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HYCAR AND MYVASEAL PRESSURE - DEFLECTION CHARACTERISTICS

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UNIVERSITY OF
CALIFORNIA

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SUBJECT HYCAR AND MYVASEAL
PRESSURE - DEFLECTION CHARACTERISTICS

NAME Reichhold / Hernandez
DATE May 1951

Tests were made to obtain pressure-deflection data for Myvaseal synthetic rubber. These data provide a basis for estimating the static loads required to deform gaskets of the same cross section and durometer hardness as those tested.

Hycar was used to provide known reference data to check the experimental procedures and to give addition information on Hycar at temperatures of 100 and 200°C and Hysterisis.

TESTING PROCEDURE

All gaskets tested were made from extruded stock.

Two gaskets were tested for each test condition.

Gaskets were compressed between two steel plates. The lower plate contained the gasket grooves when grooves were used.

For the temperature tests both plates were heated. The temperature were measured with thermocouples with the junction inserted under the gasket.

All loads were recorded after 30 seconds at each deflection.

TEST OBSERVATIONS

1. Very little cold flow occurs after the first minute.
2. It is believed that the unlubricated groove tests more nearly approximate actual continuous gasket conditions since lubrication caused elongation of the specimen and lower loads at given deflections.
3. Myvaseal showed a marked increase in permanent deformation at 100° and 150°C with complete failure at 200°C.
4. Hycar showed a slight permanent deformation and some splitting at 200°C.
5. The pressure-deflection characteristics of the extruded Myvaseal may be slightly lower than those out from sheet stock.
6. At 200°C the Myvaseal swelled to about three times normal size and was very soft and cracked. Myvaseal could not be tested at this temperature.
7. Hycar at 200°C showed good gasket pressure-deflection characteristics, but no life tests were performed.

nw

PRESSURE-DEFLECTION CURVES
FOR HYCAR

- NOMINAL $\frac{3}{8} \times \frac{3}{8}$ HYCAR GASKET
LENGTH = 8.44 IN.
UNLUBRICATED
- NOMINAL $\frac{3}{8} \times \frac{3}{8}$ HYCAR GASKET
LENGTH = 8.30 IN.
LUBRICATED - APIEZON L

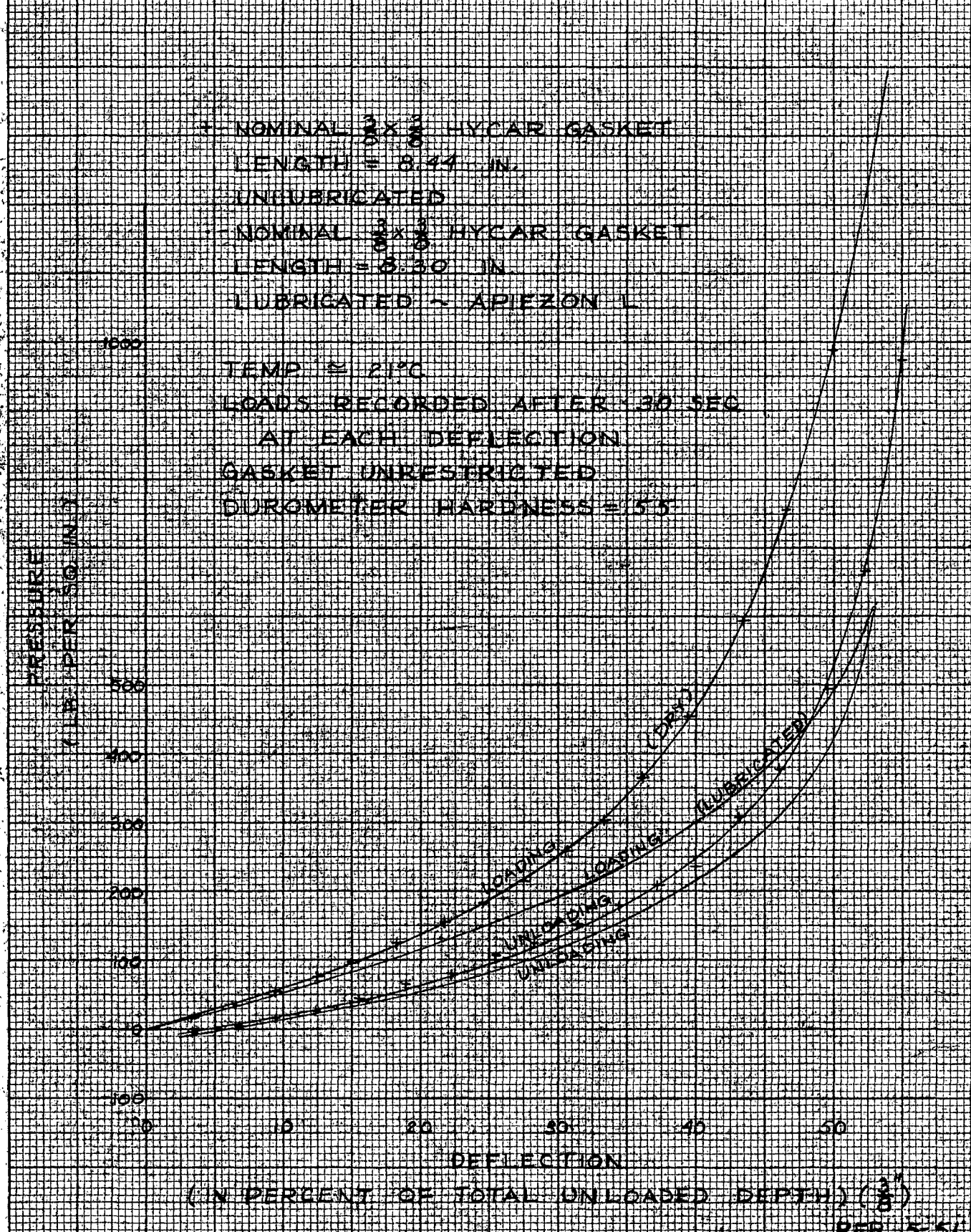
TEMP $\approx 21^{\circ}\text{C}$
 LOADS RECORDED AFTER 30 SEC
 AT EACH DEFLECTION
 GASKET UNRESTRICTED
 DUROMETER HARDNESS ≈ 75.5

PRESSURE
(LBS. PER SQ. IN.)

1000
500
400
300
200
100
100
50

DEFLECTION

(IN PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{3}{8}$)



KEUFFEL & ESSER CO.
 389 1/2
 10 X 10 to the 1/4 inch 5/16 lines accuracy
 MADE IN U.S.A.

PRESSURE - DEFLECTION CURVES
FOR MYVASEAL

- NOMINAL $\frac{3}{8} \times \frac{3}{8}$ MYVASEAL GASKET
 LENGTH = 8.89 IN.
 UNLUBRICATED

- NOMINAL $\frac{3}{8} \times \frac{3}{8}$ MYVASEAL GASKET
 LENGTH = 6.86 IN.
 LUBRICATED - APIEZON L

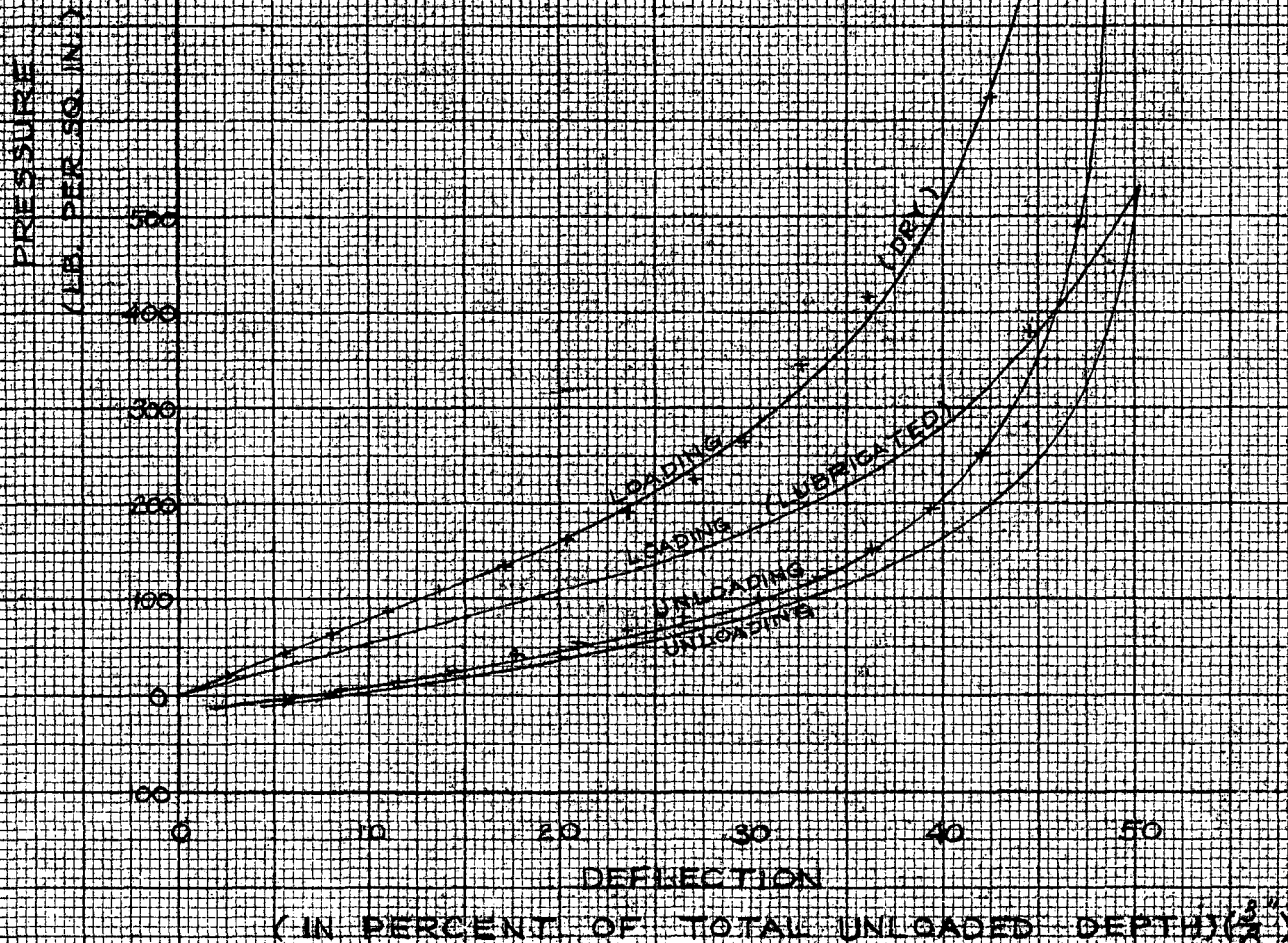
TEMP. $\approx 21^\circ\text{C}$

LOADS RECORDED AFTER 30 SEC.

AT EACH DEFLECTION

GASKET UNRESTRICTED

DUROMETER HARDNESS = 55



(IN PERCENT OF TOTAL UNLOADED DEPTH) $\left(\frac{3}{8}\right)$

REF. 15-

359-116 KEUFFEL & ESSER CO.
 10 X 10 to the 1/2 inch, 5th lines accented.
 MADE IN U.S.A.

PRESSURE - DEFLECTION CURVES
FOR MYVASEAL

NOMINAL $\frac{9}{16} \times \frac{3}{8}$ MYVASEAL GASKET
LENGTH = 8.35 IN.
UNLUBRICATED

NOMINAL $\frac{9}{16} \times \frac{3}{8}$ MYVASEAL GASKET
LENGTH = 8.43 IN.
LUBRICATED - APIEZON L

1000

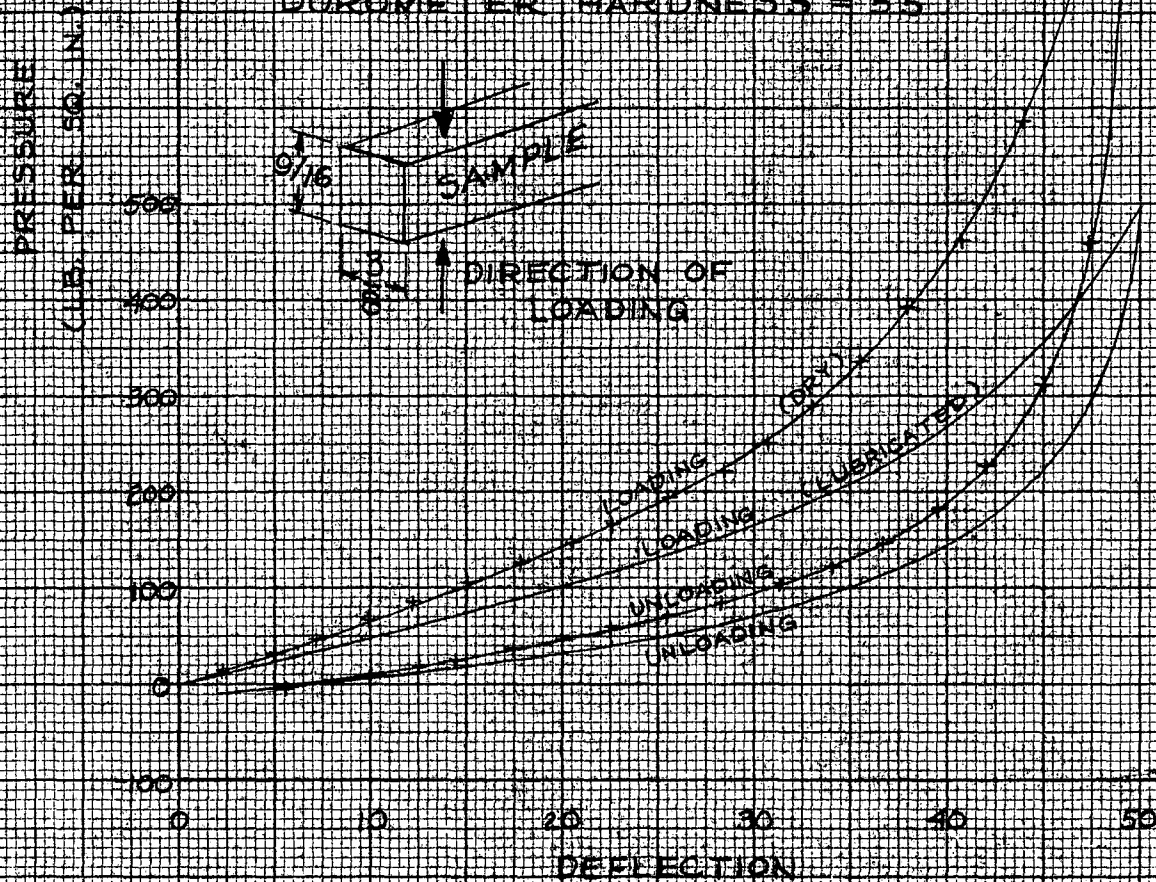
TEMP $\approx 21^{\circ}\text{C}$

LOADS RECORDED AFTER 30 SEC.

AT EACH DEFLECTION

GASKET UNRESTRICTED

DUROMETER HARDNESS = 55

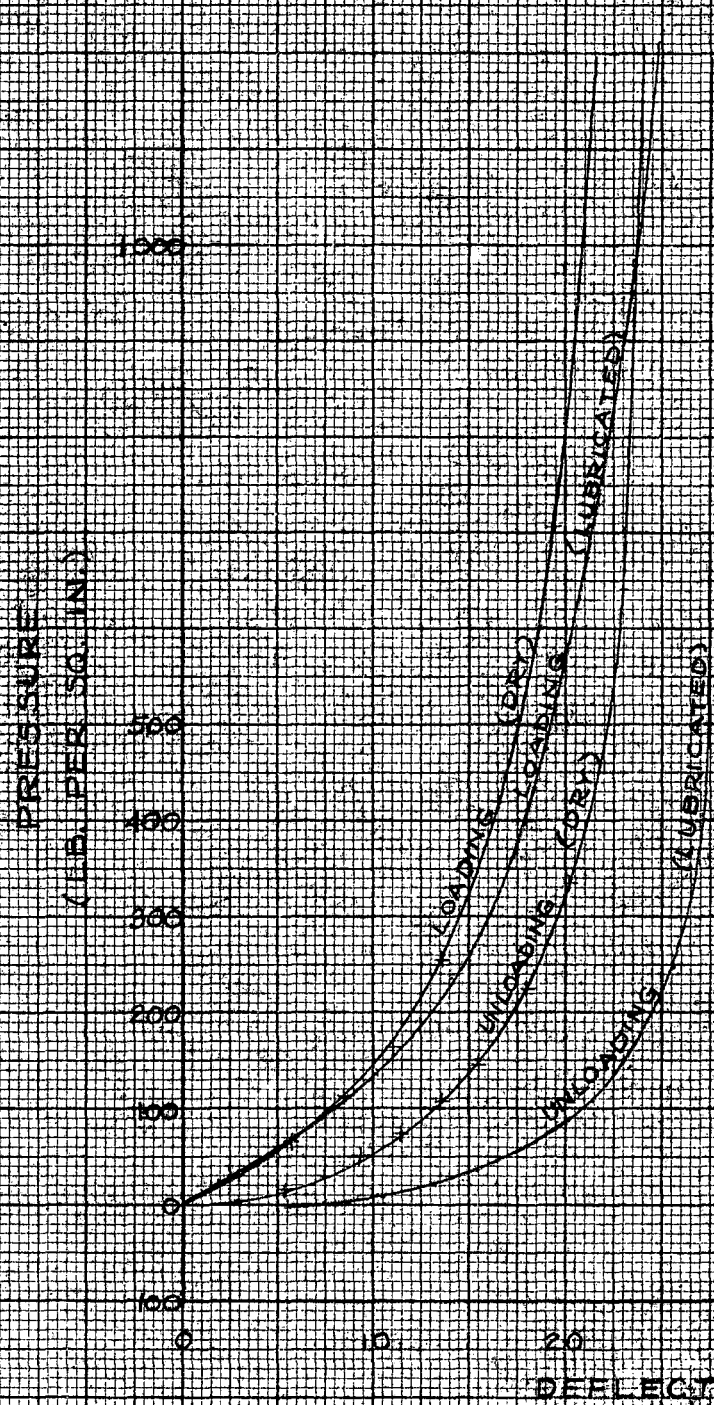


(IN PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{9}{16}$)

REF 5-51

359-116 KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th series acetate
MADE IN U. S. A.

PRESSURE-DEFLECTION CURVES
FOR HYCAR



NOMINAL $\frac{3}{8} \times \frac{3}{8}$ HYCAR GASKET
 LENGTH = 8.43 IN.
 UNLUBRICATED

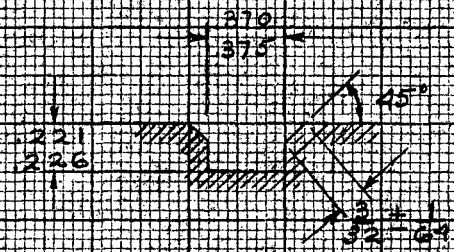
NOMINAL $\frac{3}{8} \times \frac{3}{8}$ HYCAR GASKET
 LENGTH = 8.34 IN.
 LUBRICATED -
 APIEZON L

TEMP = 21°C

LOADS RECORDED
 AFTER 30 SEC. AT
 EACH DEFLECTION

DUROMETER
 HARDNESS = 55

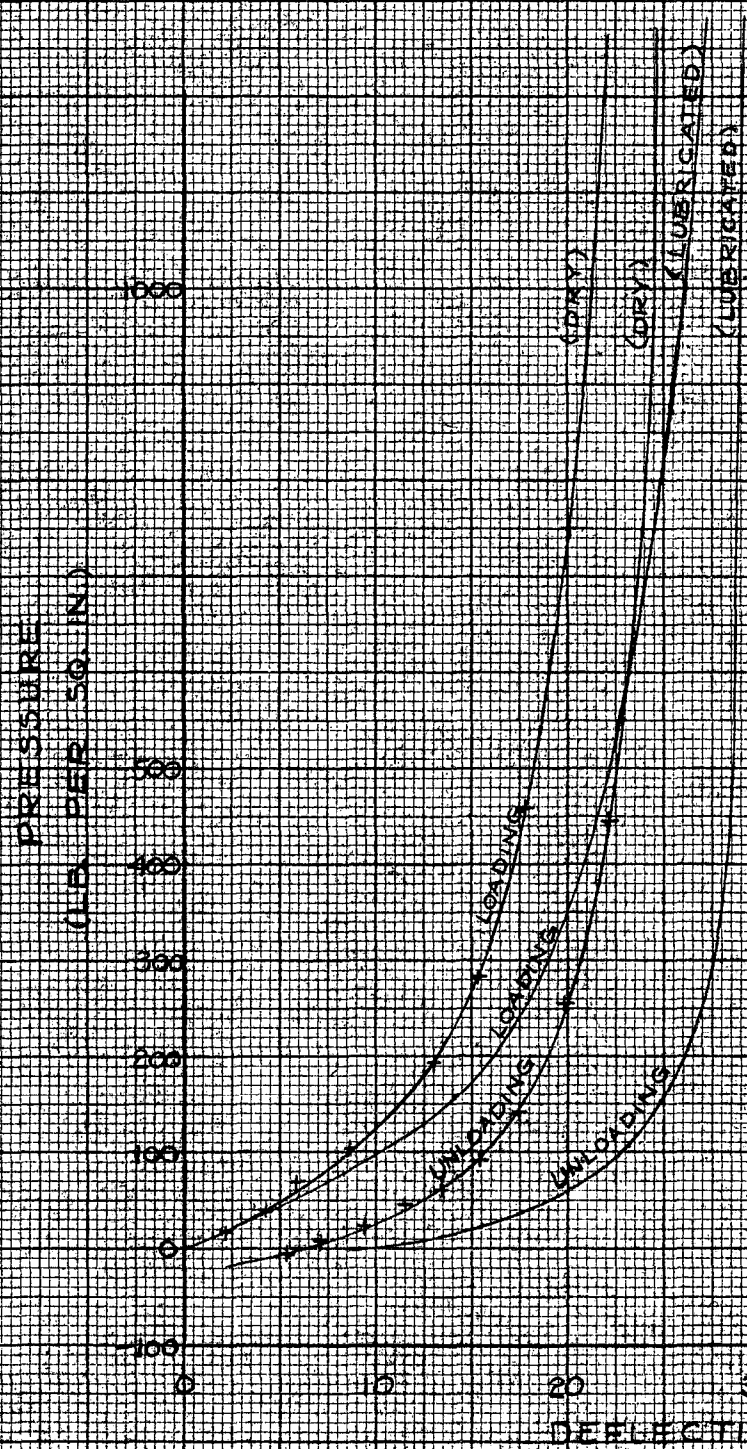
GASKET IN REGULAR
 STANDARD GROOVE



889-116 KEUFFEL & ESSER CO.
 -10 X 10 to the 1/16 inch, 5th lines accented.
 MADE IN U. S. A.

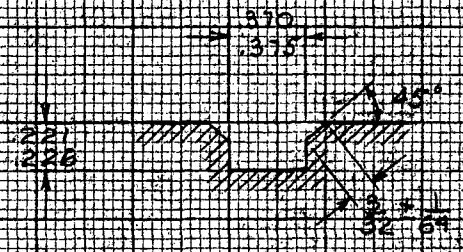
(IN. PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{3}{8}$)

PRESSURE-DEFLECTION CURVES
FOR MYVASEAL



--- NOMINAL $\frac{3}{8} \times \frac{5}{8}$ MYVA-
SEAL GASKET
LENGTH = 8.37 IN.
UNLUBRICATED
--- NOMINAL $\frac{3}{8} \times \frac{5}{8}$ MYVA-
SEAL GASKET
LENGTH = 8.46 IN.
LUBRICATED -
APIEZON L

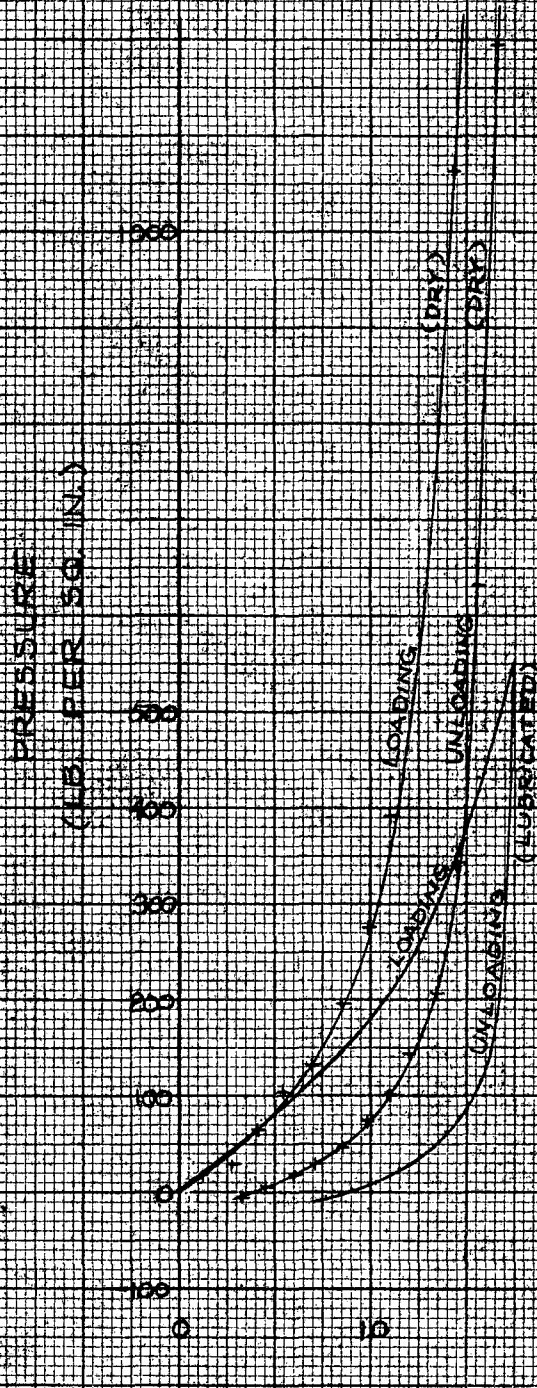
TEMP $\approx 21^{\circ}\text{C}$
LOADS RECORDED
AFTER 30 SEC. AT
EACH DEFLECTION
DUROMETER
HARDNESS = 55
GASKET IN REGULAR
STANDARD GROOVE



(IN PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{1}{8}$)

99-11C KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th lines accentuated.
MADE IN U.S.A.

PRESSURE-DEFLECTION CURVES FOR MYVASEAL



NOMINAL $\frac{9}{16} \times \frac{3}{8}$ MYVASEAL GASKET

LENGTH = 8.34 IN.

UNLUBRICATED

NOMINAL $\frac{9}{16} \times \frac{3}{8}$ MYVASEAL GASKET

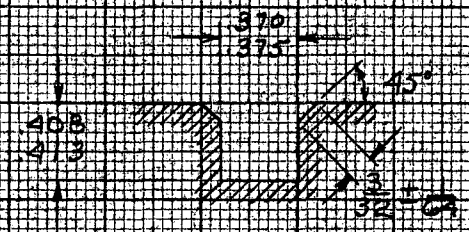
LENGTH = 8.47 IN.

LUBRICATED - APIEZON L

TEMP 21°C

LOADS RECORDED AFTER 30 SEC. AT EACH DEFLECTION

DUROMETER HARDNESS = 55
GASKET IN REGULAR STANDARD GROOVE



(IN PERCENT OF TOTAL UNLOADED DEPTH) (%)

REF. 5-51

369-11G KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th lines accepted.
MADE IN U. S. A.

PRESSURE - DEFLECTION HYSTERESIS
CURVE FOR HYCAR

NOMINAL $\frac{3}{8} \times \frac{3}{8}$ HYCAR GASKET

LENGTH = 8.45 IN.

UNLUBRICATED

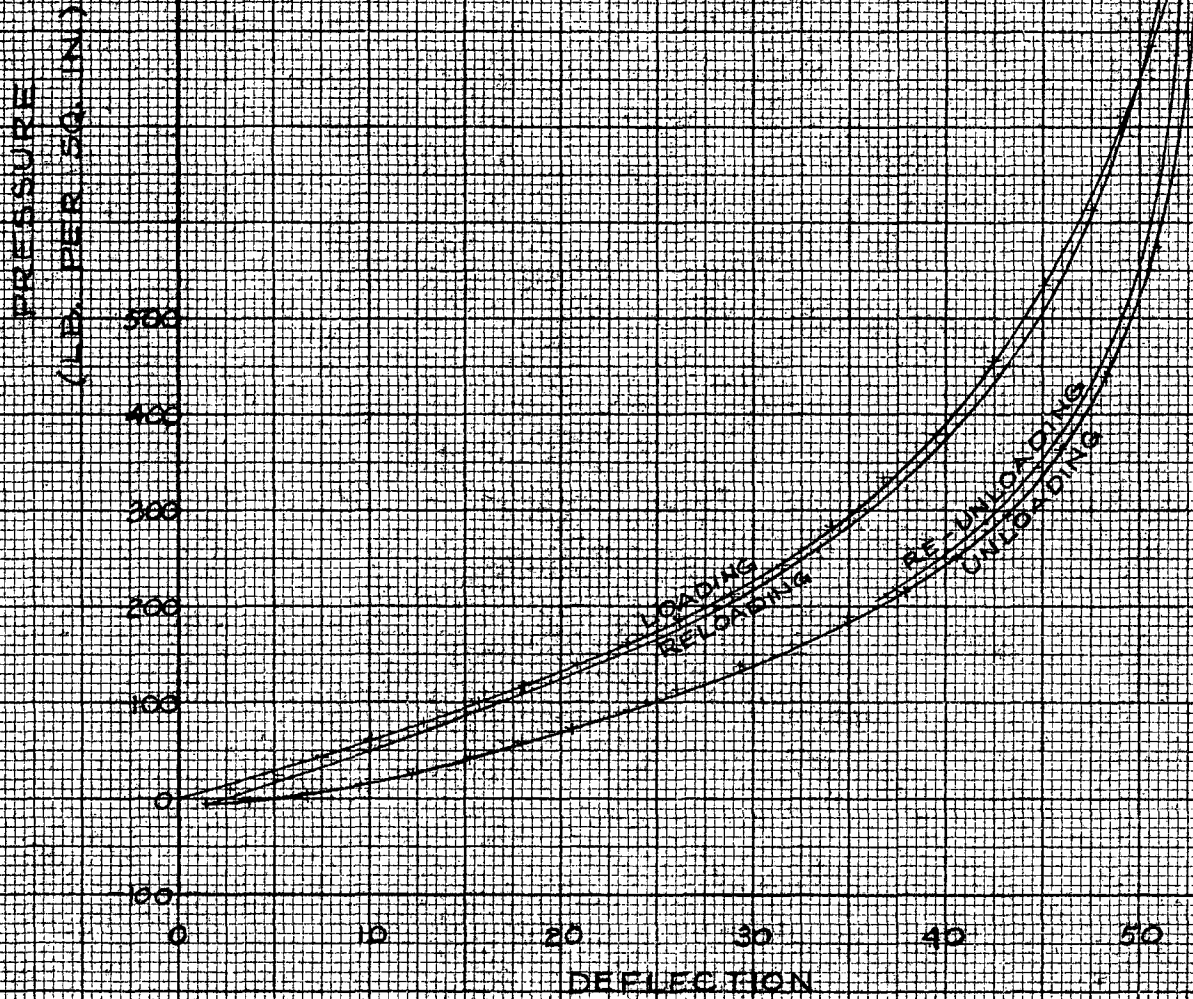
UNRESTRICTED

DUROMETER HARDNESS = 55

TEMP $\approx 21^\circ\text{C}$

LOADS RECORDED AFTER

30 SEC. AT EACH DEFLECTION

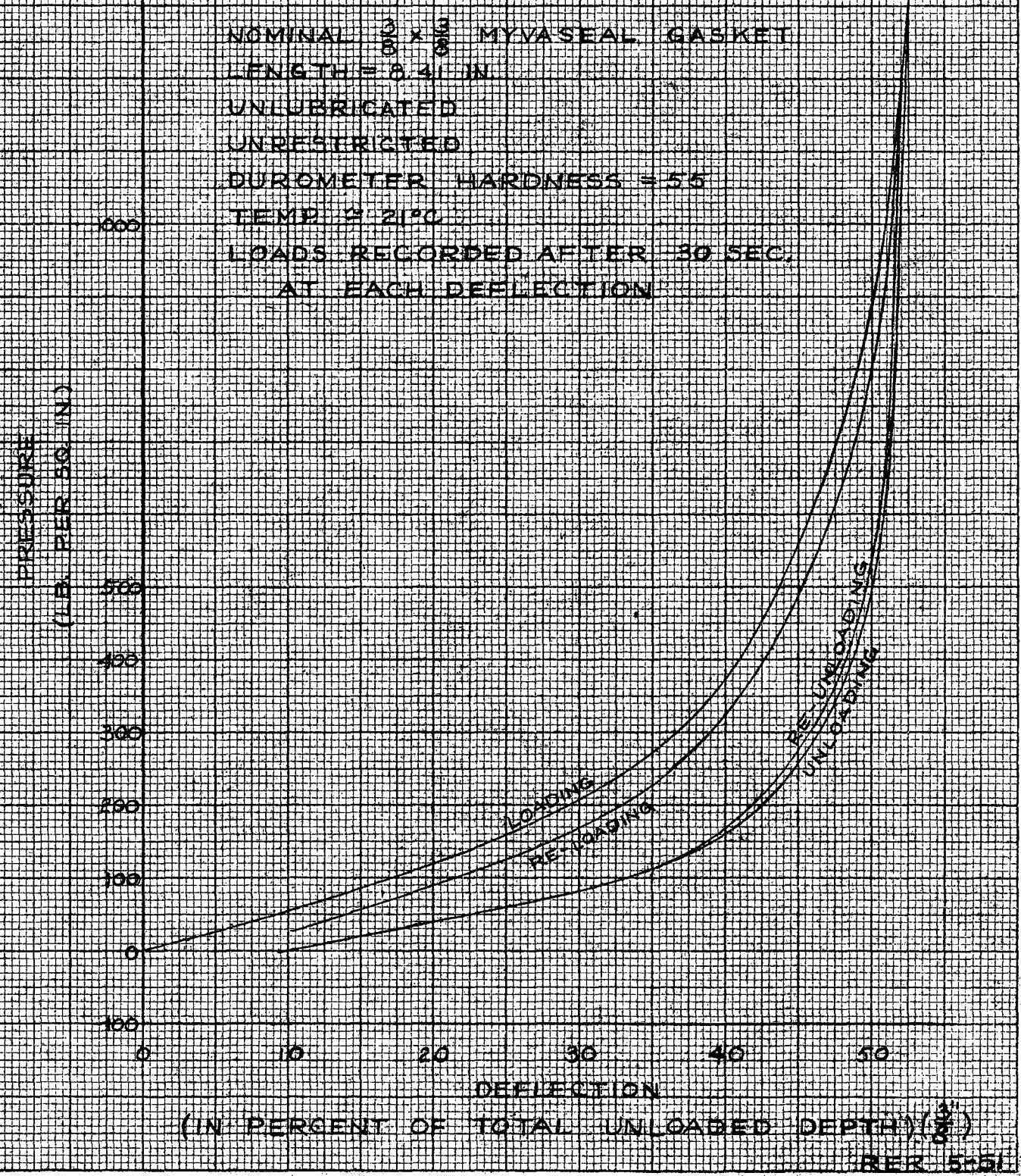


(IN PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{3}{8}$)

REF. 5-51

PRESSURE-DEFLECTION HYSTERESIS
CURVE FOR MYVASEAL

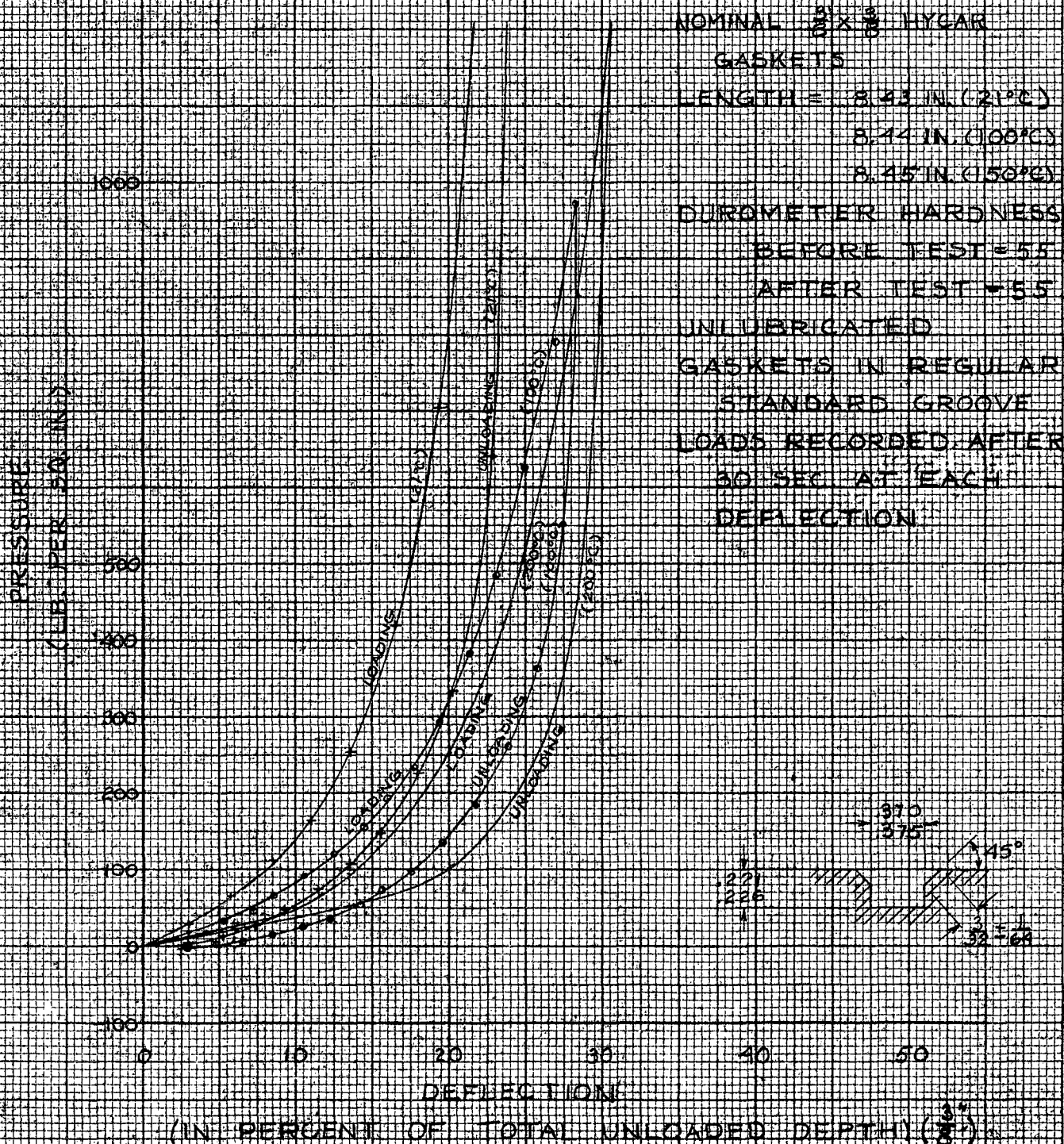
NOMINAL $\frac{3}{8} \times \frac{3}{8}$ MYVASEAL GASKET
LENGTH = 8.41 IN.
UNLUBRICATED
UNRESTRICTED
DUROMETER HARDNESS = 55
TEMP = 21°C
LOADS RECORDED AFTER 30 SEC.
AT EACH DEFLECTION



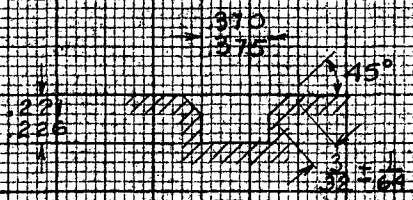
39-116
KEUFFEL & ESSER CO.
10 X 10 to the 1/2 inch, 5th lines accented.
MADE IN U.S.A.

REF 501

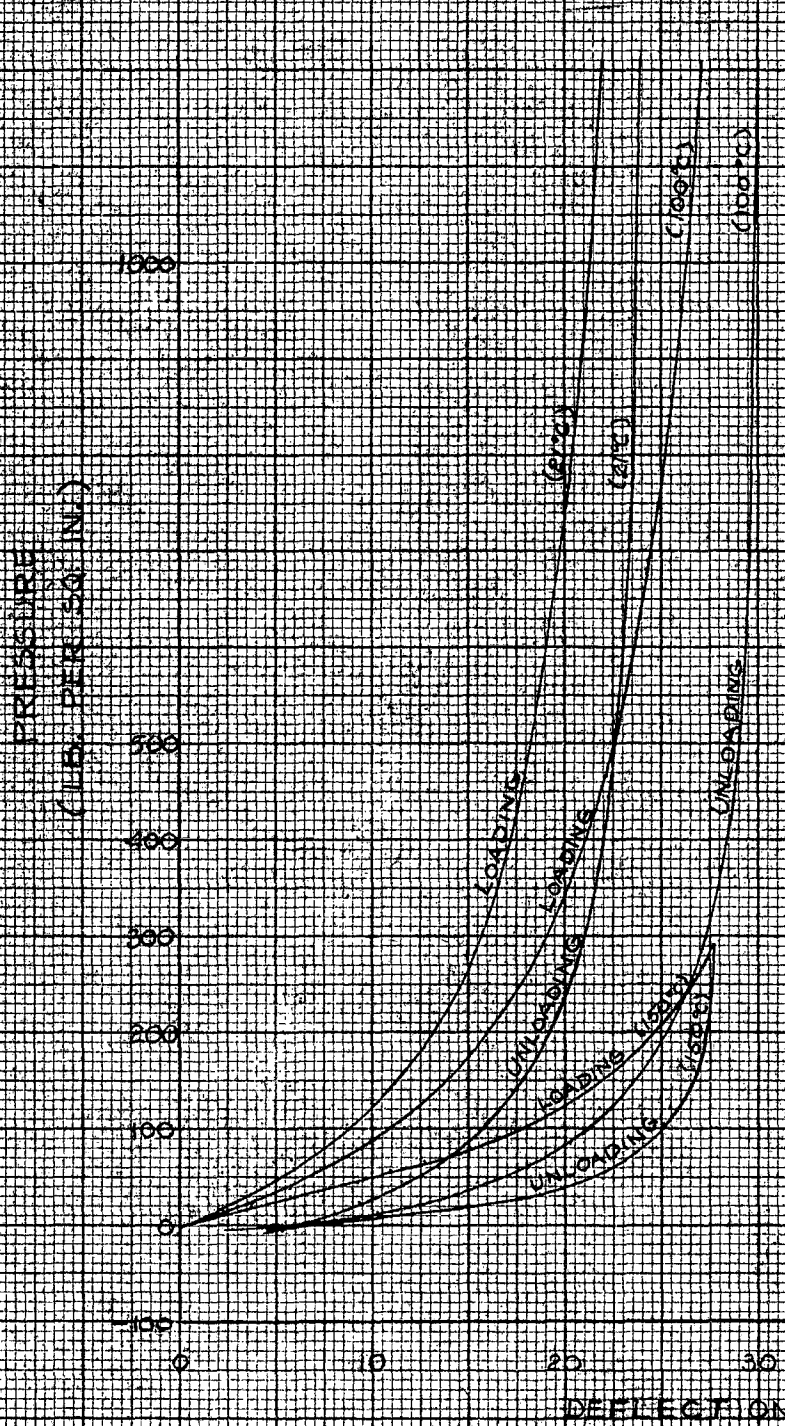
PRESSURE-DEFLECTION CURVES AT VARIOUS TEMPERATURES FOR NYCAR



U.S. Pat. 2,488,416 - Reichhold & Kessell Co.
10 X 10 to the 1/2 inch, 5th lines recessed.
MADE IN U.S.A.



PRESSURE - DEFLECTION CURVES
 AT VARIOUS TEMPERATURES
 FOR MYVASEAL

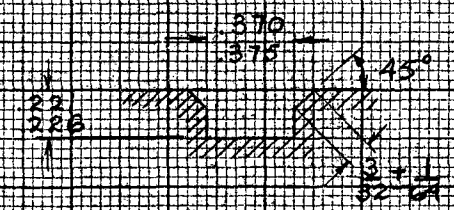


NOMINAL $\frac{3}{8} \times \frac{3}{8}$ MYVASEAL
 GASKETS
 LENGTH \approx (2°C) 8.37 IN
 (100°C) 8.40 IN
 (150°C) 8.21 IN
 DUROMETER HARDNESS
 BEFORE TEST = 55
 AFTER TEST =
 (2°C) 55
 (100°C) 55
 (150°C) 50

UNLUBRICATED
 LOADS RECORDED AFTER
 30 SEC. AT EACH
 DEFLECTION

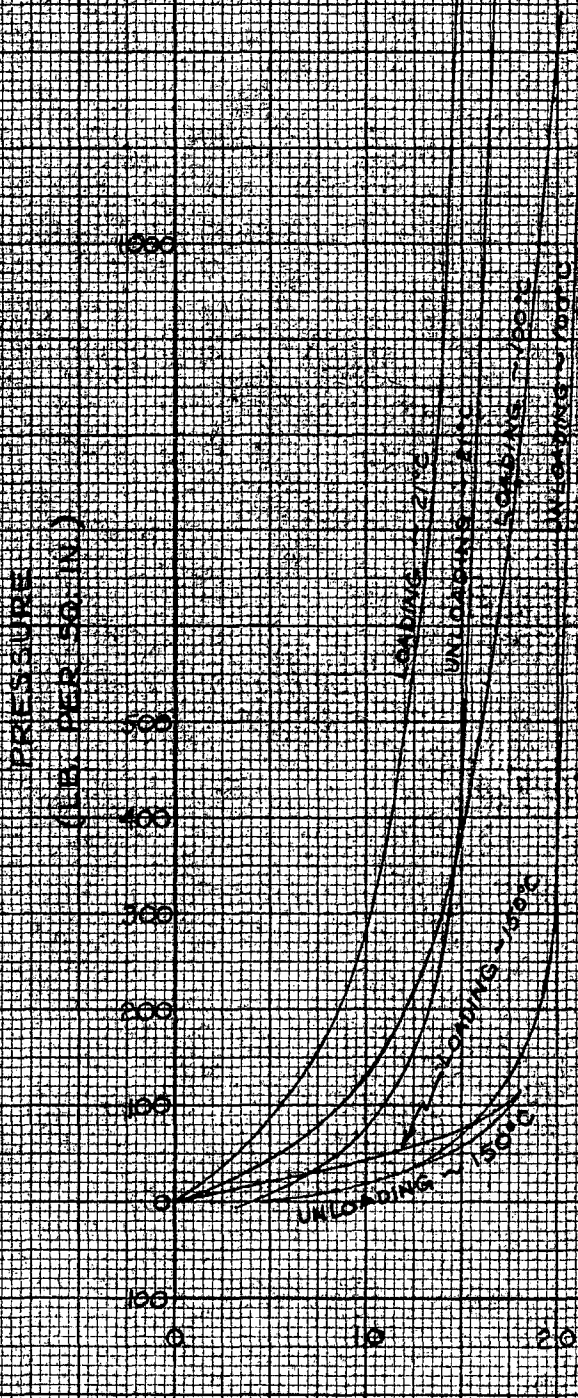
GASKETS IN REGULAR
 STANDARD GROOVE

NOTE:
 GASKET FAILED AT
 200°C



369-11C KRUFFEL & ESSER CO.
 10 X 10 to the 1/2 inch, 5th lines horizontal
 MADE IN U.S.A.

PRESSURE-DEFLECTION CURVES AT
DIFFERENT TEMPERATURES
FOR MYVASEAL



NOMINAL $\frac{9}{16} \times \frac{3}{8}$ MYVASEAL GASKETS

LENGTH: (21°C) 8.34 IN.
(100°C) 8.35 IN.
(150°C) 8.40 IN.

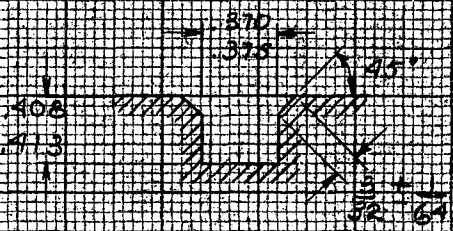
DURUMETER HARDNESS BEFORE TESTS = 5.5 AFTER TESTS =

(21°C) 5.5
(100°C) 5.8
(150°C) 5.9

UNLUBRICATED LOADS RECORDED AFTER 30 SEC. AT EACH DEFLECTION

GASKETS IN REGULAR STANDARD GROOVE

NOTE: GASKET FAILED AT 200°C

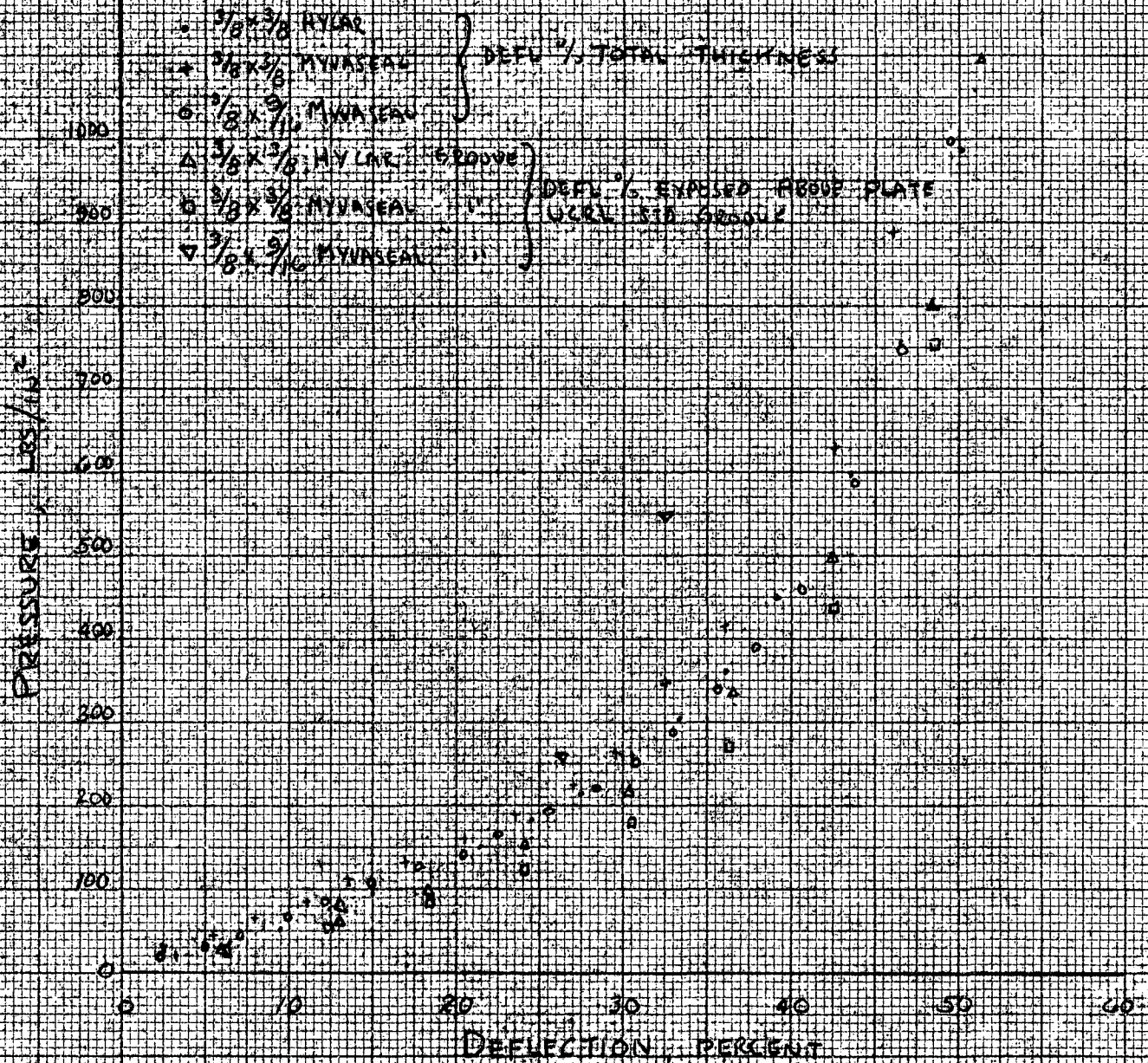


(IN PERCENT OF TOTAL UNLOADED DEPTH) ($\frac{9}{16}$)

REF 5-51

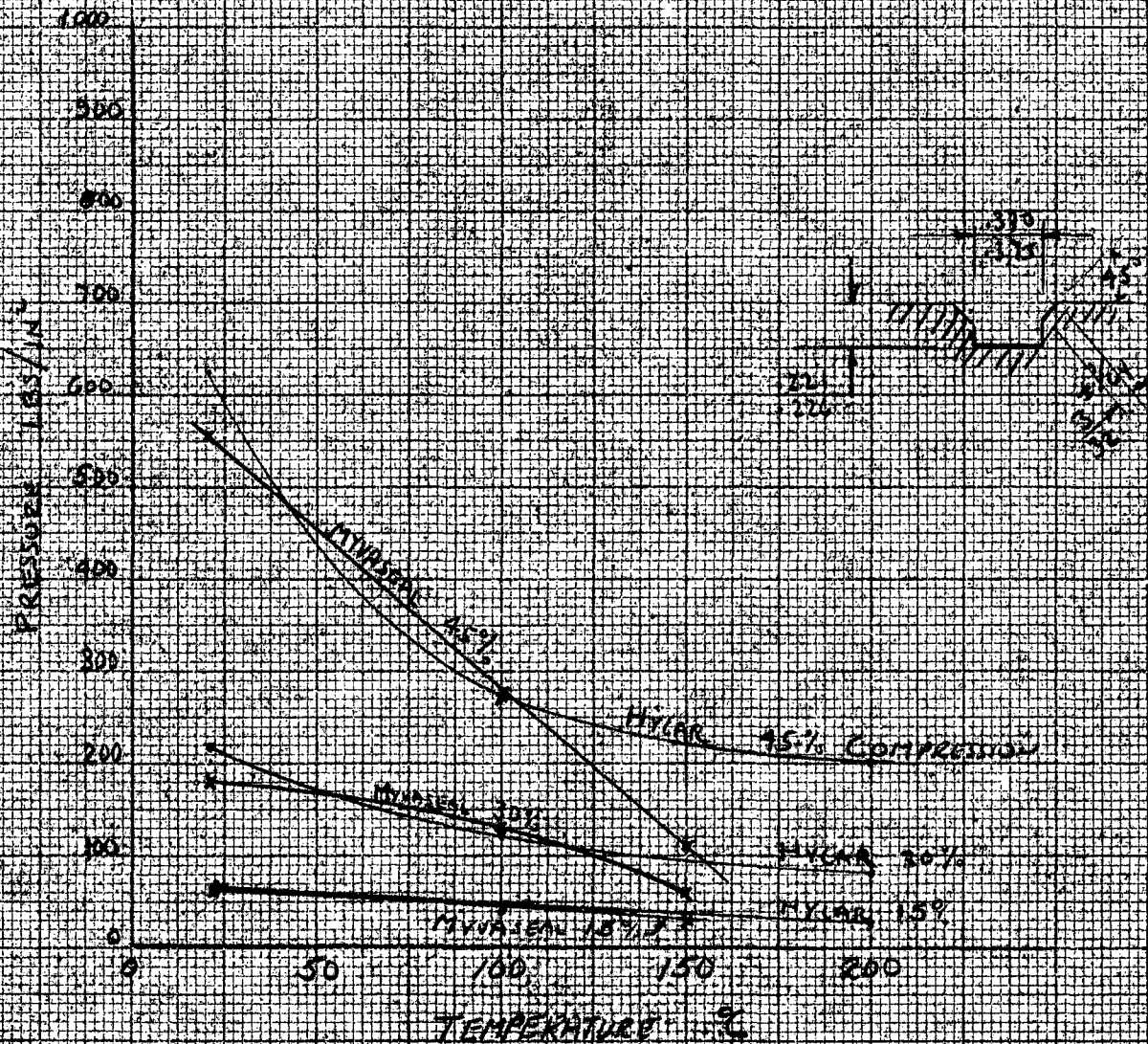
359-116 KEUFFEL & ESSER CO.
10 X 10 to the 1/4 inch 5th line accuracy
MADE IN U.S.A.

PRESSURE - DEFLECTION
 COMPARES MYLAR AND MYNASEAL
 UNLUBRICATED 0.17 IN LONG
 21°C 55-DYRUMETER
 LOADING DATA ONLY



REFURBISHED BY...
 10-10 in. dia. 5th. 11th. 12th. 13th. 14th. 15th. 16th. 17th. 18th. 19th. 20th. 21st. 22nd. 23rd. 24th. 25th. 26th. 27th. 28th. 29th. 30th. 31st. 32nd. 33rd. 34th. 35th. 36th. 37th. 38th. 39th. 40th. 41st. 42nd. 43rd. 44th. 45th. 46th. 47th. 48th. 49th. 50th. 51st. 52nd. 53rd. 54th. 55th. 56th. 57th. 58th. 59th. 60th. 61st. 62nd. 63rd. 64th. 65th. 66th. 67th. 68th. 69th. 70th. 71st. 72nd. 73rd. 74th. 75th. 76th. 77th. 78th. 79th. 80th. 81st. 82nd. 83rd. 84th. 85th. 86th. 87th. 88th. 89th. 90th. 91st. 92nd. 93rd. 94th. 95th. 96th. 97th. 98th. 99th. 100th.

PRESSURE - TEMPERATURE
NOMINAL 3/8 X 3/4 X 9 1/4
ORIFICE 0.55 DIAMETER
LUBRICANT REFINED METAL 30 WEL



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