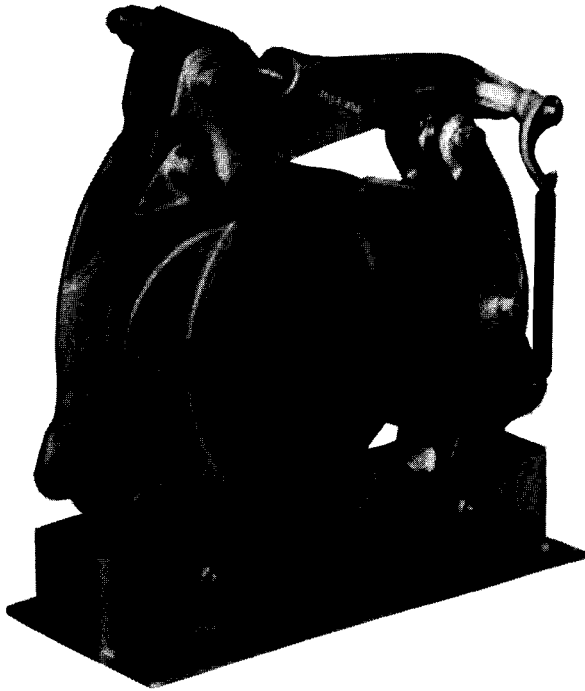


**AMETEK<sup>®</sup>**  
**PATRIOT SENSORS**

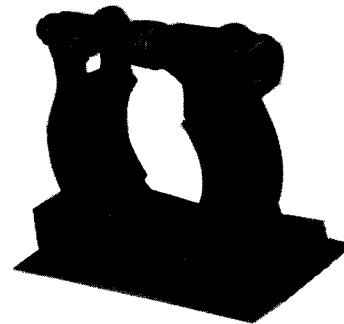
720D  
**Gemco<sup>™</sup>**  
**Hydraulic Brake Systems**

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**Hydraulic Brake Systems**

**Lets You  
Control Brake Application for  
Smooth, Responsive Stopping**





# INTRODUCTION

## HYDRAULIC BRAKE SYSTEMS

Gemco Industrial Brakes stop virtually any type of industrial machine. Applications such as indoor and outdoor bridge cranes, gantries, heavy-duty cranes, high-duty cycle cranes, commercial laundry equipment and heavy-duty industrial transfer equipment are just some examples in which Gemco Industrial Brakes are used. These proven, high-performance brake systems are tough, reliable and provide extended, trouble-free service. That's because they are designed and built to exacting specifications by Gemco. For more than 40 years Gemco has been an acknowledged leader in brake system technology for heavy-duty industrial applications.

### DESIGNED FOR APPLICATION FLEXIBILITY

Gemco Industrial Brakes provide smooth, controlled, dynamic stopping. Parking/holding (Type HM or A/HM) capabilities are available with two basic actuation techniques: manual hydraulic (Type H), and powered air/hydraulic, (A/H). The powered systems may be directly or remote controlled. Air Remote Control (ARC), Hydraulic Remote Control (HRC), and Electric Remote Control (ERC) allow the flexibility to fit most requirements.

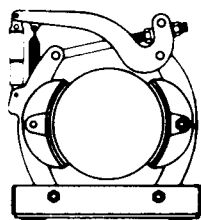
### KEY BRAKE SYSTEM FEATURES

	H	HM	S	A/H-HRC A/H-ARC A/H-ERC	A/HM-HRC A/HM-ARC A/HM-ERC
Controlled Stopping	•	•		•	•
Parking		•	•		•
Emergency Stopping		•	•	•	•

### SURE STOPPING WITH OR WITHOUT PARKING FEATURE

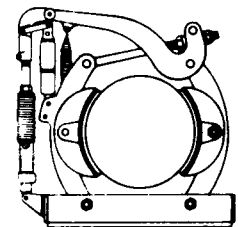
#### TYPE H BRAKE - DYNAMIC STOPPING

This hydraulic brake is designed to give the operator full control and will meet most basic stopping requirements. It is a component of many of the brake systems described on the following pages.



#### TYPE HM BRAKE - DYNAMIC STOPPING AND PARKING

This hydraulic brake provides controlled stopping as well as spring-set parking and holding capabilities.



### RATED DYNAMIC STOPPING TORQUE RATINGS (LBS./FT.)

Brake Diameter	6"	8"	10"	14"	18"
Single Brake					
Manual Hydraulic Systems	150	200	425	600	900
Air/Hydraulic Systems	350	450	1000	1400	1800

### RATED PARKING TORQUE (LBS./FT.)

	35*	50*	450	550	700
--	-----	-----	-----	-----	-----

\*Not available in Type S Design

# CAB CONTROLLED MANUAL HYDRAULIC SYSTEMS

All manual systems include necessary brakes and hydraulic actuators, fluid reservoir/bleeder, bleeder pushbutton, one control cylinder and pedal, armored hoses, tubing, fittings, and brake fluid. Specify whether 230 VDC or 115VAC (50/60 HZ) is needed for bleeder operation, or whether a manually operated bleeder is required. Systems do not include brake wheels. Consult factory for all current list prices.

## TYPE H SYSTEMS (NO PARKING):

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE SYSTEM <sup>1</sup>	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE SYSTEM <sup>2</sup>	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

<sup>1</sup>One brake systems include 100 ft. 5/16" tubing. <sup>2</sup>Two brake systems include 250 ft. 5/16" tubing. If additional tubing is needed, please specify; sold in 50 ft. lots. Tubing kit part number: J15576. Consult factory for current list price.

## TYPE HM SYSTEMS (WITH PARKING)<sup>3</sup>

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE SYSTEM <sup>4</sup>	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE SYSTEM <sup>5</sup>	6 x 3,	8 x 3,	*	*	*

<sup>3</sup>Type HM systems also include a Type HM Control Unit and Parking Brake Control Station. <sup>4</sup>One brake systems include 150 ft. 5/16" tubing. <sup>5</sup>Two brake systems include 400 ft. 5/16" tubing. If additional tubing is needed, please specify; sold in 50 ft. lots. Tubing kit part number: J15576. Consult factory for current list price.

\*NOT RECOMMENDED; USE TYPE A/HM-HRC SYSTEM.

## BRAKE WHEELS

Brake wheels can be provided with a hydraulic system. Both a Stock/Rough bore and a Finished bore can be provided based upon the customers' needs.

<u>SIZES AVAILABLE:</u>	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
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\*Consult Factory for current list prices.

# CAB CONTROLLED AIR OVER HYDRAULIC SYSTEMS

All air over hydraulic systems include brake(s) and hydraulic actuator(s), fluid reservoir/bleeder(s), preassembled air over hydraulic control panel, 3/4 HP motor and compressor assembly, tubing, hoses, fittings and brake fluid. Specify whether 230 VDC or 230/460 V (50/60 HZ) 3 ph AC power is needed. Systems do not include brake wheels. Consult factory for all current list prices.

## **TYPE A/H-ARC SYSTEMS (NO PARKING)**

<u>SYSTEM SIZE</u>	<u>BRAKE SIZE AVAILABLE</u>				
ONE BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

\*Note: Type A/H-ARC Systems include a foot operated air control valve, low air pressure buzzer, and an air gauge.

## **TYPE A/H-HRC SYSTEMS (NO PARKING)**

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

\*Note: Type A/H-HRC Systems include a hydraulic control cylinder and pedal. They are intended for bridge braking from a moving cab. This system provides off-power emergency braking, but not parking. Add LONG HOSE KIT (listed at bottom of pg. 4) for flexible connection between cab and bridge.

## **TYPE A/HM-HRC or TYPE A/HM-ARC SYSTEMS (WITH PARKING)**

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE					
With 2 brake parking	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE					
With 4 brake parking	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

\*Note: Type A/HM-HRC systems include a hydraulic control cylinder, pedal and parking control switch. They provide off-power emergency braking plus parking. Type A/HM-ARC systems provide the same functions, but with treadle valve control. Optional drip-tight enclosure is available for control panel if specified. Add LONG HOSE KIT (listed at bottom of pg. 4), for flexible connection between cab and bridge.

# ELECTRIC REMOTE CONTROLLED AIR OVER HYDRAULIC SYSTEMS

Electric Remote Controlled air over hydraulic systems include brake(s) and hydraulic actuator(s), fluid reservoir/bleeder(s), preassembled air-over hydraulic control panel, 3/4 HP motor and compressor, tubing, hoses, fittings and brake fluid. Specify whether 230 VDC or 230/460V (50/60 HZ) 3ph AC power is needed for bleeder operation. Systems do not include brake wheel(s) or optional cab control. Additional cab control options listed below.

## **TYPE A/H-ERC SYSTEMS (NO PARKING)**

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

\*Note: When optional cab control is required for two brake A/H-ERC systems, the customer must specify if a hydraulic control cylinder or an air treadle valve is desired for auxiliary cab control. Optional Cab control for a four brake system must utilize an air treadle valve.

## **TYPE A/HM-ERC SYSTEMS (WITH PARKING)**

<u>SYSTEM SIZE</u>	<u>BRAKE SIZES AVAILABLE</u>				
ONE BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
TWO BRAKE	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE					
With 2 Brake Parking	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8
FOUR BRAKE					
With 4 Brake Parking	6 x 3,	8 x 3,	10 x 4,	14 x 6,	18 x 8

\*Note: When optional cab control is specified, type A/HM-ERC systems also include a hydraulic remote controlled air valve on the brake control panel; plus a control cylinder, pedal and parking brake control switch and signal light for mounting in the cab.

## ADDITIONAL OPTIONS

1. 36" x 48" DRIP-TIGHT PANEL ENCLOSURE for A/HM panels
2. LONG HOSE KIT - For flexible connection between cab and brake system. Kit includes renewable fittings. Hose length may be shortened. Fittings included for connection of two or more hose lengths.  
 Lengths available:    25 ft. Pt. J73905            50 ft. Pt. J73906            75 ft. Pt. J87274  
                                  100 ft. Pt. J87275            125 ft. Pt. J87276
3. OPTIONAL CAB CONTROL - Available for A/H-ERC and A/HM-ERC systems

# ELECTRIC REMOTE CONTROLLED AIR OVER HYDRAULIC SYSTEMS

## **TYPE A/H-ERC CONVERSION SYSTEM For Type H Systems (No Parking)**

Most manually operated crane brake systems installed prior to January, 1970 used a 1 1/8" diameter actuating cylinder, and require between 100 and 400 PSI hydraulic pressure (30 to 120 Lb. pedal force) to develop rated torque. Unless data is available to define the required torque for a specific crane, it is recommended that the actual braking pressure required to stop a specific crane be observed and recorded on the order for a type A/H-ERC Conversion System. These pressure readings are especially important when the required braking pedal force is known to be unusually low (less than 30 lbs.). Unless otherwise specified, the Pressure Cluster supplied in the standard A/H-ERC Conversion System has an 8 to 1 pressure ratio. This provides the normal 100 to 400 PSI required braking pressure from the normal 12 to 50 PSI type A/H system air pressure. Alternate ratio pressure clusters are available for specific cranes requiring other than normal braking pressure.

Type A/H-ERC Conversion Systems are generally suitable for use with any hydraulically applied, spring released, single or double brake system (without parking), equipped with a fluid reservoir bleeder. An A/H-ERC Conversion system includes the following components:

- One 3/4 HP motor driven compressor assembly
- One Pre-piped, pre-wired control panel
- One Two-way hydraulic check valve
- One Installation kit including all necessary tubing, fittings and fluid

## **TYPE A/HM-ERC CONVERSION SYSTEM For Type HM Systems (With Parking)**

Outside cranes subject to wind loads generally use type HM brake systems, which include spring set, hydraulically released parking. Type HM brake systems converted to Electric Remote Control must include an additional pressure cluster and necessary valves to control the parking brake cylinder.

If the existing type H system does not include a fluid reservoir bleeder, add optional bleeder conversion system. Conversion systems do not include components to convert a type H brake to a type HM brake.

### **OTHER CONVERSION SYSTEMS AVAILABLE:**

**For type H to type HM (Add Parking):** Type HM Brake kits include all parts necessary to convert a type H brake assembly to a type HM brake assembly. The size of the brake to be converted must be specified on any order for type HM conversion kits.

**Bleeder Conversion System:** A Bleeder Conversion system option includes AC or DC fluid reservoir bleeder, a bleeder pushbutton and necessary tubing, fittings, and brake fluid.

Contact Factory direct for current list prices on systems and conversion packages.

# CONVERSION & MODIFICATION SYSTEMS

Conversion of existing type H, one brake one station manual brake system to type HM is available in the following brake sizes:

- 6 x 3 or 8 x 3 system
- 10 x 4 system
- 14 x 6 or 18 x 8 system

A typical conversion system includes the following components:

BRAKE SIZE	6" or 8"	10"	14"	18"
HM Actuator	J3054	-----	-----	-----
HM Cylinder	-----	J79463	J79462	J79464
Brake Conv. Kit	-----	J70898	J70899	J70899
7/8" Service Brk Cyl	-----	J23437	J23437	J23437
HM Control Unit	J107206	J107206	J107206	J107206
Switch & Light	J45767	J45767	J45767	J45767
Installation Kit	J73900	J73900	J73900	J73900

Conversion of existing type H, one or two brake, one station, manual brake system, to type A/H-ARC, 230V DC. A typical conversion includes:

A/H-ARC Panel	J89664
DC Compressor	J70943
Buzzer	J24673
Treadle Kit	J66962
Compressor Kit	J71030
Hydraulic Kit	J73900

Conversion of new or existing type H, one or two brake, one station to add a second station. A typical conversion includes:

Control Cylinder:	J16320 or J17616
Pedal	J8219
2-way Hyd. Chk. Valve	J18377
Bleeder Pushbutton	J10008
Installation Kit	J73900

Modification of existing type H or HM system to add fluid reservoir/bleeder. A typical modification includes:

Fluid Reservoir/Bleeder	J3080 or J3083
Bleeder Pushbutton	J10008
Installation Kit	J73902

Conversion of new or existing type HM one brake, one station system to add a second station. A typical conversion includes:

Control Cylinder:	J16320 or J17616
Pedal	J8219
2-way Hyd. Chk. Valve	J18377
Bleeder Pushbutton	J10008
Switch & Light	J45767
Installation Kit	J73900

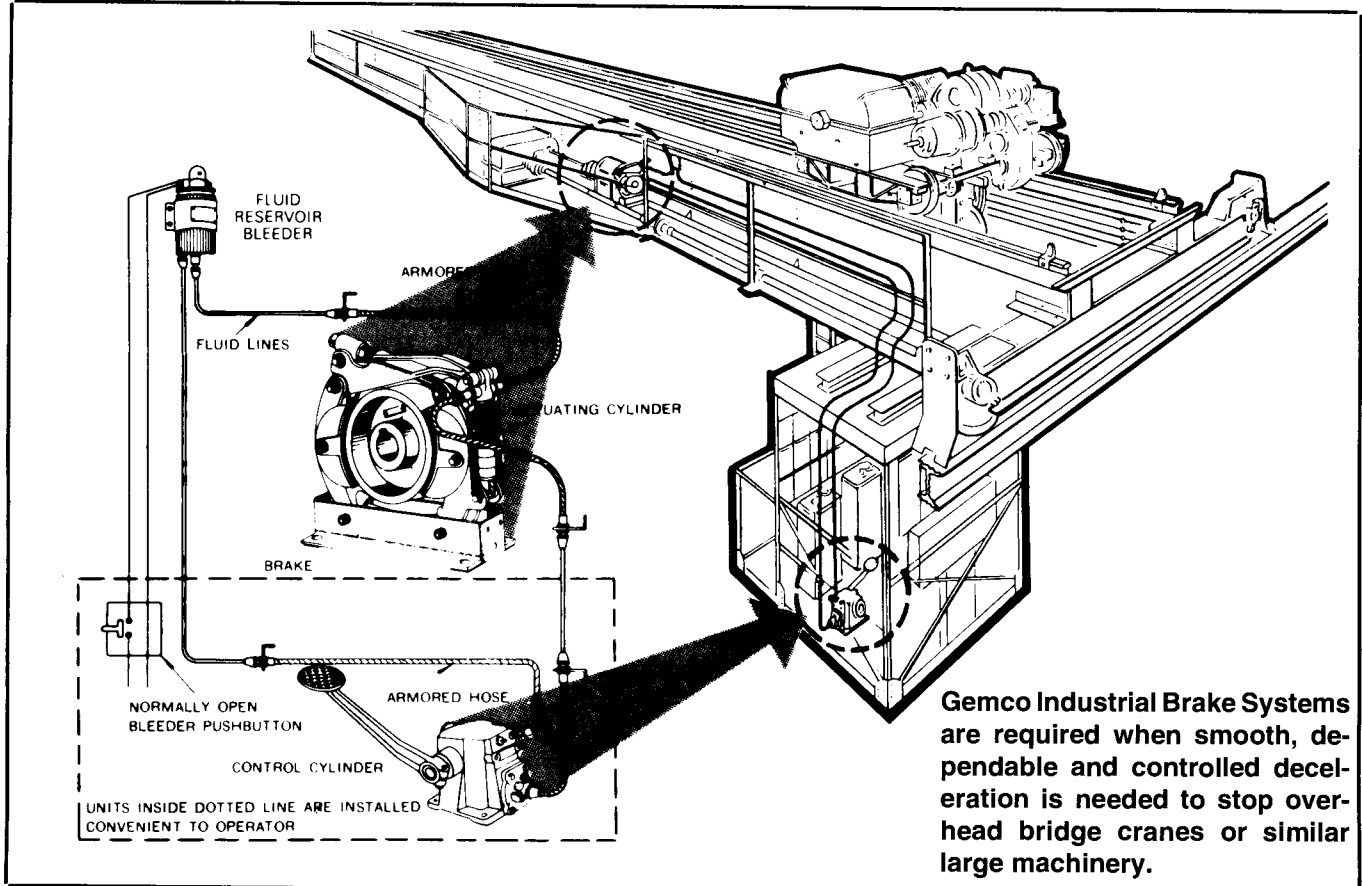
\*Note: J70806 manual bleeder may be substituted for J3080/3083 and J10008



# HYDRAULIC BRAKE SYSTEMS

## INDUSTRIAL BRAKE SYSTEMS

### TYPE H AND HM MANUAL SYSTEM DESCRIPTION



Gemco Industrial Brake Systems are required when smooth, dependable and controlled deceleration is needed to stop overhead bridge cranes or similar large machinery.

### INDUSTRIAL BRAKE SYSTEM FEATURES

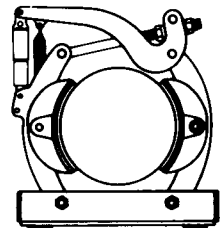
Hydraulically operated to provide the same safe performance you expect when you stop your car. External contacting shoe type brake for minimum mounting and alignment problems.

Brakes designed to repetitively absorb and dissipate the large amount of kinetic heat energy created each time the mass is decelerated. Having a rugged design, this brake needs minimum maintenance to provide long life in severe industrial and steel mill applications.

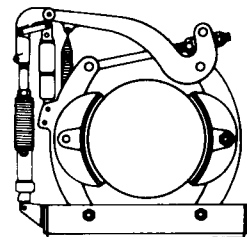
Gemco Industrial Brake systems are offered as a complete package, including all material needed for normal installation. A typical manual system includes a brake assembly, foot operated control cylinder, fluid reservoir/bleeder, pushbutton, brake fluid, tubing and hardware. New brake systems may also be ordered with air power for cab control or for electric remote control. Existing manual systems may also be converted to air power operation.

### TWO BASIC TYPES OF INDUSTRIAL BRAKES AVAILABLE ARE:

- 1.) **Type H** - Hydraulically actuated. Infinitely variable pressure control provides smooth, controlled service stops.
- 2.) **Type HM** - Hydraulically actuated (same as above) with added parking actuator, spring applied, hydraulically released.

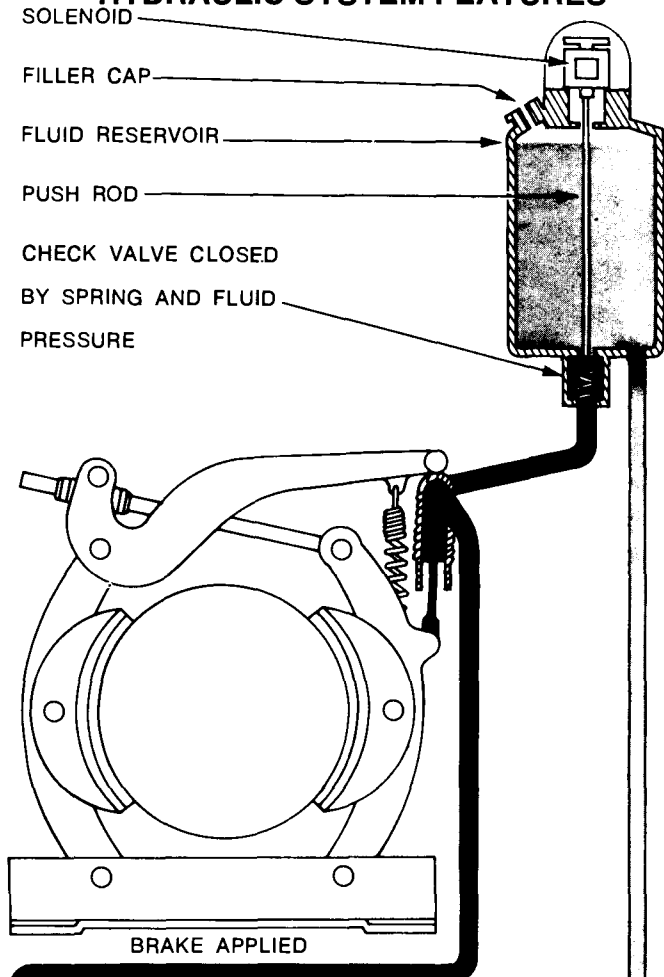


**FIVE BRAKE SIZES AVAILABLE** - 6", 8", 10", 14" & 18" diameter provides normal braking control and energy capacity for small industrial cranes to large steel mill cranes.



# HYDRAULIC BRAKE SYSTEMS

## HYDRAULIC SYSTEM FEATURES



### ALL HYDRAULIC BRAKE SYSTEMS use 21B, SAE 1703 Brake Fluid.

The rubber seals in hydraulic systems are compatible with SAE 1703 — DOT 3 brake fluid. Any mineral oil base ingredient is alien to the rubber and will cause quick system failure due to swelling and softening.

## FLUID RESERVOIR/BLEEDER

The Fluid Reservoir/Bleeder used in all industrial brake systems stores the brake fluid at the highest point of the hydraulic system and serves as a convenient bleeding tool.

After initial filling of the system, the check valve is opened by energizing the solenoid (or by depressing the pushbutton on the top of the alternate manually operated bleeder). With the check valve open, brake fluid and entrapped air is circulated through the system by pumping the control cylinder pedal. Entrapped air rises to the top and is vented out through the reservoir filler cap. During normal braking, the reservoir check valve is closed, allowing fluid displaced by the control cylinder to extend the brake actuator.

Rapid release of the brake may cause negative pressure in the brake actuator. Fluid from the reservoir/bleeder is drawn past the check valve to compensate for the negative pressure and prevent air from being drawn into the system.

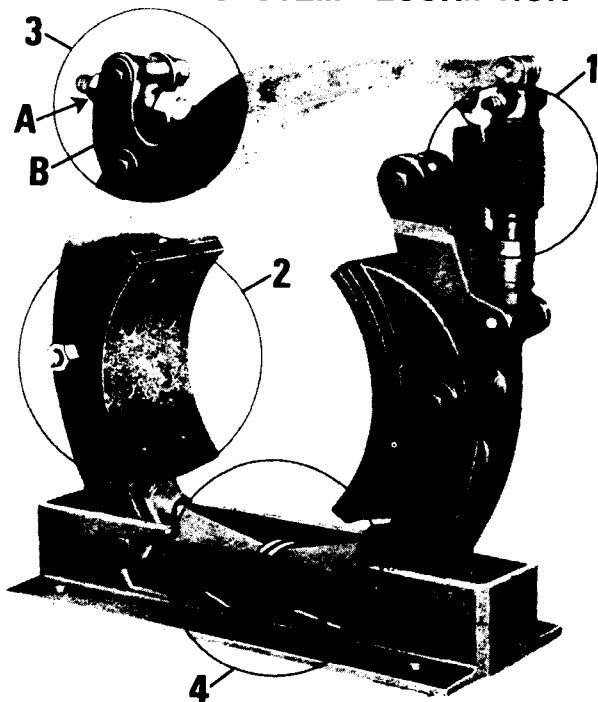
## CONTROL CYLINDER AND PEDAL

This unit converts pedal force to hydraulic braking pressure. It serves the same function as an automotive master cylinder; however, it is ruggedly designed for industrial applications. An 18" brake pedal is attached to its external splined shaft. Hydraulic output pressure is transmitted from the head & barrel assembly. Two alternate head & barrel cylinder diameters are available: 1 1/2" and 1 3/4".

The head and barrel assembly is inserted into the control cylinder housing. Its piston and link are operated by a lever, which is rotated by the shaft to which the external pedal is attached. Initial movement of the pedal causes the piston and cup to close three bypass port holes and pressure stroke begins. Piston travel forces fluid through check valve into hydraulic lines to brake cylinder. When pedal force is quickly released, a return spring (not shown) causes fast return of the piston and cup.

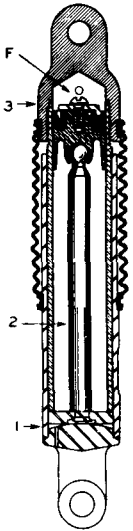
# HYDRAULIC BRAKE SYSTEMS

## TYPE H BRAKE SYSTEM DESCRIPTION



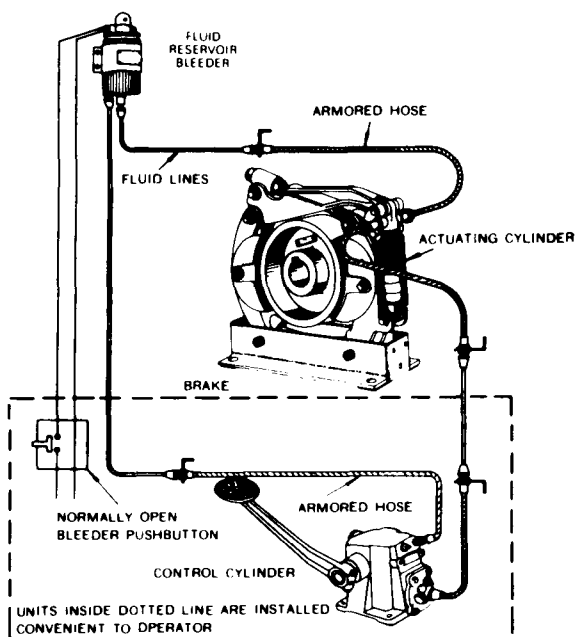
## TYPE H BRAKE ASSEMBLY FEATURES

1. Top lever forced UP from shoe arm by hydraulic actuating cylinder; clamps brake shoe to wheel. Return spring releases brake. All pivot pins are grease lubricated for minimum friction and maximum service. Hydraulic actuating cylinder link and sleeve (1) provides base for piston and guide rod assembly (2). Pressure in fluid chamber (F) extends telescoping cylinder body (3) to actuate brake. Accordian boot seals out dirt and moisture. Two cylinder diameters are available for alternate torque range.
2. Thick non-scoring wire-backed brake lining with jig drilled, deeply countersunk bolt holes provide maximum service. Standard brass lining bolts make on site relining quick and simple. Friction plugs keep brake shoes self-aligned.
3. One point brake adjustment at 2 nuts on eye bolt is fast and simple. Loosen nut B, tighten nut A to clamp brake. Then loosen nut A three turns and re-tighten nut B; brake is correctly adjusted.
4. Self-centering mechanism prevents shoes from dragging when brake is released. Equal lining clearance is constant. Initial clearance is adjusted by positive locking mechanism at base of shoe arm.



## FOOT OPERATED/CONTROLLED SERVICE BRAKING

All type H systems incorporate brakes which are applied by hydraulic actuating cylinders. Infinitely variable hydraulic pressure for controlled service stops is developed by a foot operated control cylinder. All industrial systems include fluid reservoir/bleeders which must be mounted at the highest point in the system. The fluid reservoir/bleeder stores brake fluid needed to fill the system and maintains gravity pressure on all seals. It is also equipped with a check valve to facilitate bleeding entrapped air in the system.



The drawing to the left shows a typical one brake, one station manual system. Two brake and/or multi-station systems are also available. Two brake systems using 10", 14" or 18" brakes use smaller (7/8") diameter actuators which reduce the pedal stroke to acceptable limits. Type A/H air power hydraulic systems are required when higher torques are needed, or when more than two brakes are required in the system.

# HYDRAULIC BRAKE SYSTEMS

## TYPE HM BRAKES WITH CYLINDER PARKING

Type HM brakes include a spring-applied, hydraulically released parking cylinder in addition to all of the same features described for the type H brakes. The function of the parking cylinder is to compress the parking spring to hold the parking brake released. Fluid entering the cylinder at the inlet (\*) forces the piston down and compresses the spring between the shoulder on the piston rod and the shoulder on the cylinder body. The spring remains compressed to hold the parking brake released as long as hydraulic pressure remains trapped in the cylinder. The brake can then be operated as a service brake the same as with the type H system.

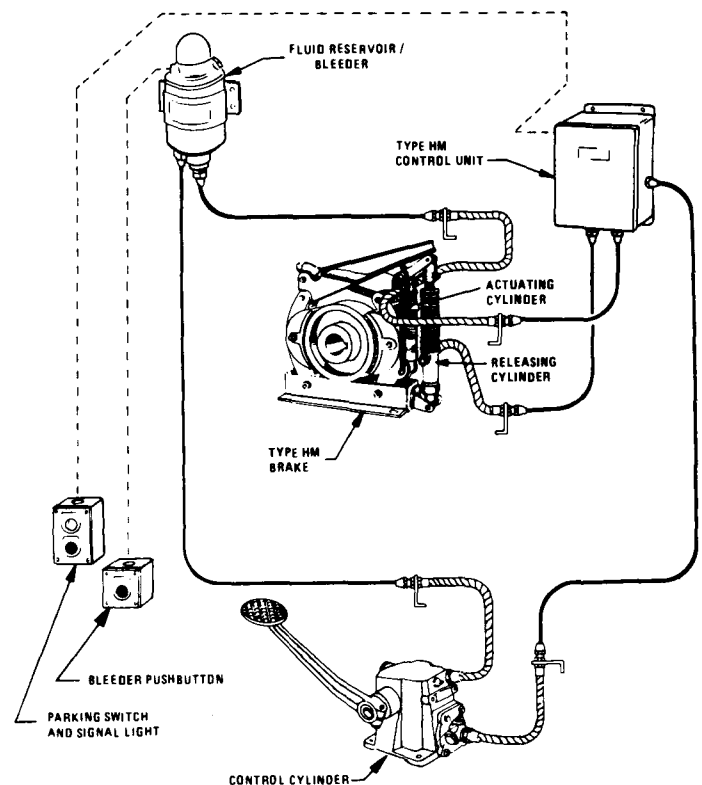
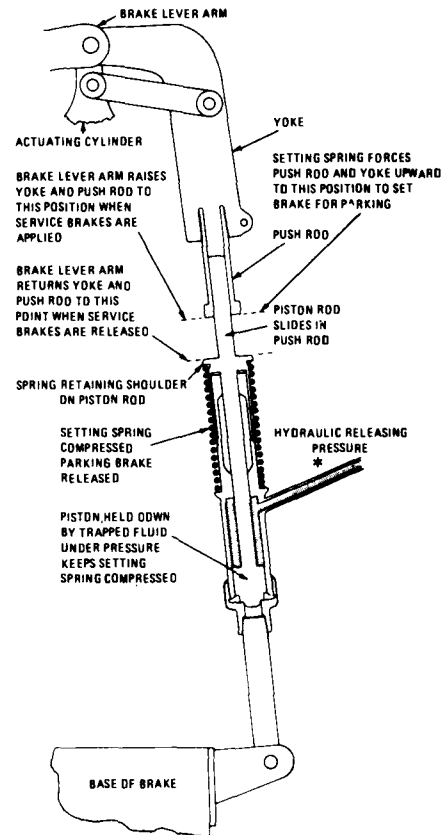
Type HM brakes are used whenever spring set parking is required. The torque developed by the parking brake spring is not adjustable; therefore, type HM systems are not recommended for emergency stopping. Air power HRC or ERC systems should be specified when emergency stopping is required.

## TYPE HM SINGLE BRAKE SYSTEMS FOOT-OPERATED, CAB CONTROLLED SERVICE BRAKING WITH SPRING-SET PARKING

Manually operated type HM single brake systems provide controlled service stops (same as type H system), plus spring-applied, hydraulically released parking. With the HM system (illustration to the right), initial stroking of the foot pedal displaces fluid and develops the hydraulic pressure required to compress the parking spring. This releasing pressure is trapped by the HM control unit as long as electric power is on. The brake can then be operated as a service brake same as with the type H system. Spring set parking torque is applied when electric power at the HM control unit is interrupted. This occurs when the parking switch or the power supply is turned off. A pressure switch in the control unit senses the releasing pressure and must be interlocked with the motor control to allow operation only when the parking brake is fully released. This pressure switch also controls the green signal light in the parking brake control station to indicate when the parking brake is released.

Type HM manual systems are not recommended for cranes requiring adjustable torque emergency stopping or multiple brake parking. Air power type A/HM-HRC systems are recommended when more than one parking brake is required in each system.

## TYPE HM BRAKE SYSTEM DESCRIPTION

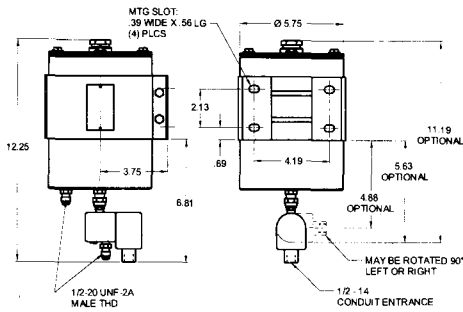


# HYDRAULIC BRAKE SYSTEMS

## BRAKE SYSTEM COMPONENT DIMENSIONS

(ALL DIMENSIONS IN INCHES)

### FLUID RESERVOIR/BLEEDER ASSEMBLY



<b>PSD0180101</b> (J3080)	230V DC	45W
<b>PSD0180100</b> (J3083)	110V 50/60HZ	45VA
<b>PSD0180102</b> (J70806)	NONE: Manually operated.	

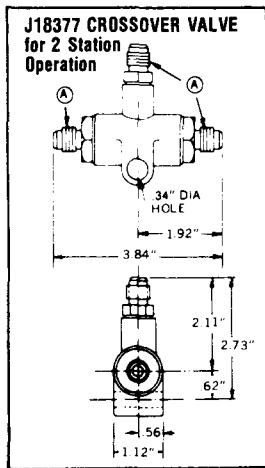
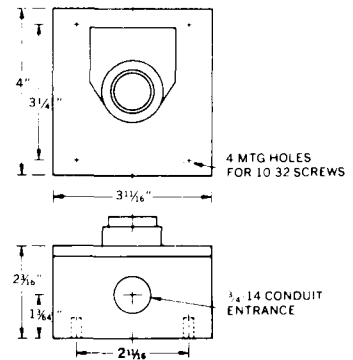
Approximate Fluid Capacity...2 1/3 qts.  
Net Weight (without fluid).....9 lbs.

This Assembly is compatible with 21B Brake Fluid, or equivalent.

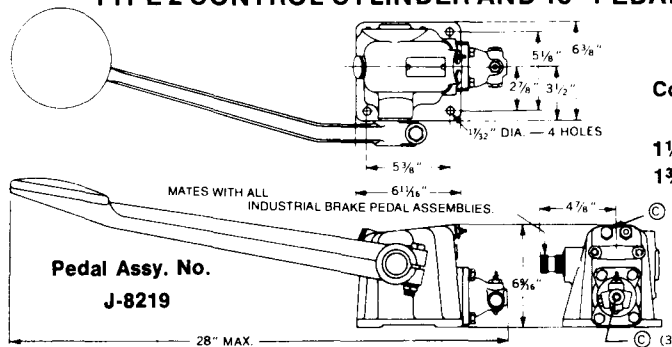
### BLEEDER PUSHBUTTON OPERATOR

Part No. **J-10008**

OIL TIGHT, surface mounted enclosure with one normally open momentary contact.



### TYPE 2 CONTROL CYLINDER AND 18" PEDAL ASSEMBLY



Control Cylinder Assy. No.

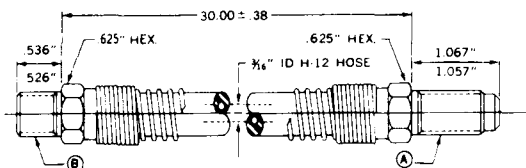
1 1/2" dia.— **J-16320**  
1 3/4" dia.— **J-17616**

Pedal Assy. No. **J-8219**

Standard 18" long pedal assy.  
No alternate pedal size available.

Control cylinder net weight 25 lbs. Pedal net weight 8 lbs.  
Above cylinders are compatible with 21B Brake Fluid, or equivalent.

### F10160—30" ARMORED HYDRAULIC HOSE



Part No. **F-10160**

**A** 1/2"-20 UNF-2A male thread with 45° flare angle. Mates with F-86 SAE tube nut and 3/16" OD copper tubing. F-10160 hose thread length has provision for F-5780 hose bracket, lockwasher and jam nut.

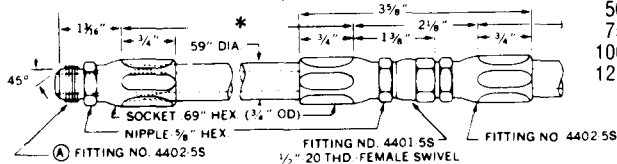
**B** 1/2"-20 UNF-2A male thread. Mates brake actuator or control cylinder port C. Use F-17 gasket.

**C** 1/2"-20 UNF-2B female thread. Mates hose thread B or F-996 plug. Use F-17 gasket.

Kit includes specified length of 1/4" ID, rubber impregnated, single wire braid hose, 2 - #4401-5S and 2 - #4402-5S renewable fittings, for field assembly. Minimum bend radius 3 1/2". Suitable for use with 21B Brake Fluid.

### HYDRAULIC HOSE KITS FOR SOME TYPE HRC SYSTEMS

1/4" Inside Diameter, 3/2" Minimum Bend Radius

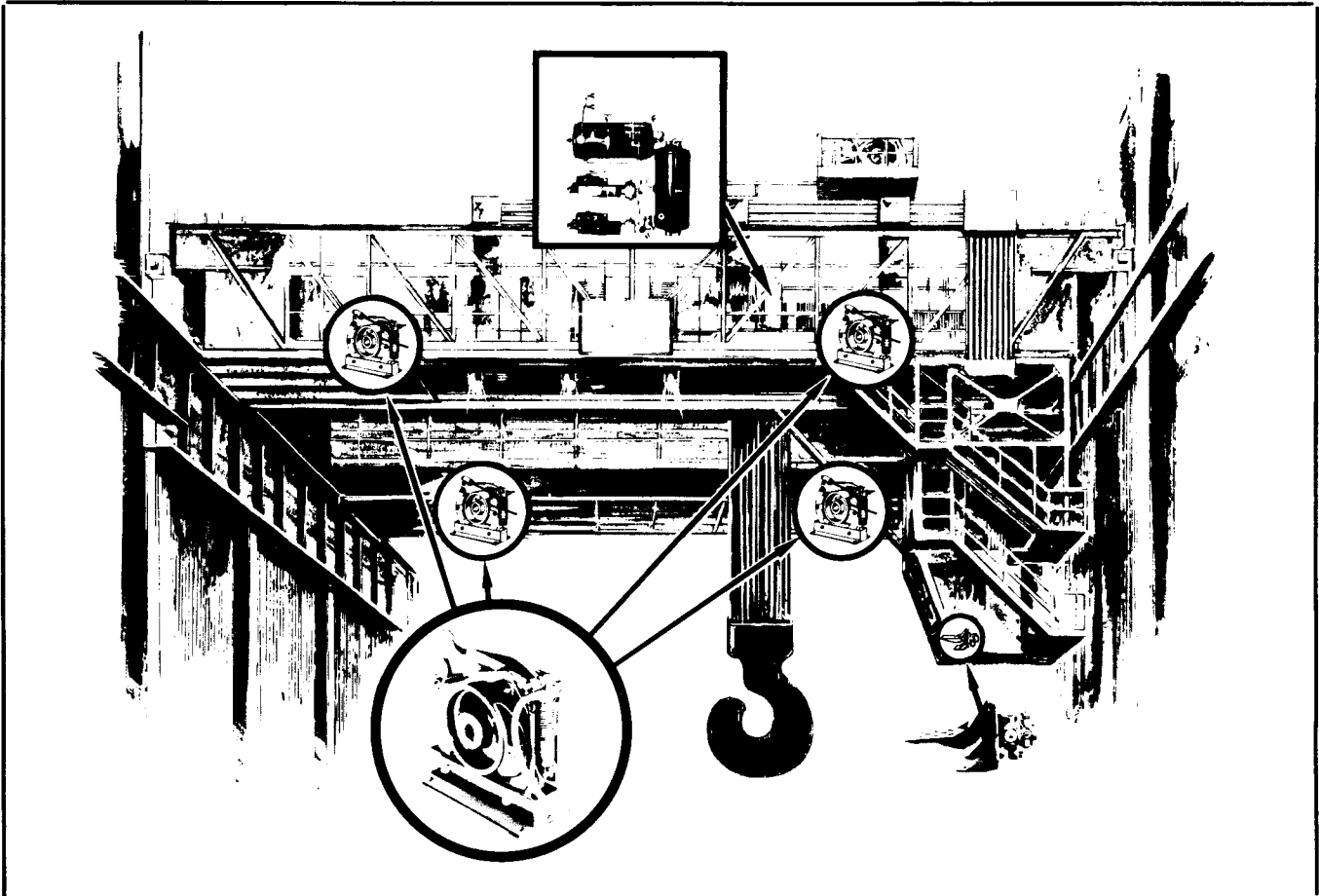


*	Kit. No.
25 Ft	J-73905
50 Ft	J-73906
75 Ft	J-87274
100 Ft	J-87275
125 Ft	J-87276

#4401-5S female fittings mates with #4402-5S fgt. (illustrated).

#4402-5S male fitting mates with #4401-5S fgt. (illustrated) or F-86 tube nut.

# TYPE A/H-ARC SYSTEM DESCRIPTION



Air over hydraulic power brake systems are required to provide smooth, dependable service stopping and quick cushioned emergency stopping for large cranes, or fast, high duty cycle cranes. Existing manual hydraulic brake systems can be easily converted to air/hydraulic power braking to meet new safety standards. Type A/H-ARC systems provide smooth treadle controlled powered service braking. They can also be supplied to provide service braking, electric remote controlled service braking, remote controlled service braking and parking.

## TYPE A/H-ARC SYSTEM FEATURES:

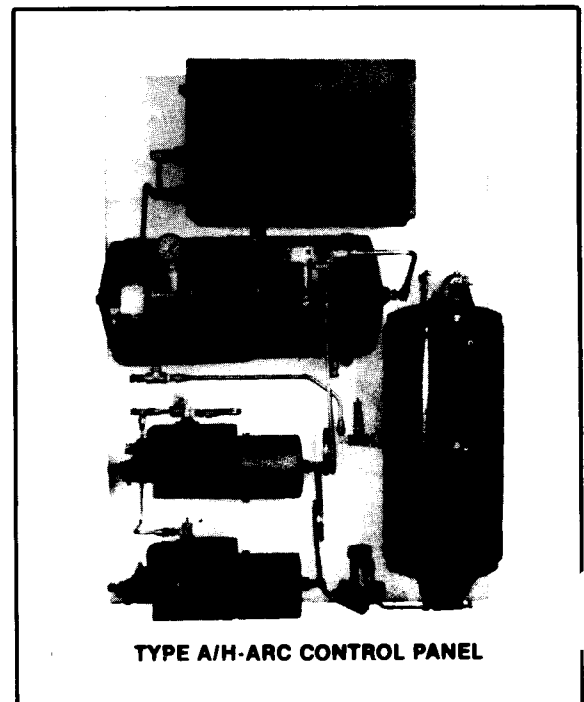
**ADAPTABLE...**Type A/H-ARC systems provide simultaneous control of any number of type H service brakes from one (or more) treadle valve control systems. Existing type H manual brake systems can be easily adapted to air power operation by the addition of the packaged control panel, compressor and treadle valve.

**SAFE...**Type A/H-ARC systems are SAFE. The system includes a protected air reservoir capable of providing a number of brake applications should air power fail. If pressure drops to 50 psi, an alarm sounds. If pressure drops below 40 psi, the brakes are applied with remaining pressure.

**CONTROLLABLE...**Type A/H-ARC systems distribute service braking pressure evenly and consistently to all brakes, to prevent skewing. The operator has the "feel" of braking for gradual deceleration control, as required for close load spotting.

**EASY TO OPERATE...**Top performance is assured under all conditions, including high duty cycle and heavy loads. Less than 70 lb. treadle force and less than three inch treadle stroke meters full pressure to all brakes.

**EASY TO INSTALL...**All air over hydraulic systems are supplied with critical air, hydraulic and electric controls preassembled on a convenient panel.



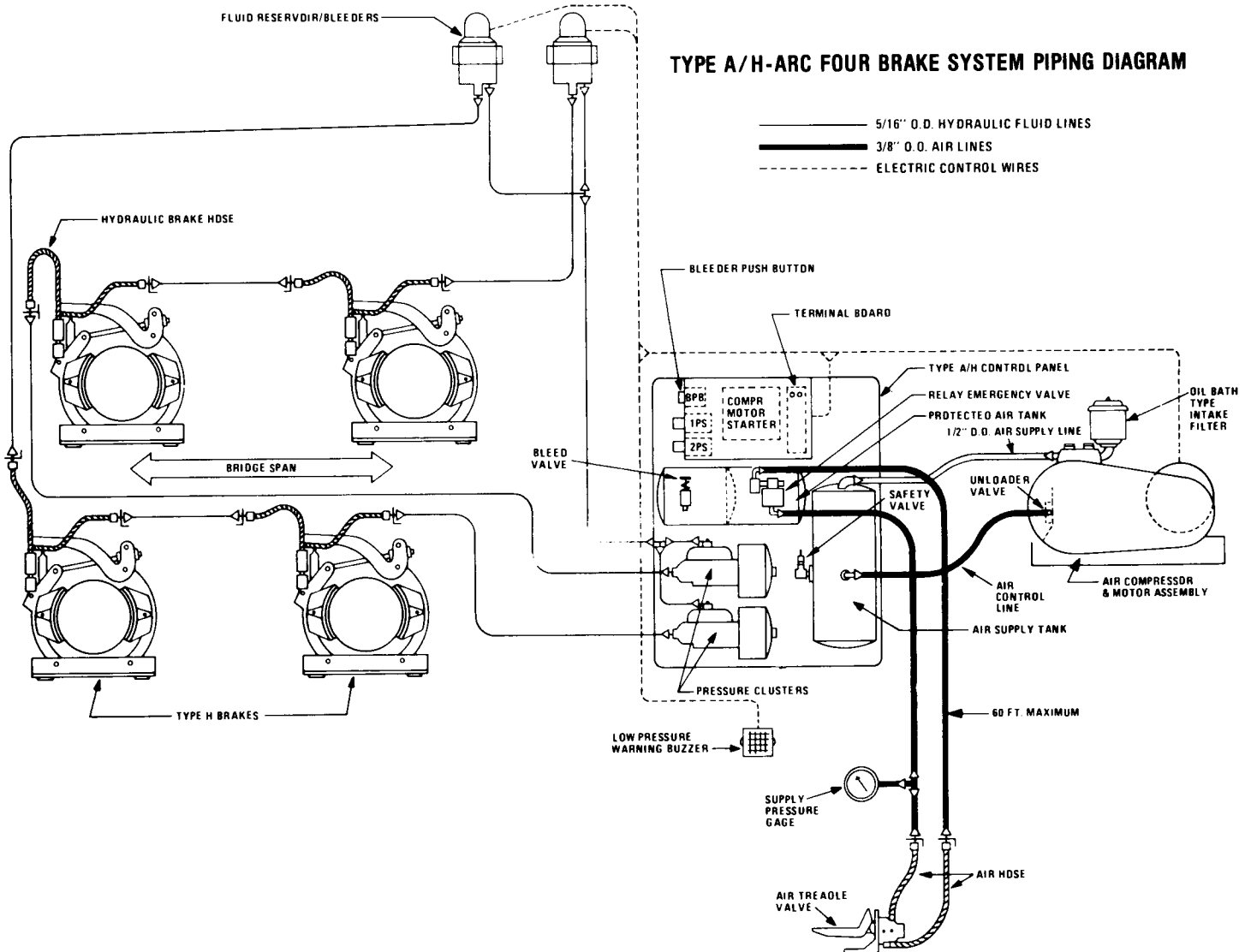
# HYDRAULIC BRAKE SYSTEMS

## THE AIR POWER SUPPLY

The basic air power supply for all air over hydraulic industrial brake systems consists of an air compressor and motor assembly, an air supply tank connected by a 1/2" air supply line, and a 3/8" air control line. Air is drawn into the compressor through an oversized oil bath air filter and pumped through the supply line to the supply tanks. An air signal returns from the supply tank through the control line to the hydraulic unloader on the compressor. The hydraulic unloader valve is closed at normal crankcase lubricator pressure and allows the compressor to pump pressure. The hydraulic unloader valve is open whenever crankcase lubricator pressure is below normal and the compressor is unloaded. Hence, the compressor starts, unloaded, and pumps only after lubricator oil pressure is normal.

All air power systems also include a pressure switch which pilots the starter and compressor motor to supply pressure from 65 to 80 PSI, a safety valve which relieves excess pressure above 150 PSI and a moisture ejection valve which automatically expels any accumulated moisture in the supply tank each time the brake system operates.

Several air valved circuits are used. Depending on the system type, however, each of them incorporate one or more air over hydraulic pressure clusters to convert moderated air pressure to a relatively high hydraulic brake operating pressure. A typical type A/H-ARC system, which provides service braking only, is controlled by an air treadle valve, as illustrated below.



# THE TYPE A/H CONTROL SYSTEM

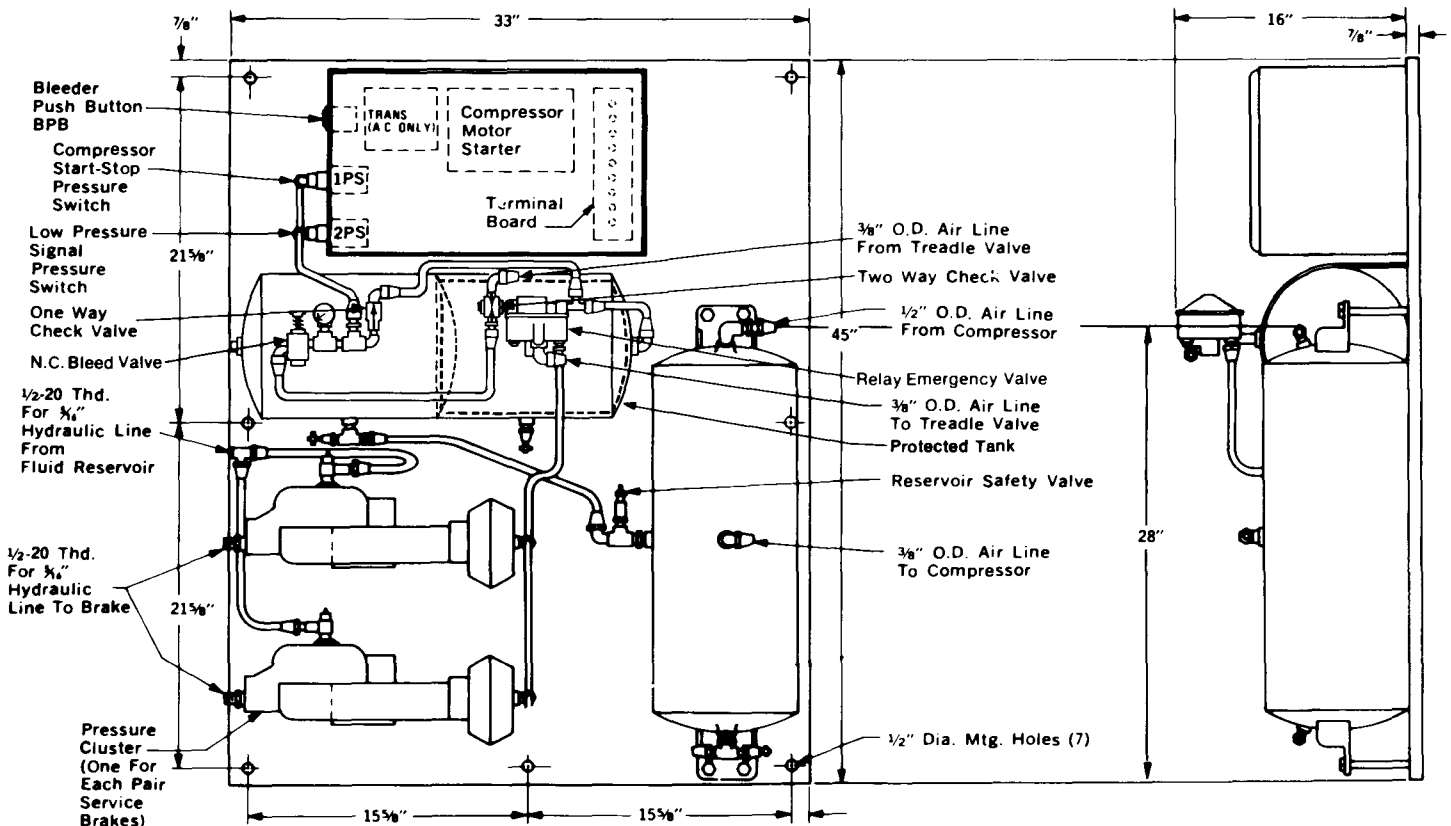
## FOOT OPERATED, AIR POWERED, CONTROLLED TORQUE SERVICE BRAKING

The type A/H-ARC control system includes a protected air tank, a metering type treadle valve, a relay emergency valve, as well as an air over hydraulic pressure cluster to operate each pair of type H hydraulically applied brakes.

Air pressure is stored in the protected tank through a one-way air check valve. Sufficient pressure is stored in the protected tank for a number of normal stops even if the air supply pressure fails. Air supply from the protected tank is metered to the relay emergency valve service port by the treadle valve. The relay emergency valve applies pressure from the protected tank to the pressure clusters in exact proportion to the treadle valve pressure.

Type A/H-ARC control systems also include a pressure switch which sounds an alarm when supply pressure falls below 50 psi. If the protected tank pressure falls below 40 psi, the relay emergency valve applies system pressure, bringing the crane to a safe stop. If the supply pressure is not replenished, the protected tank pressure bleeds down and releases brake pressure after approximately one hour. A bleed valve and bleeder pushbutton are also included on the panel for local control when bleeding the hydraulic brake system. The bleed valve operates the air system through the two-way check valve at the service port on the relay emergency valve.

## TYPE A/H-ARC PREASSEMBLED CONTROL PANEL (DIMENSIONS IN INCHES)



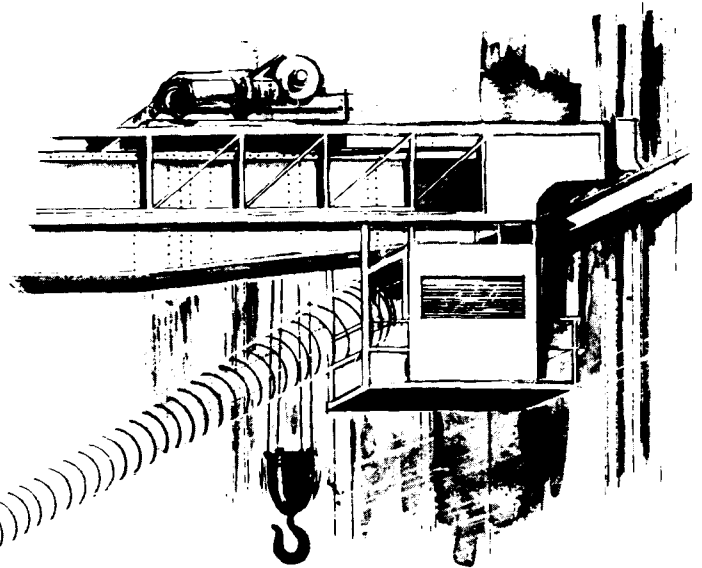


# TYPE A/H-ERC SYSTEM DESCRIPTION

Type A/H-ERC air over hydraulic, electric remote controlled systems should be used to operate hydraulic bridge brakes on radio, pulpit (or pendant) controlled indoor overhead traveling cranes.

## SYSTEM FEATURES:

- This system provides 2 steps of service braking, with off-power emergency braking.
- Both pressure steps are field adjustable to provide optimum performance.
- The low pressure step applies automatically when bridge drive control is switched to neutral.
- The high pressure step applies on operator signal or when power fails.
- Both braking torque steps remain constant regardless of the brake adjustment.

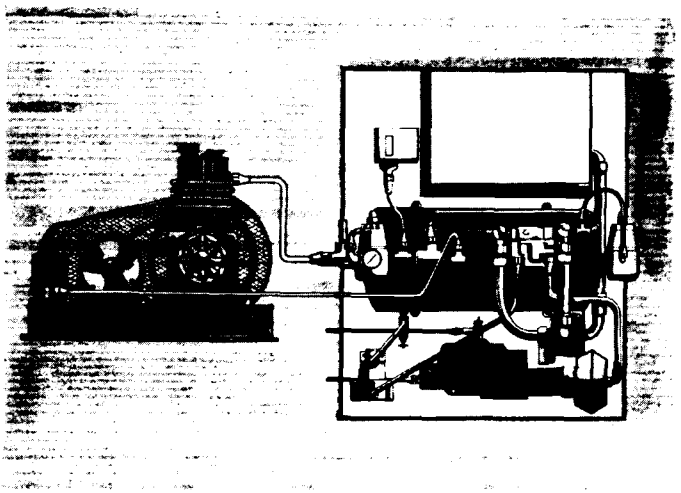


New systems can be supplied with 1, 2, 4 or more type H brakes, with all components shown on typical A/H-ERC one-brake system diagram on pg. 17, with or without auxiliary cab control.

Existing type H manual brake systems can be converted to a type A/H-ERC system per diagram on pg. 17 with addition of a preassembled A/H-ERC panel, a motor and compressor assembly, and a two-way hydraulic check valve (if manual cab control is retained), and necessary tubing hardware and brake fluid.

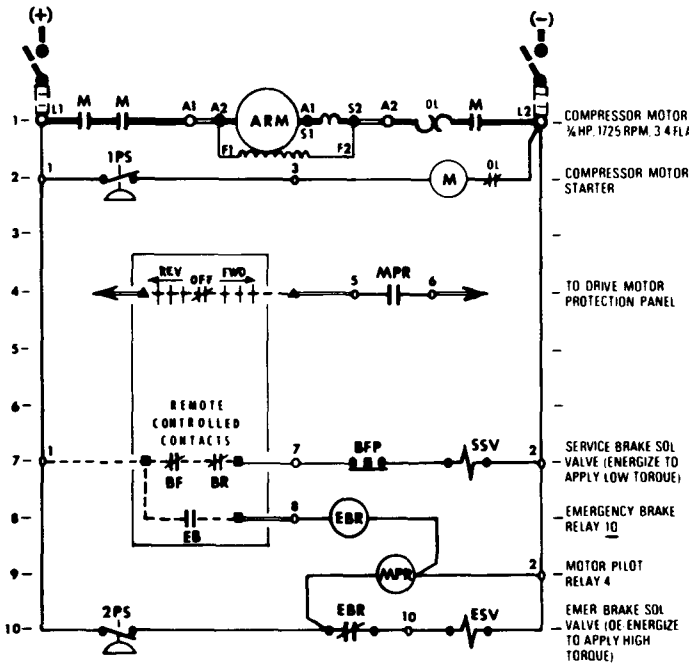
The system must include a fluid reservoir/bleeder. If it is not included in the existing system, a fluid reservoir/bleeder conversion system must be ordered separately.

Type A/H-ERC systems apply the service brake when crane power is shut down; however, braking pressure is intentionally bled down after one to two hours. Parking is not provided and not recommended for indoor cranes. When parking is required for outdoor cranes, use a type A/HM-ERC system.

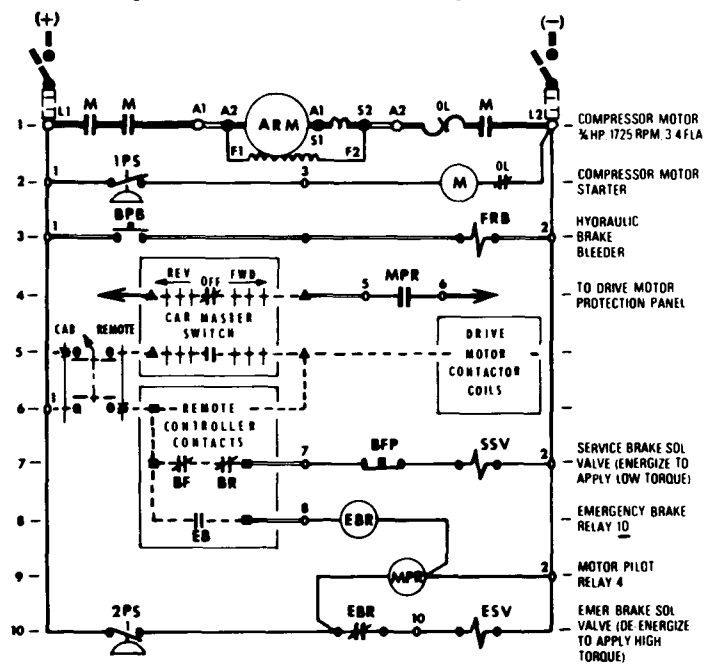


# TYPE A/H-ERC BRAKE SYSTEM OPERATION

**230V DC Elementary WIRING DIAGRAM  
For Systems Without Cab Control**



**230V DC Elementary WIRING DIAGRAM  
For Systems With Auxiliary Cab Control**



**NOTE:** Components Connected By Solid Lines Are Parts Supplied in MagneTek Brake System.

▲—Terminals On Crane Control Panels.

■—Terminals On Remote Control Panels.

○—Terminals On Brake Control Panel.

1PS — N.C. Pressure Switch  
(Opens @ 80 PSI, Close @ 65 PSI)

BPB — N.O. Bleeder Pushbutton. (In Cab)

BF, BR — N.C. Service Brake Contacts.  
(Arrange To Open When Drive Motor Is Started)

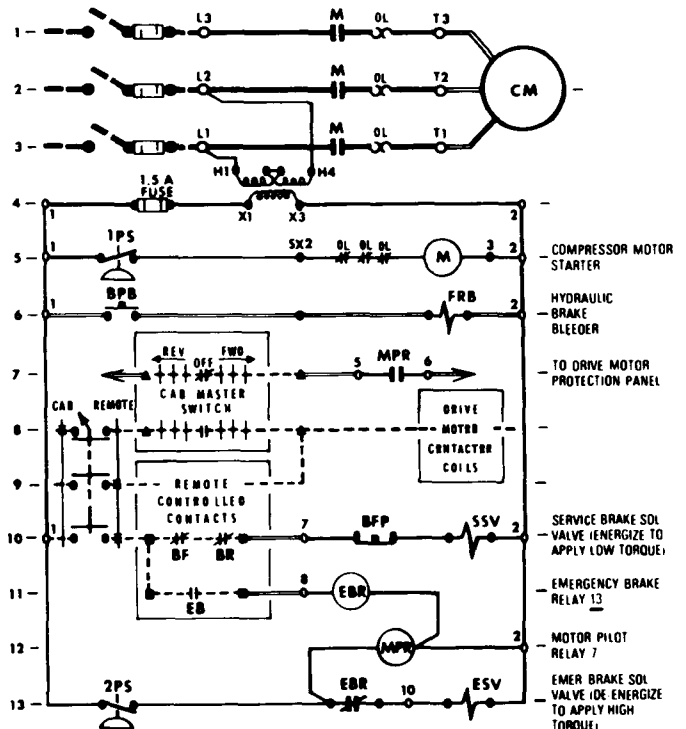
BFP — N.C. Bleeding Pushbutton

EB — N.O. Emergency Brake Contact.  
(Arrange To Close When Brake Button On Remote Station Is Depressed)

2PS — N.O. Pressure Switch  
(Close @ 60 PSI, Open @ 50 PSI)

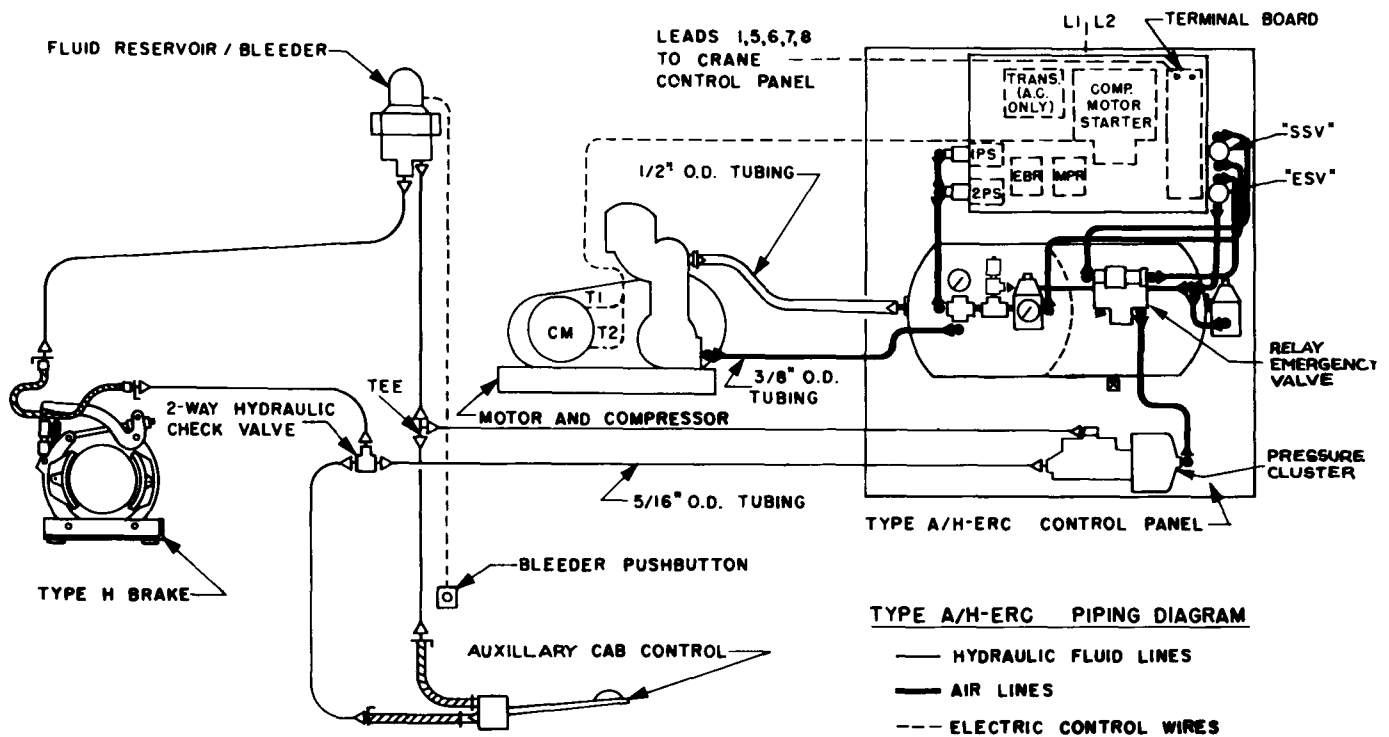
**CAUTION:** Connect Motor Leads For Correct Rotation As Indicated By Arrow On Compressor. DO NOT START COMPRESSOR UNTIL CRANKCASE IS FILLED WITH OIL. Connect MPR Contacts To Prevent Remote Operation Unless Sufficient Air Pressure Is Available For Safe Braking.

**460V 60HZ Elementary WIRING DIAGRAM  
For Systems With Auxiliary Cab Control**



Provision must be made to protect against short circuits in accordance with requirements of N.E.C.

# TYPE A/H-ERC BRAKE SYSTEM OPERATION



A typical A/H-ERC one brake system with auxiliary cab control is shown above. The 3/4 HP motor and compressor assembly and pre-assembled A/H-ERC panel are normally located on the bridge of the crane. All electrical system controls are installed in an enclosure on the panel, which is connected to the crane power supply and interconnected with crane controls as shown on page 16. Systems supplied are suitable for 230V DC or 460V AC.

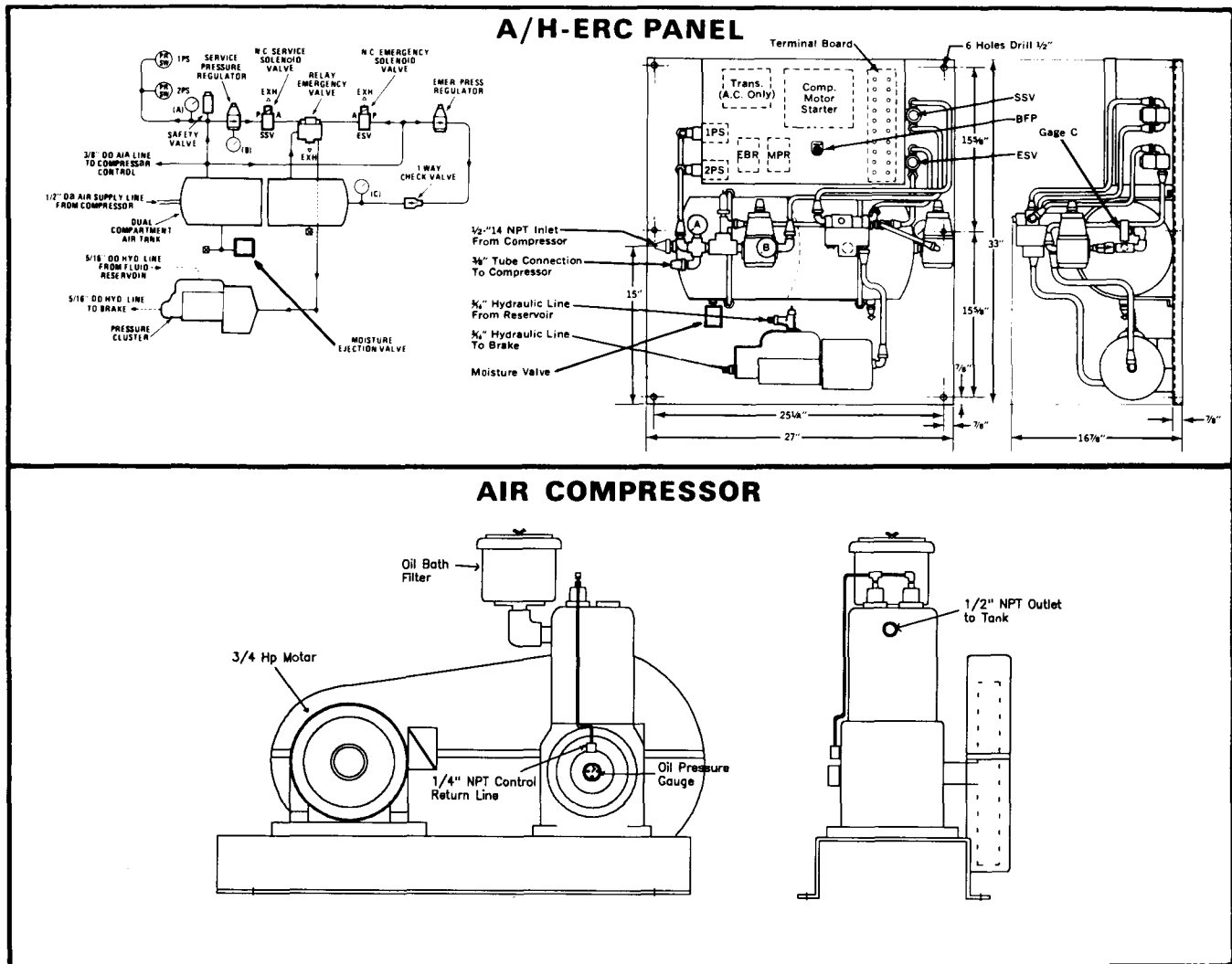
When crane power is on, the compressor pumps pressure on demand to maintain 65 to 80 PSI system pressure. Application of the air system is through a relay emergency valve located on the regulated right hand system tank. As long as the ESV solenoid air valve is energized OPEN and applying 40 PSI minimum pressure to the emergency port, the relay emergency valve delivery port is closed. When SSV solenoid air valve is energized OPEN (as in bridge motor

neutral), a low regulated pressure signal to the service port causes the relay emergency valve to apply the same pressure to the delivery port, for low-step braking. An operator signal for high-step braking closes EB contact to de-energize ESV valve closed. This causes the relay emergency valve to apply high regulated pressure to the delivery port for high-step braking.

Initial low and high regulated pressures are set at 30 and 40 PSI, but may be reset in the field for optimum braking performance.

A/H-ERC systems installed with auxiliary cab control MUST include extra contacts in the CAB-REMOTE transfer switch to close the SSV circuit when in remote control.

# TYPE A/H-ERC SYSTEM DIMENSIONS AND APPLICATION INFORMATION



## INFORMATION NEEDED WITH AN A/H-ERC SYSTEM ORDER

**NEW SYSTEMS:** Gemco will suggest correct size and number of brakes to develop correct torque and absorption rate of kinetic energy.

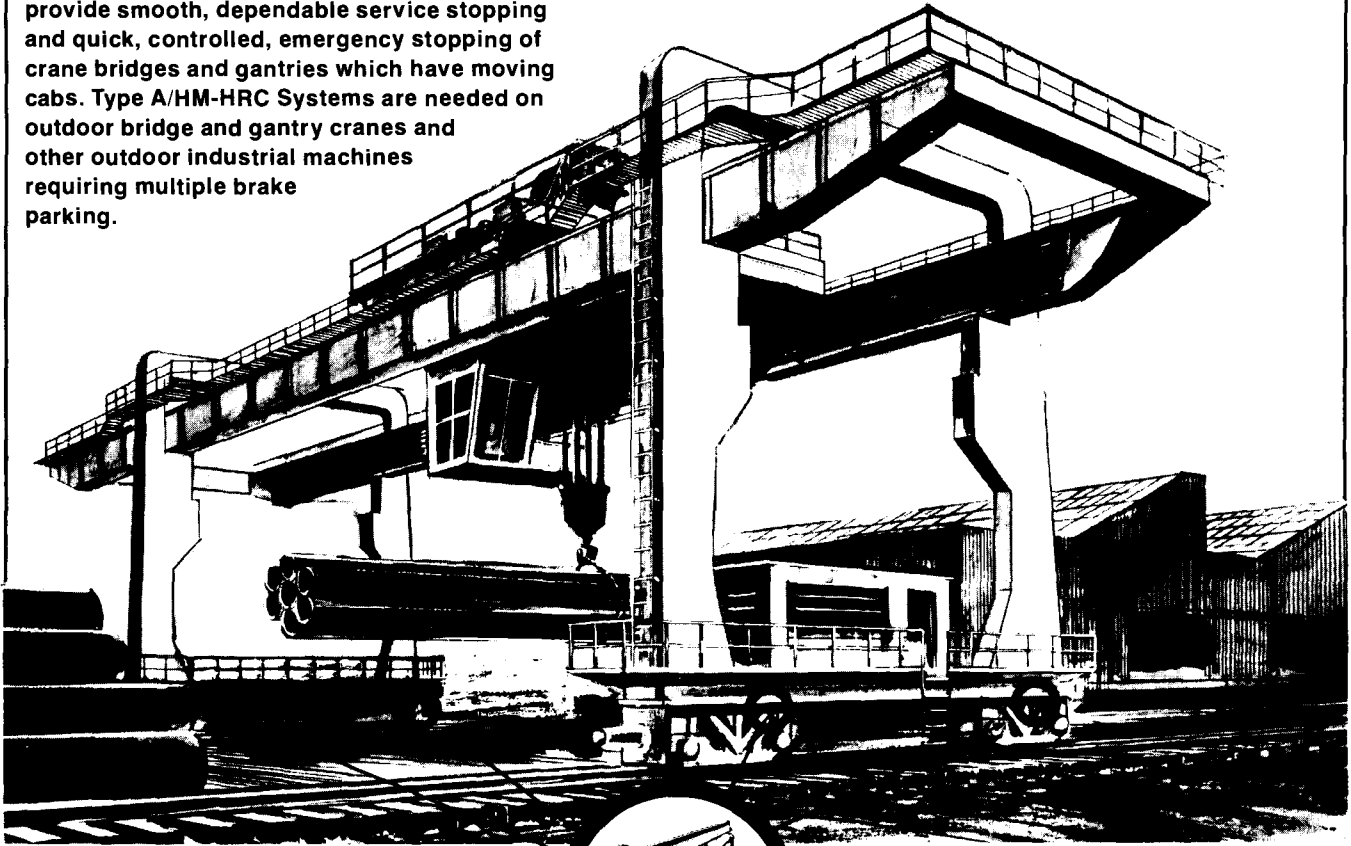
**CONVERSION SYSTEMS:** Most manually operated crane brake systems use 1 1/8" dia. actuating cylinder requiring 30 to 120 lb. pedal force to develop between 100 and 400 PSI hydraulic pressure to develop needed torque. It is recommended that actual braking pressure required to stop the crane be checked and recorded on the order for an A/H-ERC conversion system. These pressure readings are especially important when the required brake pedal force is known to be unusually low (less than 30 lbs.).

Unless otherwise specified, the conversion system will include an 8 x 1 ratio pressure cluster, providing normal hydraulic pressure when the system is installed with 30 PSI low-step and 40 PSI high-step preset air pressure. Both low and high-step air pressures are field adjustable.

Type A/H-ERC systems supplied can be suitable for either 230V DC or 230/460V 60HZ 3ph AC. The AC system includes a step-down transformer for 115V 1ph controls.

# TYPE A/H-HRC AND A/HM-HRC SYSTEM DESCRIPTION

Type A/H-HRC Air over Hydraulic Brake Systems provide smooth, dependable service stopping and quick, controlled, emergency stopping of crane bridges and gantries which have moving cabs. Type A/HM-HRC Systems are needed on outdoor bridge and gantry cranes and other outdoor industrial machines requiring multiple brake parking.



## SYSTEM FEATURES

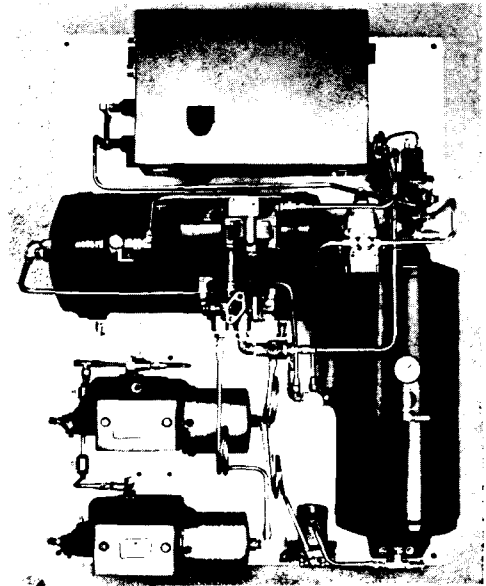
**CONTROLLABLE ... HRC - Hydraulic Remote Controlled** - systems provide simultaneous control of an A/H or A/HM air over hydraulic brake system from a manual hydraulic line. The length of the line is not limited and may include a length of hydraulic hose, as needed to control a bridge brake system from a moving cab. The HRC signal controls the air over hydraulic panel to control all brakes simultaneously. The operator has a "feel" of service braking as required for close load spotting.

**EASY TO OPERATE ... HRC control** requires less than 70 pound pedal force and less than 8 inch pedal stroke to meter full braking pressure regardless of the number of brakes used.

**SAFE ... Adjustable emergency pressure** is transmitted to each brake if electric control power is interrupted. Electric interlocks prevent operation unless sufficient air pressure is available for safe braking. A/HM-HRC systems apply spring set parking torque only *after* adjustable pressure applied emergency torque brings the crane to a smooth stop.

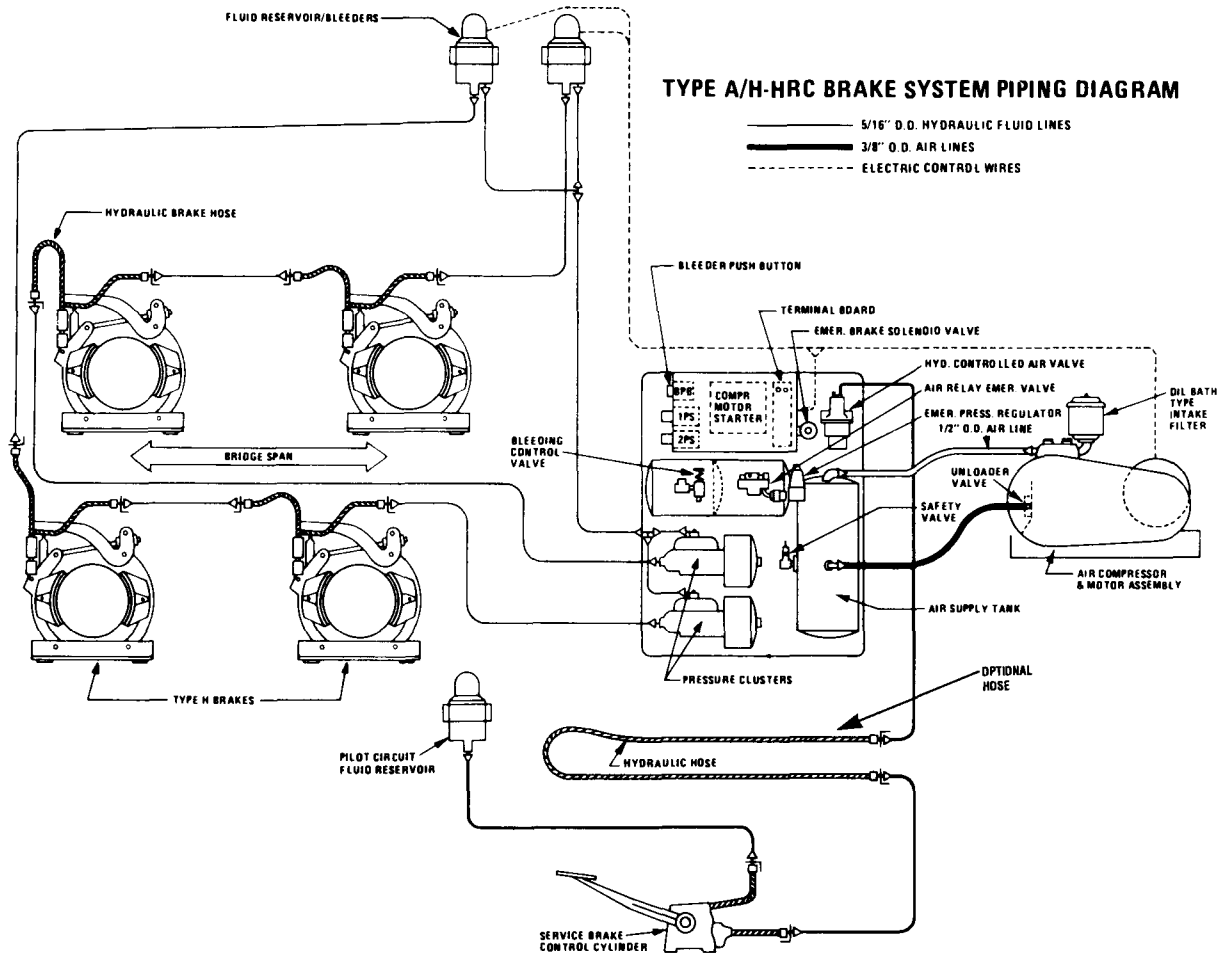
**CONVENIENT ... All air over hydraulic systems** include a control panel with all air and electric components preconnected. The panel can be easily enclosed for outdoor protection if needed. All exposed brake lines are low temperature resistant hydraulic brake fluid lines.

**FLEXIBLE ... A/H-HRC AND A/HM-HRC systems** can be used to control one, two, four or more service brakes with or without parking.



TYPE A/HM-HRC CONTROL PANEL

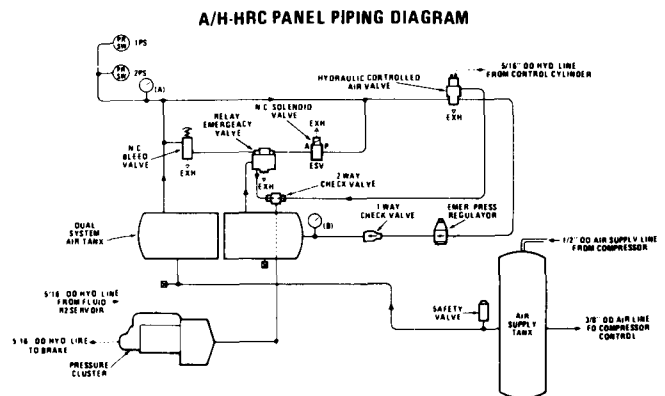
# A/H-HRC SYSTEM DESCRIPTION



Type A/H-HRC brake systems provide controlled torque service braking, similar to type A/H systems. They are controlled by an HRC hydraulic remote controlled system and are recommended:

- When the bridge brake system must be controlled from a moving cab. 3/4" O.D. hose can be furnished in lengths up to 125 feet, suitable for festooning or for use in power track carriers.
- When the length of line from the cab to the control is more than 60 feet. Any number of service brakes can be controlled by this system. HRC hydraulic remote control provides a hydraulic "signal" to an HRC air valve in A/H systems. When the control cylinder pedal is depressed, hydraulic pressure is transmitted to the HRC valve which operates the pressure cluster and hydraulic brakes in exact proportion to the pedal force. System response time is instantaneous regardless of the length of hydraulic line.

Off power emergency braking is provided by regulated pressure stored in the right side of the air supply tank. Emergency brake pressure is applied by the relay emergency valve which is controlled by the ESV solenoid valve. When ESV valve is energized OPEN, its signal to the relay emergency valve keeps brake pressure from applying. When ESV valve is de-energized, the relay emergency valve applies regulated pressure to bring the crane to a smooth, controlled stop.



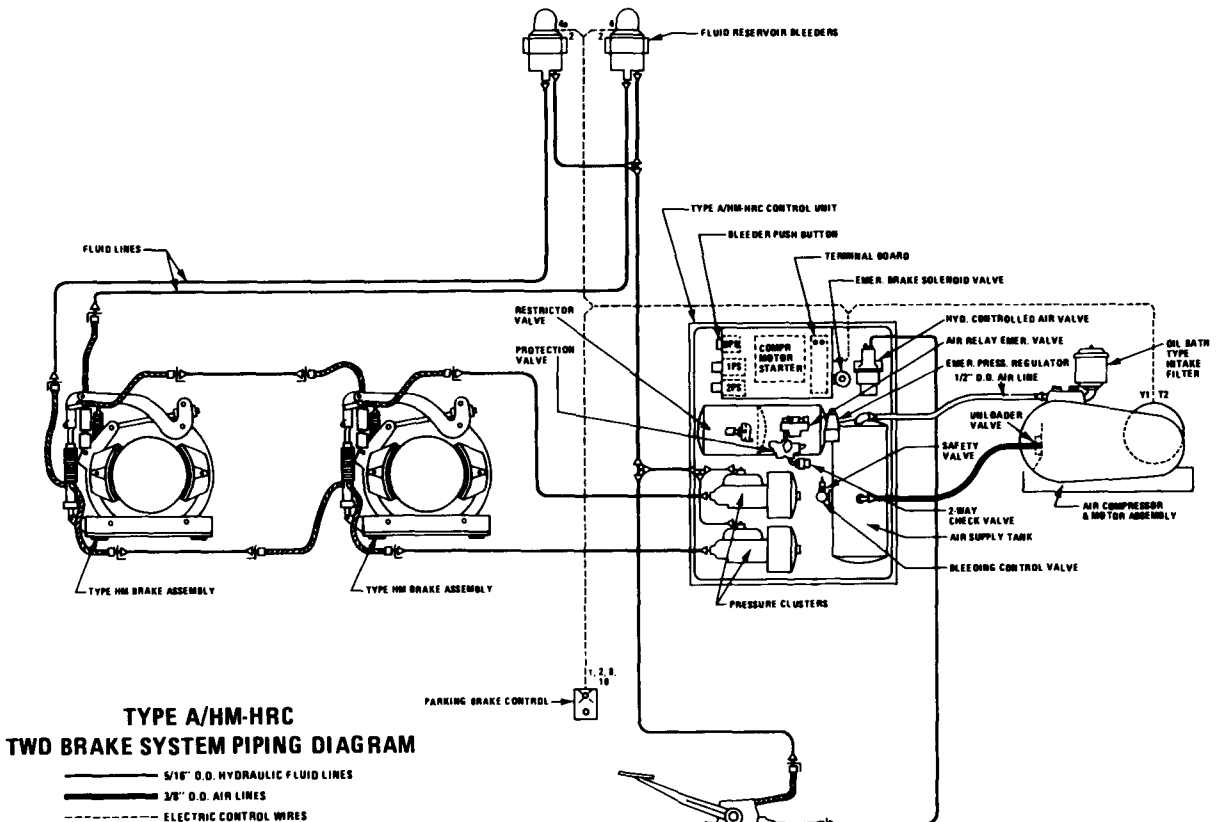
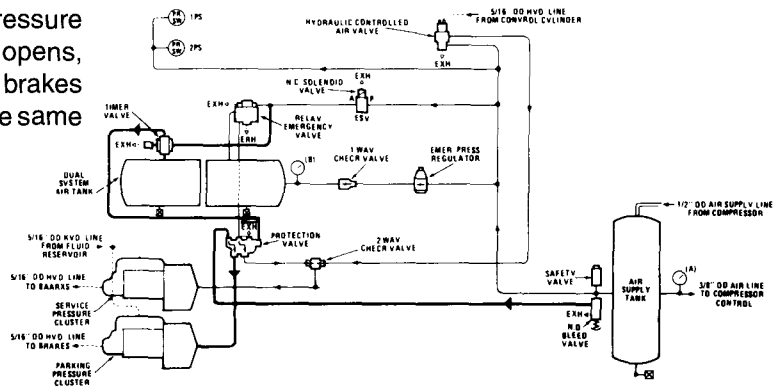
# A/HM-HRC SYSTEM DESCRIPTION

Type A/HM-HRC brake systems provide superior control of every braking requirement in slowing, stopping and parking modern cab controlled outdoor cranes and other heavy industrial machines. Controlled service braking and emergency braking is provided in the same manner as an A/H-HRC brake system. The A/HM-HRC system can be used when bridge brake control is from a moving cab or when the cab is stationary on the bridge, at any distance from the control panel.

The spring set parking cylinders are released by the A/H parking pressure cluster with air pressure in the supply tank, controlled through one of the dual passages in the protection valve. When ESV Solenoid valve is energized by normal crane power, air pressure charges the left hand system tank and signals the protection valve to open both dual passages. In addition to porting releasing pressure to the parking cylinders, the second passage opens, permitting emergency pressure to apply the service brakes when signalled by the relay emergency valve, in the same way as the A/H-HRC system.

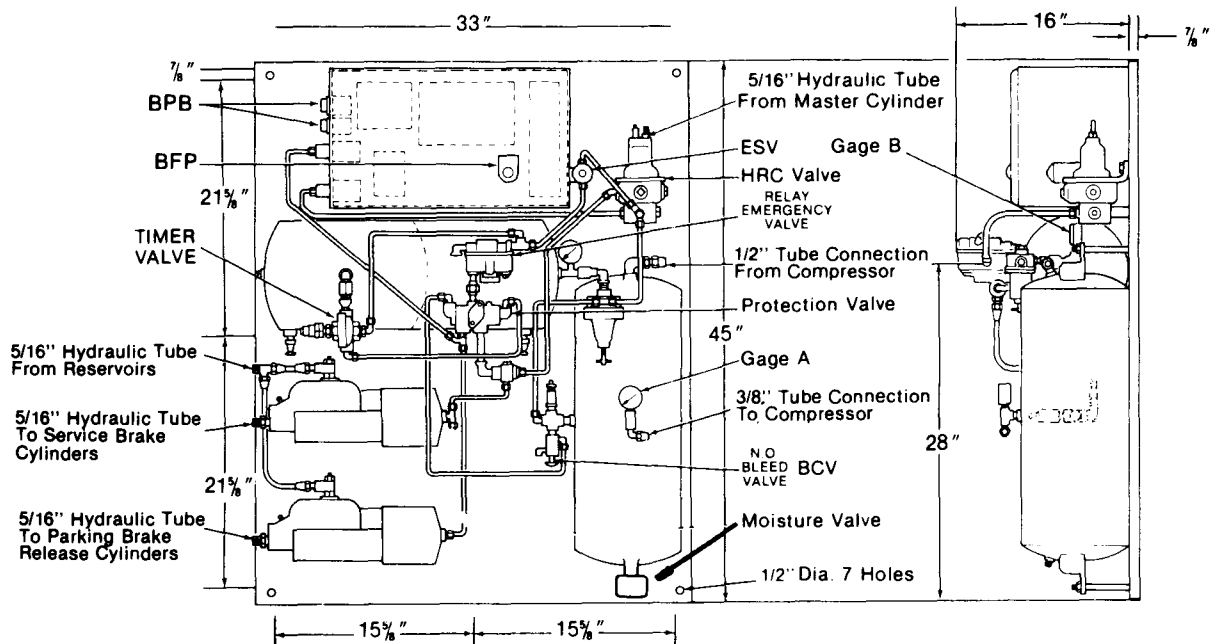
When ESV Solenoid valve is de-energized by operator signal or power failure, the relay emergency valve is signalled to apply regulated emergency pressure to the service brakes which brings the crane to a controlled stop, in the same way as the A/H-HRC system. At the same time, the timer valve initiates exhaust of the left hand supply tank pressure signals the protection valve to cut off pressure to the parking pressure cluster and set the parking brakes. Continued pressure exhaust cuts off pressure to release the service brakes. Parking brakes remain applied as long as power is disconnected.

A/HM-HRC PANEL PIPING DIAGRAM



# TYPE A/HM-HRC PREASSEMBLED CONTROL PANEL

(DIMENSIONS IN INCHES)



TYPE A/HM-HRC CONTROL PANELS ARE DESIGNED TO FIT INSIDE 36" x 48" x 17" STANDARD ELECTRICAL ENCLOSURES. ENCLOSURE #J070891 IS SUPPLIED AS AN OPTION WHEN DRIP-TIGHT WEATHER PROTECTION IS REQUIRED. THE FOLLOWING AIR POWER COMPONENTS ARE USED IN A/HM-HRC SYSTEMS.

#### 14. HYDRAULIC CONTROLLED AIR VALVE J-107047

Provides precise control of the service braking pressure through the two way air valve in exact proportion to the force applied to the master cylinder pedal—gives operator "feel" of the braking torque developed. Less than 70# pedal force meters full application pressure regardless of the length of line or hose required between the master cylinder and control panel.



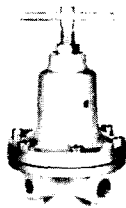
#### 17. RELAY EMERGENCY VALVE A-71891

The emergency relay valve is the main emergency braking control component in the A/HM-HRC control system. Control pressure at the port supplied from the solenoid valve "cocks" the relay valve closed and exhausts emergency braking pressure. When the control port pressure is reduced below 45 psi, the emergency braking pressure stored in the right hand tank compartment is quickly "dumped" into the service brake pressure clusters to apply emergency braking.



#### 15. PRESSURE REGULATOR A-64132

Easily adjusted, this non-relieving type pressure regulator provides exact control of emergency braking pressure stored in the right side of the system regulator tank (3a). Initial factory set pressure is 40 psi, however this pressure can be easily trimmed in the field and locked at the nut. A built in corrosion resistant screen keeps the valve seats and seals clean and free of foreign particles.



#### 18. TIMER VALVE ASSEMBLY

This unique valve assembly controls the pressure in the left hand tank compartment which supplies air to the control port of the protection valve. Each time the emergency brake solenoid valve is de-energized, the timer valve assembly automatically transfers protection valve control pressure exhaust thru the filtered restrictor valve. The restrictor valve is factory preset to prevent the protection valve from exhausting until 20 seconds after the solenoid valve is de-energized.



A-15793  
J-98692

#### 16. THREE WAY N. C. SOLENOID VALVE 115V 50/60 HZ — J-40194 230V D.C. — J-40193

When energized the solenoid valve transmits air pressure direct to the control ports of the relay valve and to the control port of the protection valve thru the timer valve assembly. When de-energized, control pressure is quickly exhausted from the relay valve to apply emergency braking pressure. Simultaneously control pressure is exhausted from the timer valve assembly to initiate bleed down of the protection valve control pressure.



#### 19. AIR LINE PROTECTION VALVE A-24912

The protection valve is a proven pilot operated check valve as needed for the unique type A/HM-HRC control system. Pressure at the control port operates the valve to close its exhaust port and opens dual passages thru the valve to the individual service brake and parking brake pressure clusters. When control line pressure is reduced to less than 40 psi, the protection valve first exhausts parking brake release pressure and after a slight delay automatically exhausts emergency braking pressure.

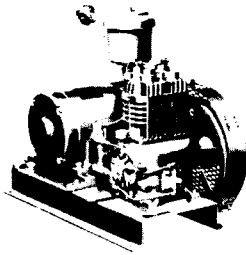




# BASIC AIR POWER COMPONENTS

## 1. Air Compressor and Motor Assembly 460V 60 HZ 3 ph. — J-70942 230V DC — J-70943

A dependable air power source proven by over 20 years of heavy duty crane use. Built-in vane-type oil pump provides positive pressure lubrication. If lube pressure drops, the compressor automatically unloads. This single-stage compressor has wrist pin bushings, insert-type connecting rod bearings, and "Timken" roller crankshaft bearings. Compressor drive motor is totally enclosed. Intake filter is oversize oil-bath type selected for extreme duty steel mill service. The compressor is driven by a ¾ HP totally enclosed industrial motor.



## 2. Safety Valve — A-228

Pop-off type with spring loaded ball bearing check. 150 psi pressure relief protects system from excessive pressure buildup.



## 3. Air Reservoir 1488 in<sup>3</sup> Single — A-35780 750 in<sup>3</sup> Each Side Dual — A-49974

Made from 14 gauge hot-rolled steel with ½" overlapped joints, machine welded, and production tested at over five times rated working pressure. All tanks are protected inside and out against corrosion. Both single and dual compartment tanks are used depending upon system requirements.



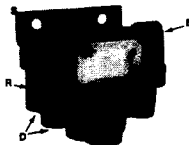
## 4. One-Way Air Check Valve — A-267

Passes air in one direction and seals off back pressure to enable storing sufficient braking pressure in protected tank for a number of fail safe stops.



## 5. Relay Emergency Valve — J-58860

This valve is standard on type A/H-ARC, as well as type AH-HRC and AH-ERC systems. Pressure at reservoir port R is metered to delivery port D in exact proportion to pressure at service port S, *provided* pressure at emergency port E is above 45 psi. If pressure at emergency port E drops below 40 psi, pressure from reservoir port R is applied to delivery port D. If the relay emergency valve remains in this condition, an internal bleed down by pass exhausts reservoir pressure to the service port at a very slow rate to release braking pressure after one to two hours.



## 6. Two-Way Air Check Valve — A-32922

Permits control from two sources of application pressure and automatically seals off the source not being used.



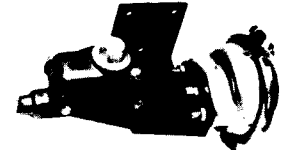
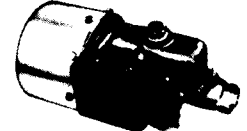
## 7. Push-Type Three-Way Air Valve — A-88740

Provides local control of pressure clusters to facilitate filling and bleeding hydraulic brake lines.



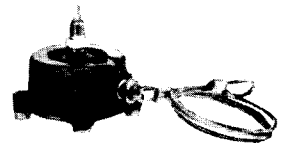
## 8. Air Hydraulic Pressure Cluster 8:1 Ratio Air Cylinder Type — J-54086 5:1 Ratio Air Chamber Type — J-54085

Boosts controlled air pressure to required hydraulic braking pressure. Replaces conventional master cylinders to provide full power braking. Various ratio assemblies are used to permit matching the required braking torque to a fixed range (0-70#) treadle force.



## 9. Automatic Moisture Ejection Valve — J-107084

Fail safe and automatic, this valve keeps the air reservoirs clean and dry. Normal brake applications operate the valve to eject condensed moisture and dirt after each brake application.



## 10. Supply Pressure Gauge — J-29349

For ready operation check, this pressure gauge registers the normal 65 psi to 80 psi supply pressure keeping the operator informed that the system is operable.



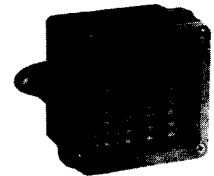
## 11. Foot-Operated Air-Metering Control Valve—J-107039

Meters air pressure in direct proportion to the force applied by the operator—give operator "feel" of the braking torque developed. The total treadle travel is only 2¾". Less than 70 lb. treadle force meters full application pressure. The universal mounting bracket allows both sit-down and stand-up operation when the valve is bolted to the cab floor.



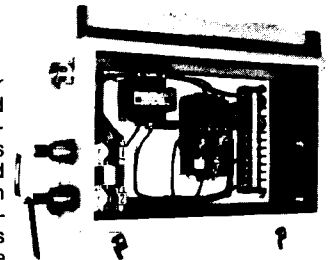
## 12. Low-Pressure Buzzer 120V 60 Hz — J-34778 230V DC — J-24673

Vibrating armature type provides a strong, clear buzzing tone with a decibel output of 75-80 measured at 3 ft. from source. Warns operator of eventual loss of air pressure due to any cause.



## 13. Electrical Control Assembly

Includes compressor motor starter with proper overload protection prewired to start-stop pressure switch. Provides easy to wire terminal board connection to 2PS system pressure switch, bleeder pressure push-buttons, and control relays when required. Pressure switches, pushbuttons, and relays have either double throw or convertible contacts providing flexible universal connections to all types of interlock and control schemes. Wiring is AWG Size 12, with 125° C., 600 volt U.L. rating insulation. A 115 volt fused secondary control transformer is included with all A.C. powered systems.



# INDUSTRIAL BRAKE WHEEL DIMENSIONS

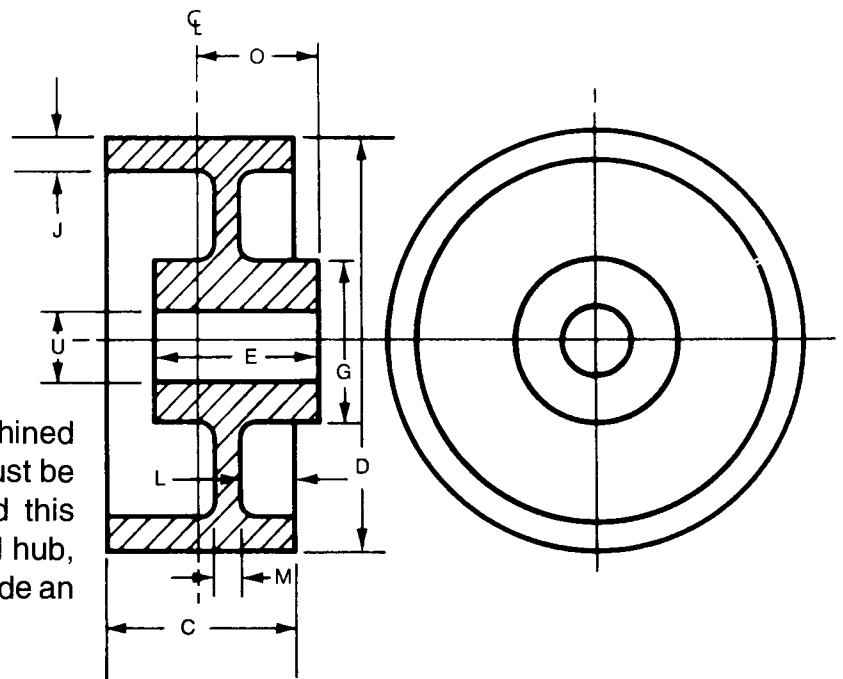
Gemco brake wheels are machined from ASTM A 536 ductile iron 80-60-03 or 80-55-06, formulated to match the brake lining. They provide uniform friction and maximum service. The castings are completely machined to close tolerances and do not require balancing when operated at normal crane speed.

No alternate casings are available. STOCK bore or FINISH bore brakes are available as described below and on page 25.

Brake wheel castings have been modified so that one casting for each of the five brake sizes is now suitable for essentially all normal installations.

## STOCK BORE WHEELS

STOCK bore wheels are completely machined except for the bore and keyway, which must be machined by the customer if purchased this way. 6 x 3 and 8 x 3 wheels have a solid hub, while 10 x 4, 14 x 6 and 18 x 8 wheels include an initial rough bore.

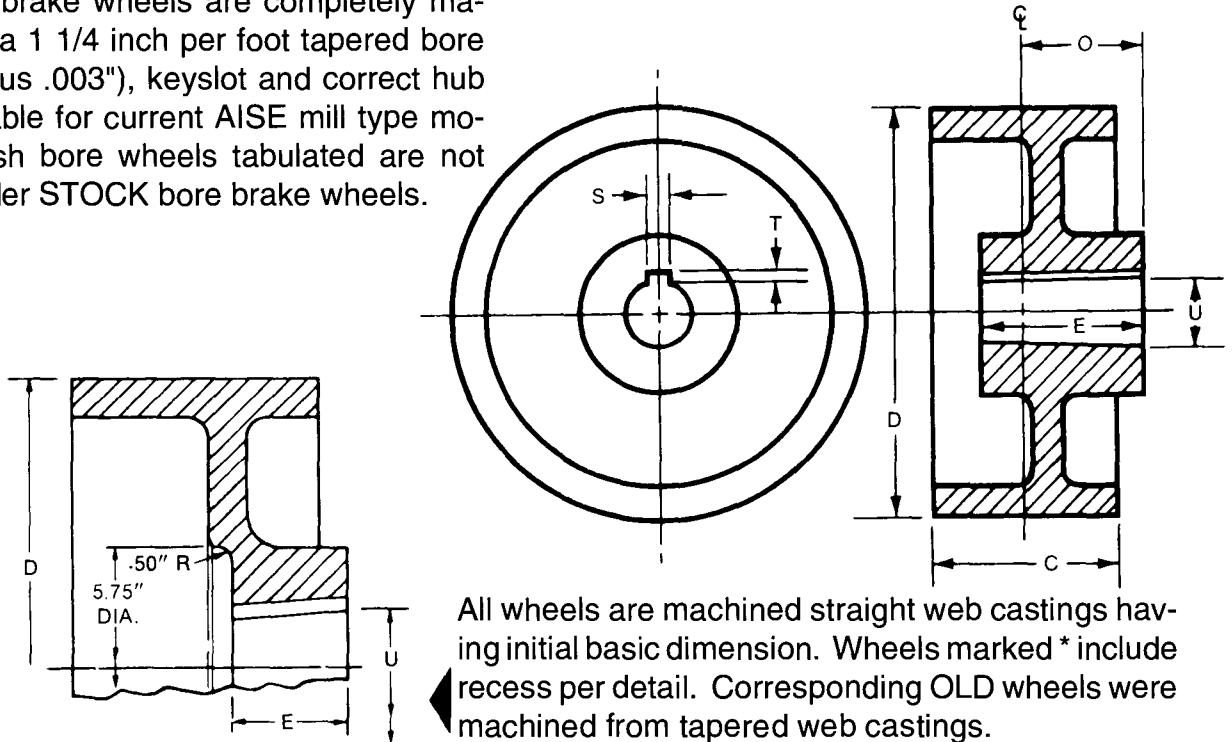


WHEEL NO.	DIMENSIONS IN INCHES									Weight lbs.	Wk <sup>2</sup> lb./ft. <sup>2</sup>
	D	C	O	G	J	L	M	U	E		
<b>J076200</b>	6	3.25	3.12	3.00	.50	1.00	.50	—	4.00	16	.55
<b>J076225</b>	8	3.25	3.12	3.50	.50	1.00	.50	—	4.00	26	1.41
<b>J076250</b>	10	4.25	3.12	5.00	.62	1.44	.62	1.00	5.50	55	4.25
<b>J076275</b>	14	6.50	4.25	5.00	.88	2.12	.88	1.50	5.50	121	24.2
<b>J076300</b>	18	8.50	5.25	7.50	.88	2.62	1.25	1.88	6.38	230	75.8

# INDUSTRIAL BRAKE WHEEL DIMENSIONS

## FINISH BORE BRAKE WHEELS

Finish bore brake wheels are completely machined with a 1 1/4 inch per foot tapered bore (plus or minus .003"), keyslot and correct hub length, suitable for current AISE mill type motors. If finish bore wheels tabulated are not suitable, order STOCK bore brake wheels.



AISE MOTOR FRAME NO.	WHEEL NO.	DIMENSIONS IN INCHES						
		D	C	O	U	E	S	T
602, 802, AC1, 2, 4	J076201	6	3.25	3.12	1.75	3.00	.50	.25
	J076228	8	3.25	3.12	1.75	3.00	.50	.25
	J076256	10	4.25	3.12	1.75	3.00	.50	.25
603, 604, 803, 804	J076227	8	3.25	3.12	2.00	3.50	.50	.25
	J076252	10	4.25	3.12	2.00	3.50	.50	.25
606, 806, AC8, AC12	J076251	10	4.25	3.12	2.50	4.00	.50	.25
	J076278	14	6.50	4.25	2.50	4.00	.50	.25
	J076323*	18	8.50	5.25	2.50	4.00	.50	.25
608, 808	J076253	10	4.25	3.12	3.00	4.50	.75	.25
	J076277	14	6.50	4.25	3.00	4.50	.75	.25
	J076324*	18	8.50	5.25	3.00	4.50	.75	.25
	J076306	18	8.50	4.88	3.00	4.50	.75	.25
610, 810, AC18	J076254	10	4.25	3.12	3.25	4.50	.75	.25
	J076279	14	6.50	4.25	3.25	4.50	.75	.25
	J076322*	18	8.50	5.25	3.25	4.50	.75	.25
	J076303	18	8.50	4.88	3.25	4.50	.75	.25
612, 812, AC25, AC30	J076255	10	4.25	3.12	3.625	5.00	.75	.25
	J076276	14	6.50	4.25	3.625	5.00	.75	.25
	J076301	18	8.50	5.25	3.625	5.00	.75	.25
614, 814, AC40, AC50	J076302	18	8.50	5.25	4.25	5.00	1.00	.375
616, 816	J076304	18	8.50	5.25	4.62	5.50	1.25	.375
618, 818	J076305	18	8.50	5.25	5.00	6.00	1.25	.50

# BRAKE SYSTEM NET WEIGHTS

## CAB OPERATED MANUAL HYDRAULIC SYSTEMS

Net weights are in pounds and kilograms and are approximate. Manual systems include necessary brakes and hydraulic actuators, fluid reservoir/bleeder, bleeder pushbutton, one control cylinder and pedal, armored hoses, tubing, fittings, and brake fluid. System weights do not include brake wheel. Add brake wheel per table below.

### TYPE H SYSTEMS (NO PARKING)

BRAKE SIZE	6x3	8x3	10x4	14x6	18x8
ONE BRAKE SYSTEM	116 lb. 52.2 Kg.	120 lb. 54 Kg.	178lb. 80.1 Kg.	225 lb. 101.3 Kg.	359 lb. 161.6 Kg.
TWO BRAKE SYSTEM	181 lb. 81.5 Kg.	189 lb. 85.1 Kg.	308 lb. 138.6 Kg.	462 lb. 207.9 Kg.	670 lb. 301.5 Kg.

One brake systems include 100 ft. 5/16" tubing. Two brake systems include 250 ft. 5/16" tubing

### TYPE HM SYSTEMS (WITH PARKING)

BRAKE SIZE	6x3	8x3	10x4	14x6	18x8
ONE BRAKE SYSTEM	136 lb. 61.2 Kg.	139 lb. 62.6 Kg.	220 lb. 99 Kg.	289 lb. 130.1 Kg.	389 lb. 175.1 Kg.
TWO BRAKE SYSTEM	233 lb. 104.9 Kg.	239 lb. 107.6 Kg.	*	*	*

Type HM systems also include a type HM Control Unit and Parking Brake Control Station. One brake systems include 150 ft. 5/16" tubing. Two brake systems include 400 ft. 5/16" tubing.

\* NOT RECOMMENDED. USE TYPE A/HM-HRC SYSTEMS

### BRAKE WHEELS

BRAKE SIZE	6x3	8x3	10x4	14x6	18x8
	16 lb. 7.2 Kg.	26 lb. 11.7 Kg.	55 lb. 24.8 Kg.	121 lb. 54.5 Kg.	230 lb. 103.5 Kg.

# BRAKE SYSTEM NET WEIGHTS

## CAB CONTROLLED AIR OVER HYDRAULIC SYSTEMS

Net weights are in pounds and kilograms and are approximate. All air over hydraulic operated systems include brake(s) and hydraulic actuator(s), fluid reservoir/bleeder(s), preassembled air over hydraulic control panel, 3/4 HP motor and compressor, tubing, hoses, fittings, and brake fluid. Weights do not include brake wheels. Add brake wheel weight from table on page 26.

### TYPE A/H-ARC SYSTEMS (NO PARKING)

BRAKE SIZE	6 x 3	8 x 3	10 x 4	14 x 6	18 x 8
ONE BRAKE	430 lb. 195.2 Kg.	432 lb. 196.1 Kg.	488 lb. 221.6 Kg.	563 lb. 255.6 Kg.	666 lb. 302.4 Kg.
TWO BRAKE	476 lb. 216.1 Kg.	480 lb. 217.9 Kg.	592 lb. 268.8 Kg.	742 lb. 336.9 Kg.	948 lb. 430.4 Kg.
FOUR BRAKE	653 lb. 296.5 Kg.	661 lb. 300.1 Kg.	885 lb. 401.8 Kg.	1185 lb. 538 Kg.	1597 lb. 725 Kg.

Type A/H systems also include a foot operated air control valve, low air pressure buzzer and air gauge.

### TYPE A/H-HRC SYSTEMS (NO PARKING)

BRAKE SIZE	6 x 3	8 x 3	10 x 4	14 x 6	18 x 8
ONE BRAKE	470 lb. 213.4 Kg.	472 lb. 214.3 Kg.	528 lb. 239.7 Kg.	603 lb. 273.8 Kg.	706 lb. 302.5 Kg.
TWO BRAKE	516 lb. 234.3 Kg.	520 lb. 236.1 Kg.	632 lb. 286.9 Kg.	782 lb. 355 Kg.	988 lb. 448.6 Kg.
FOUR BRAKE	693 lb. 314.6 Kg.	701 lb. 318.3 Kg.	925 lb. 420 Kg.	1225 lb. 556.2 kg.	1637 lb. 743.2 Kg.

Type A/H-HRC systems also include a hydraulic control cylinder and pedal. They are intended for bridge braking from a moving cab. This system includes off-power emergency braking, but not parking. Add LONG HOSE KIT, listed below for flexible connection between cab and bridge.

### TYPE A/HM-HRC or A/HM-ARC SYSTEMS (WITH PARKING)

BRAKE SIZE	6 x 3	8 x 3	10 x 4	14 x 6	18 x 8
ONE BRAKE	545 lb. 247.4 Kg.	547 lb. 248.3 Kg.	618 lb. 280.6 Kg.	693 lb. 314.6 Kg.	796 lb. 361.4 Kg.
TWO BRAKE	601 lb. 272.9 Kg.	605 lb. 274.7 Kg.	747 lb. 339.1 Kg.	897 lb. 407.2 Kg.	1103 lb. 500.8 Kg.
FOUR BRAKE With 2 brake parking	778 lb. 353.2 Kg.	787 lb. 357.3 Kg.	1040 lb. 472.2 Kg.	1340 lb. 608.4 Kg.	1752 lb. 795.4 Kg.
FOUR BRAKE With 4 brake parking	863 lb. 391.8 Kg.	871 lb. 395.4 Kg.	1155 lb. 524.4 Kg.	1455 lb. 660.6 Kg.	1867 lb. 847.6 Kg.

Type A/HM-HRC systems also include a hydraulic control cylinder, pedal and parking control station. They provide off-power emergency braking, plus parking. Optional driptight enclosure is available for control panel if specified. See weight adder below. Add LONG HOSE KIT, listed below, when flexible connection between cab and bridge is required.

#### OPTION WEIGHTS

- 36" x 48" Driptight Enclosure - 150 lbs/68.1 Kg.
- LONG HOSE KIT - 25 foot; 4.5 lbs/2.0 Kg., 50 foot; 8.5 lbs/3.9 Kg.  
Kit includes renewable fittings. Hose length can be shortened.  
Fittings included for connection of two or more hose lengths.

# 6 x 3 and 8 x 3 BRAKE ASSEMBLY DIMENSIONS

(ALL DIMENSIONS IN INCHES)

## TYPE H, HYDRAULICALLY APPLIED BRAKE ASSEMBLY, FIGS. 1 & 2

6 x 3 and 8 x 3 Brake Assemblies

BRAKE ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
J23020	12-5/8"	10-9/16"	26
J2779	12-5/8"	12-9/16"	28

## TYPE HM, HYDRAULICALLY APPLIED BRAKE WITH SPRING APPLIED PARKING, FIGS. 1 & 3

6 x 3 and 8 x 3 Brake Assemblies

BRAKE ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
J24579	18-1/2"	11-3/32"	30
J3205	18-1/2"	13-3/32"	32

### DIMENSIONS COMMON TO BOTH TYPES

WHEEL DIA.	D	6"	8"
SHAFT HEIGHT	J	4 31/31"	5 31/32"
MIN. SHOE CLEARANCE	L	4 7/8"	5 29/32"
BRAKE WHEEL OFFSET	O	3 1/8"	3 1/8"

Note: The ports of the hydraulic actuators on the above brakes include 1/2"-20 straight threads that mate J10160- 30" armored hydraulic hose which requires J105376 (FC17) gasket seals.

Hydraulic seals are compatible only with 21B super heavy-duty brake fluid, or its equivalent.

Figure 1

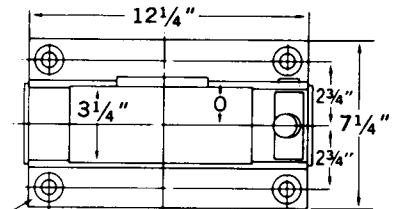


Figure 2

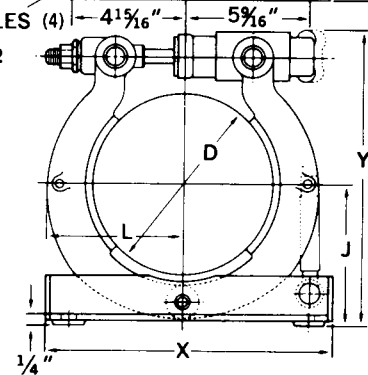
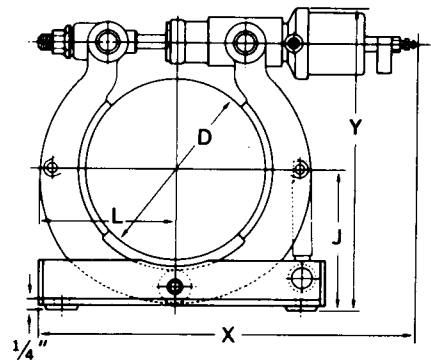


Figure 3



# 10 x 4 BRAKE DIMENSIONS

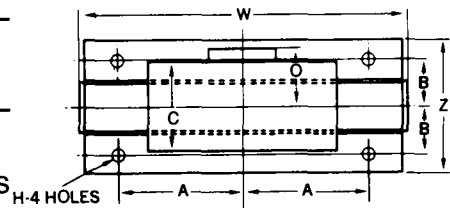
(ALL DIMENSIONS IN INCHES)

Dimensions common to all 10 x 4 size brakes.

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>H</b>
8"	3"	4-1/4"	10"	7/8"
<b>J</b>	<b>L</b>	<b>O*</b>	<b>W</b>	<b>Z</b>
9"	10"	3-1/8"	18-1/2"	8-3/16"

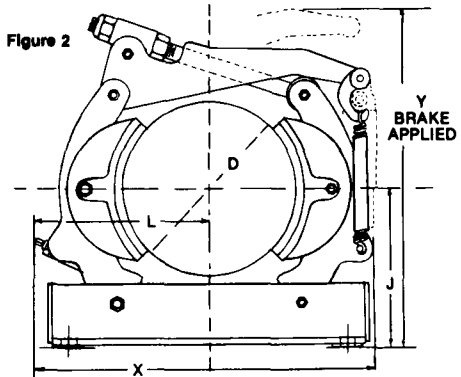
\*O Brake wheel offset is based on standard brake wheels

Figure 1



Type H brake assembly, Fig. 2, hydraulically applied by brake actuator supplied separately. (Normally use J7905 actuator for "one brake" manual systems; use J23437 for "two brake" manual systems. See system specifications for actuators used on Air/Hydraulic systems).

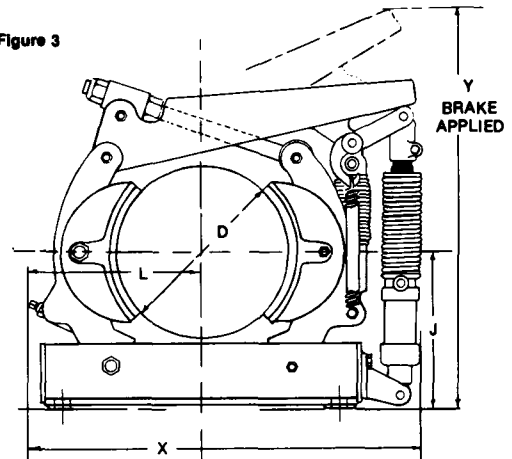
Figure 2



<b>BRAKE ASSY. NO.</b>	<b>OVERALL WIDTH X</b>	<b>MAX. HEIGHT Y</b>	<b>ASSY. WT. LBS.</b>
J2926	19-7/16"	19-7/16"	93

Type HM brake assembly, Fig. 3, supplied with J23437 hydraulic brake actuator and with HM spring applied hydraulically released cylinder.

Figure 3



<b>BRAKE ASSY. NO.</b>	<b>OVERALL WIDTH X</b>	<b>MAX. HEIGHT Y</b>	<b>ASSY. WT. LBS.</b>
J34780	23"	23"	107

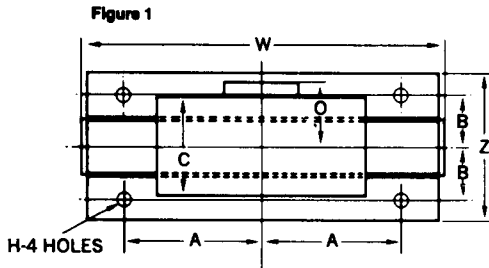
NOTE: The ports of the hydraulic actuators on above brakes include 1/2"-20 straight threads that mate J10160 -30" armored hose, which require J105376 (FC17) gasket seals.

All cylinders are compatible only with automotive J1703 hydraulic brake fluid, or equal.

# 14 x 6 and 18 x 8 BRAKE DIMENSIONS

(ALL DIMENSIONS IN INCHES)

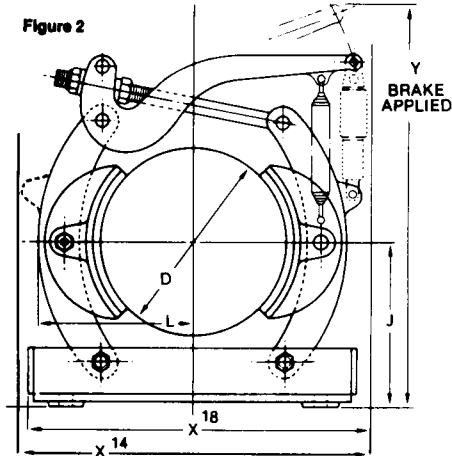
Dimensions common to all 14" and 18" brakes



## BRAKE

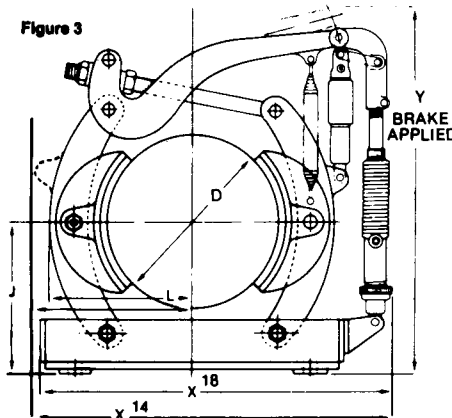
BRAKE SIZE	A	B	C	D	H
14 x 6	9-1/2"	3-7/16"	6-1/2"	14"	7/8"
18 x 8	11-1/2"	5"	8-1/2"	18"	1-1/16"
	J	L	O*	W	Z
14 x 6	11-5/8"	12-15/16"	4-1/4"	24-1/4"	9-5/8"
18 x 8	13-7/8"	13-3/8"	5-1/4"	27-3/4"	13-1/2"

\*O brake wheel offset is based on standard brake wheels



Type H brake assembly, Fig. 2, hydraulically applied by brake actuator supplied separately. (Normally use J7905 actuator for "one brake" manual systems; use J23437 actuator for "two brake" manual systems, or see system specifications for actuators on Air/Hydraulic systems).

BRAKE SIZE	ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
14 x 6	J2929	25-7/8"	28-1/2"	161
18 x 8	J2932	27-3/4"	34-3/8"	266



Type HM brake assemblies, Fig. 3, supplied with J23437 hydraulic actuator and with HM spring applied, hydraulically released cylinder.

BRAKE SIZE	ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
14 x 6	J34735	29-5/8"	28-1/2"	180
18 x 8	J40065	32-1/8"	34-3/8"	286

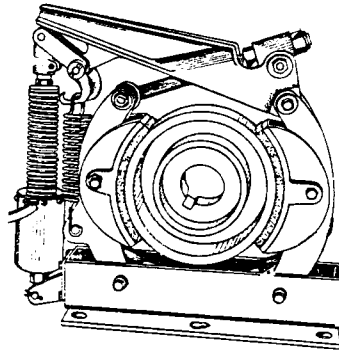
NOTE: The ports of the hydraulic actuators on above brakes include 1/2"-20 straight threads that mate J10160-30" armored hose, which require J105376 (FC17) gasket seals.

All cylinders compatible only with automotive J1703 hydraulic brake fluid, or equivalent.



# TYPE "S" AIR BRAKE

## Type S Spring Set, Air Released Brake



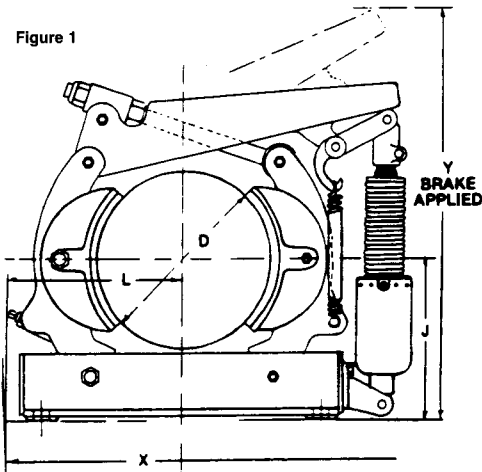
The Type S Brake provides parking for extended periods of time as well as emergency braking in the event of system pressure loss. It is designed in 10", 14" and 18" sizes.

This spring set, air released brake will stop and hold the load in the static position when air pressure is exhausted from the actuator. Application of 60 PSI or more of air pressure compresses the actuation spring and releases the brake.

### Rated Parking Torque (Ft. Lbs.)

Brake Diameter	10"	14"	18"
Torque Rating	450	550	700

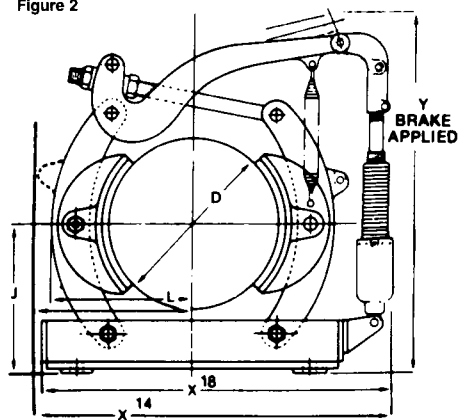
Figure 1



Type S Brake assembly, Fig. 1, supplied with spring applied, air released cylinder.

BRAKE SIZE	ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
10 x 4	J53958	23-1/4"	23"	105

Figure 2



Type S Brake assembly, Fig. 2, supplied with spring applied, air released cylinder.

BRAKE SIZE	ASSY. NO.	OVERALL WIDTH X	MAX. HEIGHT Y	ASSY. WT. LBS.
14 x 6	J53957	30-5/16"	28-1/2"	182
18 x 8	J58855	32-5/8"	34-3/8"	288