Copy (A)

(Copy "A")

(PYDRAUL SELECTOR 1 and 2
Page 1)

(After section on "Development" put in the following section:)

Reformulation }-10/63/ep

The Pydraul fluids in this Selector were reformulated in 1970 to remove polychlorinated biphenyls (PCB's). They are now designated with the letter "A" following the product name and provide equal or superior performance when compared to the original Pydraul fluids.

Because some PCB's have been considered to be persistent in the environment, Monsanto chose to remove these components from Pydraul. We took this action voluntarily in an effort to demonstrate our environmental awareness.

Reformulation of the Pydraul fluids provided us with the opportunity to make a number of product improvements, particularly in the areas of lubricity, pump performance and thermal stability. These improvements give you the benefit of the latest Monsanto technology in fire resistant hydraulic fluids.

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TOWOLDMON0022474
WATER_PCB-00006943

(Copy "B")

NEW COPY (B)
SET SAME FACES
SAME CAP

8/204
205 Sel. Sytt

Pydraul Selector 1
Pages 2 and 3
(Top Half of Page)

0107572

all CAPS

8/93/C

PHYSICAL PROPERTIES CAPS	Pydraul 60	Pydraul 150-A	Pydraul [illegible]	Pydraul F-9-A	Pydraul 625-A
Appearance	Cloudy Blue Liquid	Cloudy Blue Liquid	[illegible]	Clear Blue Liquid	Clear Blue Liquid
Spec. Gravity 25/25°C	1.088-1.091	1.120-1.131	[illegible]	1.20-1.23	1.30-1.34
Neutralization No. (mg KOH/g) max.	0.25	0.30	0.50	0.50	0.50
Moisture (max.) %	0.10	0.10	0.10	0.10	0.10
Viscosity CAPS					
centistokes @ 100°F	9.6-10.4 cs	29-34 cs	34-38	48-57 cs	125-145 cs
@ 210°F	2.3-2.5 cs	6.9-8.1 cs	4.2-4.6	4.7-5.5 cs	6.7-7.2 cs
SSU @ 100°F	60 SSU	146 SSU		250 SSU	628 SSU
@ 210°F	35 SSU	53 SSU		43 SSU	49 SSU
Absolute SSU @ 100°F	60.5 SSU	163 SSU		302 SSU	829 SSU
(SSU x Density) @ 210°F	35 SSU	56 SSU		522 SSU	65 SSU
Pour Point	-70°F	-55°F	-15°F	0°F	+5°F
Bulk Temp. Max. (continuous operation)	175°F	150°F		225°F	225°F
Boiling Point °F at 760 mm Hg	707°F	585°F ~~617°F~~		644°F	770°F
Coefficient of Thermal Expansion per °F	0.00044	0.00042		0.00037	0.00048
Specific Heat Btu/lb/°F @ 77°F	0.42	0.40		0.34	0.30
Thermal Conductivity Btu/hr/ft/°F	0.047	0.072		0.065	0.062
Vapor Pressure mm Hg @ 200°F	0.002	0.01		0.02	0.004
Bulk Modulus (Room Temp. 1000-6000 psi)	328,000	319,000		395,000	400,000
Rust Test ASTM D-665	Pass	Pass	Pass	Pass	Pass
Foam Test ASTM D-892	Pass	Pass	Pass	Pass	Pass
Solubility in Water	Negligible	Negligible	Negligible	Negligible	Negligible

NEW COPY (1) SAME FACES SAME FORMAT, ETC.

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Pydraul Selector 2
Pages 2 and 3
(Top Half of Page)

8/204
205
See Style

all CAPS

PHYSICAL PROPERTIES (all CAPS)	Pydraul 135-A	Pydraul 230-A	Pydraul 312-A	Pydraul 540-B
Appearance	Clear Green Liquid	Clear Green Liquid	Clear Green Liquid	Clear Green Liquid
Spec. Gravity 25/25 °C	1.168-1.182	1.122-1.144	1.105-1.125	1.115-1.135
Neutralization No. (mg KOH/g) max.	0.30	0.30	0.30	0.30
Moisture (max) %	0.10	0.10	0.10	0.10
Viscosity (all CAPS)				
centistokes @ 100 °F	27.5-30.5 cs	47-53 cs	65-73 cs	111-118 cs
@ 210 °F	4.1-4.5 cs	5.2-5.8 cs	6.4-7.1 cs	7.7-8.4 cs
SSU @ 100 °F	135 SSU	233 SSU	320 SSU	535 SSU
@ 210 °F	40.5 SSU	44.3 SSU	48.4 SSU	52.6 SSU
Absolute SSU @ 100 °F	159 SSU	264 SSU	357 SSU	602 SSU
(SSU x Density) @ 210 °F	47.6 SSU	50.2 SSU	54 SSU	59.2 SSU
Pour Point	-15 °F	-10 °F	0 °F	+10 °F
Bulk Temp Max. (continuous operation)	200 °F	200 °F	200 °F	200 °F
Boiling Point °F @ 760 mm Hg	570 °F	650 °F	662 °F	680 °F
Coefficient of Thermal Expansion per °F	0.00042	0.00036	0.00036	0.00039
Specific Heat Btu/lb/°F @ 77 °F	0.32	0.36	0.37	0.37
Thermal Conductivity Btu/hr/ft/°F	0.067	0.067	0.068	0.068
Vapor Pressure mm Hg @ 200 °F	2.1	0.28	0.30	0.26
Bulk Modulus (Room Temp 1000-6000 psi)	372,000	376,000	365,000	355,000
Rust Test ASTM D-665	Pass	Pass	Pass	Pass
Foam Test ASTM D-892	Pass	Pass	Pass	Pass
Solubility in Water	Negligible	Negligible	Negligible	Negligible

TOWOLDMON0022476
WATER_PCB-00006945

(Copy "E")

PYDRAUL SELECTOR 1 & 2
Page 2 & 3

~~At bottom of page substitute the following for the small print detail on each fluid:~~

~~Put across the page:~~ (all caps)

Copy C-1

Following is a partial list of applications for the Pydraul fluids:

Hel. B.F.

Diecasting
- diecast machines
- trim presses

Steel Industry
- continuous casters
- rolling mills
- furnaces
- scrap chargers
- stripper cranes
- arc welders
- combustion controls
- mobile equipment

Aluminum Industry
- stripper cranes
- direct chill casters
- furnaces
- rolling mills
- shearers
- combustion controls
- mobile equipment

Forging and Extrusion
- forge presses
- extrusion presses
- billet manipulators

Foundries
- furnaces
- molding lines

Fabrication
- forming presses
- welders
- furnaces

Set in four equal cols line for line centered. (Set cap lines in B.F.)

7/20 6/93

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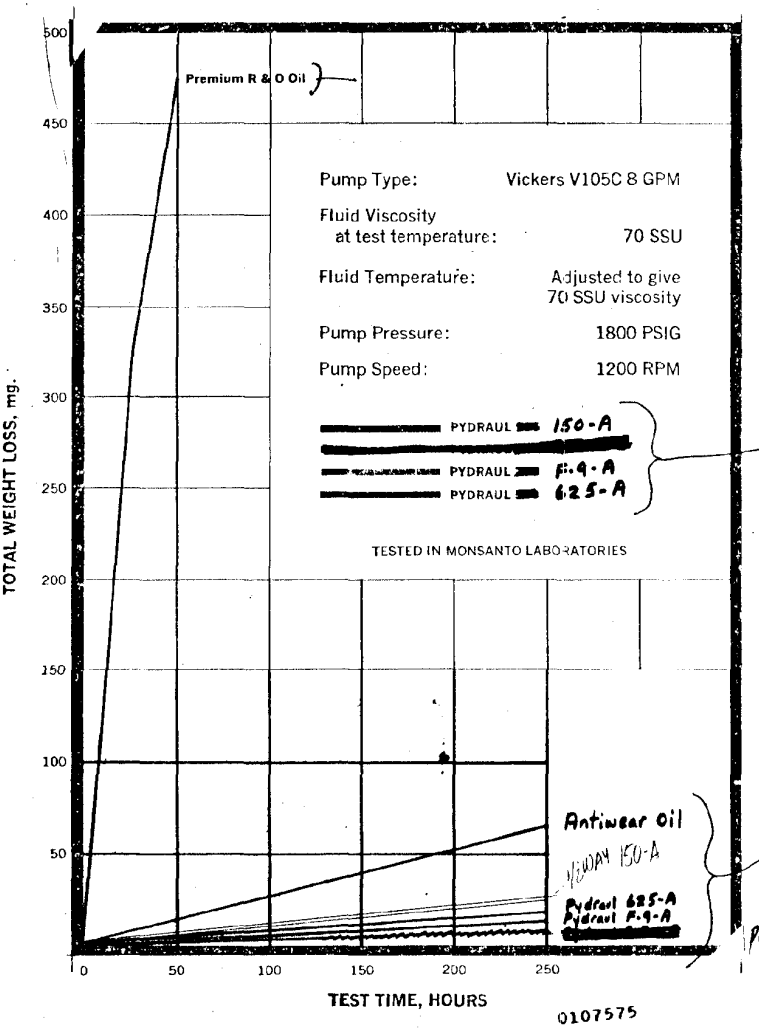
WATER_PCB-00006946

For Selector I, Page 6

Note Deletion

In a more severe Vickers hydraulic pump test (V-105-C pump), the [redacted] Pydraul fluids performed as well as commercial antiwear oils and proved far superior to premium R & O oil (rust and oxidation inhibited).

Copy "F"

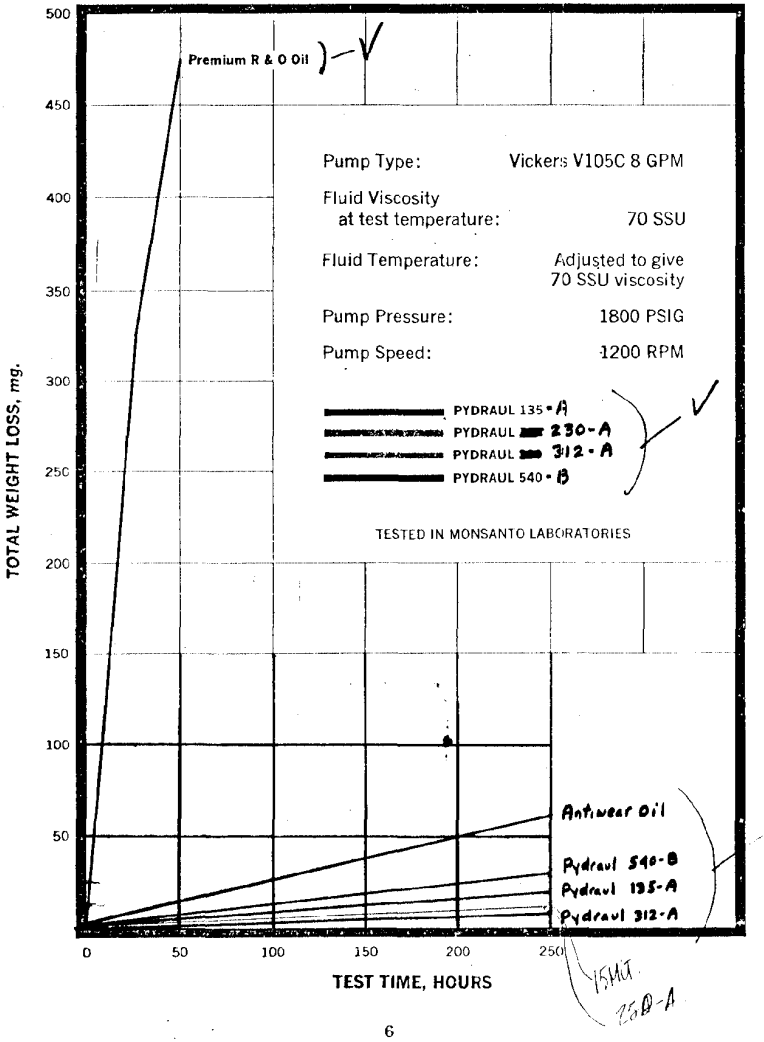


0107575

TOWOLDMON0022478
WATER_PCB-00006947

For Selector 2, Page 6

In a more severe Vickers hydraulic pump test (V-105-C pump), the ~~low-cost~~ Pydraul fluids performed as well as commercial antiwear oils and proved far superior to premium R & O oil (rust and oxidation inhibited).



TOWOLDMON0022479
WATER_PCB-00006948

~~Pydraul Selector 1~~

NEW COPY (D) SET SAME FACES SAME FORMAT.

24 Jan/#65

Mixing Compatibility - SET

Pydraul with Other Hydraulic Fluids

10/93

18

8/20/205 see sheet

	60	150-A	[redacted]	F-9-A	625-A
Fyrquel® 90	Yes	No	[redacted]	Yes	Yes
150	Yes	No	[redacted]	Yes	Yes
220	Yes	No	[redacted]	Yes	Yes
300	Yes	No	[redacted]	Yes	Yes
550	Yes	No	[redacted]	Yes	Yes
Houghto-Safe® 1010	Yes	No	[redacted]	Yes	Yes
1055	Yes	No	[redacted]	Yes	Yes
1120	Yes	No	[redacted]	Yes	Yes
1130	Yes	No	[redacted]	Yes	Yes

Fyrquel® is a registered trademark of Stauffer Chemical Company
Houghto-Safe® is a registered trademark of E.F. Houghton Co.

0107577

NEW COPY (E) SET SAME FACES SAME FORMAT

(Copy "H")

~~Pydraul Selector 1~~

~~Mixing Compatibility~~

Pydraul With Other Pydraul Fluids — 10/93

18L 8/204 205 see style

	60	150-A	[illegible]	F-9-A	625-A
135-A	Yes	Yes	[illegible]	Yes	Yes
230-A	Yes	Yes	[illegible]	Yes	Yes
312-A	Yes	Yes	[illegible]	Yes	Yes
540-B	Yes	Yes	[illegible]	Yes	Yes
60	—	No	[illegible]	Yes	Yes
150-A	No	—	[illegible]	No	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
F-9-A	Yes	No	[illegible]	—	Yes
625-A	Yes	No	Yes	Yes	—

NOTE: All of the reformulated Pydraul fluids are compatible with their older counterpart i.e. 150-A is compatible with 150, ~~[illegible]~~ F-9 A with F-9, etc.

0107578

TOWOLDMON0022481
WATER_PCB-00006950

From the desk of

P. DWAINE FOWLKES

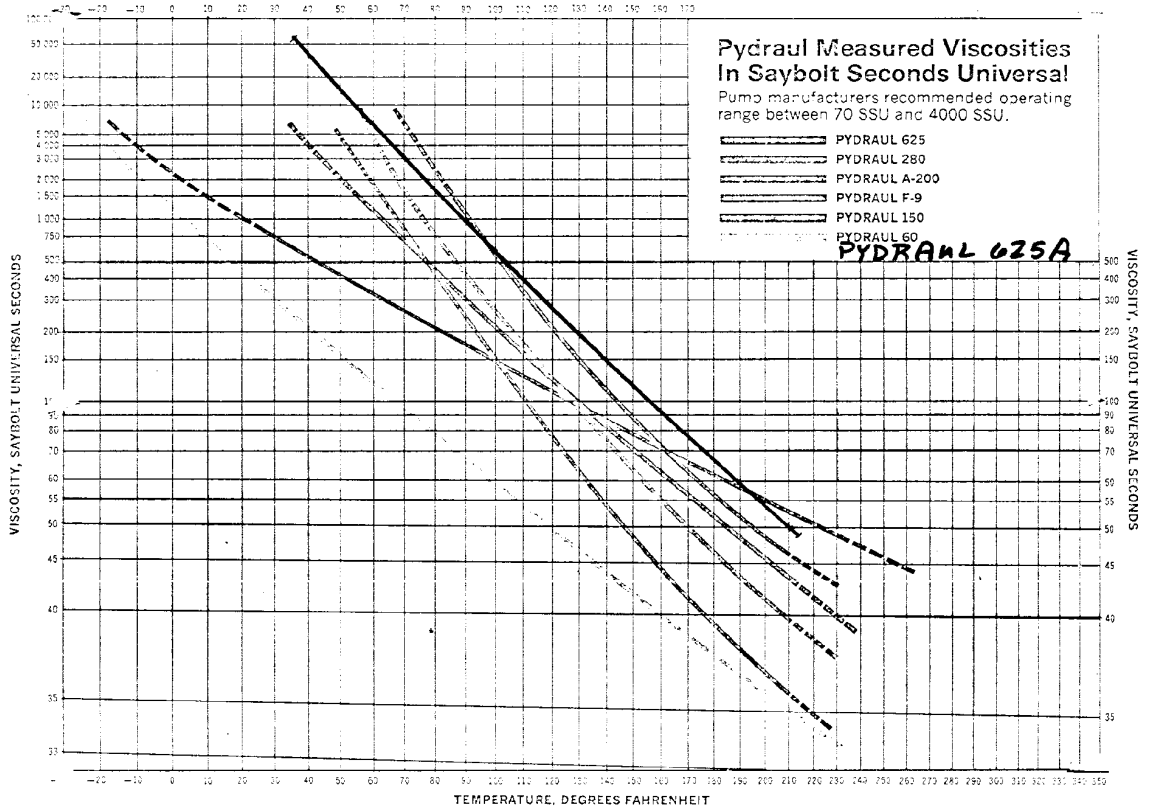
SELECTOR

1

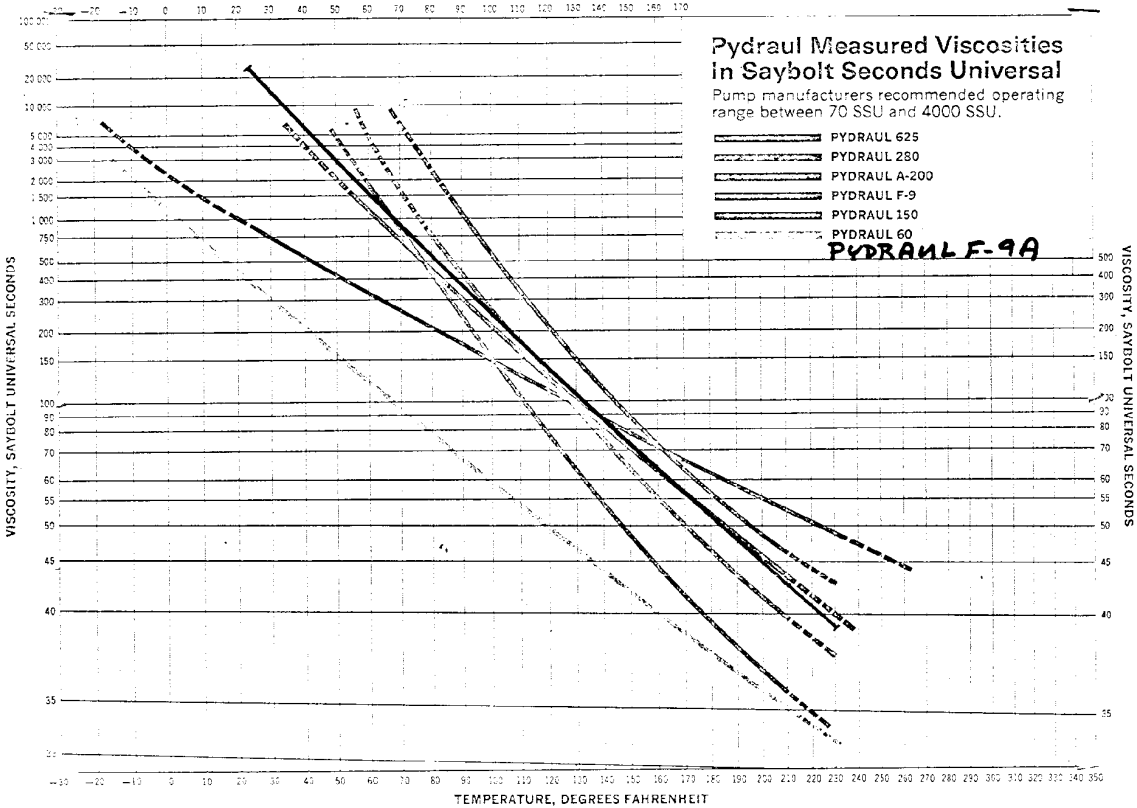
Cs #5541

0107579

TOWOLDMON0022482
WATER_PCB-00006951


Pydraul Measured Viscosities
In Saybolt Seconds Universal
Pump manufacturers recommended operating range between 70 SSU and 4000 SSU.
PYDRAUL 625
PYDRAUL 280
PYDRAUL A-200
PYDRAUL F-9
PYDRAUL 150
PYDRAUL 60
PYDRAUL 625A
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
TEMPERATURE, DEGREES FAHRENHEIT

0107580



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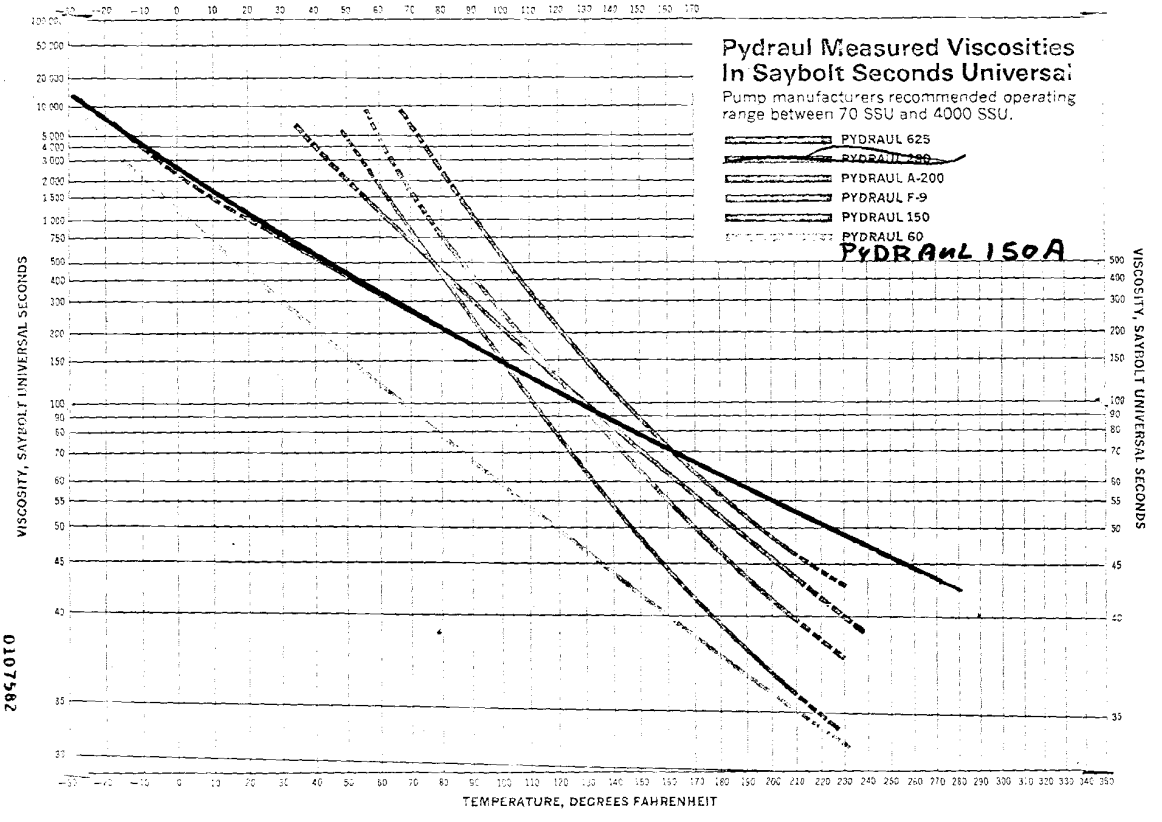
WATER_PCB-00006953



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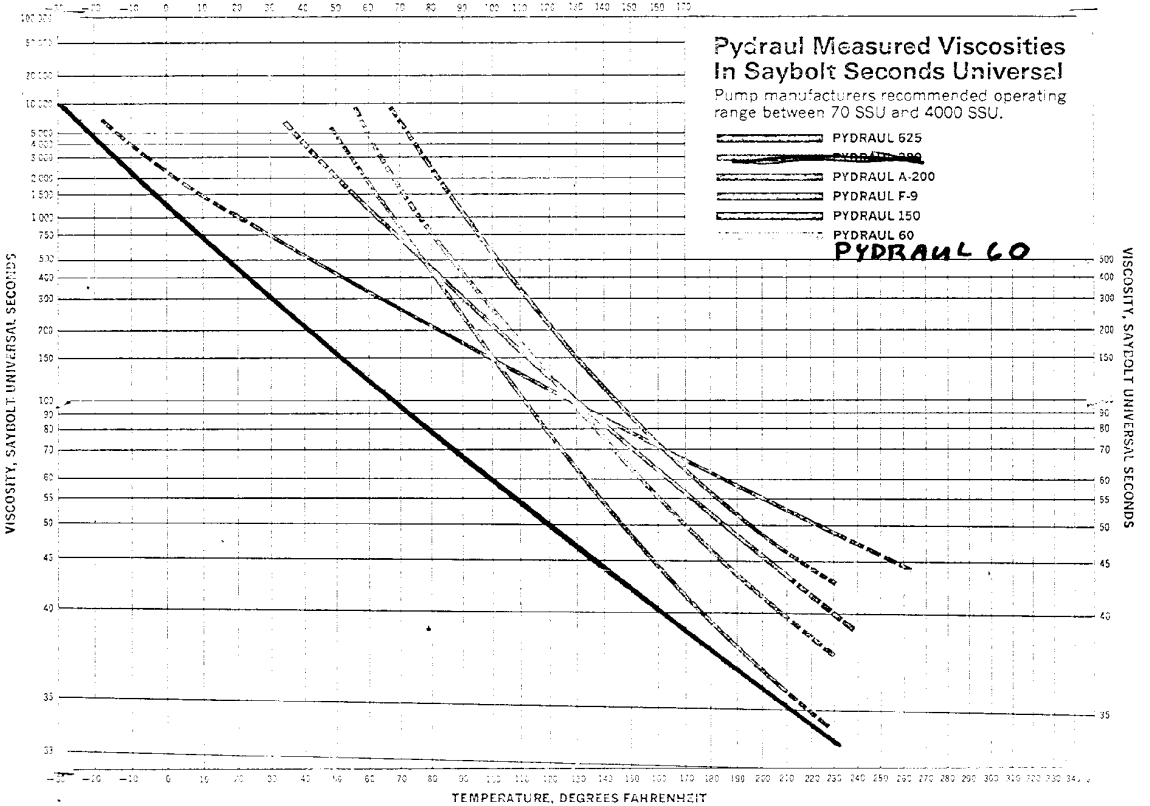
Pydraul Measured Viscosities
In Saybolt Seconds Universal
Pump manufacturers recommended operating range between 70 SSU and 4000 SSU.
PYDRAUL 625
PYDRAUL A-200
PYDRAUL F-9
PYDRAUL 150
PYDRAUL 60
PYDRAUL 60
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
TEMPERATURE, DEGREES FAHRENHEIT

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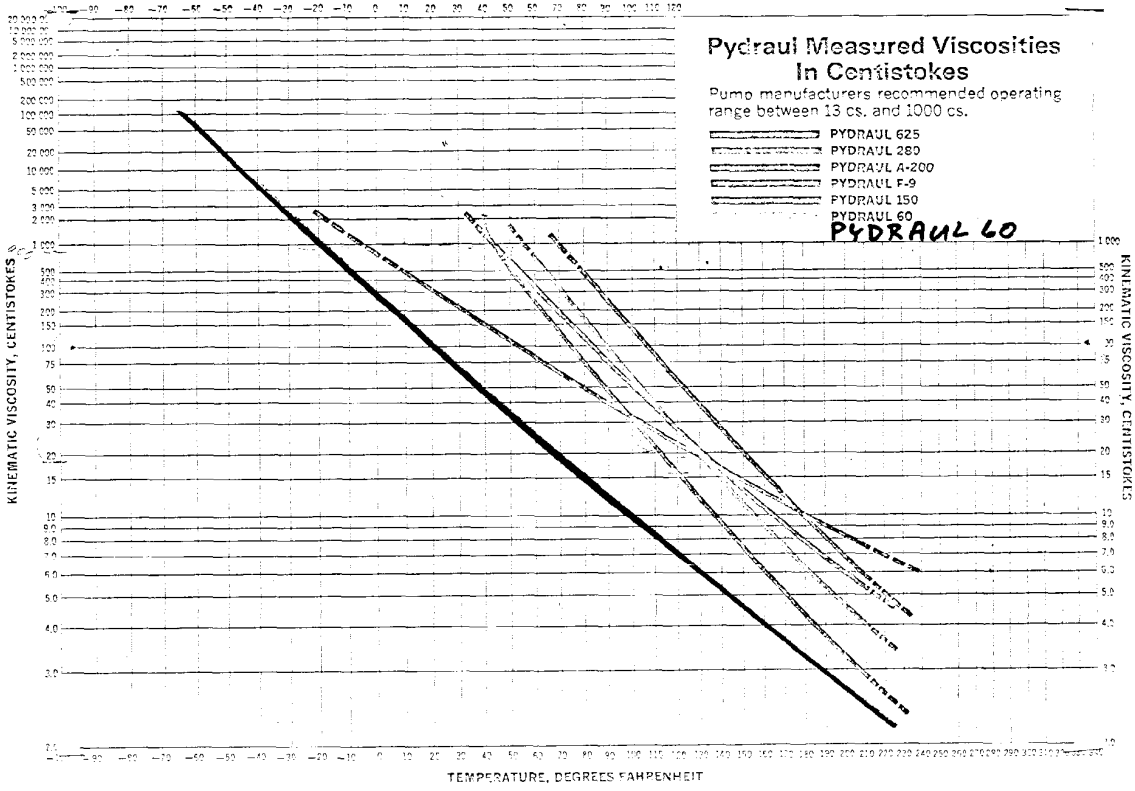

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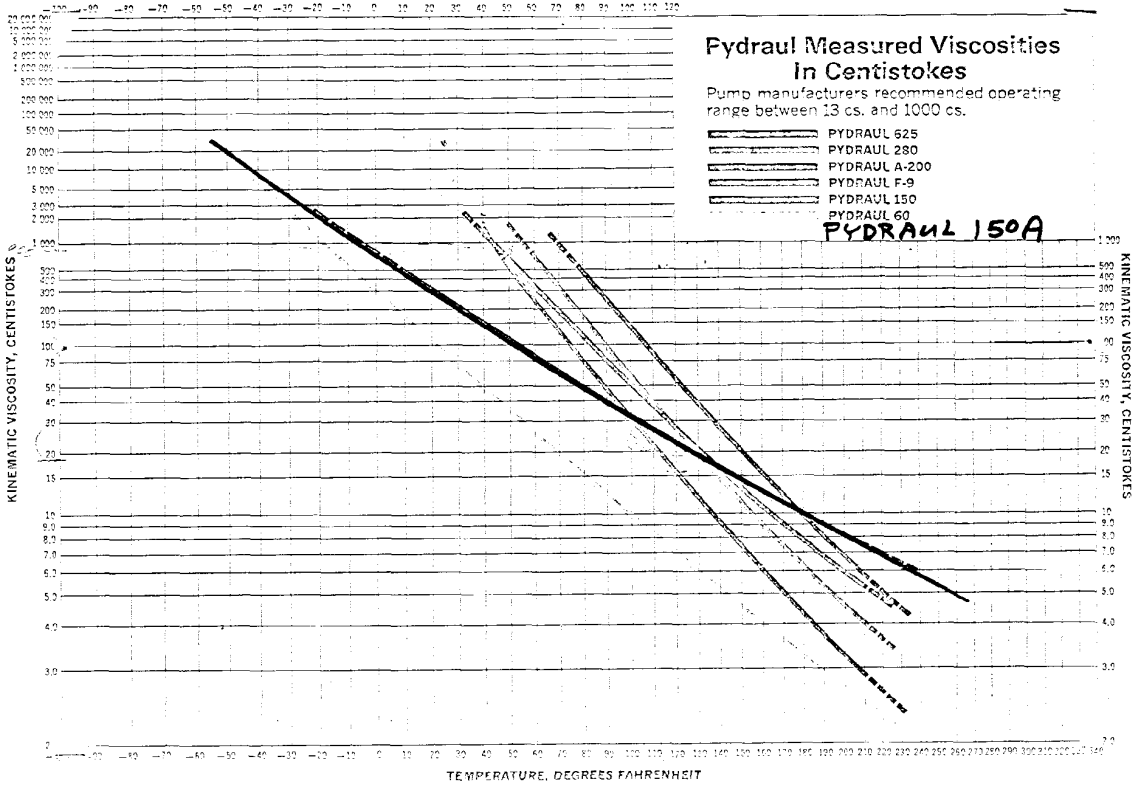
WATER_PCB-00006956



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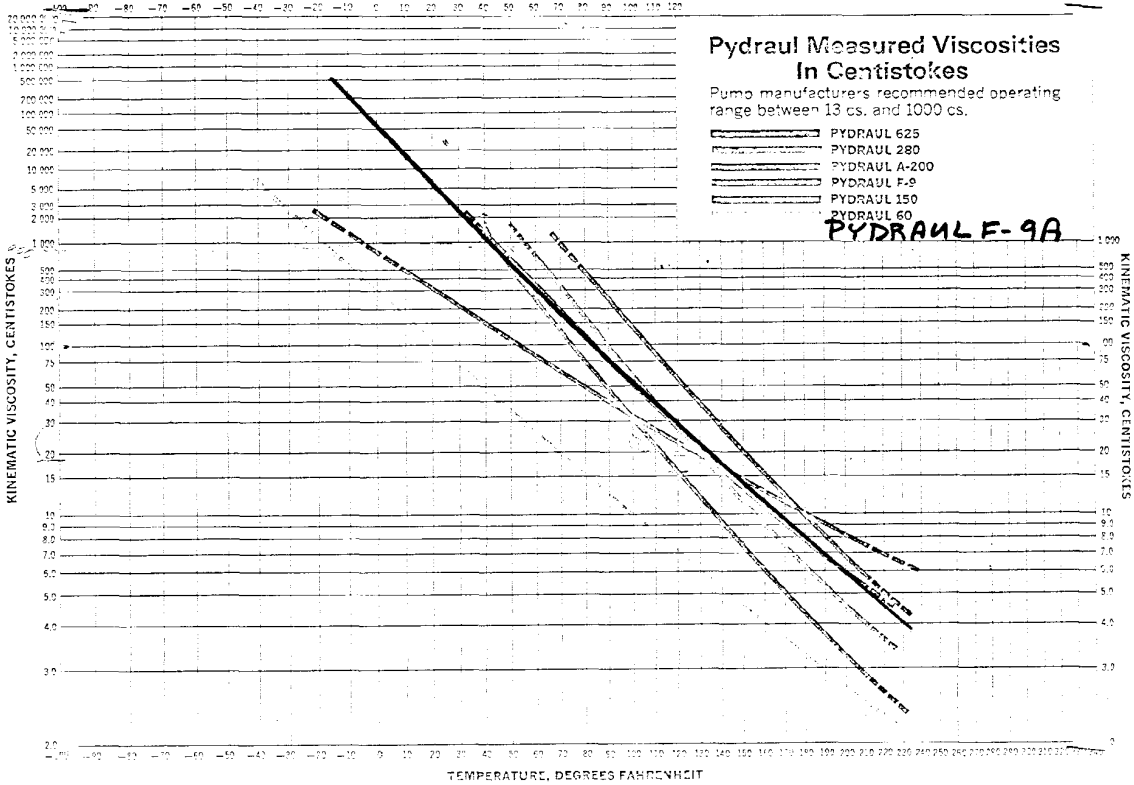
WATER_PCB-00006957



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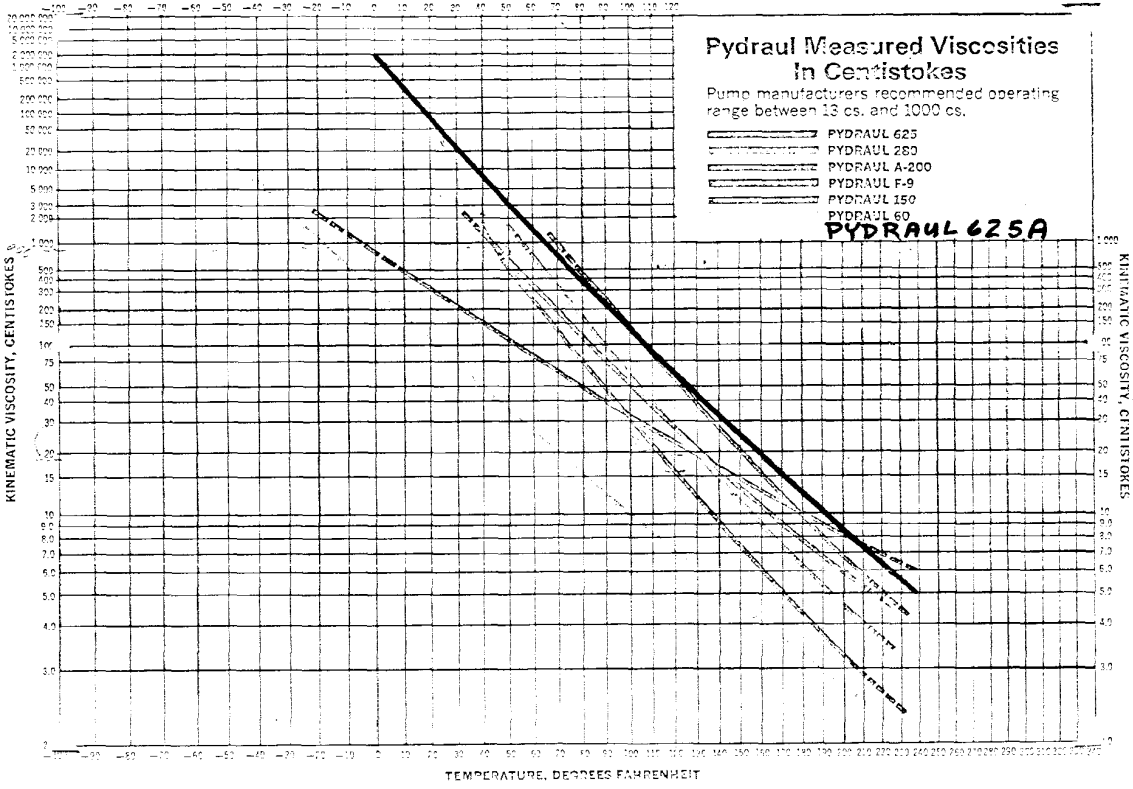

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TOWOLDMON0022490
WATER_PCB-00006959

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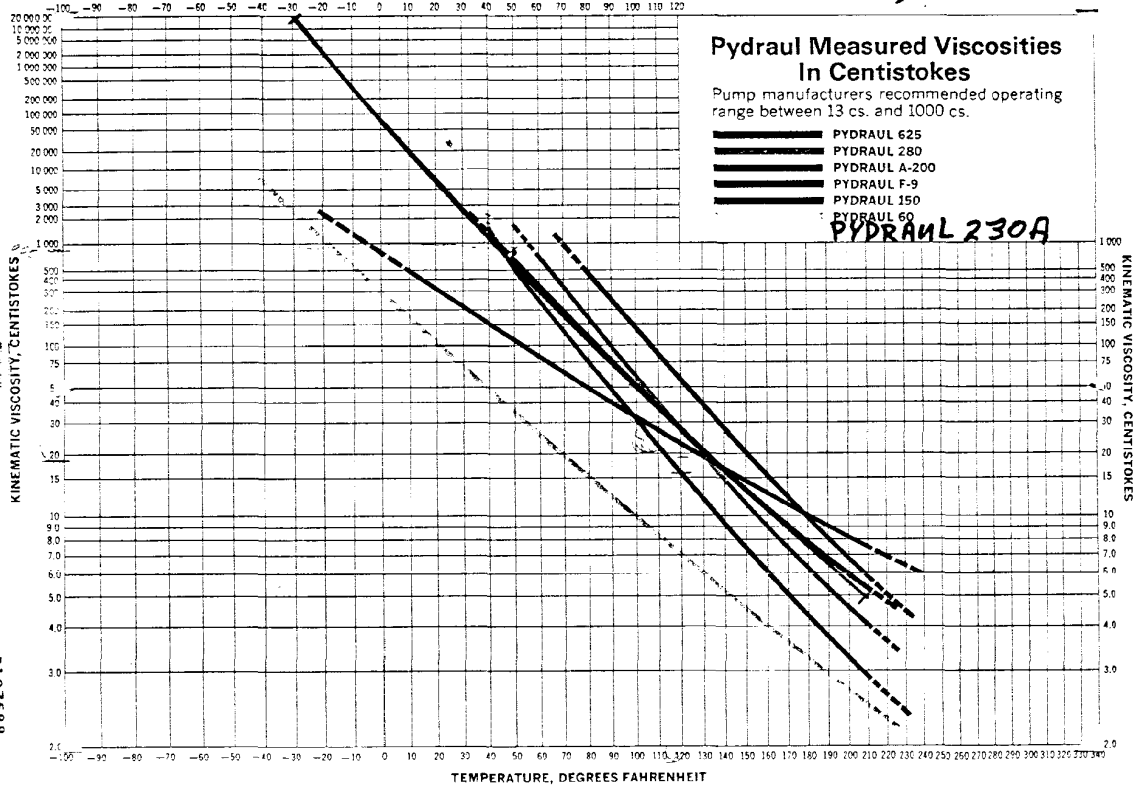

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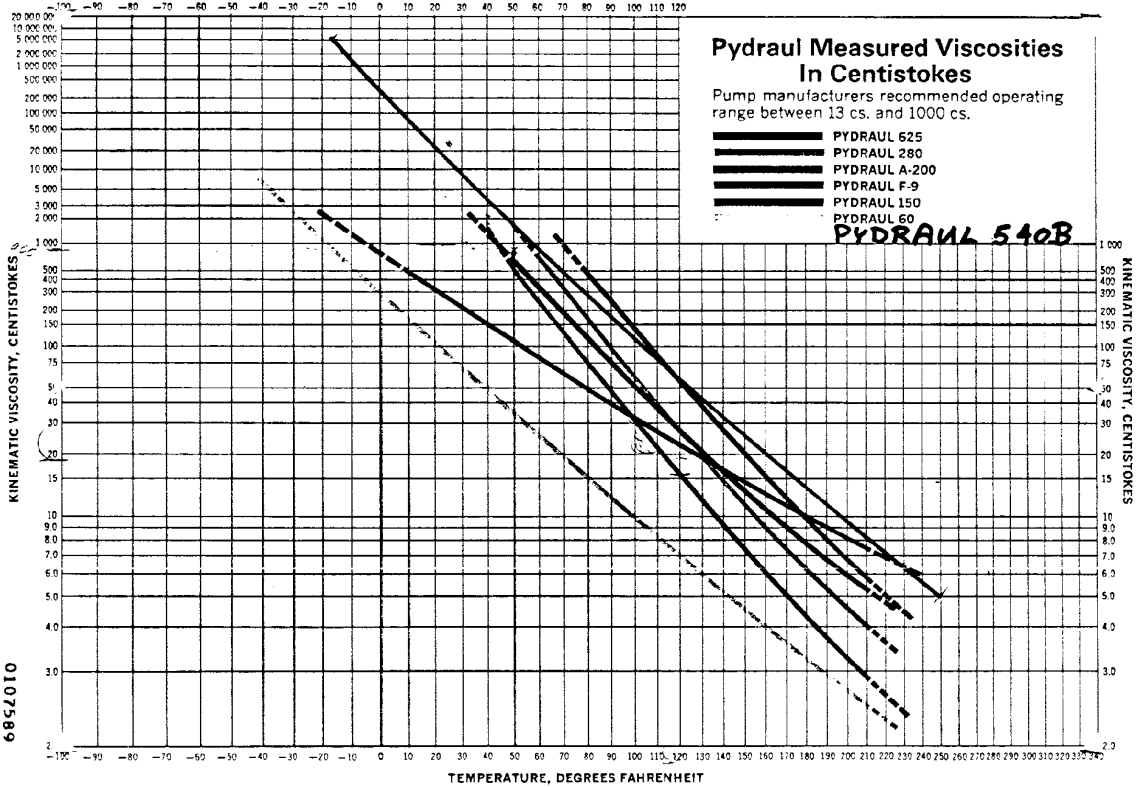
TOWOLDMON0022491
WATER_PCB-00006960



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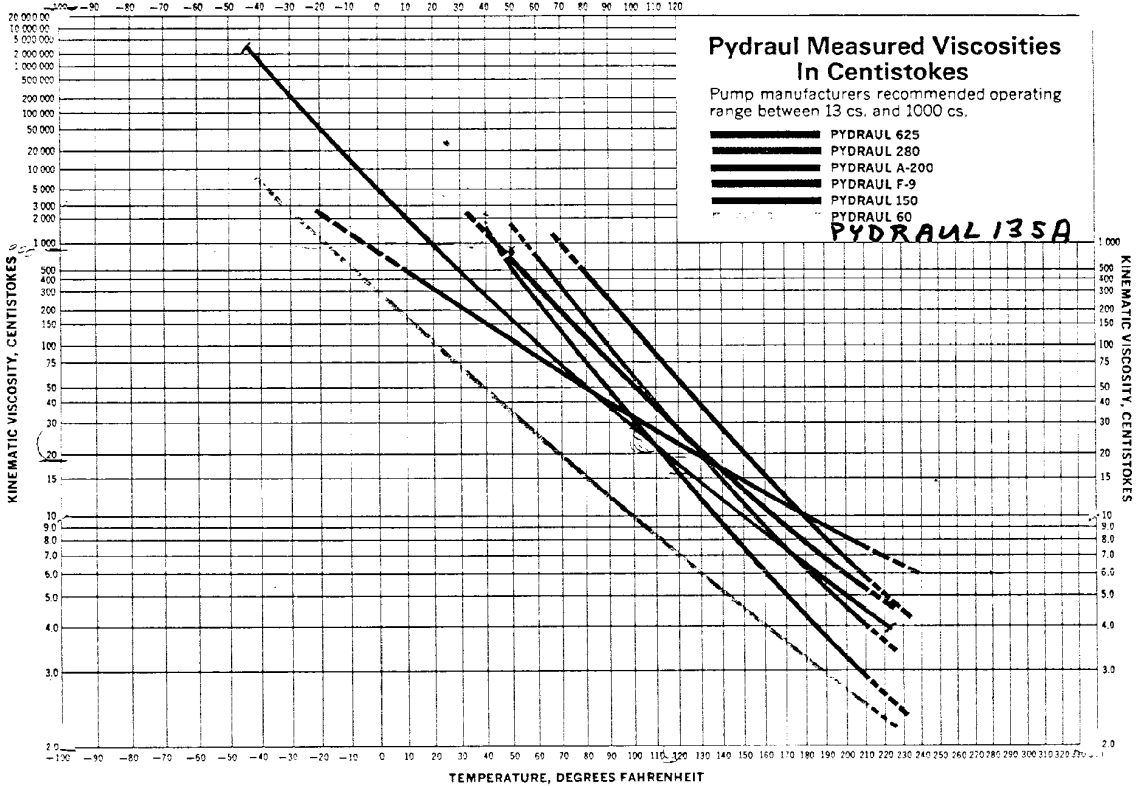
TOWOLDMON0022492
WATER_PCB-00006961



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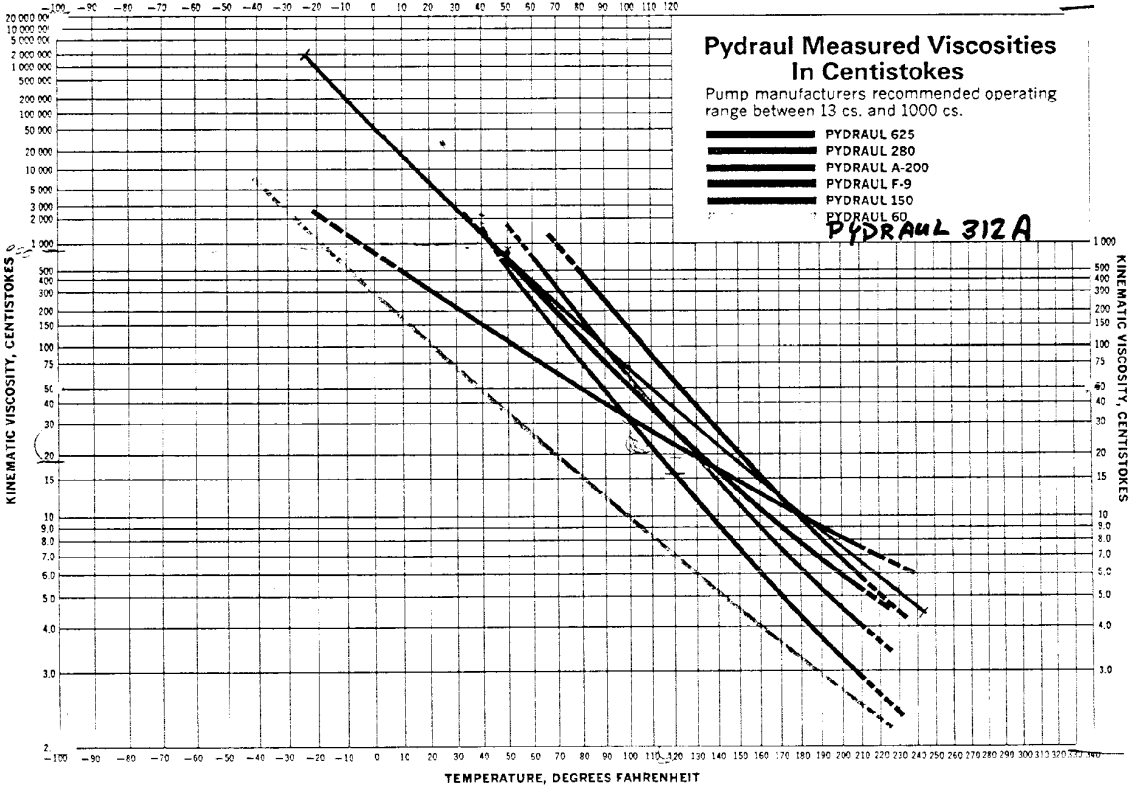
TOWOLDMON0022493
WATER_PCB-00006962



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TOWOLDMON0022494
WATER_PCB-00006963

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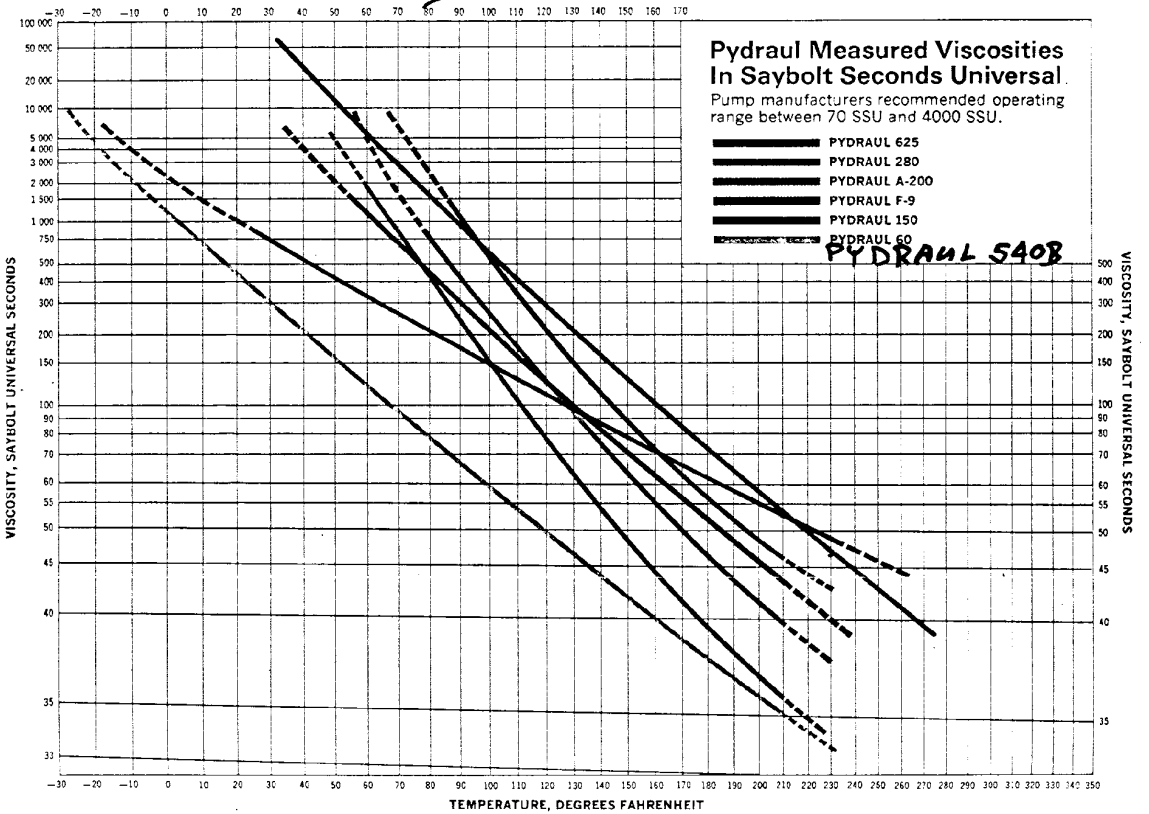
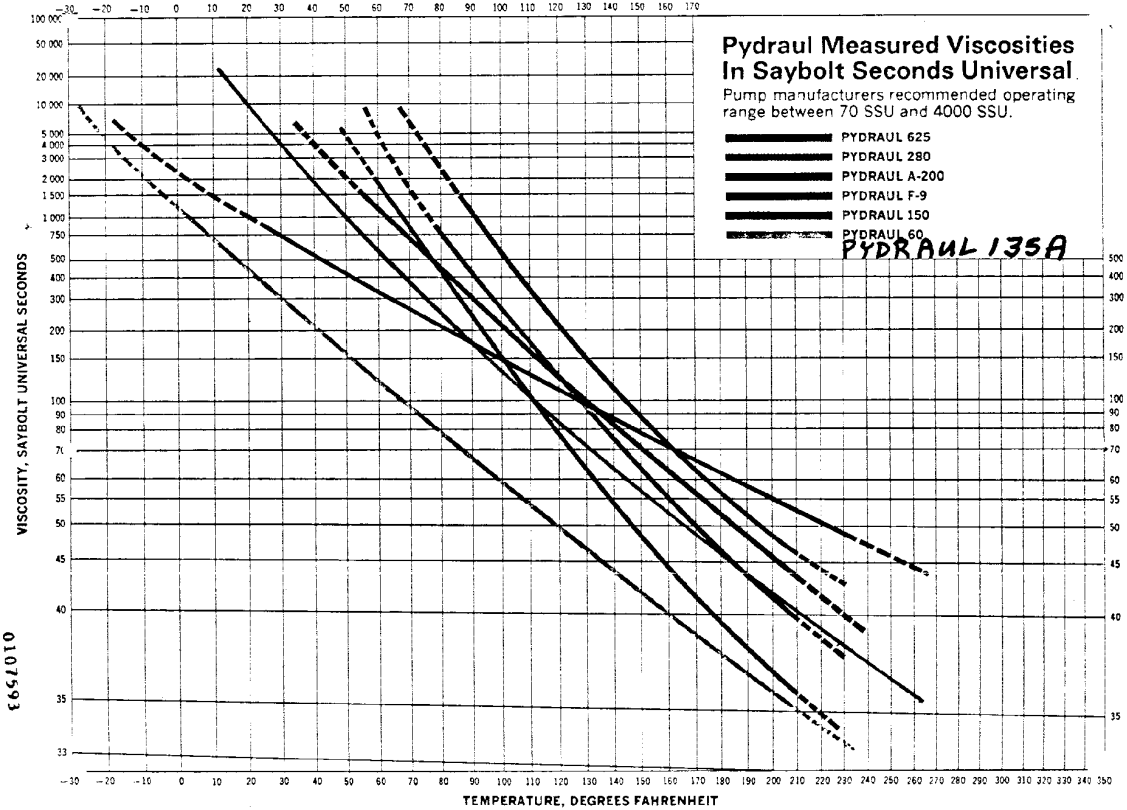


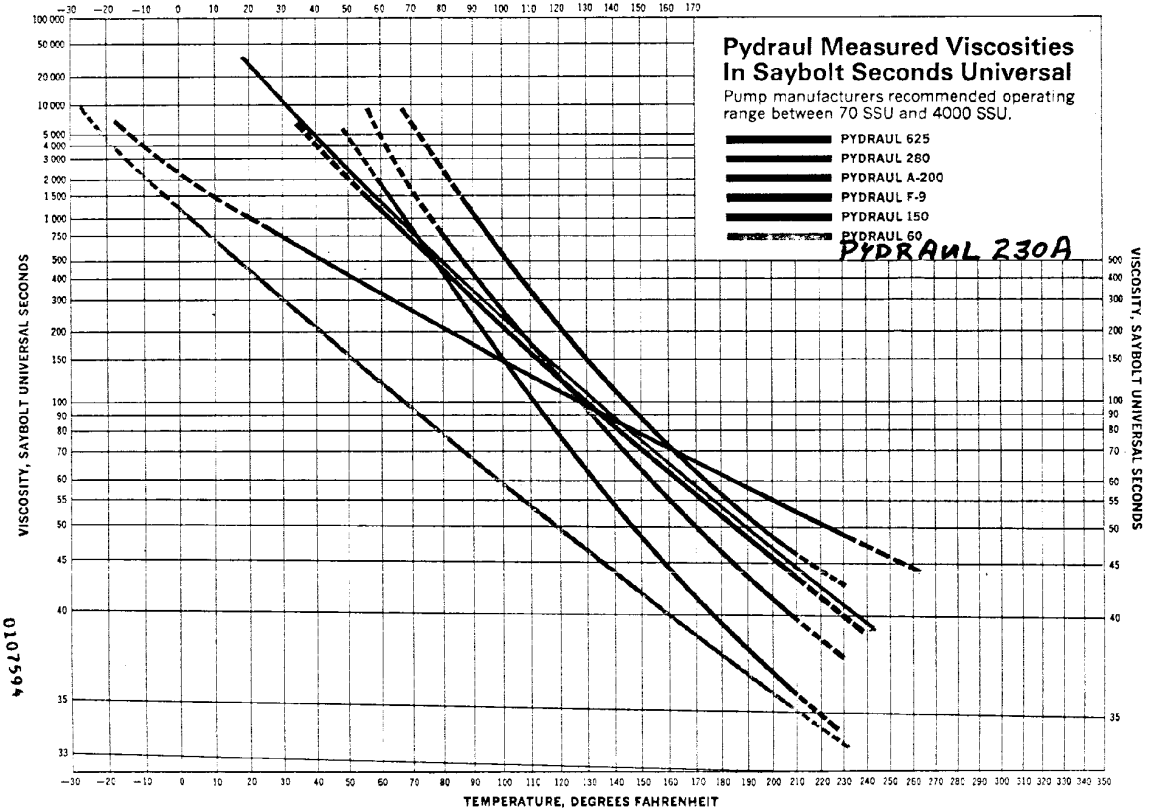
Pydraul Measured Viscosities
In Saybolt Seconds Universal
Pump manufacturers recommended operating range between 70 SSU and 4000 SSU.
PYDRAUL 625
PYDRAUL 280
PYDRAUL A-200
PYDRAUL F-9
PYDRAUL 150
PYDRAUL 60
PYDRAUL 540B
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
TEMPERATURE, DEGREES FAHRENHEIT

0107592

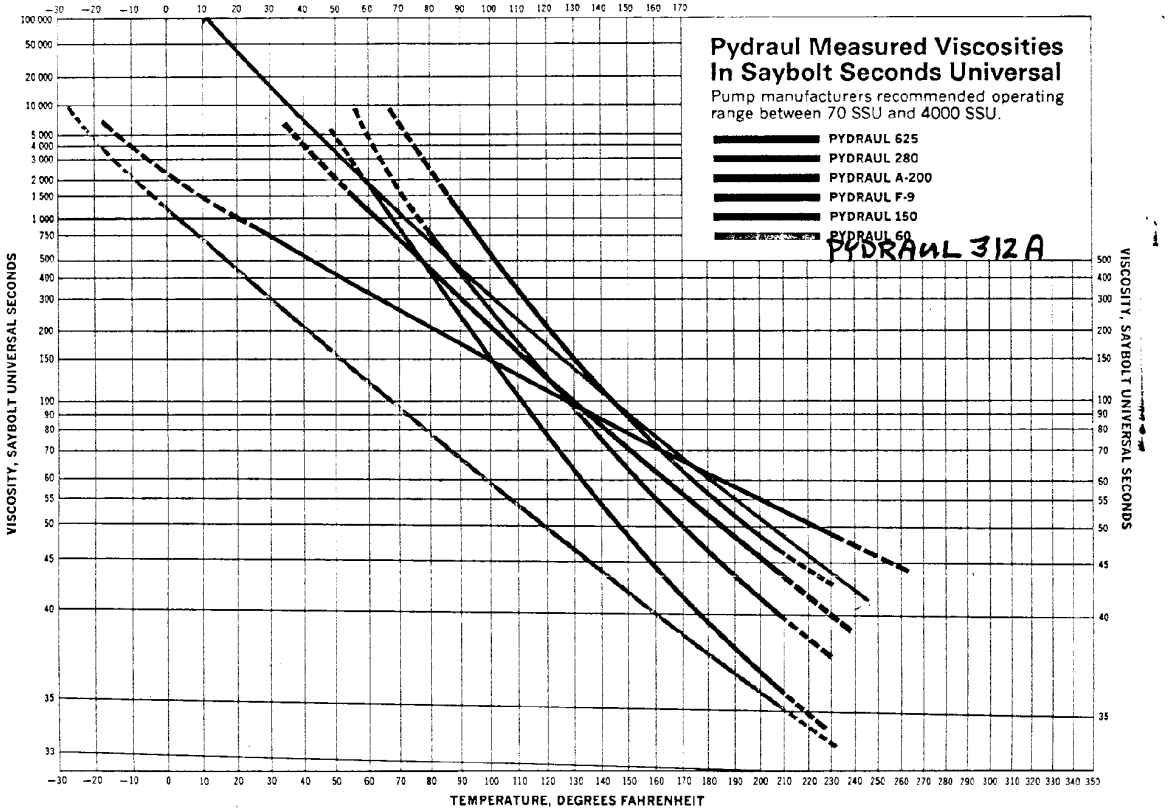


01017593

TOWOLDMON0022496
WATER_PCB-00006965


Pydraul Measured Viscosities
In Saybolt Seconds Universal
Pump manufacturers recommended operating range between 70 SSU and 4000 SSU.
PYDRAUL 625
PYDRAUL 280
PYDRAUL A-200
PYDRAUL F-9
PYDRAUL 150
PYDRAUL 60
PYDRAUL 230A
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
TEMPERATURE, DEGREES FAHRENHEIT

0107594


Pydraul Measured Viscosities
In Saybolt Seconds Universal
Pump manufacturers recommended operating range between 70 SSU and 4000 SSU.
PYDRAUL 625
PYDRAUL 280
PYDRAUL A-200
PYDRAUL F-9
PYDRAUL 150
PYDRAUL 60
PYDRAUL 312A
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
VISCOSITY, SAYBOLT UNIVERSAL SECONDS
TEMPERATURE, DEGREES FAHRENHEIT

4

0107595