that conform to special Marine or ABS certifications, welding certifications, etc.

We have experience handling large quantities of brake bands and meeting expected deliveries. Our quality and inspection will meet specifications, provide superior workmanship and reduce defects. We utilize molded and woven linings and can machine the lining for rivet holes, countersinking and meet other dimensional requirements.



Friction Blocks

Midwest Brake® has extensive experience manufacturing high quality, dimensionally accurate friction blocks. Our blocks utilize high strength fibers, binders and resins to provide added strength and durability and are proven in the toughest of applications.

- Molded Blocks
- Machined Blocks
- Cushioned Style Blocks
- Tolerances +/- .002



Hydraulic Caliper Brakes, Diaphragms & Flywheel Brakes

Hydraulic Caliper Brake

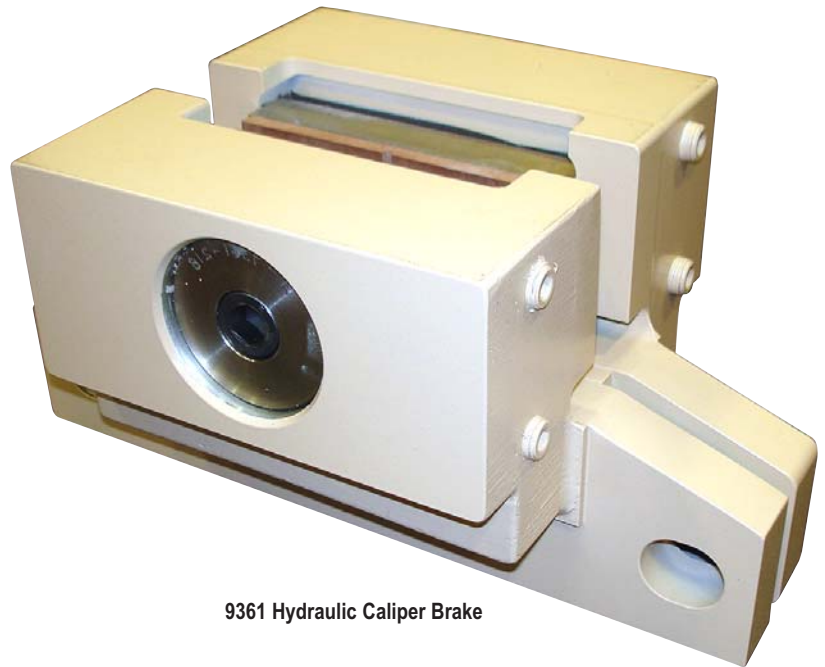
The Midwest Brake® Model 9361 Caliper Brake is a hydraulic released, spring set brake. The 9361 disc brake system consists of a brake and oil system.

Hydraulic Caliper Features:

- Reduced Lining Wear
- No Coil Failure Due to Improper Gap Setting
- No Excessive Heat
- No Damage to Rotor Disc
- Minimal Maintenance

Hydraulic Caliper Applications:

- Material Handling Equipment
- Winches
- Cranes & Hoists
- Conveyors
- Machine Tools



9361 Hydraulic Caliper Brake

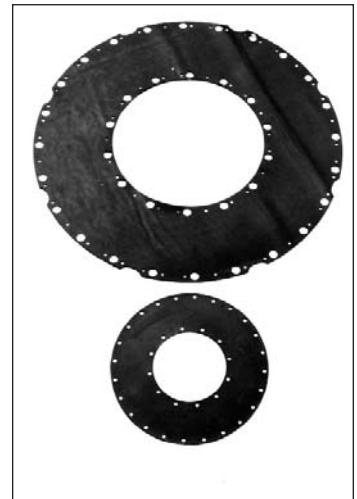
Diaphragms

Diaphragms are used as an air bladder to lock the air between chambers in a clutch or brake to actuate the clutch and brake.

Our diaphragms are much stronger than that of OEM supplied diaphragms. The 2 ply neoprene material has a burst strength of 3000 PSI that will extend the life of the diaphragm and lower downtime and life cycle costs.

Diaphragms Available for the Following Presses*

- Clearing
- Hamilton
- Schuler
- ALL Flat Stock Types Manufactured
- 2-Ply Burst Strength = 3000 PSI
- Danly
- Minster

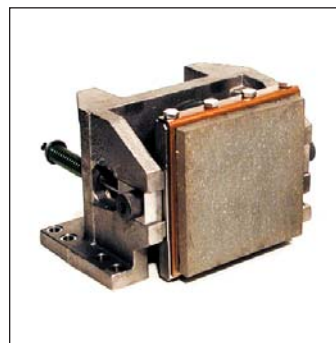


Diaphragms

Flywheel Brakes

Flywheel brakes are used to stop the flywheel from turning when a clutch has been disengaged and the motor is shutdown.

Flywheel brakes are required for presses due to safety regulations. Midwest Brake® supplies several standard models along with our own designs.



Midwest Brake® Flywheel Brake



Dynamatic® Flywheel Brake Shoe

Press Pac® Series Oil Shear Clutch/Brake Systems

Press Pac® Proven Reliability

The original Press Pac® Oil Shear Press Drives were introduced in 1968. Since that time, thousands of our press drive systems are proven in the toughest metal forming applications where reliability and performance of these systems significantly impact production output.

Industrial production requirements demand higher quality and performance from press drive systems. Press Pac® will increase machine uptime and reliability, lower maintenance requirements and repair costs over the life of your machine.

Press Pac® Applications

- Stamping Presses
- Forging Presses & Upsetters
- Headers
- Press Brakes
- N.C. Turret Punch Press
- Metal Forming Equipment

Press Pac® Benefits

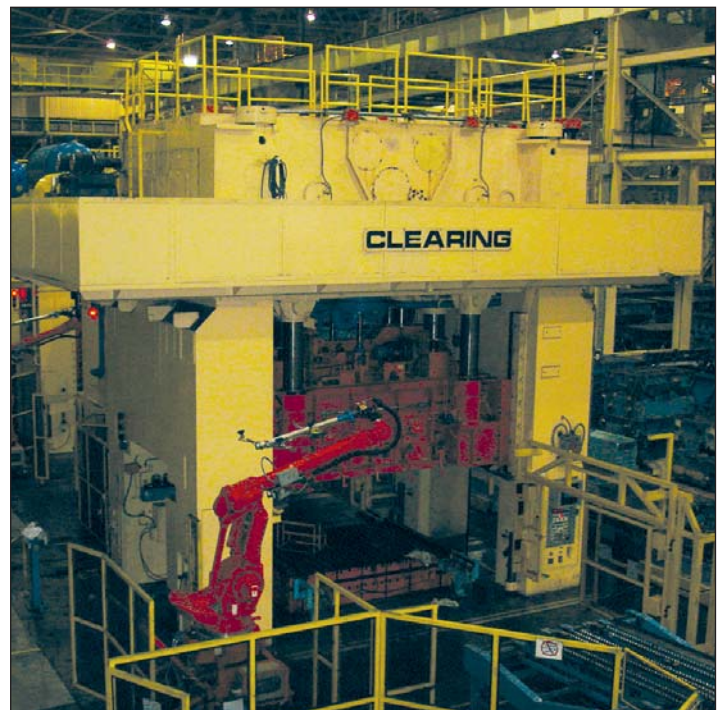
- Increased Production Rates
- Increased Reliability & Machine Uptime
- Reduced Life Cycle Costs
- Simple Installation
- Minimal Maintenance Requirements



Press Pac® 3200 Series
Multiple Disc Clutch/Brake
Shown Without Housing



Tier 1 Automotive Stamping Plant
Retrofitted With Press Pac® Hydraulic Clutch/Brakes



Press Pac® 3294 Series
900/600 Ton Double Action Stamping Press Installation

Oil Shear Press Drives For Metal Forming Equipment

World Class Press Drive Engineering

Midwest Brake® develops, produces and delivers the latest high performance oil shear press drives that deliver innovation and performance to our customers.

Our press drive systems have successfully been in service worldwide for many years and are proven in many of the world's leading automotive facilities and stamping plants.

Midwest Brake® offers custom design and application engineering support, field service support and a network of sales engineers ready to assist you with your press drive requirements.

- Press Drive System Engineering
- Clutch/Brake Design & Manufacture
- Application Engineering Support
- Field Service Support
- Turnkey Installation Services
- Controls & Systems Support

Press Pac® For New Equipment

Midwest Brake® specializes in the design and manufacture of oil shear press drive systems for original equipment manufacturers and new equipment installations.

Our complete line of oil shear clutch/brakes are easily incorporated into new press designs and new equipment. Our team of professional application engineers, sales engineers and customer service personnel are dedicated to providing OEM customers the high level of service and support needed in today's manufacturing environment.



Press Pac® 3294 Series – Hydraulic Actuation / Oil Cooled



Press Pac® 2297 Separate Clutch & Brake
Danly® 1600 Ton Double Action Stamping Press Installation

Midwest Brake® Oil Shear Press Drive History

- | | |
|-------------|--|
| 1962 | 1st Retrofit of a Stamping Press with an Oil Shear Press Drive |
| 1968 | Press Pac® 1600 Series – Commercial Introduction Oil Shear Press Drive Pneumatically Actuated/Oil Cooled |
| 1986 | Press Pac® 2000 – Field Test Oil Shear Press Drive Hydraulically Actuated/Oil Cooled |
| 1991 | Press Pac® 2100 Series – Commercial Introduction Oil Shear Press Drive Hydraulically Actuated/Oil Cooled |
| 1994 | 500th Stamping Press – Retrofit |
| 1997 | Press Pac® 3200 Series – Commercial Introduction Oil Shear Clutch/Brake – OEM Design Hydraulically Actuated/Oil Cooled |
| 2002 | Over 4000 Stamping Press & Welding Press Drives Successfully Installed Worldwide |

Press Pac® 3200 Series Clutch/Brake Systems

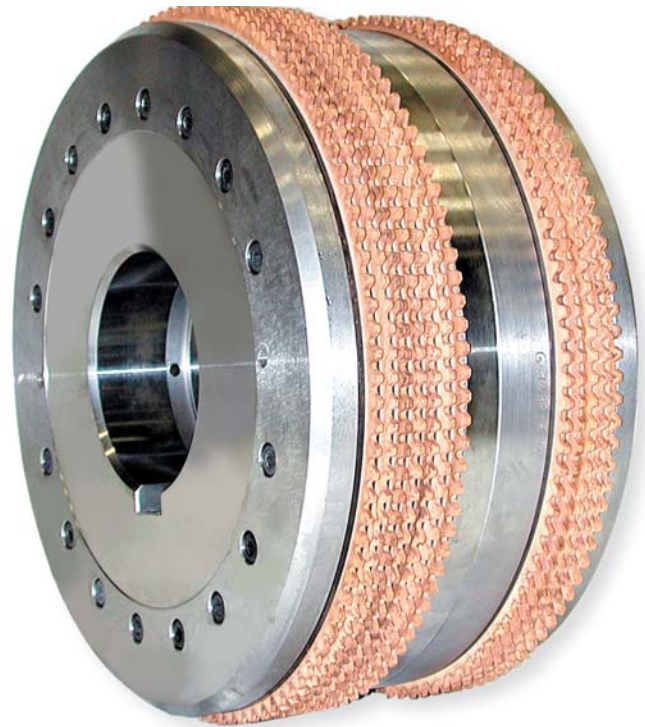
Press Pac® 3200 Series Multiple Disc Clutch/Brake

The Press Pac® 3200 Series Oil Shear Clutch/Brake Drive System is a hydraulically actuated / oil cooled, multiple disc, combination clutch/brake for metal forming presses.

This unit is designed for installation on new equipment including stamping & forging presses up to 4000 tons. These high performance drive systems offer precise control, are virtually maintenance free, and eliminate costly downtime by utilizing advanced oil shear design technology.

Press Pac® 3200 Series Features

- Hydraulic Actuation / Oil Cooling
- 7 Standard Clutch/Brake Models
- Reinforced Clutch & Reinforced Brake Models
- Torque Range 2250 Lb-ft thru 160,000 Lb-ft
- Soft Start / Soft Stop Control Package
- Mounted With Keys or Locking Assemblies
- Actuation Pressure of 800 PSI



Press Pac® 3200 Series Benefits

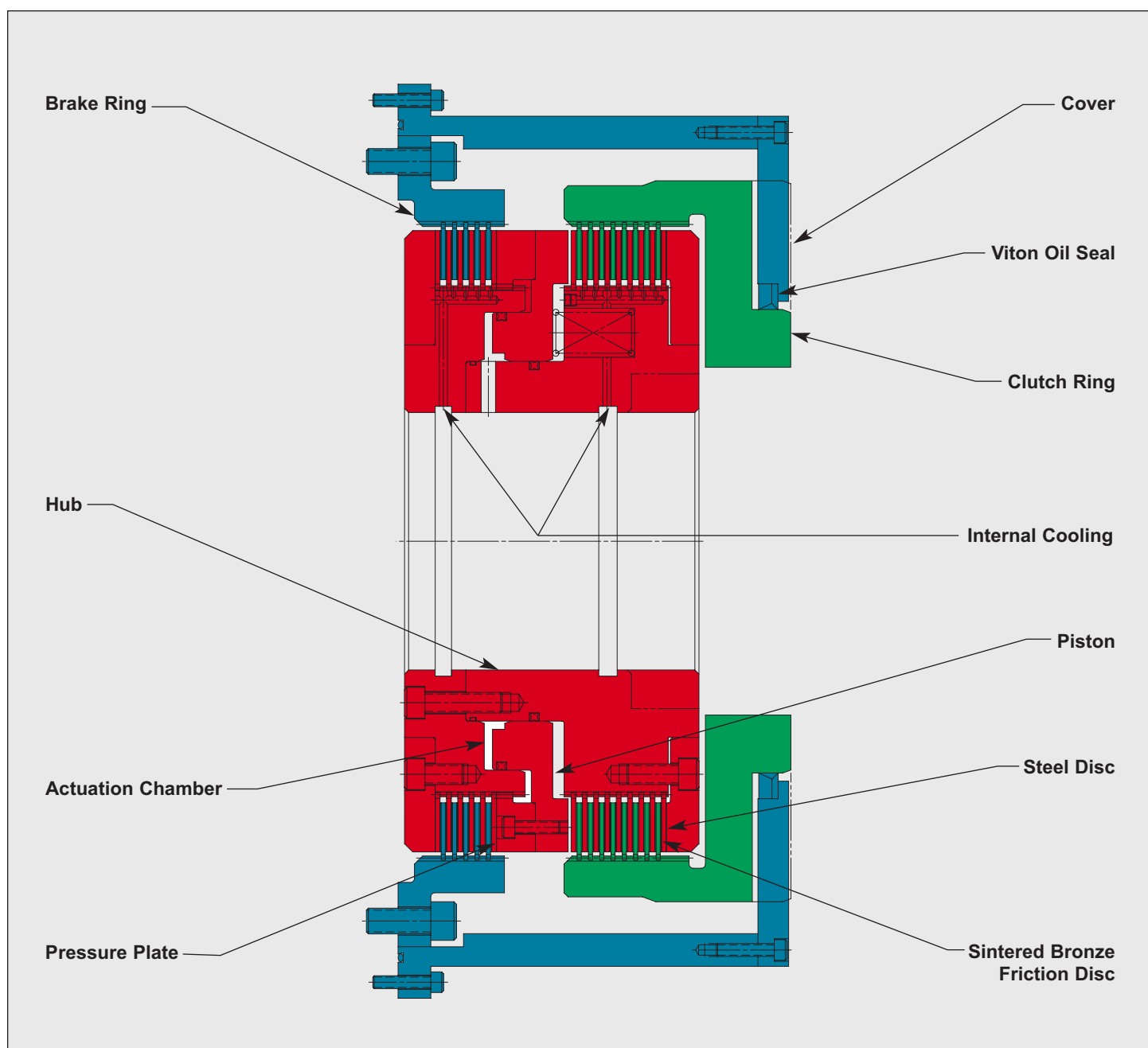
- **Longer Clutch/Brake Life** – High Cooling Capacity
 - Circulating Oil System – Dissipates Heat & Cools Oil
 - Friction Discs Are Continually Lubricated
 - Excellent Single Stroke Performance
Rapid Stroke Rate
- **Maintenance Free**
 - No Clutch/Brake Adjustment
 - Virtually No Friction Disc Wear
 - Eliminates Press Downtime
- **Excellent Start / Stop Capability**
 - Consistent Braking Angles
 - Controlled Accel / Decel Available
- **Smooth, Quiet Engagement**
 - Extends Life of Press Parts
 - Cushioned Engagement of Oil Shear
 - Noise Free
 - No Hazardous Dust Lining Exhausted
Into Atmosphere
- **Compact Design**
 - Low Inertia
 - High Torque In a Smaller Package

Circulating Oil System

- Oil Tank
- Dual Press Safety Valve
- Temperature Switch
- Manifold Block
- Heat Exchanger Oil/Water
or Air/Water Option
- TEFC Motor & Pump
- Flow Switch
- Gauges & Accumulators
- Relief Valves & Check Valves
- High Pressure Filter & Low
Pressure Filter (10 Micron)



Oil Shear Press Drives For Metal Forming Equipment



Press Pac® 3200 Specifications

MODEL NUMBER	STANDARD CLUTCH TORQUE		REINFORCED CLUTCH TORQUE		STANDARD BRAKE TORQUE		REINFORCED BRAKE TORQUE	
	Lb-ft	Nm	Lb-ft	Nm	Lb-ft	Nm	Lb-ft	Nm
3263	2,250	3,051	3,375	4,576	875	1,186	1,312	1,779
3275	4,500	6,101	6,750	9,152	1,750	2,373	2,625	3,559
3280	9,000	12,202	13,500	18,304	3,749	5,083	5,502	7,460
3286	18,000	24,405	27,000	36,607	7,465	10,121	10,989	14,899
3290	36,000	48,810	54,000	73,214	15,000	20,337	22,500	30,506
3294	80,000	108,466	120,000	162,698	50,000	67,791	80,000	108,466
3296	160,000	216,931			100,000	135,582		

Press Pac® 2200 Series Clutch/Brake Systems

Press Pac® 2200 Series Separate Clutch and Brake Mounted Units Hydraulically Actuated / Oil Cooled

The Press Pac® 2200 Series Oil Shear Clutch and Brake Drive System is a hydraulically actuated / oil cooled, multiple disc, separate clutch and brake for metalforming presses.

This unit is ideally suited for installation on both new equipment and the retrofit of existing equipment, including stamping and forging presses up to 4000 tons. These high performance drive systems offer precise control, are virtually maintenance free, and eliminate costly downtime by utilizing advanced oil shear design technology.

Press Pac® 2200 Series Features

- Hydraulic Actuation / Oil Cooling
- 9 Standard Clutch & Brake Models
- Torque Range 5000 Lb-ft thru 150,000 Lb-ft
- Soft Clutch / Soft Brake Control Package
- No Clutch & Brake Overlap or Slight Overlap Designs
- Mounted With Keys or Locking Assemblies
- Actuation Pressure of 700 PSI and Up
- Micro Inch Brake Design Available

Press Pac® 2200 Series Benefits

- **Longer Clutch/Brake Life** – High Cooling Capacity
 - Circulating Oil System – Dissipates Heat & Cools Oil
 - Friction Discs Are Continually Lubricated
 - Excellent Single Stroke Performance
 - Rapid Stroke Rate
- **Maintenance Free**
 - No Clutch/Brake Adjustment
 - Virtually No Friction Disc Wear
 - Eliminates Press Downtime
- **Excellent Start / Stop Capability**
 - Consistent Braking Angles
 - Controlled Accel / Decel Available
- **Smooth, Quiet Engagement**
 - Extends Life of Press Parts
 - Cushioned Engagement of Oil Shear
 - Noise Free
 - No Hazardous Dust Lining Exhausted Into Atmosphere
- **Compact Design**
 - Low Inertia
 - High Torque In a Smaller Package



Press Pac® 2232 Separate Clutch & Brake
Verson® 600 Ton Stamping Press Installation

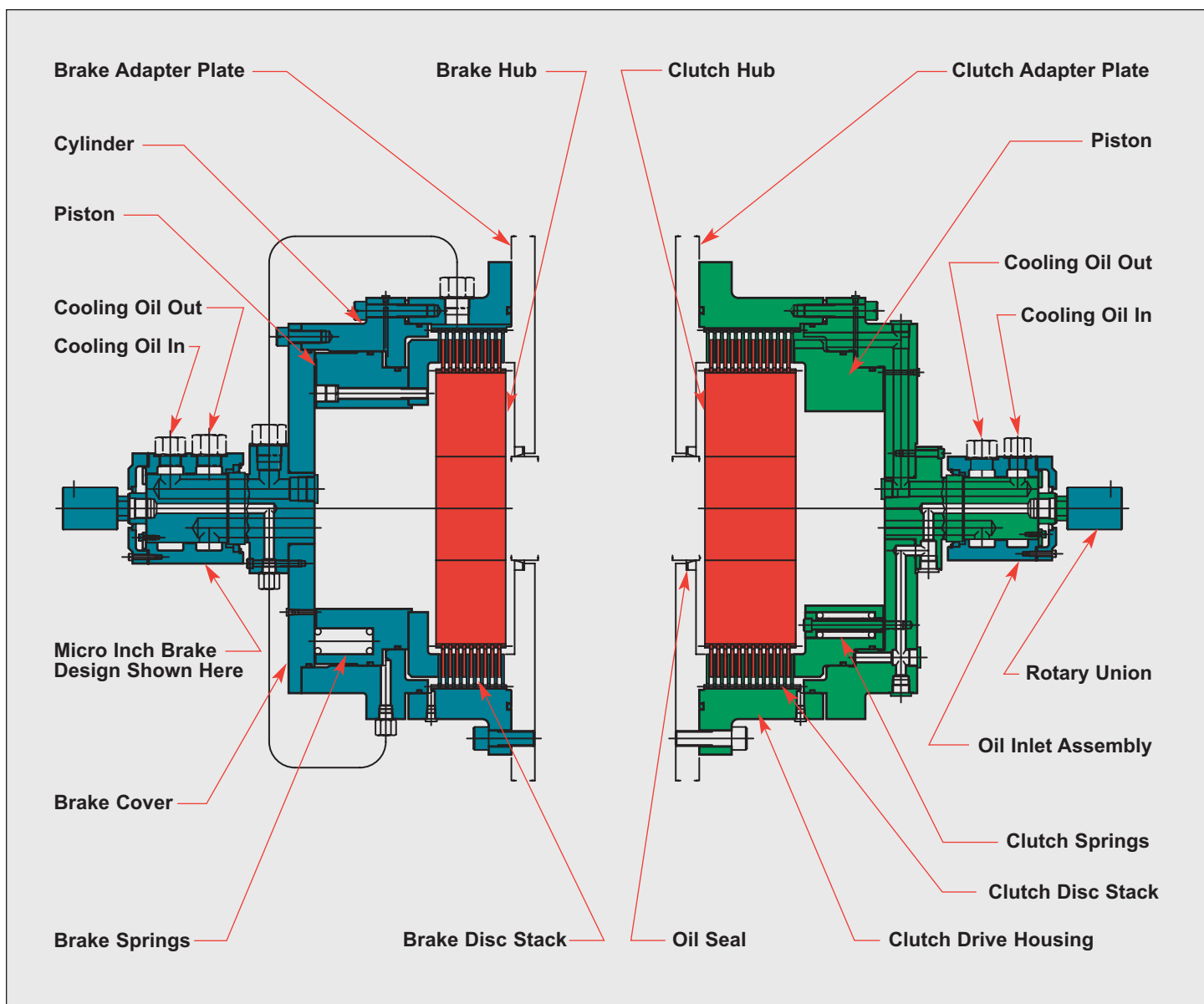
Press Pac® Drive Package

- Complete Drive System Engineering
- Clutch Assembly
- Brake Assembly
- Clutch and Brake Hub
- Clutch and Brake Adapters
- Rotating Union
- Hydraulic Oil Tank
- Midwest Brake Service Technician Check Out

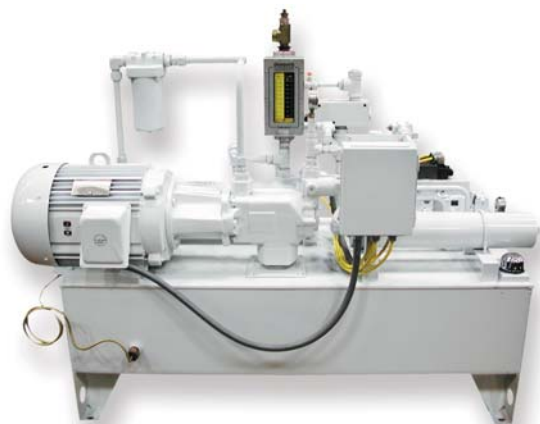


Press Pac® Brake Only Application
Ajax® 1300 Ton Forging Press Application

Oil Shear Press Drives For Metal Forming Equipment



Circulating Oil System



Press Pac® 2200 Specifications

MODEL NUMBER	CLUTCH TORQUE		BRAKE TORQUE	
	Lb-ft	Nm	Lb-ft	Nm
Separate Mounted				
2205	5,000	6,794	3,500	4,745
2212	10,000	13,589	6,000	8,135
2222	20,000	27,178	14,000	18,981
2232	30,000	40,767	18,077	24,509
2242	40,000	54,356	28,000	37,963
2262	60,000	81,534	42,000	56,944
2282	80,000	108,465	56,000	75,926
2292	105,000	135,890	73,500	99,653
2297	150,000	203,830	105,000	142,361

Press Pac® 2100 Series Clutch/Brake Systems

Press Pac® 2100 Series Integral Drive System

The Press Pac® 2100 Series Integral Press Drive System is a hydraulically actuated / oil cooled, multiple disc, combination clutch/brake for metal forming presses.

- Hydraulic Actuation / Oil Cooling
- 10 Standard Clutch/Brake Models
- Torque Range 10,000 Lbs-ft thru 150,000 Lbs-ft
- Presses Up to 4000 Tons
- Soft Start / Soft Stop Control Package



Press Pac® 2100 Series Benefits

Increased Production Rate

A single stroke rate of up to 90% of the continuous strokes per minute can be achieved with Press Pac® 2100. Increased thermal capacity allows for more strokes per minute, more parts per hour and a substantial cost savings can easily be realized through the advanced oil shear technology.

Increased Press Speed

The speed of the press can generally be increased up to 25% without a gear change. The thermal capacity of the Press Pac® 2100 allows for a simple sheave change to increase the speed of your press, which increases more strokes per minute and ultimately more throughput.

Longer Clutch/Brake Life

The advanced circulating oil system delivers cool oil to lubricate friction discs. Oil shear technology, the viscous shearing of oil between alternating discs, transfers torque and drive inertia resulting in less wear on the friction disc surfaces.

Maintenance Free

Press Pac® provides millions of strokes with little to no maintenance or repair requirements and thus, will lower your annual maintenance cost.

Smooth, Quiet Engagement

Noise free, cushioned engagement of oil shear technology decreases gear train wear and extends the life of press parts.

Excellent Start / Stop Capability

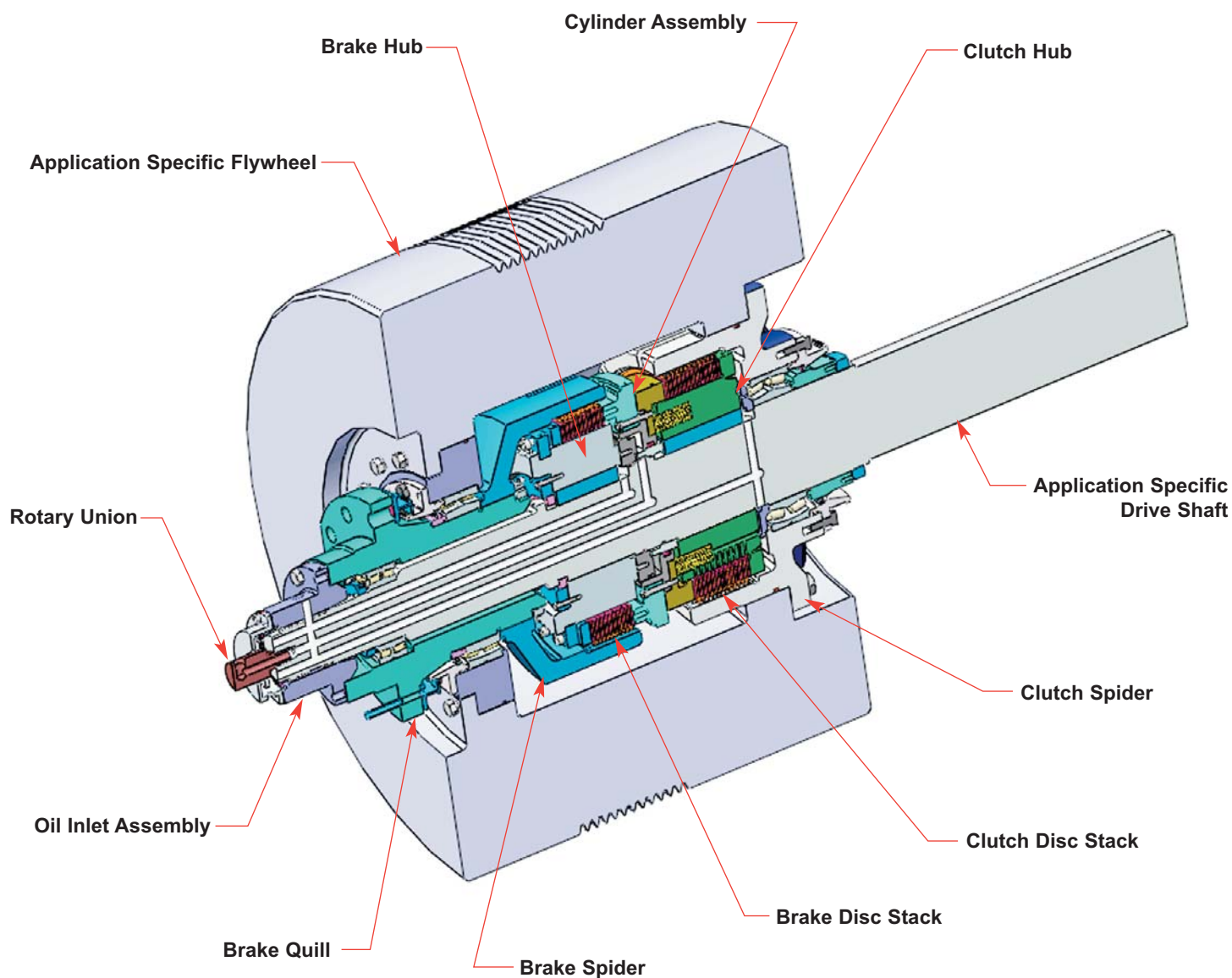
Precise, repeatable clutch engagement and improved stopping times are easily achieved through simple set up and adjustments to the control system. Reduced stopping times can provide faster press cycle times and improve machine productivity.



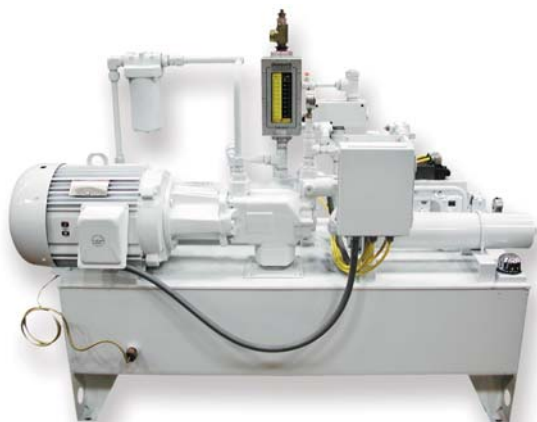
Reduced Life Cycle Costs

Achieve up to 10 years of high volume production without any press downtime or costly repairs. Press Pac®, when compared to standard dry friction clutch/brakes, eliminates costly downtime to replace damaged parts, packings and worn out brake linings and presents a substantial cost savings of the life of your machine.

Oil Shear Press Drives For Metal Forming Equipment



Circulating Oil System



Press Pac® 2100 Specifications

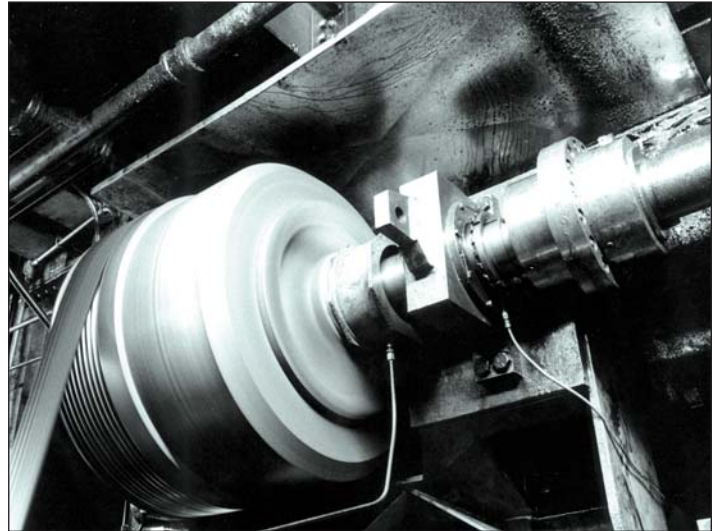
MODEL NUMBER	CLUTCH TORQUE		BRAKE TORQUE	
	Lb-ft	Nm	Lb-ft	Nm
Integral Mounted				
2111	10,000	13,589	5,000	6,795
2121	20,000	27,178	10,000	13,589
2131	30,000	40,767	15,000	20,384
2141	40,000	54,356	20,000	27,178
2145	45,489	61,675	29,376	39,829
2161	60,000	81,534	30,000	40,767
2165	65,707	89,087	41,966	56,898
2181	80,000	108,466	53,038	71,910
2191	105,000	135,890	70,555	95,660
2195	150,000	203,830	106,358	144,202

Press Pac® 1600 Series Clutch/Brake Systems

Press Pac® 1600 Series Integral Drive System

The Press Pac® 1600 Series Integral Press Drive System is a hydraulically actuated / oil cooled, multiple disc, combination clutch/brake for metal forming presses.

- Pneumatic Actuation / Oil Cooling
- 18 Standard Clutch/Brake Models
- Torque Range 6,667 Lbs-ft thru 120,000 Lbs-ft
- Presses Up to 4000 Tons



Press Pac® 1600 Series Benefits

Increased Production Rate

A single stroke rate of up to 90% of the continuous strokes per minute can be achieved with Press Pac® 1600. Increased thermal capacity allows for more strokes per minute, more parts per hour and a substantial cost savings can easily be realized through the advanced oil shear technology.

Increased Press Speed

The speed of the press can generally be increased up to 25% without a gear change. The thermal capacity of the Press Pac® 1600 allows for a simple sheave change to increase the speed of your press, which increases more strokes per minute and ultimately more throughput.

Longer Clutch/Brake Life

The advanced circulating oil system delivers cool oil to lubricate friction discs. Oil shear technology, the viscous shearing of oil between alternating discs, transfers torque and drive inertia resulting in less wear on the friction disc surfaces.

Maintenance Free

Press Pac® provides millions of strokes with little to no maintenance or repair requirements and thus, will lower your annual maintenance cost.

Smooth, Quiet Engagement

Noise free, cushioned engagement of oil shear technology decreases gear train wear and extends the life of press parts.

Excellent Start / Stop Capability

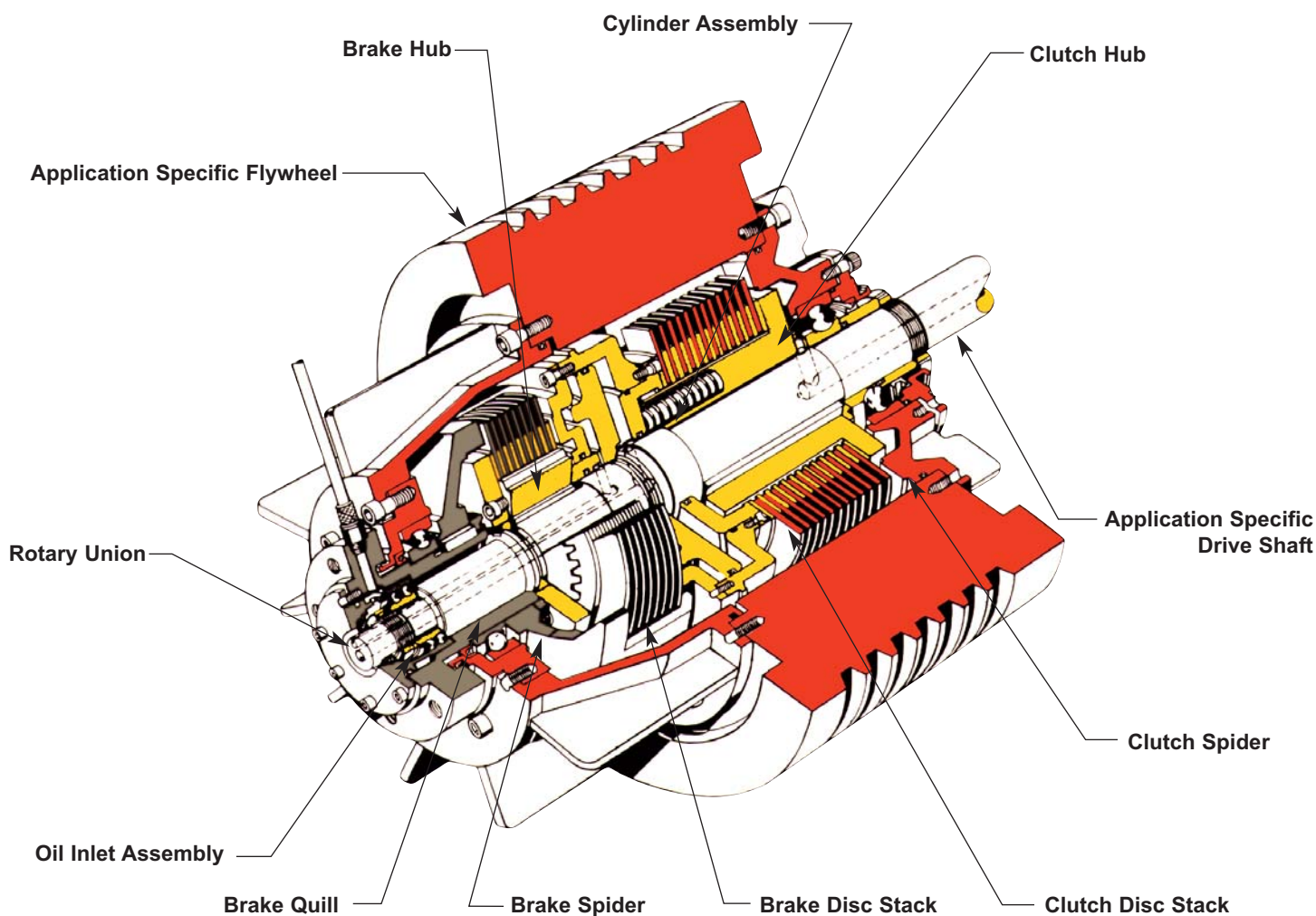
Precise, repeatable clutch engagement and improved stopping times are easily achieved through simple set up and adjustments to the control system. Reduced stopping times can provide faster press cycle times and improve machine productivity.



Reduced Life Cycle Costs

Achieve up to 10 years of high volume production without any press downtime or costly repairs. Press Pac®, when compared to standard dry friction clutch/brakes, eliminates costly downtime to replace damaged parts, packings and worn out brake linings and presents a substantial cost savings of the life of your machine.

Oil Shear Press Drives For Metal Forming Equipment



Circulating Oil System



Press Pac® 1600 Series Specifications

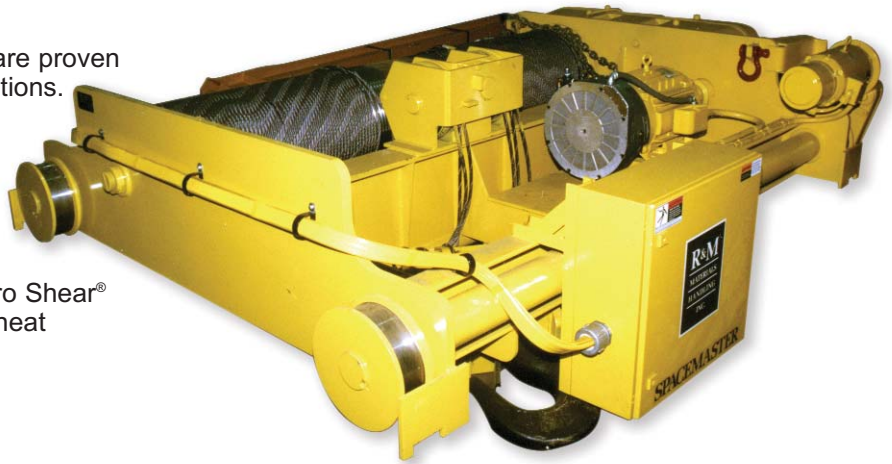
MODEL NO.	CLUTCH TORQUE		BRAKE TORQUE		OIL TANK CAPACITY	
	Lb-ft @80 PSI	Nm @5.52 Bar	Lb-ft	Nm	Gallons	Liters
Integral Mounted						
1608	6,667	9,039	2,841	3,841	20.0	75.70
1609	6,667	9,039	3,896	5,282	20.0	75.70
1610	8,333	11,298	2,833	3,841	20.0	75.70
1612	8,333	11,298	3,895	5,282	20.0	75.70
1616	11,583	15,705	8,083	10,959	30.0	113.56
1618	11,583	15,705	11,146	15,112	30.0	113.56
1624	17,458	23,670	8,083	10,959	30.0	113.56
1626	17,458	23,670	11,146	15,112	30.0	113.56
1630	21,833	29,602	8,083	10,960	30.0	113.56
1632	21,833	29,602	11,146	15,112	30.0	113.56
1640	29,108	39,466	8,083	10,960	30.0	113.56
1642	29,108	39,466	11,125	15,083	30.0	113.56
1660	54,166	73,440	25,667	34,799	80.0	302.83
1662	54,166	73,440	35,292	47,849	80.0	302.83
1670	70,417	95,472	25,667	34,799	80.0	302.83
1672	70,417	95,472	35,292	47,849	80.0	302.83
1685	87,917	119,199	25,667	34,799	80.0	302.83
1687	87,917	119,199	35,292	49,849	80.0	302.83

Electro Shear® Oil Shear Motor Brakes

Electro Shear® Motor Brake

The Electro Shear® Oil Shear Motor Brakes are proven and reliable in the toughest industrial applications. Midwest Brake has been the leader in oil shear brake technology for over 35 years, offering the highest quality, most reliable brakes available in the market today.

Originally developed for the rigorous stops and starts of automotive transfer lines, Electro Shear® Oil Shear brakes are designed for excellent heat dissipation, which allows for higher cycle rates without brake fade.



Electro Shear® Motor Brake Features:

- 8 Standard Sizes - Torque Range Up To 1708 Lb-ft
- Electric A.C. Power – 230 VAC, 460 VAC, 575 VAC
- NEMA Motor Standard Mounting Designs
 - 56 C Frame – 449T Frame
 - T-Frame Motors
 - U-Frame Motors
- IEC Motors
- Simple & Easy One Piece Installation
- Spring Set, Fail Safe Brake
- Cast Aluminum Housing
- Self Adjusting
- Horizontal or Vertical Mounting
- Manual Release

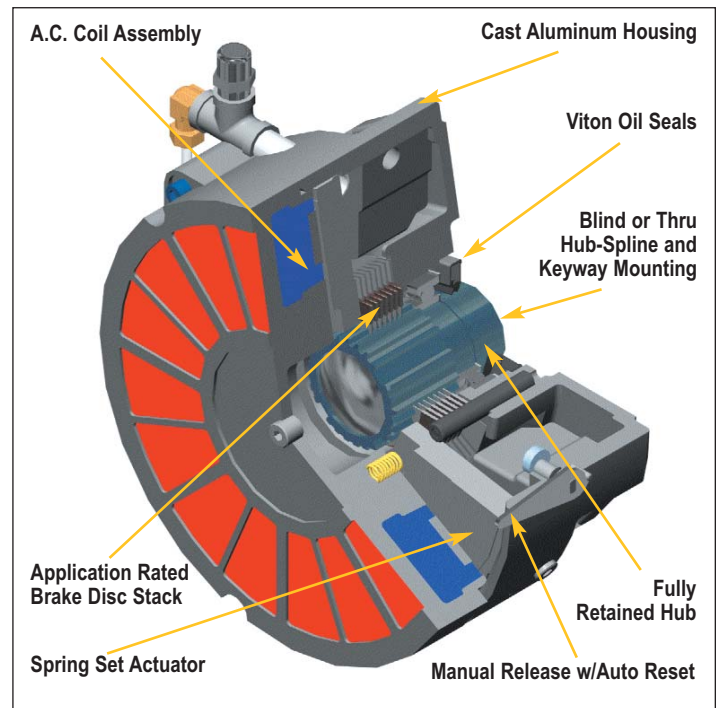
Electro Shear® Brake – Operation

Electro Shear® brakes are spring applied, electrically released, multiple disc “**Oil Shear**” brakes. The brake disc stack is immersed in a bath of oil, totally enclosed against moisture and contamination.

Electro Shear® brakes stop the machine load by the shearing of an oil film between alternating which results in virtually **No Wear On The Friction Disc Surfaces.**

The unit is self contained, totally enclosed and utilizes advanced composite friction material discs with steel alternating discs.

Ultimate Simplicity



Electro Shear® Oil Shear Motor Brakes



Electro Shear® Model 8725 – 25 Ton Overhead Crane Application – Electro Shear® Brakes Installed On Site At Midwest Brake®

Simple Installation, One Piece Assembly

Electro Shear® brakes are easily installed on the rear C-flange of a NEMA standard motor. They are shipped from the factory completely assembled and are installed in one, integral piece – **No Loose Pieces, No Assembly Required.**

Installation can be performed quickly and easily in a manner of minutes. Simply secure the brake using the Midwest Brake supplied bolts, make the electrical connections to the AC power source as per the service manual, fill with Type F automatic transmission fluid and the brake is ready for operation.

Electro Shear® is easily fit to accommodate custom mounting configurations including gear boxes, metric motors, double c-face applications, thru shaft applications and many others. Please contact your Midwest Brake representative for application assistance.



Step 1 – Remove Old Brake



Step 2 – Slide Brake on Motor Shaft



Step 3 – Fill Brake Using Type F Fluid

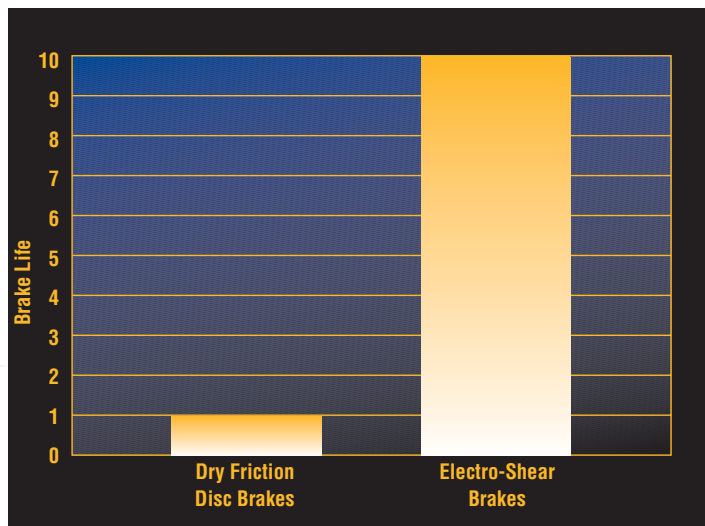


Step 4 – Wire Brake to Motor

Exceptionally Long Disc Stack Life

The inertia of the machine is stopped by the shearing of an oil film between the alternating paper and steel discs. These discs do not contact until over 90 percent of the inertia is absorbed.

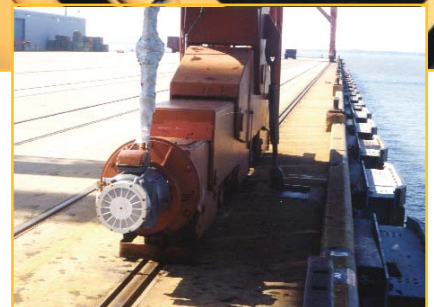
This leads to exceptionally long disc stack life. Static and dynamic torque ratios are nearly the same, resulting in fast, smooth stops.



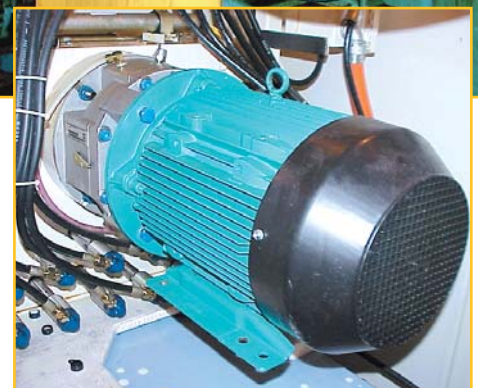
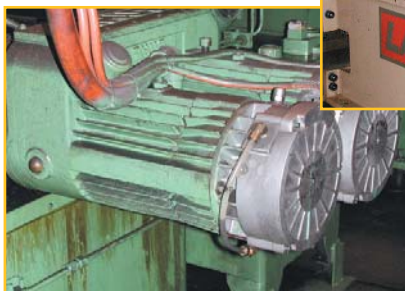
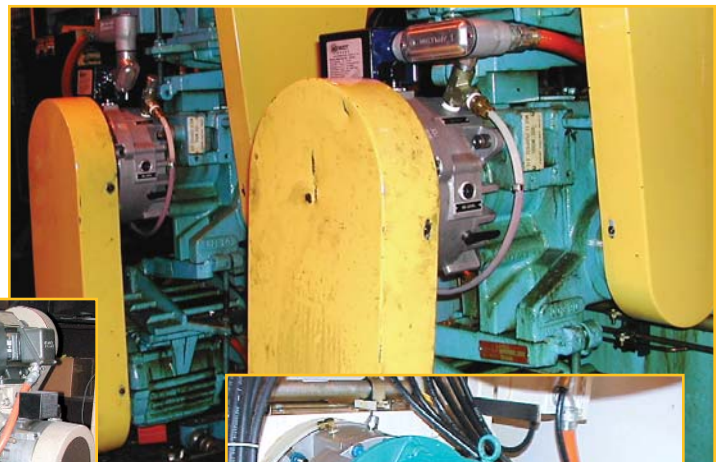
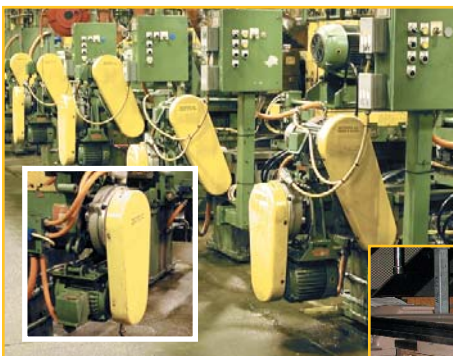
Based on Job Site Studies and Application Case Studies

Electro Shear® Oil Shear Motor Brakes

Brakes for Crane & Hoist Applications



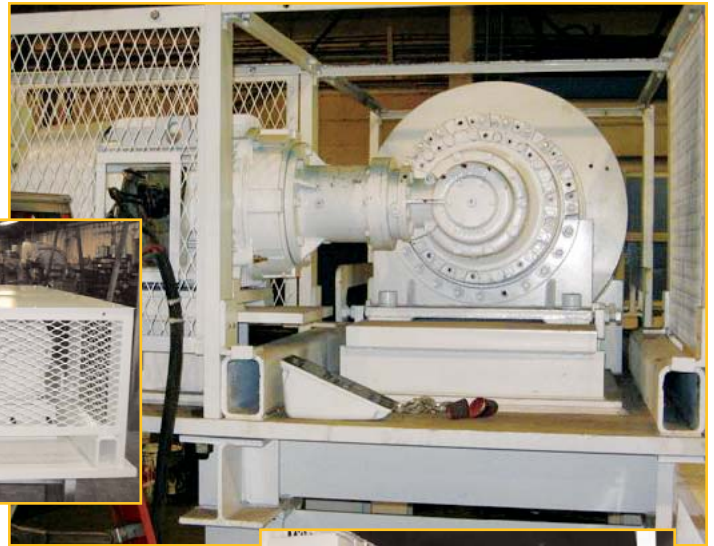
Brakes for Motors & Machine Tool Applications



Electro Shear® Oil Shear Motor Brakes

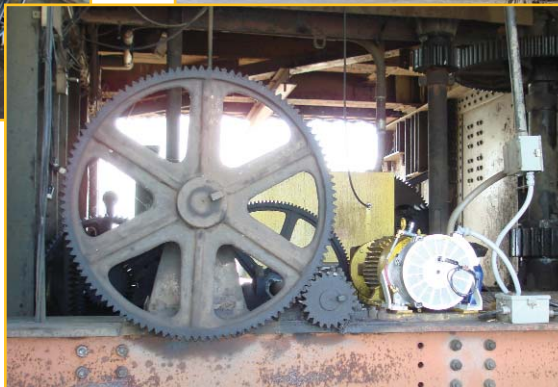
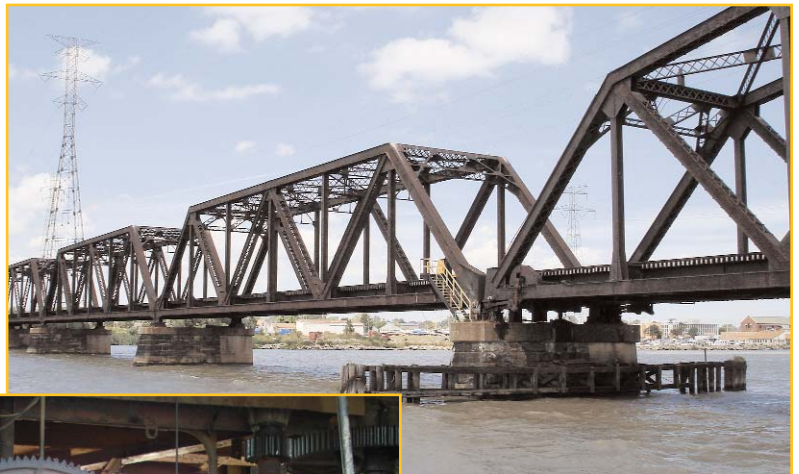
Brakes for Constant Tension Winches

- Coal & Mining Application
- Material Handling Equipment
- Conveyors
- Simple Field Retrofit



External Encoder Mounting
For Easy Access

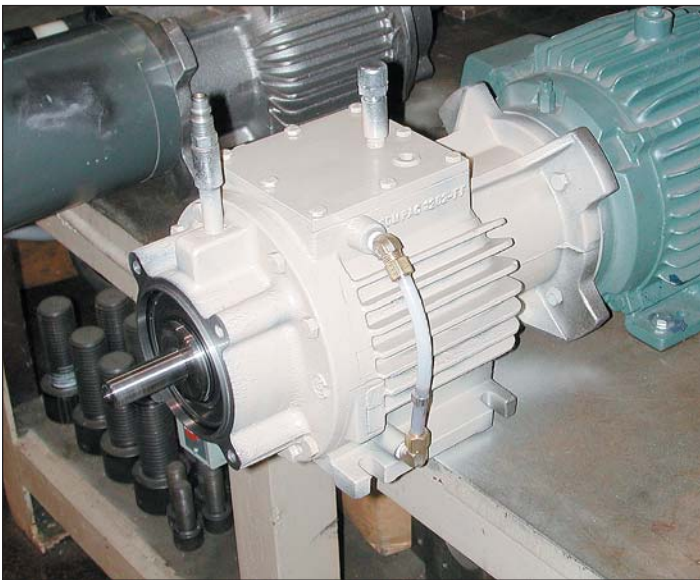
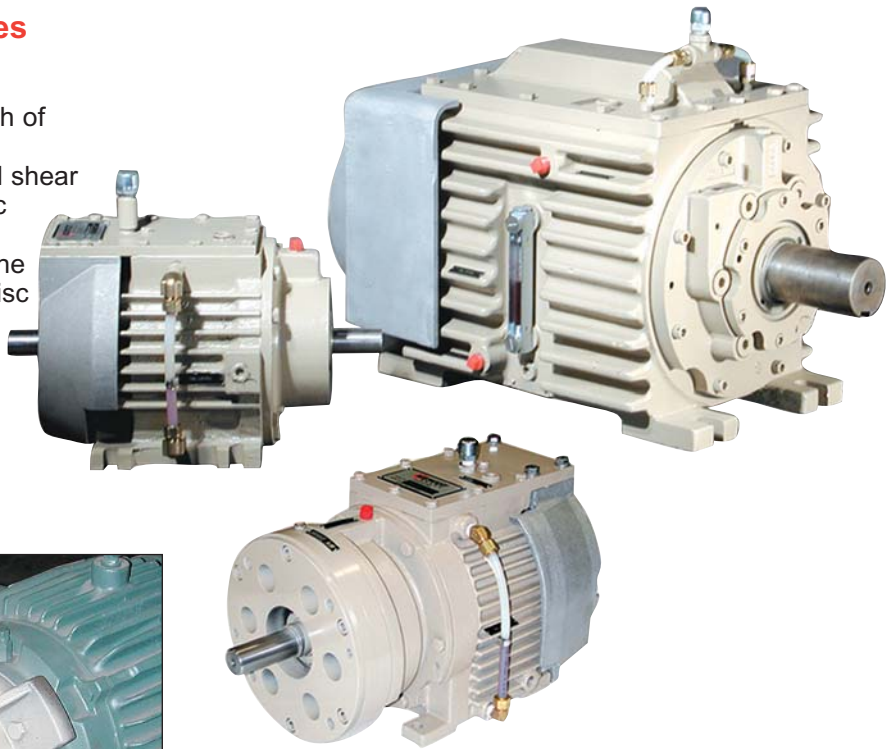
Brakes for Rail Bridge Applications



Som Pac® Series Clutch/Brake Drives

Som Pac® Series Clutch/Brake Drives

Som-Pac® drives are completely assembled Clutch/Brake drive systems operating in a bath of oil within a rugged, sealed housing which is impervious to outside contaminants. These oil shear Clutch/Brake drives contain multiple plate disc packs that are immersed in oil. Torque is transmitted by the shearing of the oil across the disc providing cooling and lubrication to the disc surfaces. The result is no wear on the disc surfaces, superior heat transfer and long trouble free performance.



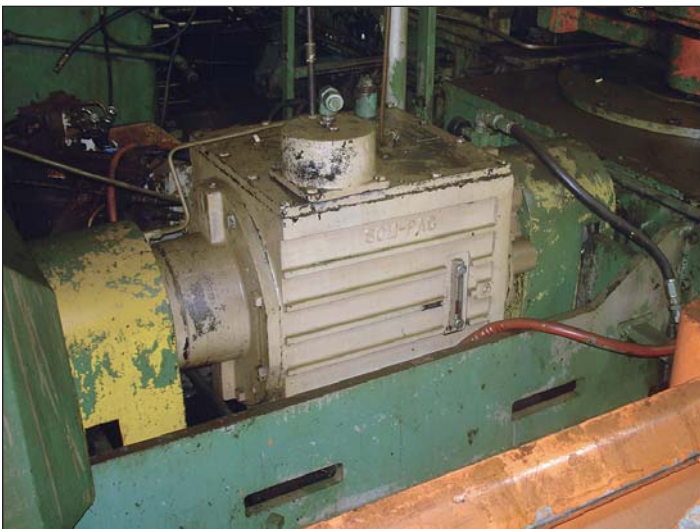
Som-Pac® Model 1202FF Running on Test Stand

Som-Pac® Features:

- Fully Enclosed Clutch/Brake Drive System
- Continuous Oil Flow
- Clutch/Brake Mechanically Interlocked
- Air Engaged Clutch
- Spring Set Brake (In Standard Units)
- Brake Torque Can Be Adjusted Externally
- Easy Installation
- Reduced Maintenance Costs

Som-Pac® Applications Include:

- | | |
|--------------------------------|----------------------------------|
| • Conveyors | • Coil Feeding Equipment |
| • Transfers | • Spinning Machinery |
| • Shuttles | • Packaging Machinery |
| • Machine Tools | • Presses |
| • Index Tables | • Grinding Machines |
| • Assembly Machines | • Winding Equipment |
| • Turnovers | • Cement Block Machines |
| • Palletizing Machines | • Testing Equipment |
| • Welding Machinery | • Container & Drum Manufacturing |
| • Electric Motor Manufacturing | |



Som-Pac® Model 2480 Transfer Line Application

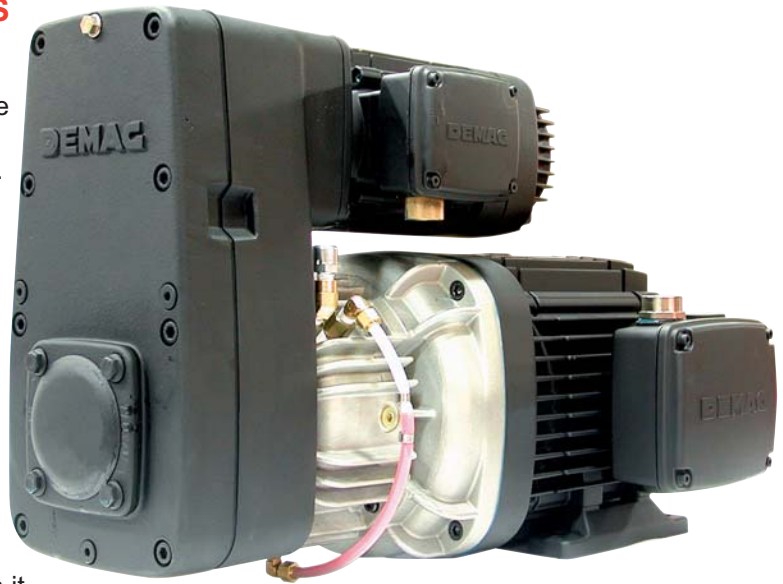
Demag KOS & KBOS Microspeed Drives

Mannesmann Demag™ – Model KOS & KBOS

Mannesmann Demag™ manufactures a Microspeed 2 Speed Drive Unit model KOS and KBOS. Midwest Brake and Mannesmann Demag™ worked together to develop an oil shear clutch/brake for the Microspeed Drive Units. This clutch/brake is supplied on new drives as OEM equipment and as a retrofit package for existing units in the field.

The oil shear clutch/brake operates in a bath of hydraulic transmission fluid which lubricates the discs and dissipates heat. The shearing of oil between the clutch discs transmits the torque and heat. The friction discs experience little or no wear.

The oil shear clutch/brake can provide years of service with no wear, no adjustments and no maintenance. It is a totally enclosed and oil immersed package that makes it impervious to outside contaminants. Thus, airborne coolants and metal chips from the machining operation cannot affect the operation or life of the friction material. The heat transfer by the oil shear principle provides uniform operation and cycling from Monday morning to Friday afternoon.



Demag™ KBOS Microspeed Drive With Oil Shear Clutch/Brake Series 8900



Demag™ KOS Drive with Oil Shear Clutch/Brake Series 8300



Demag™ Motor With 8900 Series Brake

Midwest Brake® Oil Shear Clutch Features:

- **Eliminate “Monday Morning Syndrome”**
- **Oil Shear Brake** – Results in longer life, better heat transfer
- **No Adjustment**
- **Totally Enclosed Unit** – System unaffected by environment
- **No External Controls Required to Operate Brake**
- **No Overlap Between Clutch & Brake**
- **Full Braking Torque For Emergency Stops**



Demag™ Model KBOS Microspeed Vertical Mount

Midwest Brake® Offers the Following Options for the Demag Product:

- Motor and Clutch Repair Services
- Conversion From Dry Clutch to Oil Shear Clutch
- Inspection and Service Technicians Available
- 1 Year Warranty



Demag™ Model KOS on a Lamb Cycloidal Drive

Authorized Distributor for Eaton® Airflex®
Clutches & Brakes



Authorized Distributor for Eaton® Airflex® Clutches & Brakes

CBC Clutch/Brake Combination Features:

- Compact Size
- High Thermal Capacity
- High Clutch & Brake Torque
- Low Maintenance
- Easy Installation
- Improved Safety Features

Other Eaton / Airflex Products Include:

- CB Clutches & Brakes
- VC Clutches & Brakes
- CS/CTE Brakes
- FSPA
- WCB Dual Piston Brakes
- WCB Brakes
- DC Clutches & Brakes
- DBB Brakes
- Rotorseals

Eaton / Airflex Products Can Be Used On:

- Mechanical Presses
- Press Brakes
- Shears
- Paper Converting Equipment
- Coil Processing Equipment
- Turret Presses
- Paper Machine Drives
- All Metalworking Equipment



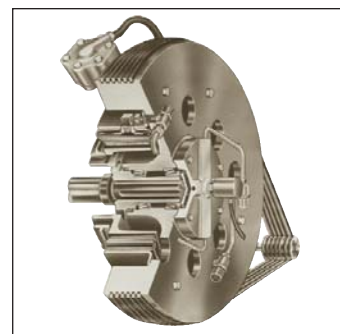
CB Clutches & Brakes



WCB Brakes



VC Clutches & Brakes



FSPA Clutches

Clutch / Brake Repair

Clutch/Brake Repair

Midwest Brake® offers complete clutch/brake repair and rebuilds on all style of mechanical clutches and brakes stamping and forging presses.

Wet Clutch Rebuilds

- Midwest Brake® - Press Pac®
- Komatsu* Wet Clutch

Dry/Pneumatic Clutch Rebuilds

- All Styles of Dry Clutch Rebuilds

We Can Supply Replacement Parts for Clutch/Brakes

We can inspect, disassemble, repair & rebuild all style of clutch/brake units for presses. We can machine & repair component parts, reline clutch/brake plates. We also provide field service engineers who can install and check out your system to insure that your newly rebuilt unit is operating properly.

* Free phone consultation support available.



Press Pac® 2161 Series - Integral Unit on Test Stand



Dry Friction Clutch on Test Stand



Verson* Clutch/Brake Repaired and Ready for Shipping



Komatsu* Wet Clutch



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www.midwestbrake.com
sales@midwestbrake.com (E-mail)