

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

Section	1413
Page	1413.1
Issue	A

## TABLE OF CONTENTS

Related Products .....	1
Operating Range.....	1
Series Description .....	1
Features & Benefits .....	2
Model Number Key .....	2
Specifications .....	2
Standard Materials of Construction .....	2
Dimensions .....	3
Performance Curves .....	4

## RELATED PRODUCTS

Cast Iron, Non-Jacketed Pumps: Catalog Section 1401

Cast Iron, Jacketed Pumps: Catalog Section 1412

## SERIES DESCRIPTION

The 332 Series™ has been developed for high capacity and heavy-duty service for a wide range of applications. They are widely used for barge, tanker and terminal loading and unloading applications. They are designed to handle both thin and viscous liquids. This series of pumps are supplied with pedestal supported thrust bearings and as a result offers a fully rigid and positive alignment, thus eliminating the need for a secondary shaft support. They can be supplied with jacketed features for steam or hot oil heating (See 260 Series™ pumps in catalog section 1412).

They are designed to work equally well in both directions and possess excellent vacuum developing characteristics.

This series of pumps provides a continuous and steady stream of liquid without foaming or churning.

These pumps are ideally suited for gear reduction, V-belt and timing belt arrangements without additional shaft support.



## OPERATING RANGE

SERIES	MAXIMUM CAPACITY		MAXIMUM PRESSURE		MAXIMUM TEMPERATURE		MAXIMUM VISCOSITY	
	USGPM	l/min	PSI	kPa	°F	°C	SSU	cSt
332 Series™	to 590	to 2,233	200	1380	to +650	to +343	to 2,000,000	to 440,000

Section	1413
Page	1413.2
Issue	A

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

## FEATURES & BENEFITS

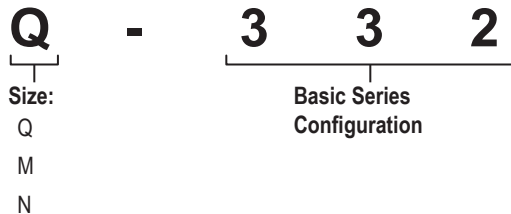
- Designed for pumping liquids at greater pressures, high capacity and heavy-duty service for a wide range of applications.
- Thrust bearing – heavy duty type, grease lubricated oversized thrust bearing to withstand excessive thrust and radial loads; bearing is not exposed to pumped liquid.
- Relief valve – (standard) to protect against excessive pressures, pumps are supplied with integral head mounted relief valves
- Allows easy adjustment of end clearance, assuring peak pumping performance without dismantling pump.
- Jacketed features – can be supplied with jacketed features for steam or hot oil heating (See 260 Series™ pumps in catalog section 1412).

## STANDARD MATERIALS OF CONSTRUCTION

Component	Standard Material
Casing	Iron
Head and Bracket	Iron
Rotor ①	Ductalloy
Idler	Iron
Rotor Shaft	Steel
Idler Pin	Steel
Idler and Bracket Bushings ②	Bronze (Carbon Graphite Optional)
Shaft Seal ③ ④	Packed (Mechanical Seal Optional)
Integral Relief Valve	All Iron

- ① Standard rotor on M, and N pump is ductalloy.
- ② Other bushings available to suit application
- ③ Standard packing is C-1065 graphite/PTFE. C-1045 food grade PTFE and 1625GF high temp graphite are available as options.
- ④ Buna-N elastomer used in mechanical seal. FKM or PTFE elastomers available upon request.

## MODEL NUMBER KEY



## SPECIFICATIONS

Model Number	Port Size Inch	Nominal Pumping Rating at 50 PSI (345 kPa) 100 SSU (21 cSt)			Motor Power Required Based on Rated Speed 100 SSU (21 cSt)				Maximum Hydrostatic Pressure		Maximum Rec. Discharge Pressure Over 100 SSU (21 cSt)		Maximum Recommended Temperature*				Approximate Shipping Weight	
					50 PSI (345 kPa)		100 PSI (690 kPa)						Packed	Mech. Seal				
		GPM	LPM	RPM	HP	kW	HP	kW	PSI	kPa	PSI	kPa	°F	°C	°F	°C	LBS	KG
Q-332	4" Flanged	310	1173	520	17.0	12.7	27.0	20.1	400	2758	200	1379	450	232	225	107	410	186
M-332	4" Flanged	400	1514	420	22.0	16.4	36.0	26.9	400	2758	200	1379	450	232	225	107	490	222
N-332	5" Flanged	590	2233	350	30.0	22.4	50.0	37.3	400	2758	125	862	450	232	225	107	850	386

**Note:** Ports are suitable for use with 125# ANSI iron or 150# ANSI steel companion flanges or flanged fittings.

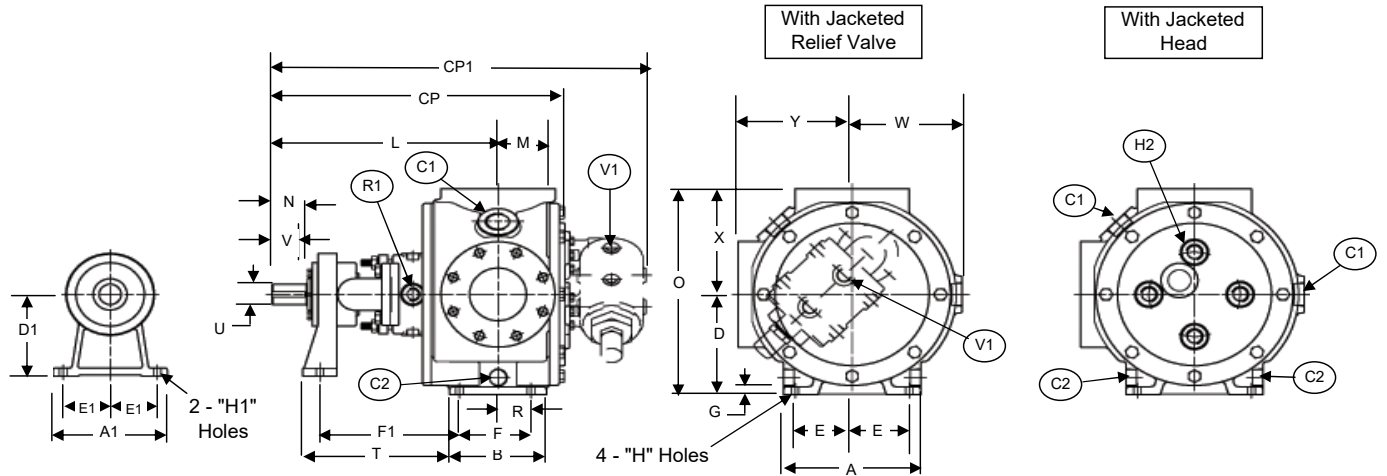
\* For higher temperatures, consult factory for recommendations.

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

Section	1413
Page	1413.3
Issue	A

## DIMENSIONS



These dimensions are average and not for construction purposes. Certified prints on request.

Model Number	Port Size		A	B	CP	CP1	D	E	F	G	H	L	M	N	O	P	R
Q-332	4" ANSI Flanged	in	10.0	6.50	26.75	31.25	7.75	4.12	4.25	.62	.65	20.81	3.0	3.0	15.88	1.38	1.38
		mm	254	165	680	794	197	105	108	16	17	529	76	76	403	0.35	0.35
M-332	4" ANSI Flanged	in	12.0	8.50	26.75	31.5	9.5	5.0	6.25	.75	.65	20.31	4.0	3.0	19.0	1.25	2.56
		mm	305	216	680	800	241	127	159	19	17	516	102	76	483	32	65
N-332	5" ANSI Flanged	in	12.0	8.50	37.38	42.25	9.5	5.0	6.25	1.0	.65	30.5	4.5	4.0	19.0	1.44	2.88
		mm	305	216	949	1073	241	127	159	25	17	775	114	102	483	37	73

Model Number		T	U	V	W	X	Y	Keyway	Bearing Pedestal					Approximate Shipping Weight
									A1	D1	E1	F1	H1	
Q-332	in	14.31	1.937	2.88	7.0	8.12	8.12	.500 x .250	10.0	7.75	4.12	13.75	0.65	410 lb
	mm	364	49	73	178	206	206	13 x 6	254	197	105	349	16.5	186 kg
M-332	in	12.81	1.937	2.88	8.62	9.5	9.5	.500 x .250	12.0	7.75	4.12	12.38	0.65	666 lb
	mm	325	49	73	219	241	241	13 x 6	305	197	105	314	16.5	302 kg
N-332	in	22.12	2.437	3.0	8.62	9.5	9.5	.625 x .312	12.0	9.5	5.25	21.5	0.69	790 lb
	mm	562	62	76	219	241	241	16 x 8	305	241	133	546	17.5	359 kg

Pumps have Flanged Suction and Discharge connections suitable for use with 125# or 150# ANSI Flanges and Fittings.

If optional Left Hand Casing required, please specify when ordering.

For Steam/Oil Jacketed features, refer to 260 Series™ pumps (Section 1412).

Optional Shaft lengths can be provided to accommodate drives when required. Dimensions 'N' and 'V' (Keyway length) will change.

Section	1413
Page	1413.4
Issue	A

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

## PERFORMANCE CURVES

### Inlet Conditions

The performance curves show “Based on 10 (or 15) in – Hg.” Which is the standard test condition. This is not the maximum vacuum capability of the pump.

### Extra Clearances

Extra clearances are required for higher viscosities as noted on the performance curves to reduce horsepower requirements and provide smooth pump operation. Extra clearances may also be required at elevated temperature.

### Mechanical Efficiency

The mechanical efficiency (expressed in percent) can be calculated using the following formula:

### Relief Valves

Almost all pumps are equipped with internal relief valves to protect the pumps and systems from over pressure. These valves are not designed to operate as capacity regulating devices. The maximum differential operating pressure should be specified when the pump is ordered to ensure that the spring or springs will be capable of covering the required pressure range. Relief valves should be set at “complete bypass pressure” where the entire capacity of the pump is bypassing through the relief valve. The relationship between “cracking pressure” and “complete bypass pressure” varies depending on the pump and the application. Final setting of the valve should be made when the pump is installed and operating. If the relief valve is used strictly as an overpressure device for unusual circumstances, the motor can be selected based on operating pressures. This assumes proper motor protection has been installed and a delay to reset is acceptable. If frequent full opening of the relief valve is required in the application, the motor should be sized to cover or nearly cover the complete bypass setting.

### NPSH (Net Positive Suction Head)

The  $NPSH_R$  (Net Positive Suction Head Required by the pump) is given in the table below and applies for viscosities through 750 SSU.  $NPSH_A$  (Net Positive Suction Head – Available in the system) must be greater than the  $NPSH_R$ .

PUMP SIZE	PUMPS SPEED, RPM														
	100	125	155	190	230	280	350	420	520	640	780	950	1150	1450	1750
Q	1.9	2.1	2.3	2.7	3.3	4.2	6.1	8.4	12.7	—	—	—	—	—	—
M	2.1	2.3	2.8	3.4	4.3	6.0	9.0	12.7	—	—	—	—	—	—	—
N	2.1	2.3	2.8	3.4	4.3	6.0	9.0	—	—	—	—	—	—	—	—

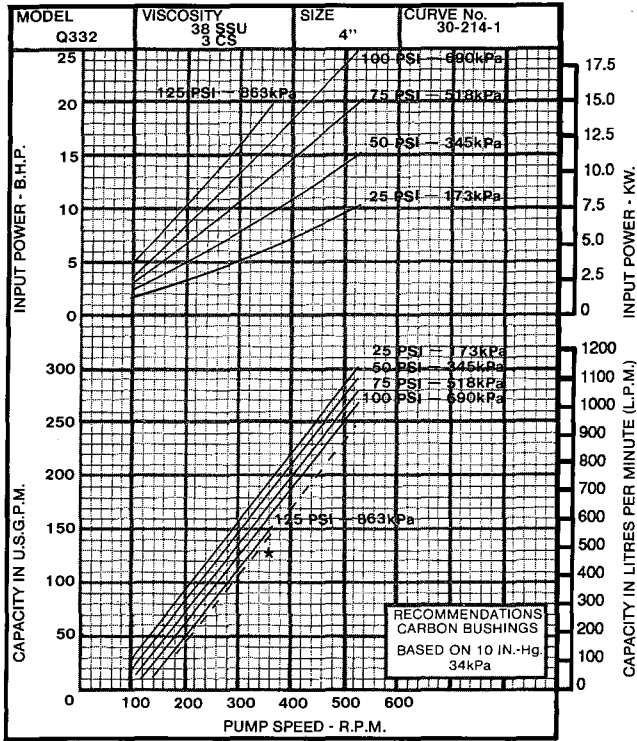
$NPSH_R$  – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

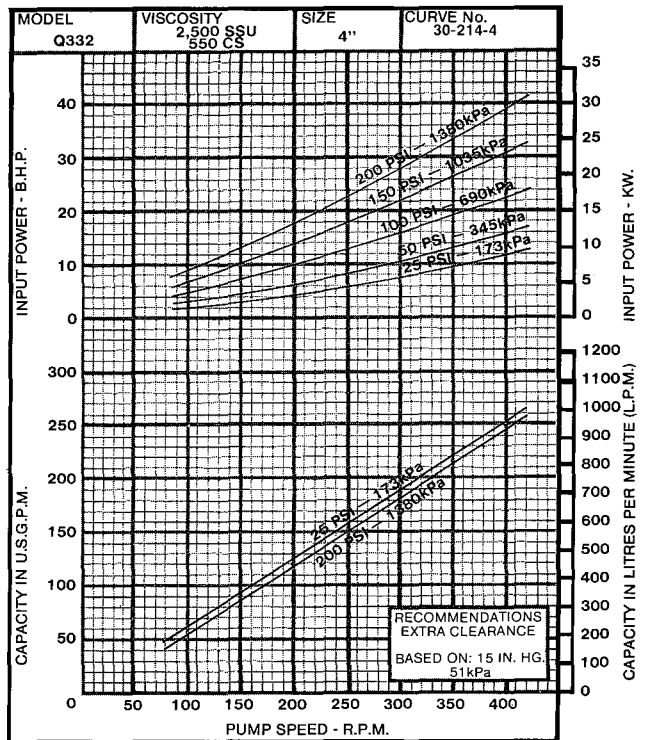
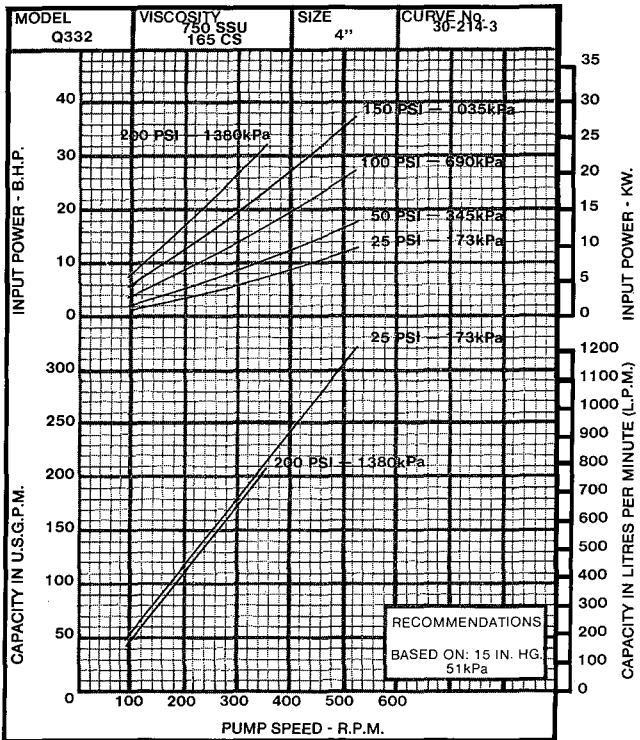
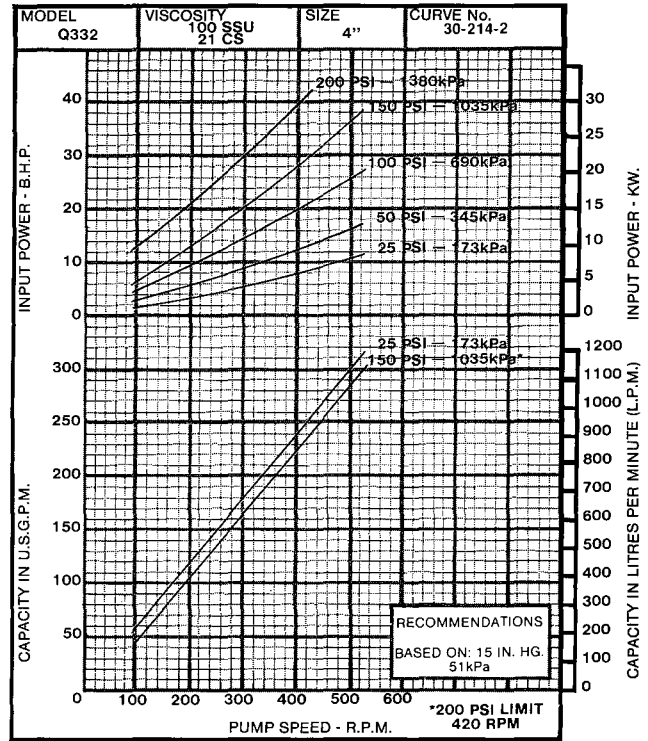
332 Series™

Section	1413
Page	1413.5
Issue	A

## Q SIZE



\* - - - 28 SSU MAX 75 PSI - 518 kPa



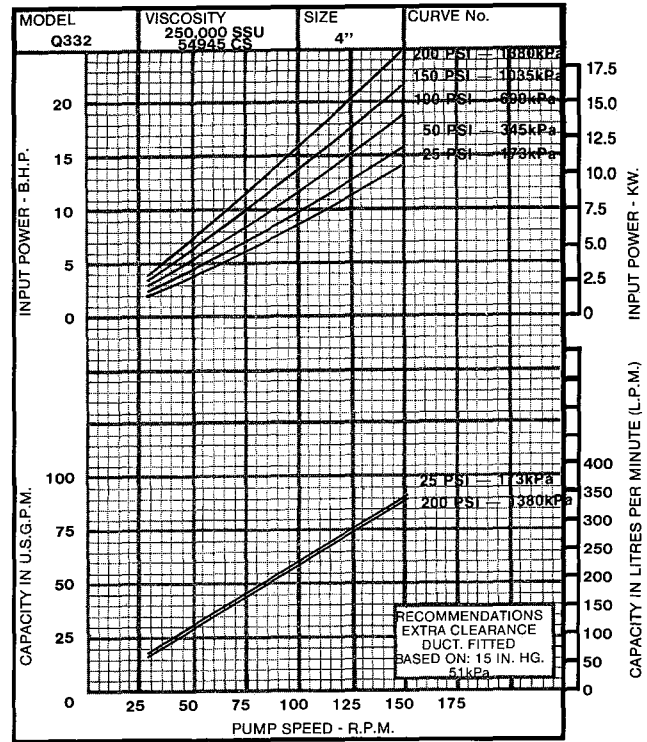
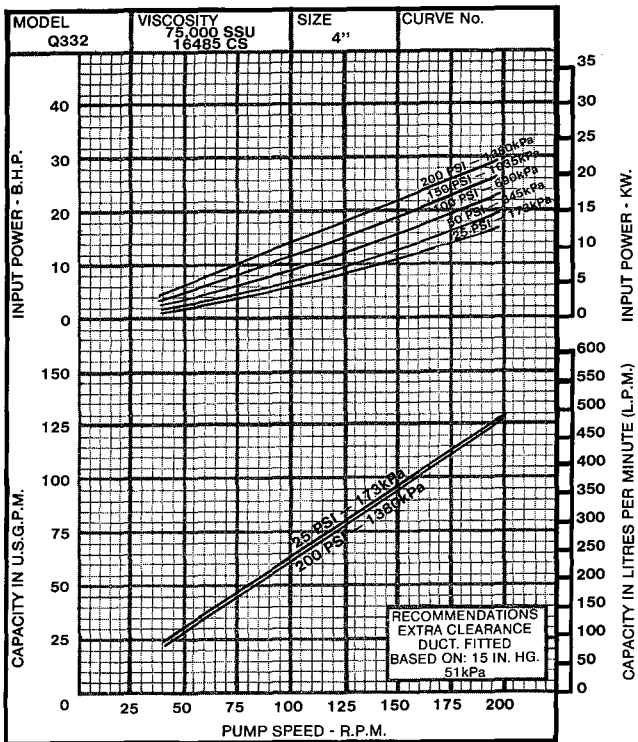
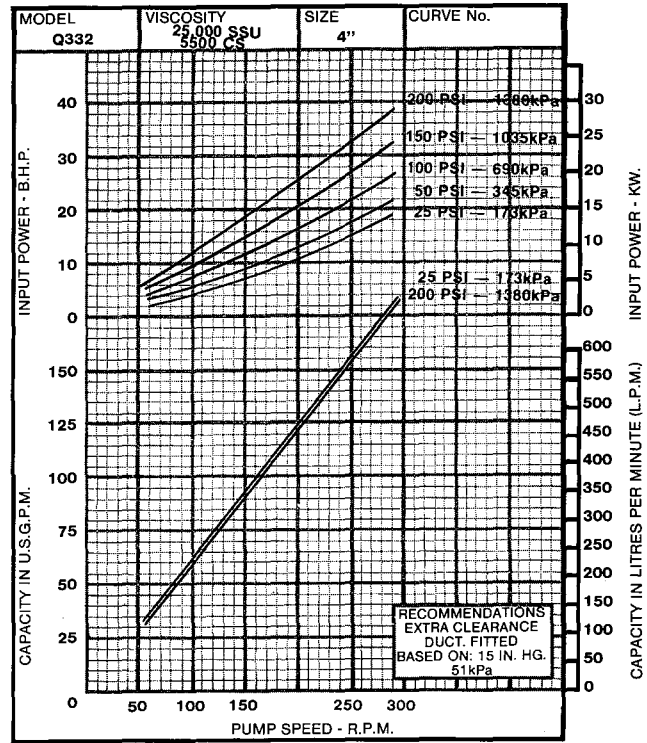
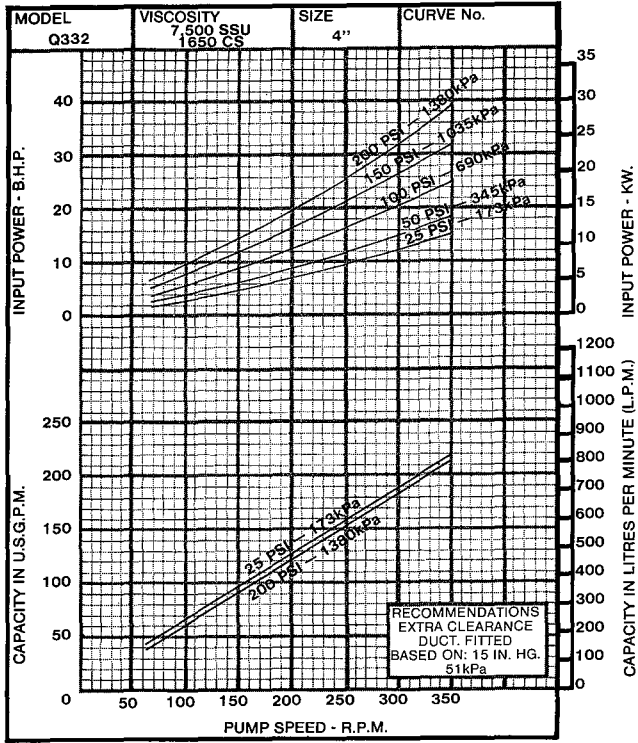


Section	1413
Page	1413.6
Issue	A

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

## Q SIZE

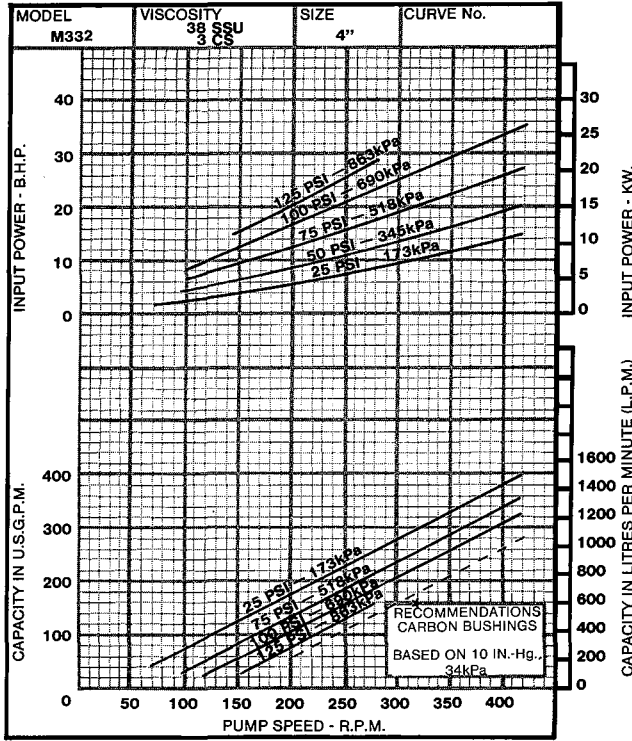


# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

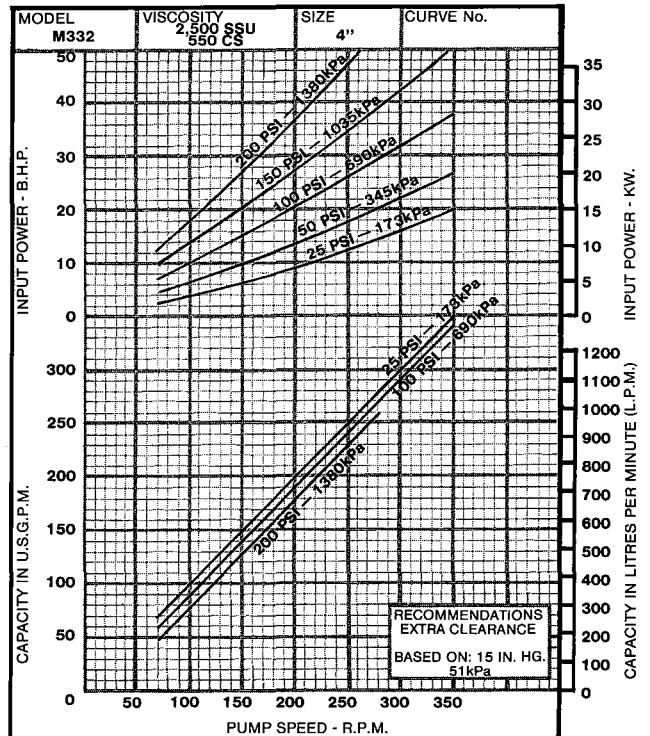
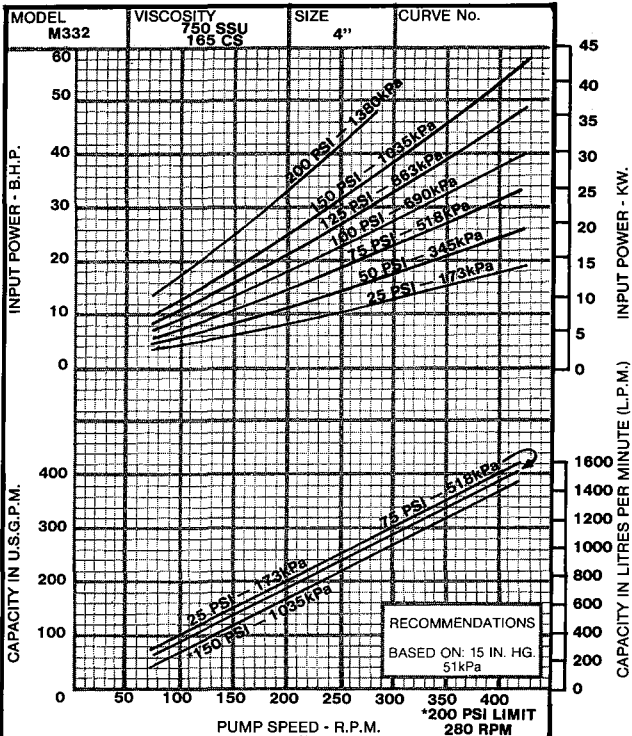
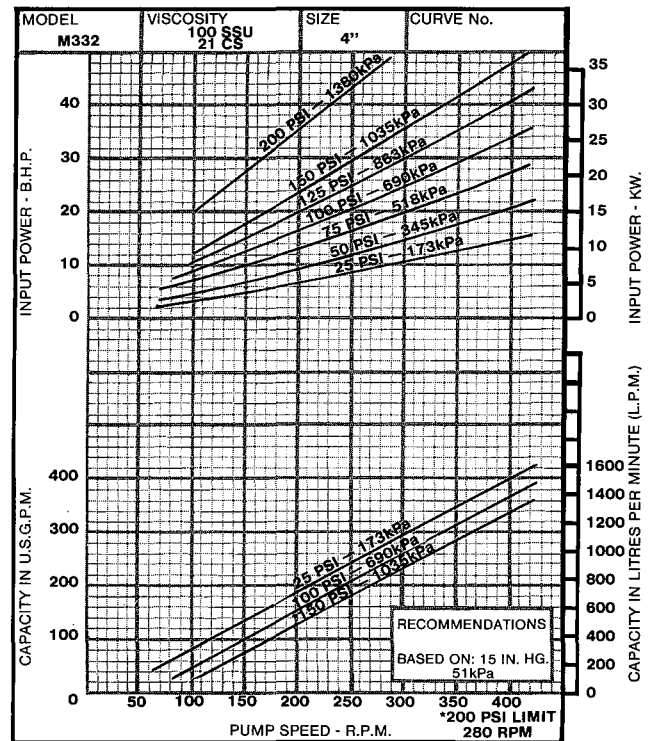
332 Series™

Section	1413
Page	1413.7
Issue	A

## M SIZE



\* - - - 28 SSU MAX 75 PSI - 518 kPa



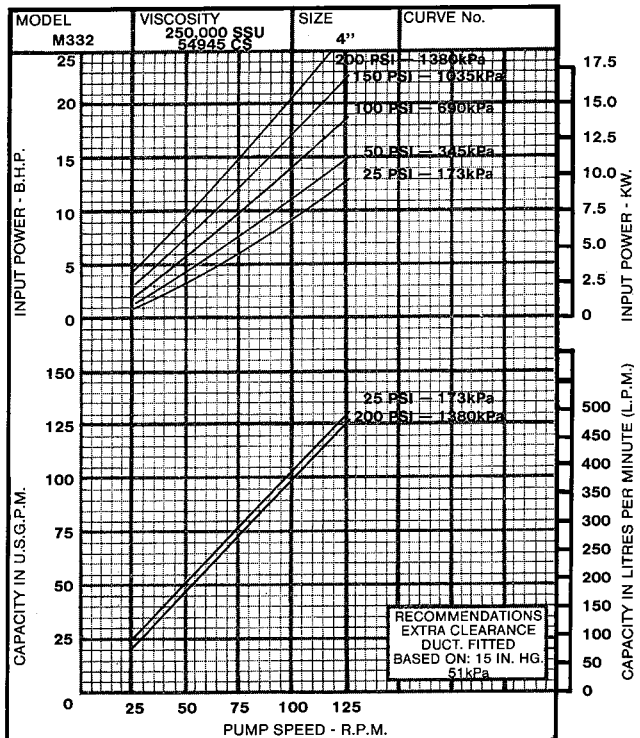
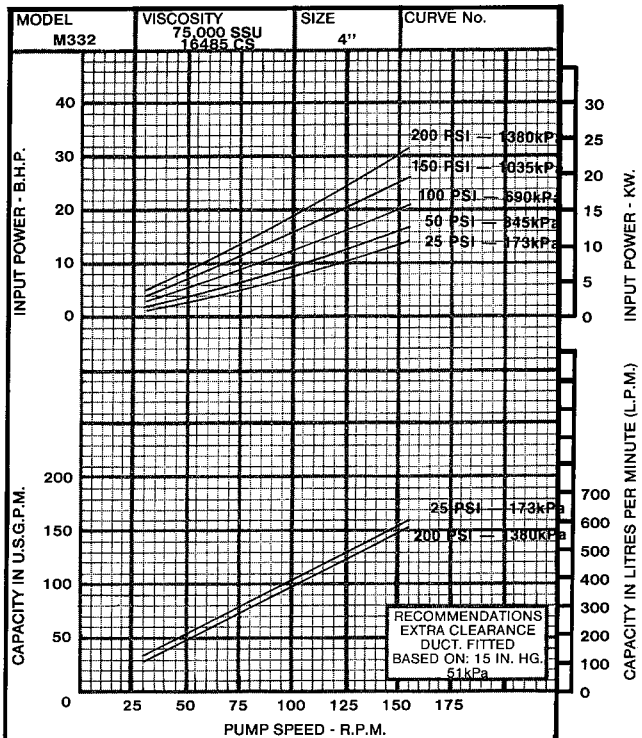
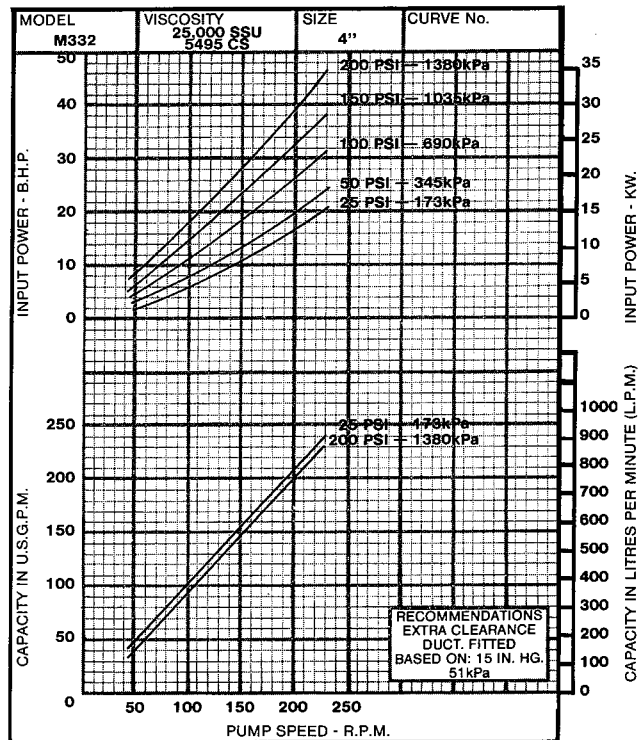
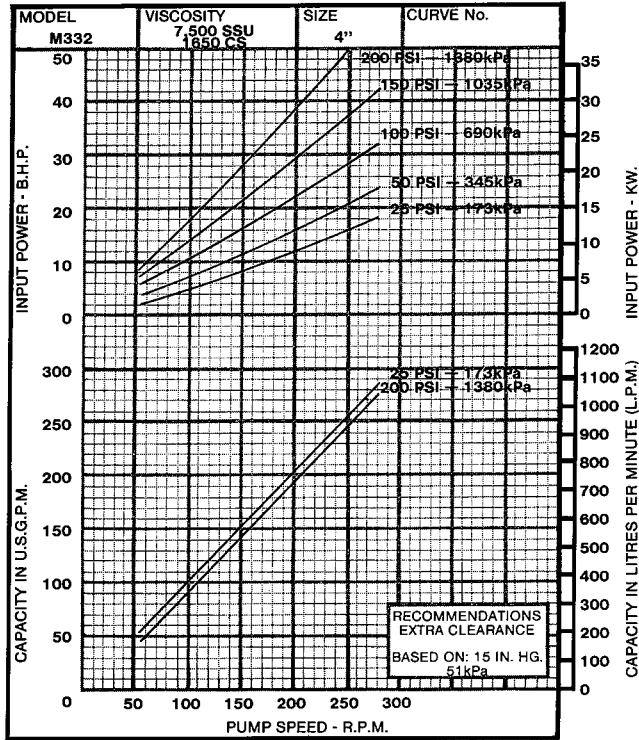


Section	1413
Page	1413.8
Issue	A

# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

## M SIZE



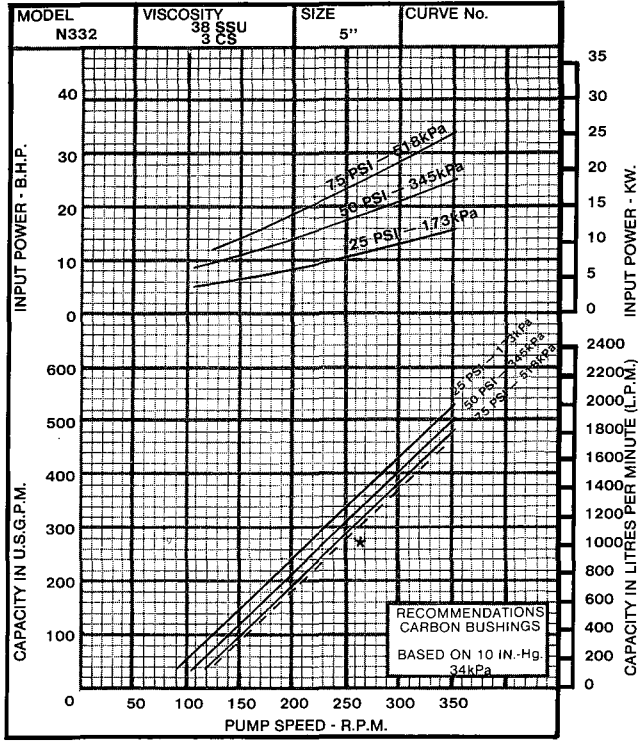


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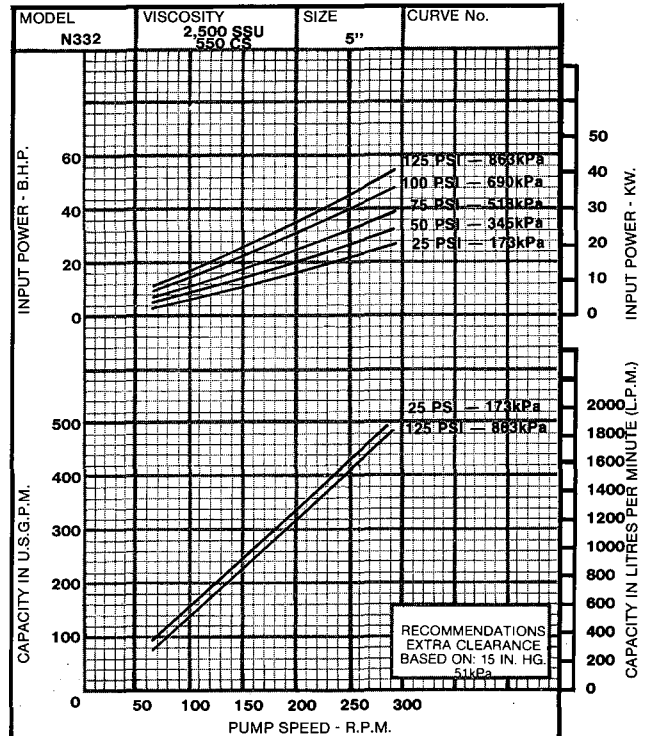
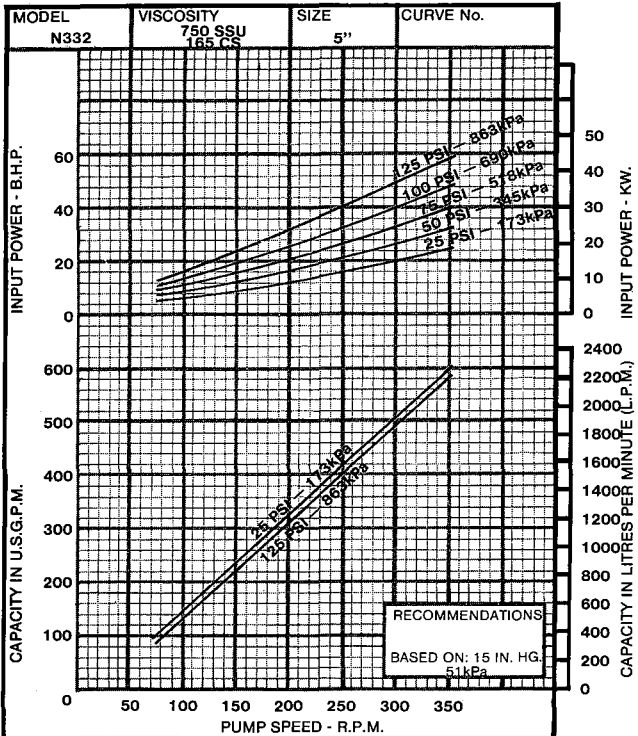
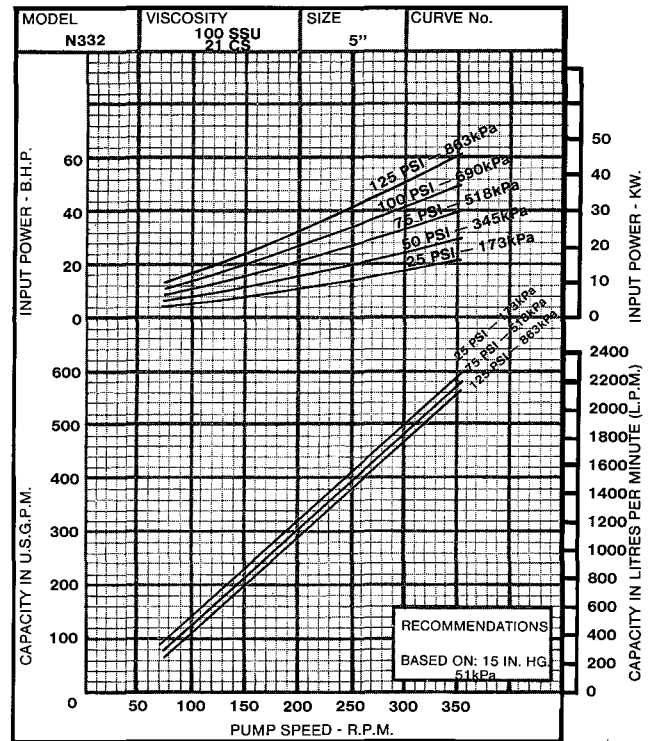
332 Series™

Section	1413
Page	1413.9
Issue	A

## N SIZE



\* - - - 28 SSU MAX 75 PSI - 518 kPa

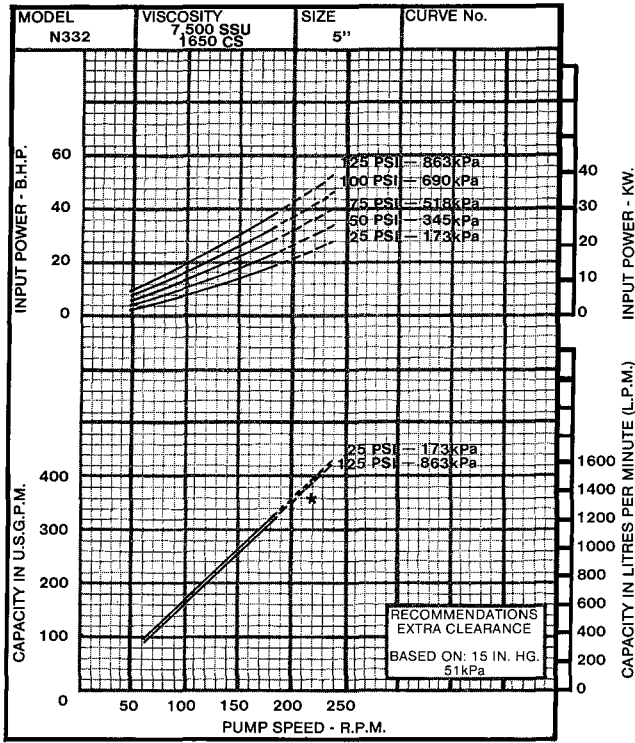


Section	1413
Page	1413.10
Issue	A

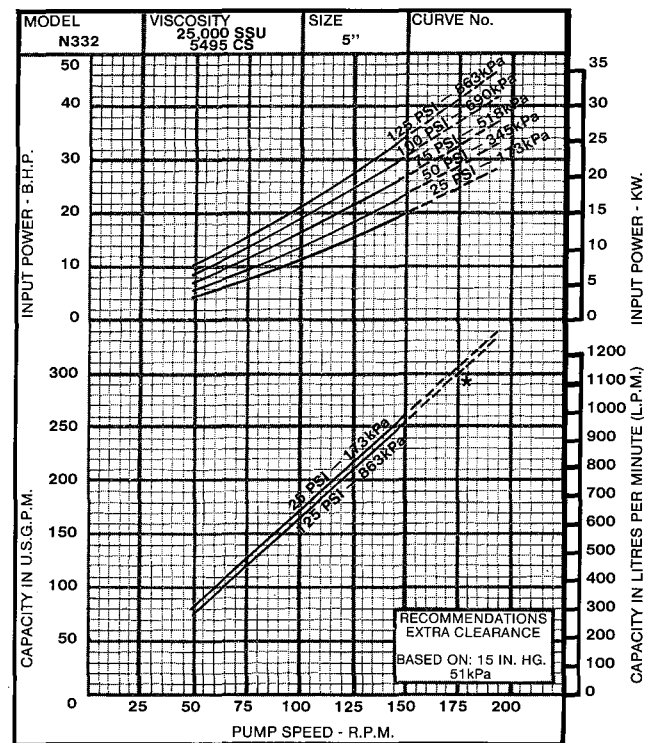
# CAST IRON — ROTARY POSITIVE DISPLACEMENT PUMPS

332 Series™

## N SIZE



\*-----Consult factory for operation in this range.



\*-----Consult factory for operation in this range.

