MONSANTO

PYDRAUL AC

Fire-Resistant Compressor Lubricant

Monsanto Technical Bulletin No. O-133 **October, 1956**
Monsanto Chemical Company, Organic Chemicals Division, St. Louis 1, Mo.

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Fire-Resistant Compressor Lubricant
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GENERAL INFORMATION

*Pydraul** AC is a thoroughly proven synthetic lubricant designed specifically to minimize two of the major problems associated with air compressor cylinder lubrication:

1) Air compressor explosions and receiver fires,

2) Compressor maintenance due to deposit formation on exhaust valves and air system components.

Fires and explosions in air compressors and compressed air systems are fairly common and can be very destructive to property and hazardous to personnel. Numerous theories have been proposed to explain the origin of these occurrences but there is still a wide divergence of opinion. On one point, however, there is general agreement; namely, that petroleum oil lubricants are directly involved. Apparently, oil mists and films gradually accumulate throughout the air system and these break down into combustible gases and carbonaceous residues. (The latter are often as flammable as gunpowder.) These materials can ignite, producing either an explosion or a receiver fire — or both.

Obviously, if such combustible materials could be removed from the system or prevented from forming, fires and explosions could be eliminated. Substitution of a *Pydraul* fire-resistant lubricant for petroleum oil in air compressors will thus drastically reduce explosion hazard.

Monsanto's *Pydraul* lubricants are wholly synthetic products which have been widely used in diverse industrial applications for many years. Their high degree of fire resistance has been conclusively demonstrated in actual use as well as in numerous laboratory flammability tests. Lubricating properties approximate those of SAE 30 lubricating oil. Both *Pydraul* F-9 and *Pydraul* AC work very well as air compressor lubricants. However, the latter was specifically designed for this service in order to reduce cylinder deposits to an absolute minimum.

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*PYDRAUL: Reg. U. S. Pat. Off.

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Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents covering any material or its use.

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TOWOLDMON0039541
WATER_PCB-00024010

BROAD ACCEPTANCE — WIDE USAGE

The *Pydraul* fluids have been used for periods ranging up to five years as air compressor lubricants and are now successfully lubricating many hundreds of compressors of numerous types and sizes produced by most of the major compressor manufacturers including:

Chicago Pneumatic Tool Company

Clark Brothers Company

Cooper-Bessemer Corporation

Ingersoll-Rand Company

Gardner-Denver Company

Joy Manufacturing Company

Norwalk Company, Inc.

Worthington Corporation.

REDUCED MAINTENANCE

Without exception the *Pydraul* lubricants have proved to be outstanding in air compressor service. Life of piston rings, cylinders, and valves has been at least equal to — often better than — that obtained with the use of premium quality petroleum lubricants. The carbon deposits frequently found on exhaust valves and air system piping are significantly reduced when *Pydraul* lubricants are used. *Pydraul* AC, which was designed specifically as a fire-resistant air compressor lubricant, is particularly outstanding in this regard. This reduction in exhaust valve and air system deposits means a real saving in compressor maintenance costs. (See photos on pages 2 and 3.)

EASY TO USE

Conversion of compressors from petroleum to *Pydraul* lubricants is quite simple. For best results several points require attention. Since these fluids are excellent solvents for many petroleum lubricant residues, all inter-stage equipment should be completely cleaned to prevent loosened deposits from passing into succeeding stages and causing malfunction or equipment damage. These fluids also soften or lift many paints and if interior surfaces which will be contacted by the lubricant are painted, this paint should be removed prior to installation.

On compressors which are splash-lubricated from a crankcase, the above clean-up procedure is the only conversion change required.

If a separate force feed cylinder lubricator of the water/glycerine-filled sight glass type is used, the lubricator must be modified. The *Pydraul* lubricants are heavier than water or glycerine and thus will not

Continued on Page 4

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WATER_PCB-00024011

COMPARISON OF INDUSTRIAL AIR COMPRESSO

Compressor Data: 142 CFM, 6" LP Bore, 5" I



500 HOURS ON PREMIUM
PETROLEUM OIL

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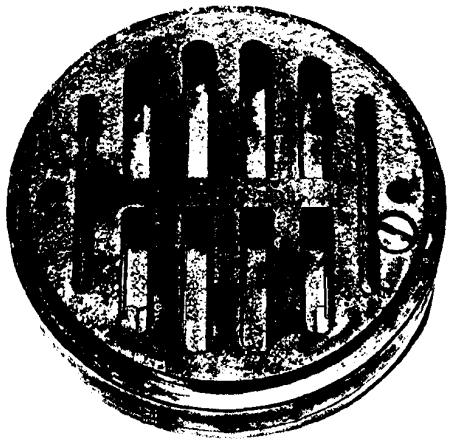
WATER_PCB-00024012

VALVE DEPOSITS FROM TWO LUBRICANTS

' Bore, 5" Stroke, 870 RPM, 100 PSI Air.



500 HOURS ON MONSANTO'S
PYDRAUL AC LUBRICANT

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TOWOLDMON0039544
WATER_PCB-00024013

rise through these standard sight glass liquids. "Fluorochemical 101" a clear liquid supplied by Minnesota Mining & Manufacturing Company, has a higher density than the *Pydraul* lubricants and has proved to be a completely satisfactory sight glass liquid for use with these lubricants. Alternately, a simple metal bobber can be obtained for most of these lubricators. This is installed in the sight glass after draining the sight glass liquid and removing the guide wire. Operation of the lubricator is then indicated by movement of the bobber with each stroke of the pump plunger. Bobbers are available for either the McCord and Manzell lubricators as McCord Part No. A25849 or Manzell Part No. 82-1021-B. Modification of the Madison-Kipp lubricator requires replacement of the entire sight glass with their No. C-CV-300 oil feed indicator.

Lubricators of the vacuum sight feed type can be used without alteration and have proved very satisfactory.

USE RATE

Field experience has proved that the required lubrication rate with the *Pydraul* lubricants approximates closely that of the normal petroleum oils. On an initial installation it is well to start with a somewhat increased lubricant feed rate and reduce in successive increments until inspection of cylinder walls and valves indicates the proper degree of wetting by the lubricant.

SAFE TO HANDLE

Pydraul AC is safe to use in this application since its toxicity is of a very low order. Repeated or prolonged skin contact should be avoided, however. Accidental contact with the eyes will result in moderate to severe pain and irritation but no permanent effects. In such an instance copious and prolonged washing of the eyes is recommended. To relieve irritation physicians have used 1% pontocaine solution as well as ophthalmic cortisone acetate solution.

TYPICAL PROPERTIES OF PYDRAUL AC

Viscosity (SUS)	
50° F.	15,000
75° F.	1,650
100° F.	410
130° F.	127
210° F.	43
Pour Point, ° F.	20
Neutralization Number	0.05
Specific Gravity 60°/60° F.	1.35
Autogenous Ignition Temperature	1,100° F.
Solubility of water in Pydraul AC	
at 75° F.	0.1%
at 210° F.	0.4%
Solubility of Pydraul AC in water	Negligible

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TOWOLDMON0039545
WATER_PCB-00024014

AVAILABILITY

Monsanto's *Pydraul* AC is readily available in commercial quantities.

SHIPPING INFORMATION

Shipping Classification in U.S.A.	— Chemicals N.O.I.B.N.
Shipping Regulations	— None
Standard Container	— Drums, black iron, nonreturnable: 55 gals., 600 lbs. net, 5 gals., 55 lbs. net.

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For additional information and samples contact Monsanto Chemical Company, Organic Chemicals Division, Functional Fluids Sales, P.O. Box 478, St. Louis, Missouri.

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TOWOLDMON0039546
WATER_PCB-00024015

PYDRAUL AC
Fire-Resistant Compressor
Lubricant



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For further information on the products described in this bulletin
contact the nearest Monsanto office.

MONSANTO CHEMICAL COMPANY

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