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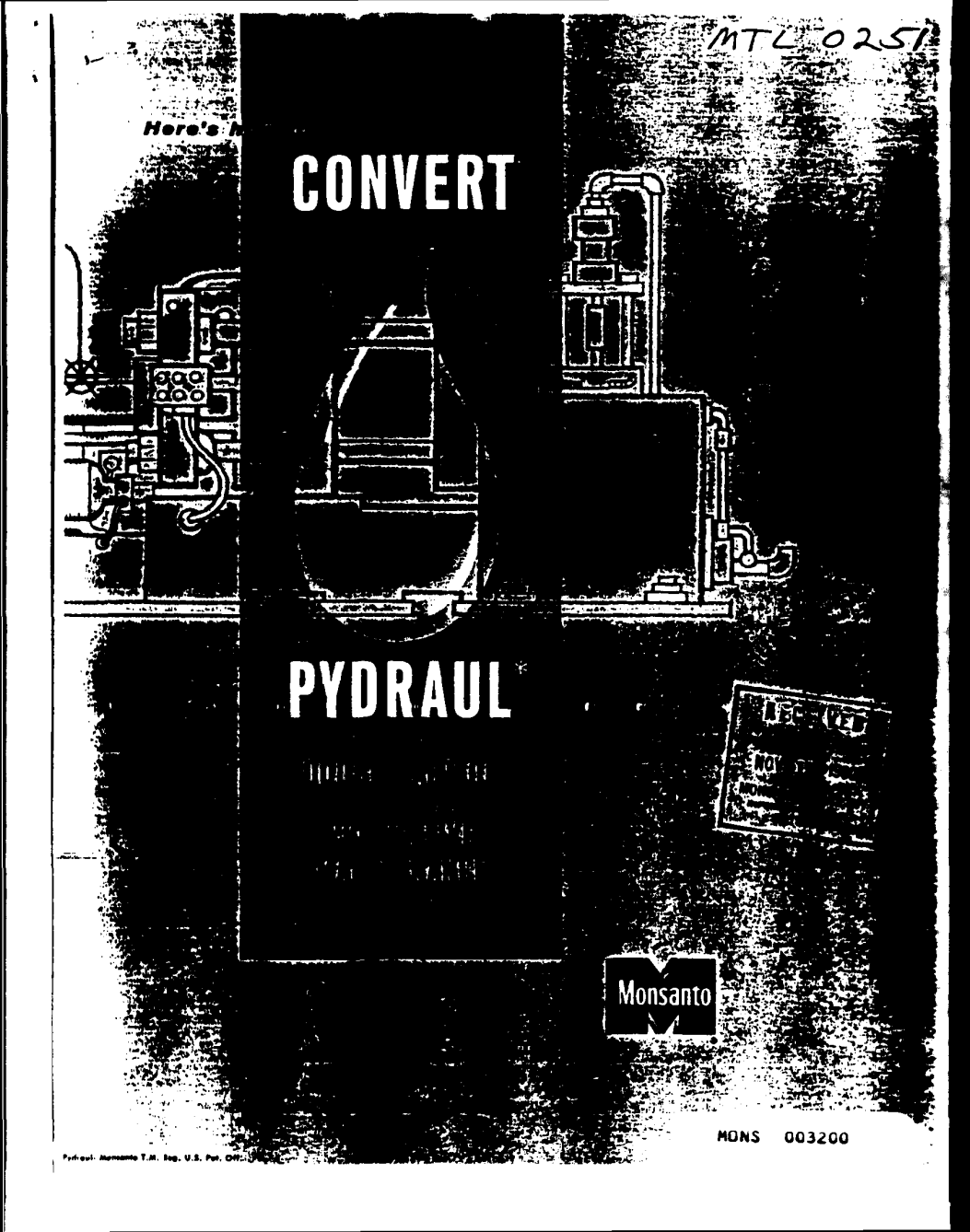
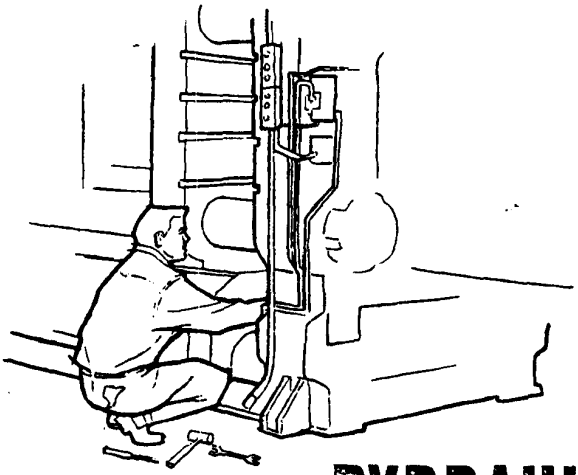


MONS 003200

Pydraul: Monsanto T.M. Reg. U.S. Pat. Off.



converting to PYDRAUL is easy!

You can convert to Pydraul straight synthetics no matter what type of hydraulic fluid you now use in your equipment—nearly every type of hydraulic equipment that needs a fire-resistant fluid has been converted to Pydraul. Equipment manufacturers are experienced in conversion procedures and should be consulted for their recommendations. Some manufacturers will tell you exactly what seals to change and several will supply them. You can use the check list on the opposite page as a general guide for converting hydraulic systems to any Pydraul fluid.

For machines now running on a straight synthetic fluid, you can add Pydraul A-200 or Pydraul 625 as make-up without interrupting your production. Machines operating on oil or water-based fluids require a few simple conversion steps which primarily involve cleaning the system of the old fluid and changing dynamic seals to resistant materials.

CHECK FOR LEAKS

Check the entire system for leaks before you shut it down for conversion. Mark these for correction later.

DRAIN FLUID FROM SYSTEM

Drain the reservoir, lines and cylinders as completely as possible to remove all the previous fluid. Sometimes this can be done by opening unions at low spots in the system and blowing clean with air.

CLEAN RESERVOIR AND FILTERS

Remove interior paint from the reservoir (if it is painted) by scraping or with a commercial paint remover. Wipe it dry with clean rags which are lint free. Clean or change the cartridge in the filter. Pydraul fluids can be used to flush systems, too, since they will loosen tars, varnish and residues left by previous fluids. Filters will remove these contaminants. If there is no filter or if parts of equipment are difficult to reach for cleaning, a portable filter can be connected to the system and left on stream for the first two or three days of operation.

CHECK PUMPS FOR WEAR

Replace any parts of the pump assembly that show serious wear—especially important if the machine has operated on water-based fluids.

. . . . . *just follow these steps*

INSTALL RESISTANT SEALS AND PACKINGS

Some Pydraul users have converted without changing seals and changed them at later maintenance checks. Usually dynamic seals should be changed to a resistant material. Non-resistant static seals will swell in Pydraul and make a tighter seal; the swelled seal can be replaced with a new one when the joint is later disassembled for other reasons. At [illegible] use butyl rubber bladders for accumulators.

RECONNECT LINES

When you reconnect the lines, tighten them carefully [illegible] Then fill with Pydraul to the proper level.

START AND STOP PUMP

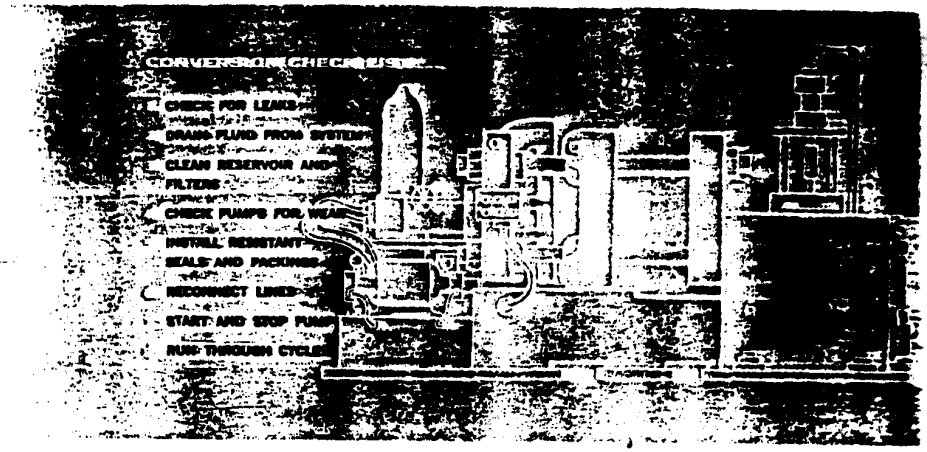
With the hydraulic controls on neutral, start and stop the pump several times without allowing the system to reach working pressure. This procedure will lubricate the pump. Then you can leave the pump on to bring the system to working pressure.

RUN THROUGH CYCLE

Run through the cycle several times to use all parts of the hydraulic system. Bleed any air through the petcocks or valves from parts that might collect air. Check the fluid level and add Pydraul if necessary.

You can keep fluid make-up at a minimum with adequate maintenance

The normal loss of Pydraul in a properly converted system will be no more than for petroleum fluids, and in many cases, it has been considerably less. The technique for holding down the make-up requirement for Pydraul is the same as for any fluid; namely, regular maintenance checks for loose joints. Losses of Pydraul in diecasting machines are generally as low as one pint per eight-hour shift. If you reclaim leakage, your losses can be cut even further. It is not unusual to find the annual cost of hydraulic fluid actually *decreases* after Pydraul has been installed.



Packing and seal information

Availability of packings and seals for Pydraul fluids is no problem—manufacturers supply them in all configurations. Resistant materials are generally required only for dynamic (moving) seals. Static seals may be ordered in resistant materials if the user prefers. The chart at right lists the manufacturers who supply packings and seals resistant to Pydraul. The list is intended as a guide, and the equipment manufacturer or packing supplier should be contacted for latest recommendations.

MONS 003203

SUPPLIER	TYPE OF MATERIAL	"O" Rings	"V" Rings	"U" Packings	Flat Gaskets	Oil Seals	Back-up Rings	"U" Cups	Flange Packings	Other
A. W. Chesterton Co. Everett, Mass.	Butyl—Fabric		X	X						
Acushnet Process Co. New Bedford, Mass.	Silicone	X			X	X				X
	Butyl	X			X	X				X
	Viton	X			X	X				X
Anchor Packing Co. 401 N. Broad St. Philadelphia, Pa.	Silicone	X	X	X	X			X	X	X
	Teflon	X	X	X	X	X	X	X	X	X
	Impregnated duck		X	X						
	Impregnated asbestos				X					X
	Butyl		X	X	X			X	X	X
C. W. Marsh Co. Muskegon, Mich.	Impregnated leather		X	X	X	X	X	X	X	X
Chicago Rawhide Mfg. Co. 1301 Elston Ave. Chicago 22, Ill.	Butyl	X	X	X	X	X			X	X
	Silicone	X	X	X	X	X			X	X
	Viton	X								X
	Teflon									X
Crane Packing Co. 1800 Cuyler Ave. Chicago 13, Ill.	Silicone	X	X			X		X	X	X
	Butyl	X	X			X		X	X	X
Garlock Packing Co. Palmyra, New York	Silicone	X			X	X			X	X
	Butyl		X				X			
	Teflon	X	X	X	X	X	X	X	X	X
	Viton	X	X	X	X	X	X	X		X
	Leather		X	X	X		X	X	X	X
	Asbestos				X					
	Butyl impregnated duck		X	X						
Greene, Tweed & Co. North Wales, Pa.	Asbestos				X					
	Butyl	X	X	X	X			X	X	X
	Impregnated duck		X	X					X	X
	Phenolic						X			
	Teflon	X	X	X	X		X		X	X
Goshen Rubber Co., Inc. P.O. Box 416 Goshen, Indiana	Butyl	X			X	X		X	X	X
	Silicone	X			X	X		X	X	X
International Packings Corp. Bristol, New Hampshire	Silicone	X	X	X	X				X	X
	Butyl	X	X	X	X	X			X	X
	Viton	X	X	X	X	X			X	X
	Leather		X	X		X			X	
Linear, Inc. State Road & Levick St. Philadelphia, Pa.	Butyl	X						X		
	Vyram	X	X					X		
	Vyram—Fabric		X							
Plastic & Rubber Products Co. 2100 Hyde Park Blvd. Los Angeles, Calif.	Butyl	X								X
	Silicone	X								X
Precision Rubber Products Corp. 3100 Oakridge Drive Dayton 7, Ohio	Butyl	X								
Raybestos-Manhattan, Inc. Packing Div. Passaic, New Jersey	Asbestos		X	X	X				X	X
	Teflon		X	X	X				X	X
	Butyl—Duck		X					X		
	Butyl—Asbestos				X					X
	Asbestos—Teflon		X		X			X		X
Vellumoid Co. Rockdale St. & Seaman Ave. Worchester 6, Mass.	Vellumoid				X					X
W. S. Shamban Co. 11617 W. Jefferson Blvd. Culver City, Calif.	Teflon	X	X	X	X	X	X	X	X	X
	Nylon	X	X	X	X	X	X	X	X	X
	KEL F	X	X	X	X	X	X	X	X	X

CONTACT THE MATERIAL SUPPLIER FOR HIS LATEST RECOMMENDATIONS

Other hydraulic components . . . readily available

[illegible] Most standard oil filters are satisfactory and you can use active earth or clay types. Manufacturers supplying filters include:

- Briggs Filtration Company
- Capitol Engineering Company
- Cuno Engineering Corporation
- Dollinger Corporation
- Purolator [illegible]
- Hilliard Corporation
- Honan-Crane Corporation
- Marvel Engineering Company
- Fulflo
- Mayhew

HOSE: Although both neoprene and Buna N swell somewhat in Pydraul, [illegible] satisfactory life with the fluid when made of reinforced wire braid [illegible] Butyl hoses are resistant and are preferred when new hoses are [illegible] of butyl hose include:

- Aeroquip Corporation
- Anchor Coupling Company
- Eastman Manufacturing Company
- Electric Hose & Rubber Company
- Resistoflex Corporation
- Weatherhead Corporation

SWIVEL COUPLINGS: Pydraul is being used in systems containing swivel [illegible] supplied by such companies as:

- Barco Manufacturing Company
- Chicksan Company

PIPE JOINT SEALANTS: [illegible] can be obtained from:

- Crane Packing Company (John Crane Plastic Lead Seal No. 2[illegible])
- General Electric Company (Glyptal 1201 Red Enamel)
- Permatex Company (Permatex Special Sealant No. 1282)
- Dow Corning Corporation (Silastic 6127 putty)
- Shell Chemical Company (Epon Adhesive VI)
- Friesland Plastics Company (Teflon Tape Seal)

ACCUMULATORS: Many hydraulic systems contain a bladder to separate the [illegible] pressure or nitrogen. For these, butyl rubber is necessary. Suppliers include:

- Green Hydraulics, Incorporated
- Hydromotive, Incorporated
- Superior Pipe Specialties Company

PAINTS: [illegible] resistant to Pydraul are supplied by:

- Amercoat Corporation (South Gate, California)
- Andrew Brown Paint Company (Los Angeles, California)
- Carboline Company (St. Louis, Missouri)
- Carrol Products (Farmingdale, New York)
- Corrosion Chemical Company of America (Beverly Hills, California)
- Finch Paint & Chemical Company (Torrance, California)
- W. P. Fuller & Company (Los Angeles, California)
- General Paint Company (San Francisco, California)
- The Glidden Company (Chicago, Illinois)
- Industrial Finishes Company (Philadelphia, Pennsylvania)
- Interchemical Corporation (Los Angeles, California)
- Lewe Brothers Company (Dayton, Ohio)
- Magna Coatings Corporation (Los Angeles, California)
- Minnesota Platen Corporation (Pipestone, Minnesota)
- Nycote Laboratories (Van Nuys, California)
- Pacific Paint & Varnish Company (Berkeley, California)
- Parker Paint Company (Tacoma, Washington)
- Pittsburgh Plate Glass Company (Milwaukee, Wisconsin)
- Powell Paint Company (Compton, California)
- Rinshed Mason Company (Anaheim, California)
- Royalty Paint & Varnish Company (Pasadena, California)
- Saran Protective Coatings Company (Ferndale, Michigan)
- Sherwin-Williams Company (Chicago, Illinois)
- Sinclair Refining Company (New York, New York)
- Titanine, Incorporated (Union, New Jersey)
- Warren Company (Atlanta, Georgia)

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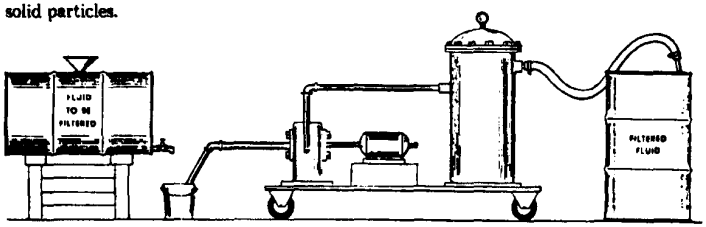
CONTACT THE SUPPLIER FOR LATEST RECOMMENDATIONS

To reclaim Pydraul, follow these simple instructions

(You can actually reclaim Pydraul lost from leaks and spills because of its exceptional stability and resistance to water. If fluid losses are appreciable—such as in mining equipment that seems to leak despite careful maintenance—recovery of fluid can result in considerable savings. Simply placing a container beneath leaks until they can be repaired will save some fluid. Where drip pans have been used beneath hydraulic machinery, more than half of the Pydraul purchased has been reclaimed. Savings like these reduce overall fluid costs and help make Pydraul the most economical straight synthetic fire-resistant fluid available.)

Reclaiming Pydraul consists of two steps: removing water, and filtering dirt or other solid particles.

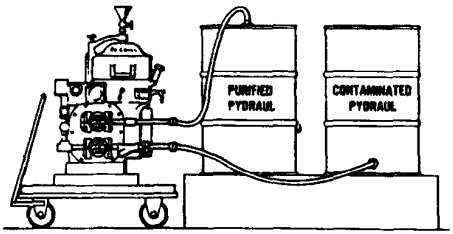


FLUID PURIFICATION SYSTEM

TO SEPARATE WATER

Water does not mix with Pydraul and will form a layer on top of the Pydraul. In the shop, a drum can be reserved for collecting contaminated fluid. A drum with a side and end bung placed horizontally on a cradle about two feet above the floor is a simple and effective settling chamber. Salvaged fluid can be added through a large funnel left in the top opening and drained periodically as the water separates (see diagram). More elaborate systems might use settling tanks, sight gauges and so on.

A second method employs a centrifuge. Suitable units are made by De Laval and Sharples Co. Centrifuges have the advantage of separating water from large volumes of fluid in a short time.



CENTRIFUGE SYSTEM FOR PURIFICATION

TO FILTER OUT SOLID PARTICLES

A number of filtration units are available in complete units with filter, pump and motor. Hilliard, Cuno and Hanon-Crane are among the suppliers. Other systems use filter media such as cotton linters, felt, or metal screens. Attapulgus clay, diatomaceous earth and Fuller's earth may be used to help keep the fluid clean, dry, low in neutralization number and light in color. A small pump and motor can be used to pump the Pydraul through the filter, and into a clean storage drum.

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Safe handling information

Animal toxicity studies and human experience indicate that the Pydraul fluids may be used safely if a few reasonable precautions are taken. Repeated or prolonged skin contact should be avoided since the fluids are excellent solvents for the oils normally components of the skin. When splashed or sprayed into the eyes, the Pydraul fluids cause painful smarting. There is no evidence, however, of any permanent eye injury. In the event of accidental contact with the eyes, the eyes should be flushed with copious amounts of water for 15 minutes and the workman referred to a physician; physicians have used 1% pontocaine solution and ophthalmic cortisone acetate solution to relieve irritation.



Respiratory protection or mechanical exhaust ventilation should be provided if there is repeated and prolonged contact of the fluid with heated surfaces with resulting volatilization or possible decomposition of the fluid. For short periods, such as might arise in turning off equipment following the rupture of a hydraulic line or other mechanical failure, no such protection is necessary.

Toxicity studies demonstrate that the Pydraul fluids are comparable, generally, to petroleum-based hydraulic fluids with respect to short-term massive exposures. The details of animal toxicity studies are available from Monsanto's Medical Department.

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