

TRA10 Series Positive Displacement Pumps

Section	100
Page	100.1
Issue	B

TRA10 Series Performance Range (standard pumps)		
Flow Range	GPM	0 to 450
	M3/Hr	0 to 102
Pressure Range	PSI	0 to 200
	Bar	0 to 14
Temperature Range	°F	-40 to 300
	°C	-40 to 150
Viscosity Range	SSU	910,000
	cPs	200,000

Major Design Features

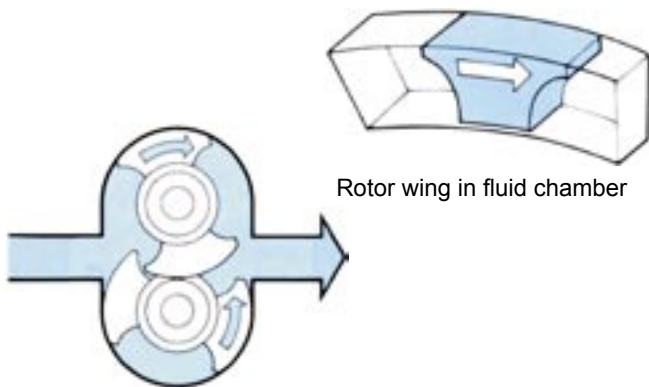
- Sanitary design conforming to 3-A requirements, with FDA-approved elastomers.
- Fast and easy disassembly, cleaning and reassembly.
- Sealing options to handle nearly every application.
- Non-galling, nickel-based “808” alloy rotors standard, allowing close clearances that minimize slip and provide high pressure capability, and high efficiency even on thin liquids.
- Wright Pump TRA10 series pumps are drop-in replacements for Waukesha® Universal I series pumps.

Circumferential Piston Principle

Wright Pump's TRA10 series rotary positive displacement pumps operate on the circumferential piston pumping principle. The timed rotors rotate in chambers machined into the pump housing, providing a large sealing surface which minimizes slip.

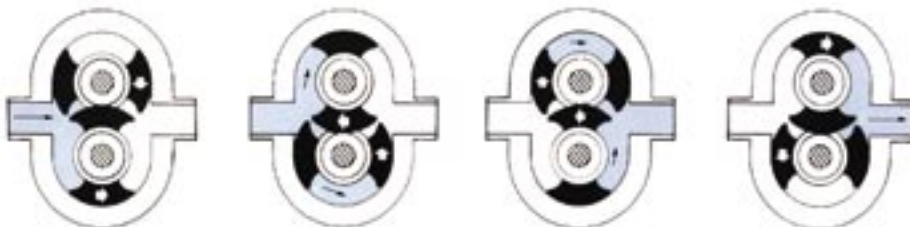
The circumferential piston principle provides:

- capacity proportional to speed
- near-constant capacity regardless of changes in system pressure
- excellent suction characteristics
- low shear
- ability to handle discharge pressures to 200 psi
- reversible direction of flow.



Rotor wing in fluid chamber

Rotor rotation and Flow

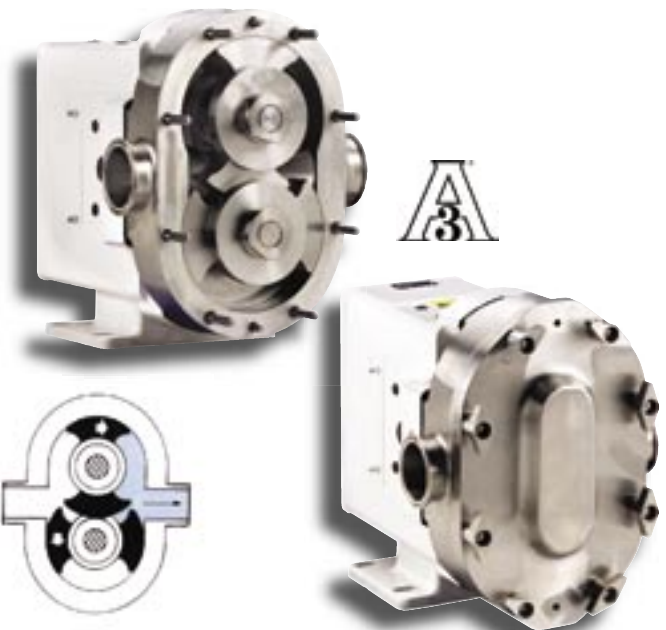


Typical Applications

These pumps are well suited to both sanitary and industrial applications, for both thin liquids and highly viscous fluids.

They conform to 3-A standard 02-09 “Centrifugal and Positive Rotary Pumps for Milk and Milk Products.” They meet criteria necessary for use in dairy and food equipment, and in systems that handle, process and packaged consumable products.

Wright Pumps are used in a variety of food and beverage applications. The sanitary design also lends itself to many industrial applications where low shear or frequent cleaning are required, such as resins and coatings, ED paints, inks, and personal care products.



Section	100
Page	100.2
Issue	B

TRA10 Series Positive Displacement Pumps

Standard Construction and Options

Wright pump offers a wide variety of options to satisfy the unique requirements of nearly every application. Additional options may be available upon request - consult factory for availability.

Shaft Seals (two required)	Standard	No standard seal type. Select type from options
	Options	• Single O-Ring Seal. Buna Standard. ◦ Optional Materials: FKM (Viton®), EPDM, Silicone
		• Single Mechanical Seal. SiC/SiC faces with Buna O-rings Standard. ◦ Optional Face Materials: Carbon, Ceramic, Chrome Oxide ◦ Optional O-Ring Materials: FKM (Viton®), EPDM, Silicone
		• Double O-Ring Seal with Flush. Buna Standard. ◦ Optional Materials: FKM (Viton®), EPDM, Silicone
		• Double Mechanical Seal with Flush. SiC/SiC faces with Buna O-rings Standard. ◦ Optional Face Materials: Carbon, Ceramic, Chrome Oxide ◦ Optional O-Ring Materials: FKM (Viton®), EPDM, Silicone
		• Twin wing rotors with standard clearances
		• Twin wing rotors with hot clearances or hot chocolate clearances
		• Single wing rotors with standard clearances, hot clearances or hot chocolate clearances
		• Cover Nuts
Options	Hex Cover Nuts (standard on pumps for EU countries)	
Port Sizes		
Model 0060	Standard	No standard port size. Select size from options
	Options	1", 1.5"
Models 0150, 0180 & 0300	Standard	1.5"
	Options	2"
Model 0450	Standard	2"
Model 0600	Standard	2.5"
	Options	3"
Model 1300	Standard	3"
	Options	4"
Model 2200	Standard	4"
Model 3200	Standard	6"
Port Configuration	Standard	Sanitary Clamp
	Options	Bevel Seat, RJT, NPT, SMS, 150# Flange, 300# Flange
Mounting	Standard	Horizontal ports with top shaft position
	Options	• Horizontal ports with bottom shaft position
		• Vertical ports with right-hand shaft position
		• Vertical ports with left-hand shaft position

Viton® is a Registered Trademark of DuPont Dow Elastomers L.L.C.

TRA10 Series Positive Displacement Pumps

Section	100
Page	100.3
Issue	B

Wright TRA10 Features Compared to Others		
Wright Pump	Waukesha®	Wright Advantage
High strength 17-4 PH shafts standard on 0300-3200	Welded bi-metal shafts standard, 17- PH available at extra cost.	Sustains higher loads for less downtime, especially on high pressure or viscosity.
Solid front cover	Welded-on rotor nut cups	Less susceptible to damage or weld failure.
Rotorcase hold-down bolts	Available at extra cost.	Prevents seal damage when cover removed.
Helical timing gears standard	Spur timing gears standard.	Provides higher load-carrying capacities and lower noise
SiC/SiC material standard on single mechanical seals.	Carbon/ceramic standard on single mechanical seals.	Harder materials offer longer seal life
Stainless steel front bearing retainers standard.	Stainless steel bearing retainers available at extra cost.	Offers increased corrosion resistance and ensures integrity of bearing support.
Powder-coated gearbox	Epoxy coated gearbox.	Offers superior corrosion and chip resistance
Intelligent oil plug positioning, on back of pump.	Oil plugs on sides, exposed to high pressure washdown water spray..	Helps prevent water contamination of the gearbox oil reservoir.
Threaded grease fittings	Push-in grease fittings	Prevents dislodging of grease fittings due to pressure from grease gun.
Grease fitting access on both sides of pump.	Grease fitting access on one side only.	Enhances maintenance when pump is mounted in tight spaces which limit access.
Four-way mounting	Three-way mounting	Provides more flexibility to match shaft position to reducer or gearmotor input.

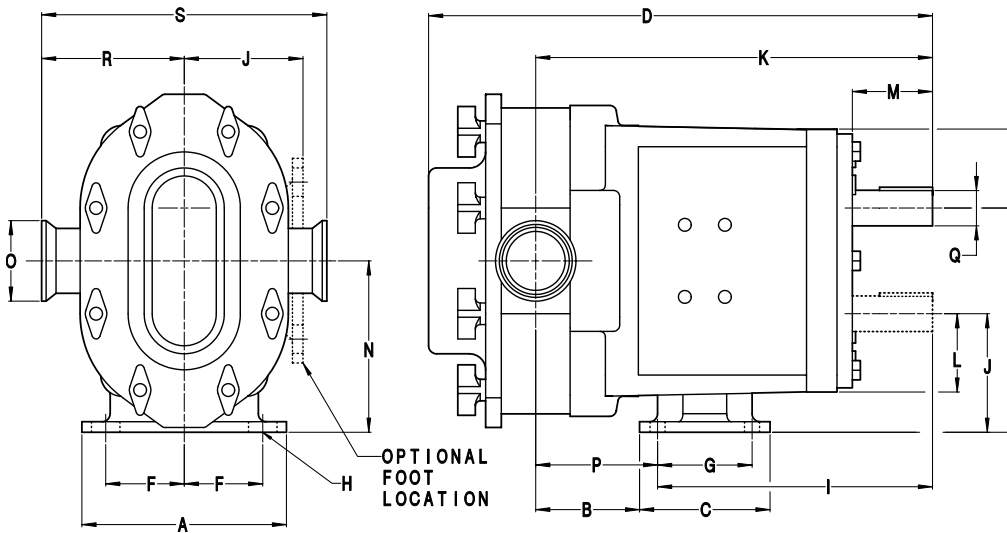
Specifications - Standard Pump

Model	Nominal Capacity		Displacement per Revolution		Maximum Pressure		Standard Ports		Maximum Speed (RPM)
	GPM	M ³ /hr	Gal.	Liter	PSI	Bar	in.	mm	
0060 - TRA10	GPM	6	Gal.	0.008	PSI	200	in.	1.5	800
	M ³ /hr	1.3	Liter	0.031	Bar	14	mm	38	
0150 - TRA10	GPM	9	Gal.	0.014	PSI	200	in.	1.5	700
	M ³ /hr	2.0	Liter	0.054	Bar	14	mm	38	
0180 - TRA10	GPM	17	Gal.	0.029	PSI	200	in.	1.5	600
	M ³ /hr	3.8	Liter	0.110	Bar	14	mm	38	
0300 - TRA10	GPM	36	Gal.	0.060	PSI	200	in.	1.5	600
	M ³ /hr	8.2	Liter	0.227	Bar	14	mm	38	
0450 - TRA10	GPM	59	Gal.	0.098	PSI	400	in.	2.0	600
	M ³ /hr	13.3	Liter	0.371	Bar	27	mm	51	
0600 - TRA10	GPM	90	Gal.	0.153	PSI	200	in.	2.5	600
	M ³ /hr	20.4	Liter	0.579	Bar	14	mm	64	
1300 - TRA10	GPM	150	Gal.	0.254	PSI	200	in.	3	600
	M ³ /hr	34.1	Liter	0.961	Bar	14	mm	76	
2200 - TRA10	GPM	310	Gal.	0.522	PSI	200	in.	4	600
	M ³ /hr	70.4	Liter	1.976	Bar	14	mm	102	
3200 -TRA10	GPM	450	Gal.	.754	PSI	200	In.	6	600
	M ³ /hr	102	Liter	2.854	Bar	14	mm	152	

Section	100
Page	100.4
Issue	B

TRA10 Series Positive Displacement Pumps

Dimensions - Standard Pumps



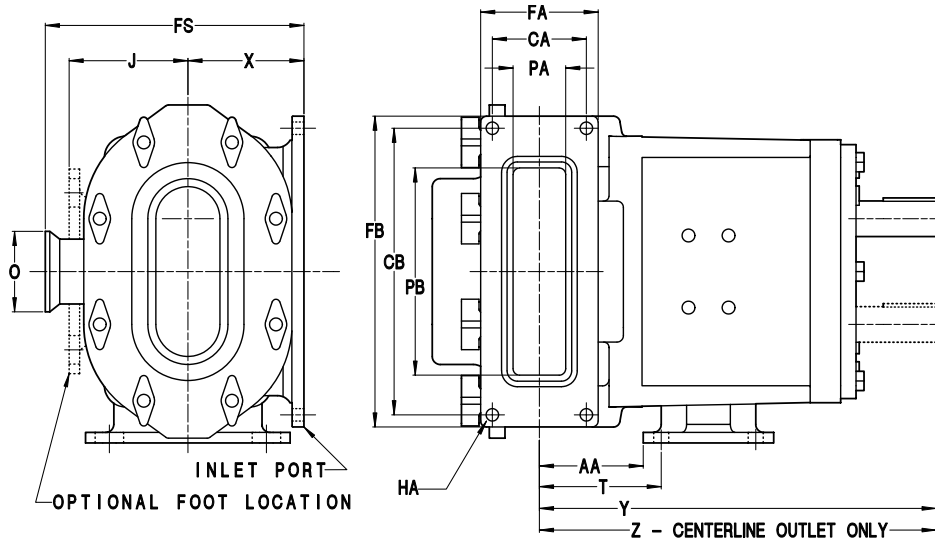
Model		A	B	C	D	E	F	G	H	I	J	K	L	M	N
0060	in.	4.75	1.95	3.75	12.04	5.50	1.94	2.31	0.375 x 0.31 (slot)	6.82	2.93	9.61	2.12	2.00	4.21
	mm	121	50	95	303	140	49	59	9.5 x 8 (slot)	173	74	244	54	51	107
0150	in.	4.75	1.95	3.75	12.04	5.50	1.94	2.31	0.375 x 0.31 (slot)	6.82	2.93	9.61	2.12	2.00	4.21
	mm	121	50	95	303	140	49	59	9.5 x 8 (slot)	173	74	244	54	51	107
0180	in.	4.75	2.18	3.75	12.46	5.50	1.94	2.31	0.375 x 0.31 (slot)	6.82	2.93	9.84	2.12	2.00	4.21
	mm	121	55	95	316	140	49	59	9.5 x 8 (slot)	173	74	250	54	51	107
0300	in.	6.25	2.78	4.25	14.58	6.86	2.31	2.56	0.438 x 0.44 (slot)	7.77	3.56	11.61	2.62	2.32	5.21
	mm	159	71	108	370	174	59	65	11 x 11 (slot)	197	90	295	67	59	132
0450	in.	8.25	4.14	5.87	18.91	9.56	3.50	4.12	0.56 x 0.50 (slot)	10.13	5.06	15.14	3.50	2.25	7.31
	mm	210	105	149	480	243	89	105	14 x 13 (slot)	257	129	385	89	57	186
0600	in.	8.25	4.14	5.87	18.91	9.56	3.50	4.12	0.56 x 0.50 (slot)	10.13	5.06	15.14	3.50	2.25	7.31
	mm	210	105	149	480	243	89	105	14 x 13 (slot)	257	129	385	89	57	186
1300	in.	8.25	4.78	5.87	19.85	9.56	3.50	4.12	0.56 x 0.50 (slot)	10.12	5.06	15.77	3.50	2.25	7.31
	mm	210	121	149	504	243	89	105	14 x 13 (slot)	257	129	401	89	57	186
2200	in.	8.50	3.69	9.0	23.37	12.38	3.75	7.25	0.56 x 0.19 (slot)	14.05	6.38	18.49	4.50	2.75	9.38
	mm	216	94	229	594	314	95	184	14 x 5 (slot)	357	162	470	114	70	238
3200	in.	12.00	4.12	11.63	30.17	13.88	5.25	8.00	0.66 Ø	16.55	6.88	21.92	5.06	4.06	10.38
	mm	305	105	295	766	353	133	203	16 Ø	420	175	557	129	103	264

Model		O	P	Q Ø	R	S	Weight
0060	in.	1.5	2.79	0.875	3.49	6.97	lb. 53
	mm	38	71	22.23	89	177	kg 24
0150	in.	1.5	2.79	0.875	3.49	6.97	lb. 53
	mm	38	71	22.23	89	177	kg 24
0180	in.	1.5	3.02	0.875	3.55	7.09	lb. 53
	mm	38	77	22.23	90	180	kg 24
0300	in.	1.5	3.84	1.250	4.25	8.50	lb. 99
	mm	38	98	31.75	108	216	kg 45
0450	in.	2	5.01	1.625	5.38	10.75	lb. 290
	mm	51	127	41.28	136	273	kg 132
0600	in.	2.5	5.01	1.625	5.37	10.75	lb. 290
	mm	63	127	41.28	136	273	kg 132
1300	in.	3	5.65	1.625	5.37	10.75	lb. 312
	mm	76	144	41.28	136	273	kg 142
2200	in.	4	4.44	2.000	6.63	13.25	lb. 555
	mm	102	113	50.80	168	337	kg 252
3200	in.	6	5.37	2.375	8.00	16.00	lb. 1050
	mm	152	136	60.45	203	406	kg 477

TRA10 Series Positive Displacement Pumps

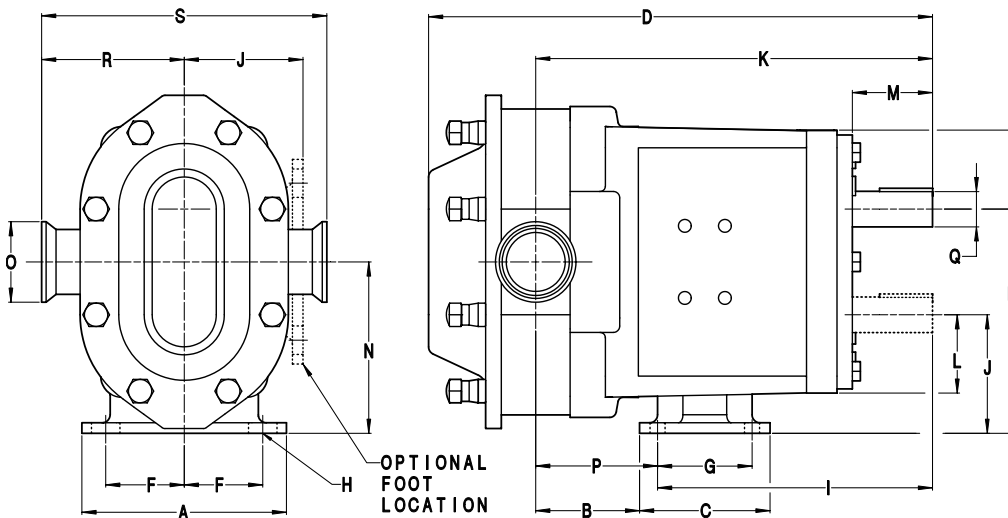
Section	100
Page	100.5
Issue	B

Dimensions - Rectangular Inlet Flange Pumps



Model		J	X	FS	T	Y	Z	AA	FA	CA	PA	FB	CB	PB	HA
0240	in.	2.93	3.63	7.11	3.02	9.84	9.84	2.18	3.00	2.00	1.31	8.00	7.00	4.93	.41
	mm	74	92	181	77	250	250	55	76	51	33	203	178	125	10
0340	in.	3.56	3.88	8.12	3.83	11.36	11.37	2.77	3.12	1.88	1.75	12.00	10.75	6.75	.53
	mm	90	99	206	98	289	289	70	79	48	44	305	273	171	13
0640	in.	5.06	4.94	10.31	5.05	15.16	15.12	4.18	5.00	4.00	2.24	13.23	12.20	8.82	.53
	mm	129	125	262	128	385	384	106	127	102	57	336	310	224	13
1340	in.	5.06	4.94	10.31	5.67	15.78	15.76	4.80	4.66	3.00	2.97	15.25	14.00	9.25	.53
	mm	129	125	262	144	401	400	122	118	76	75	387	356	235	13
2240	in.	6.38	6.25	12.87	4.44	18.49	18.49	3.69	5.62	4.37	3.87	18.00	16.75	11.00	.53
	mm	162	159	327	113	470	470	94	143	111	98	457	425	279	13

Dimensions - Cover Options



Model		CP	CP1	CP2	CP3	CP4
0060	in.	12.04	13.47	13.53	13.62	15.25
	mm	306	342	344	346	387
0150	in.	12.04	13.47	13.53	13.62	15.25
	mm	306	342	344	346	387
0180	in.	12.46	13.90	13.95	14.04	15.67
	mm	316	353	354	357	398
0300	in.	14.58	16.42	15.98	16.08	17.67
	mm	370	417	406	408	449
0450	in.	N/A	N/A	N/A	N/A	N/A
	mm	N/A	N/A	N/A	N/A	N/A
0600	in.	18.91	20.69	20.47	20.76	22.07
	mm	480	526	520	527	561
1300	in.	19.85	21.63	21.42	21.70	23.01
	mm	504	549	544	551	584
2200	in.	23.37	N/A	26.07	N/A	27.87
	mm	594	N/A	662	N/A	708
3200	in.	30.17	N/A	N/A	N/A	N/A
	mm	766	N/A	N/A	N/A	N/A

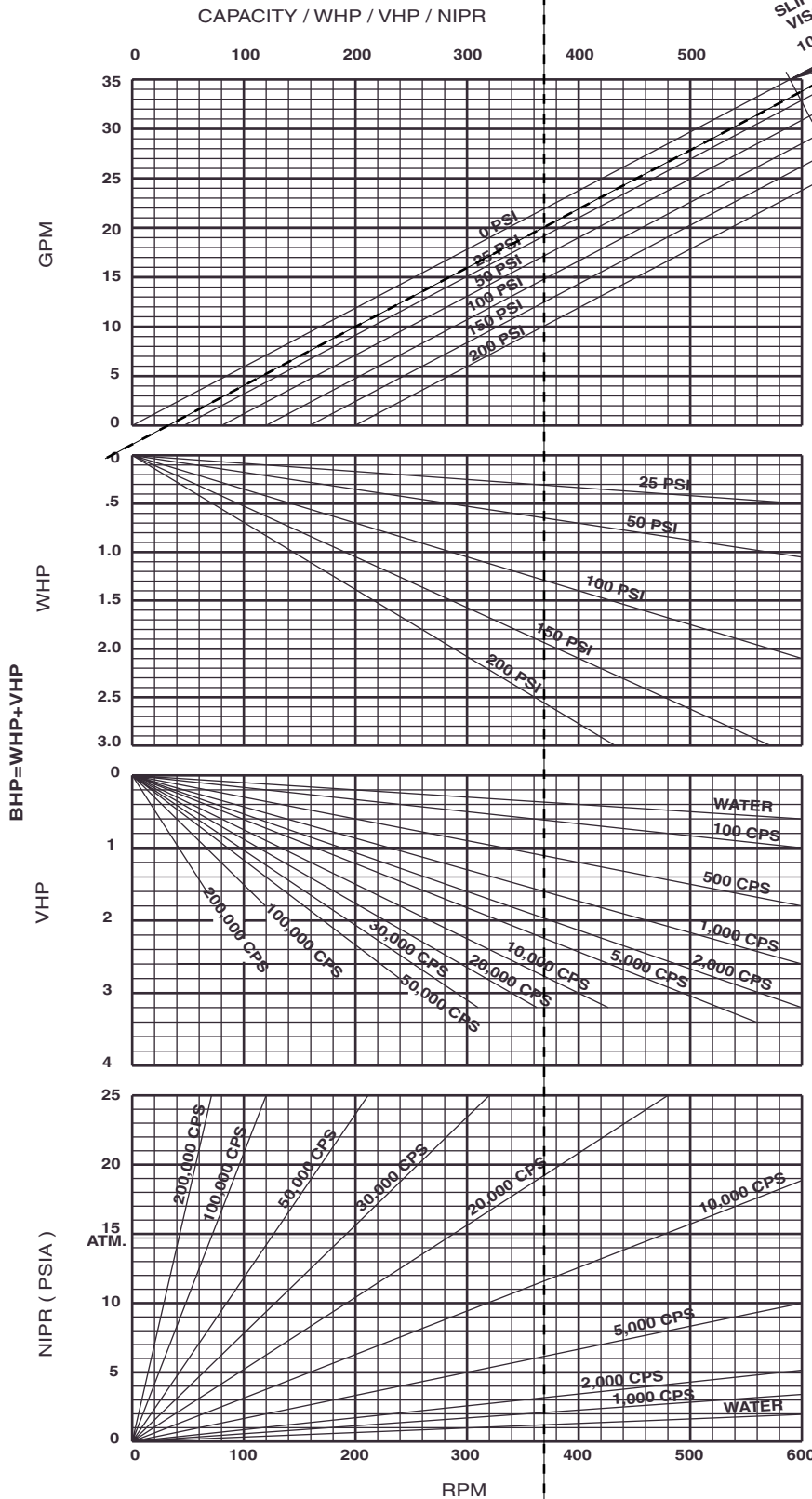
Section	100
Page	100.6
Issue	B

TRA10 Series Positive Displacement Pumps

Performance Curves

Example

Example



How to Use Wright Pump Performance Curves

Capacity

1. Determine liquid viscosity and required pump differential pressure.
2. For liquids with viscosity greater than 200 cPs, use the 0 psi line on the top (GPM) curve to find the desired flow rate and RPM. Note that flow stays the same regardless of pressure in this situation.
3. For liquids with viscosity less than 200 cPs, locate actual viscosity on the slip correction curve. Go down perpendicular from the slip correction curve (0 psi line) to the actual differential pressure. From this intersection point, draw a line parallel to the pressure lines to find the desired flow rate and RPM.

Input Power

1. On the WHP ("Working" or "Water" Horsepower) graph, locate the pump operational speed. Follow the line vertically down until the pump differential pressure line is intersected. Note the WHP at this point.
2. Using the same RPM line, drop down to the VHP (Viscous Horsepower) graph until the correct liquid viscosity line is intersected. Note the VHP here.
3. Add WHP and VHP to obtain actual BHP (Brake Horsepower) to correctly size the drive.

NIPR (Net Inlet Pressure Required)

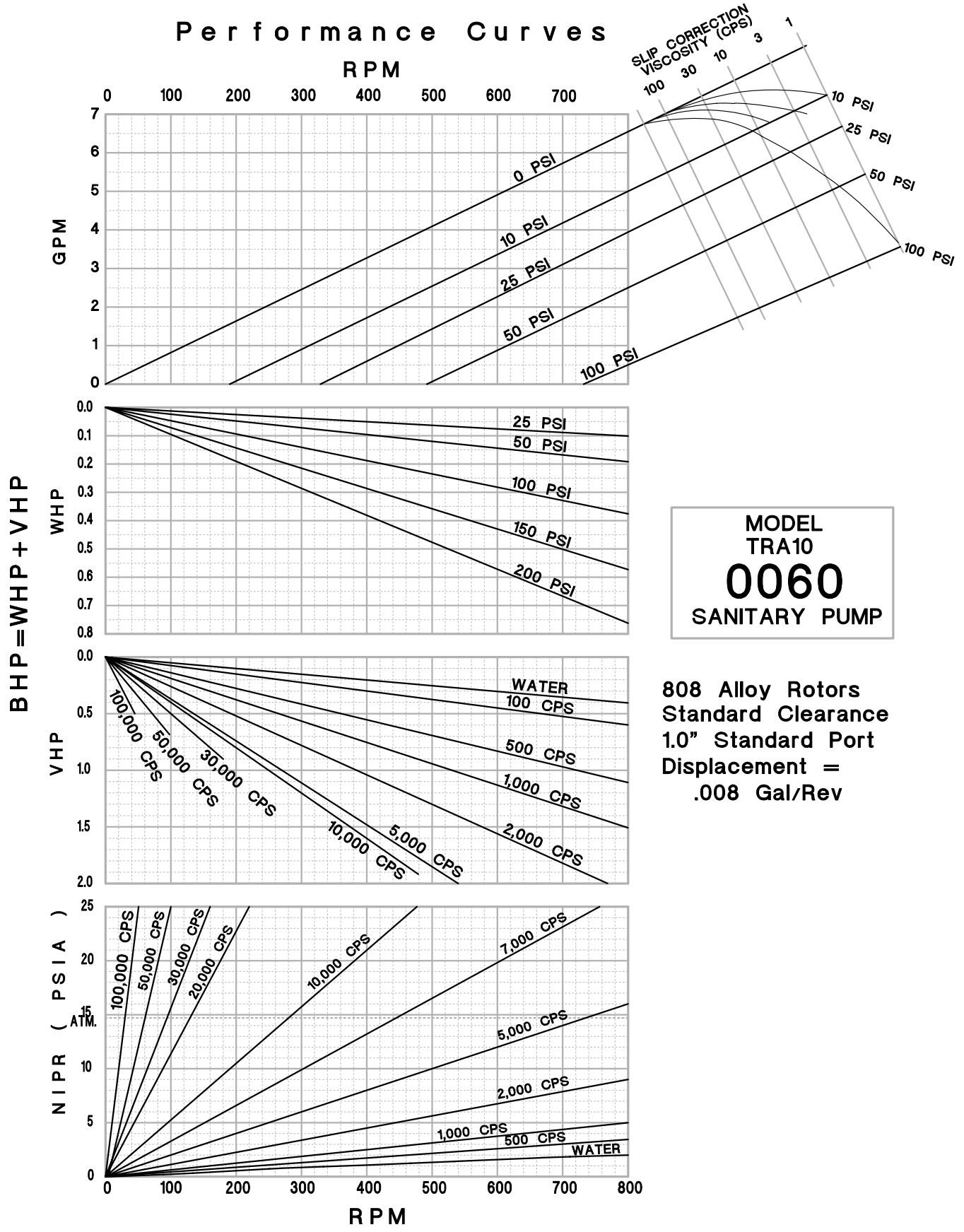
1. Start with the pump operational speed. Go vertically up until actual liquid viscosity is intersected.
2. Read NIPR from the left axis. If the system's NIPA (Net Inlet Pressure Available) is less than the pump's NIPR, cavitation will occur. Either change the system design to improve NIPA or select a larger pump operating at a slower speed to reduce the pump's NIPR.

Example

Select pump and motor for 20 gpm capacity at 100 psi for 30 cPs fluid. Because viscosity is less than 200 cPs, find 30 cPs line on slip correction curve, follow it down to the 100 psi curve (dashed line), then follow that line to 20 gpm. Following the dashed vertical line up, the speed required is about 370 RPM. Following it down, the WHP is 1.3 and the VHP is 0.2, for a total BHP of 1.5. NIPR is about 1.3 psia.

TRA10 Series Positive Displacement Pumps

Section	100
Page	100.7
Issue	B



BHP = WHP + VHP

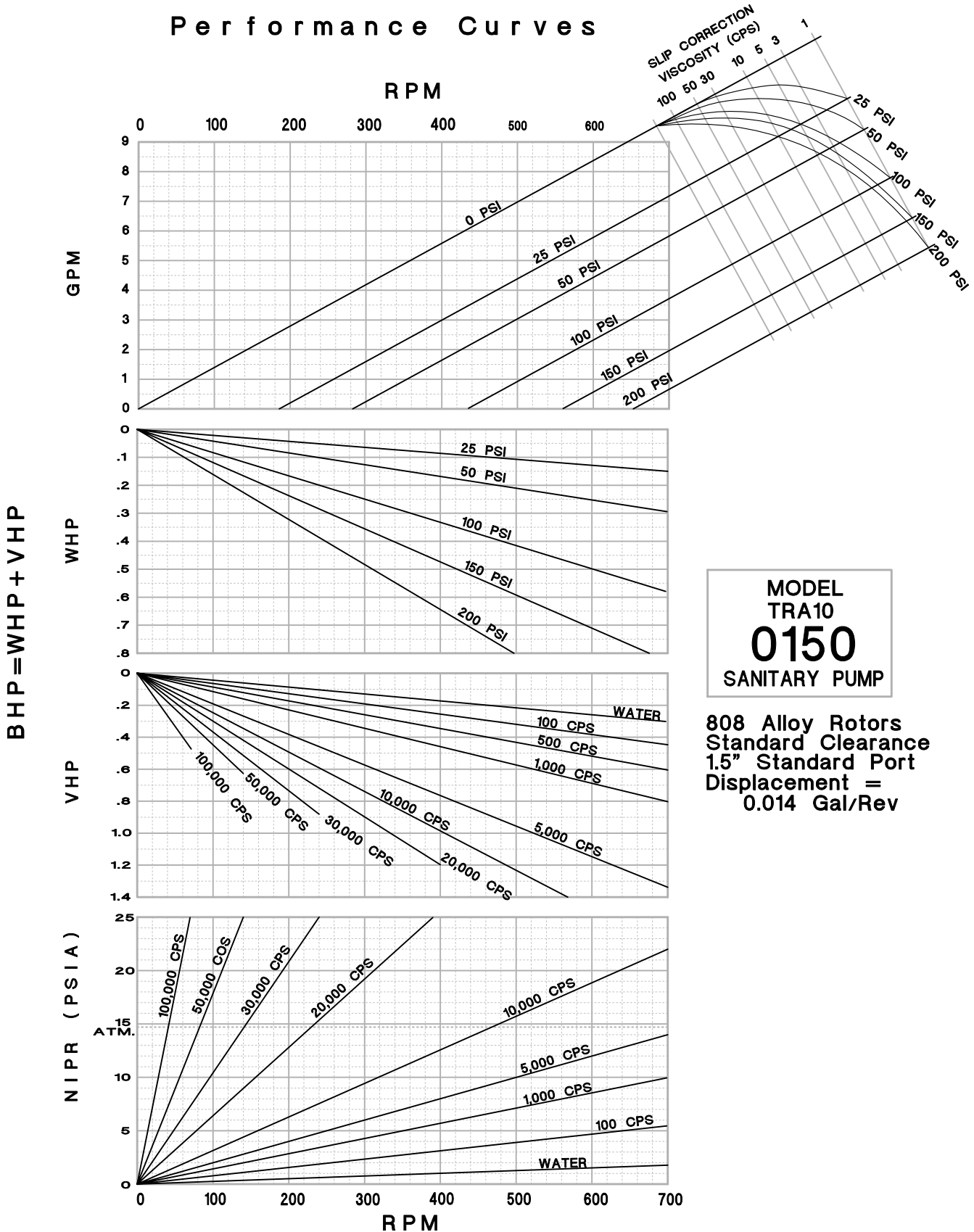
MODEL
TRA10
0060
SANITARY PUMP

808 Alloy Rotors
Standard Clearance
1.0" Standard Port
Displacement =
.008 Gal/Rev

Section	100
Page	100.8
Issue	B

TRA10 Series Positive Displacement Pumps

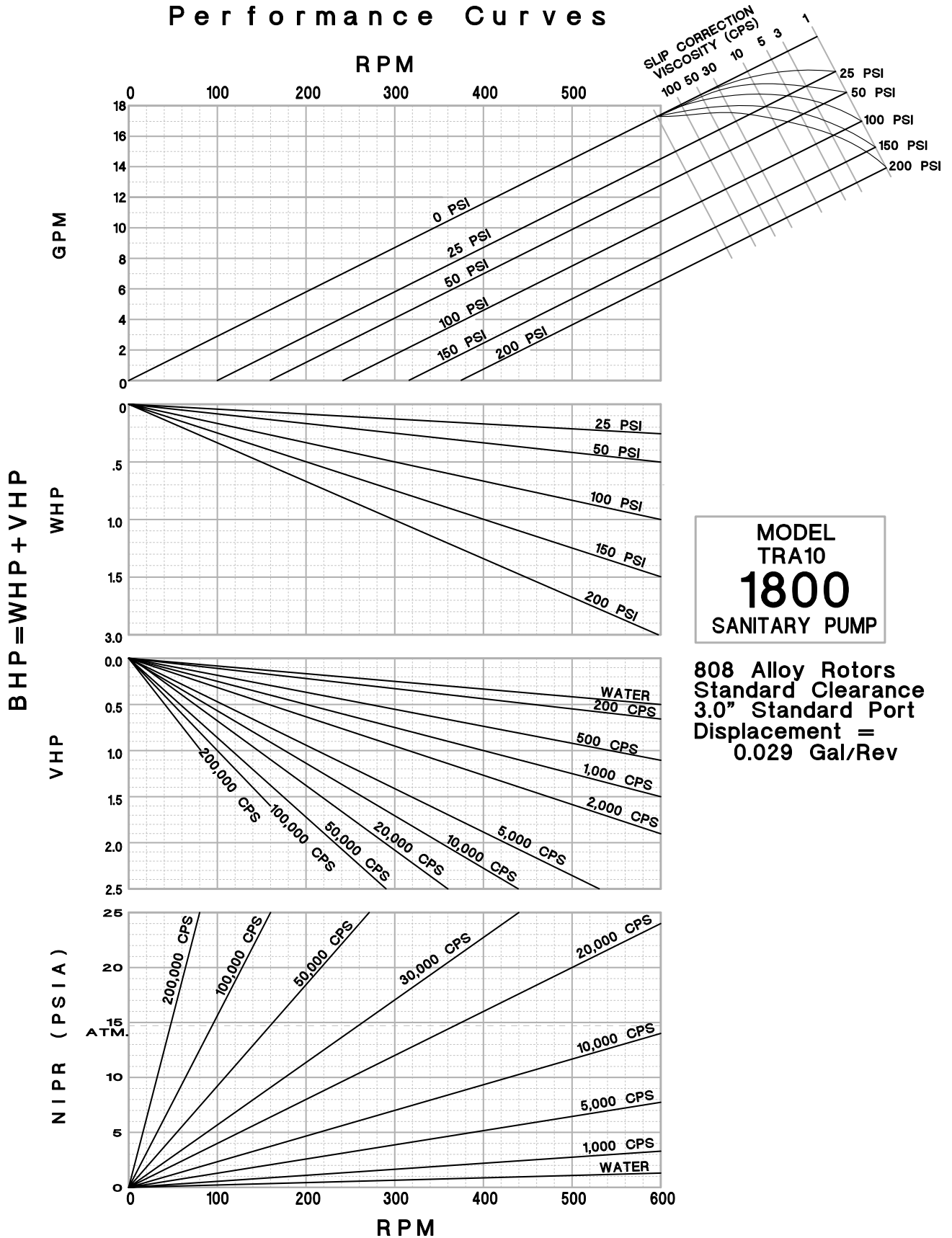
Performance Curves



TRA10 Series Positive Displacement Pumps

Section	100
Page	100.9
Issue	B

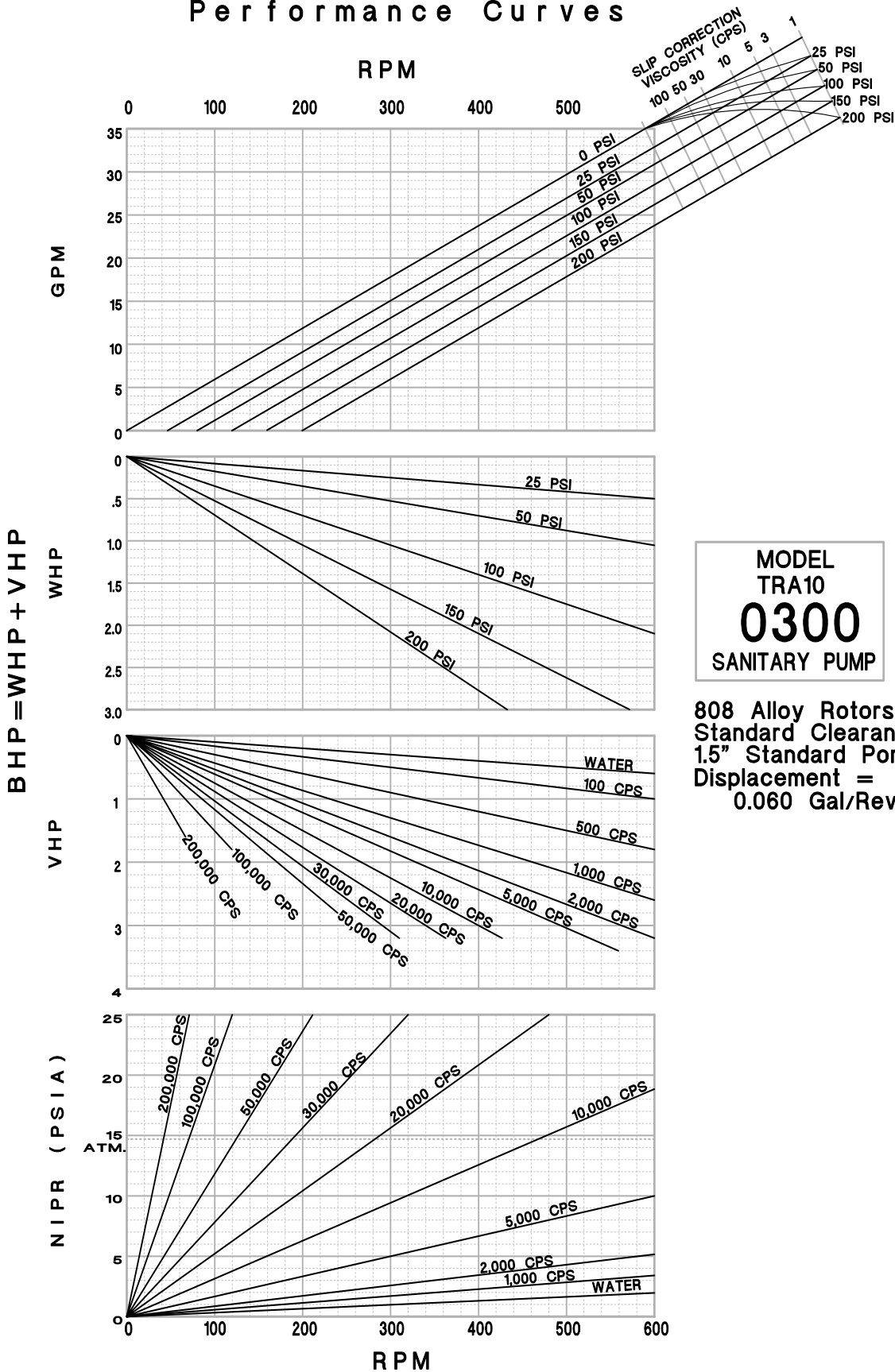
Performance Curves



Section	100
Page	100.10
Issue	B

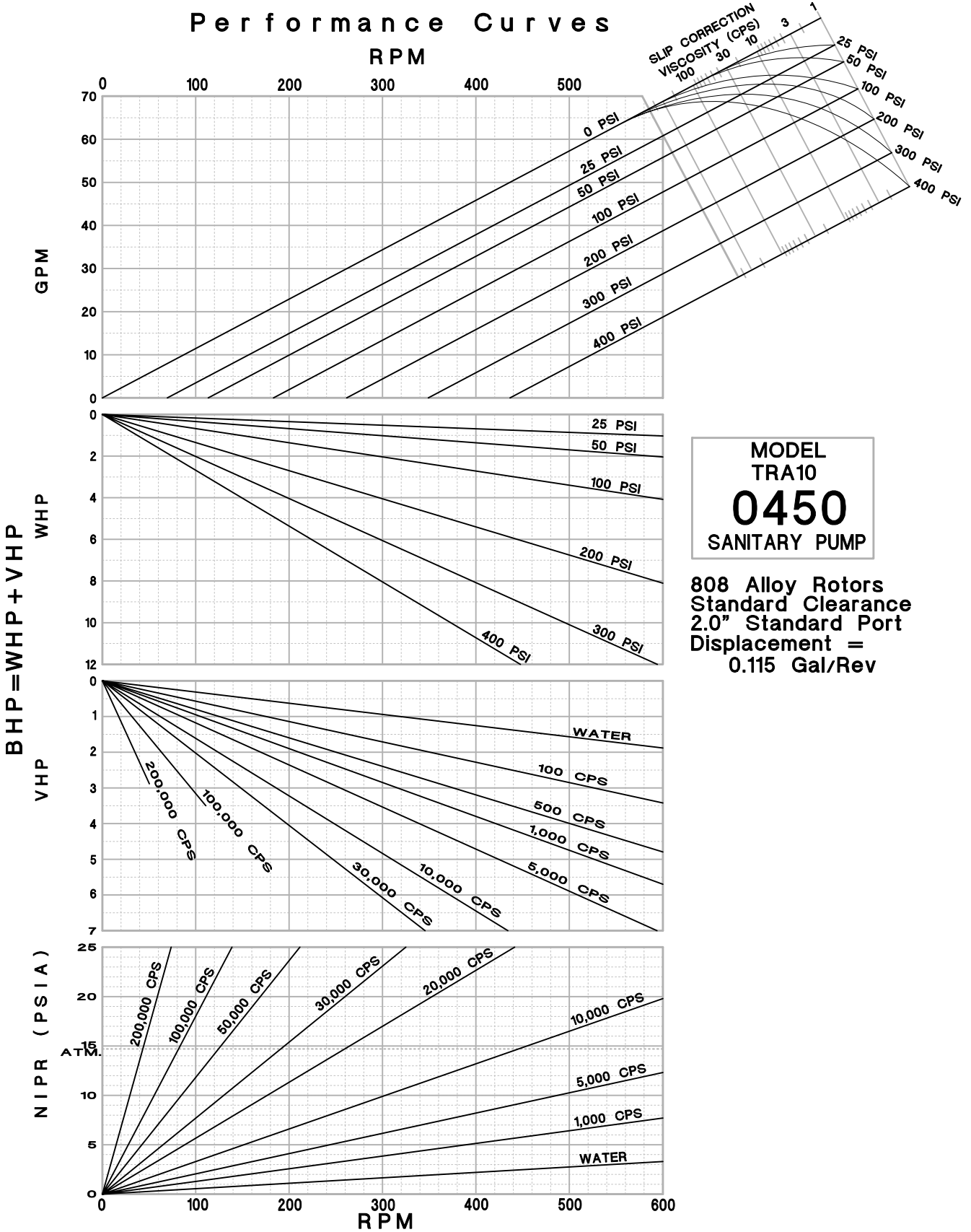
TRA10 Series Positive Displacement Pumps

Performance Curves



TRA10 Series Positive Displacement Pumps

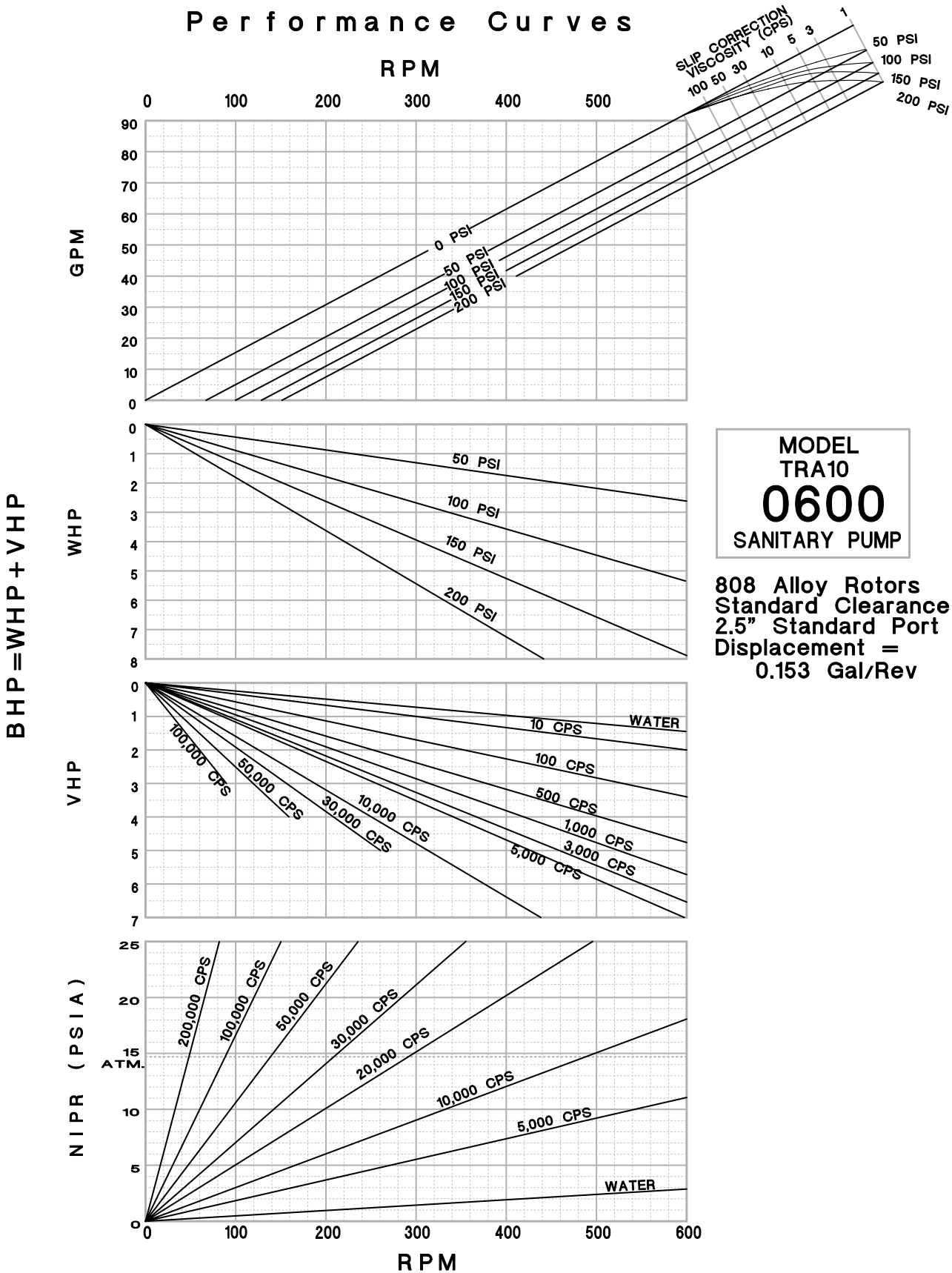
Section	100
Page	100.11
Issue	B



Section	100
Page	100.12
Issue	B

TRA10 Series Positive Displacement Pumps

Performance Curves



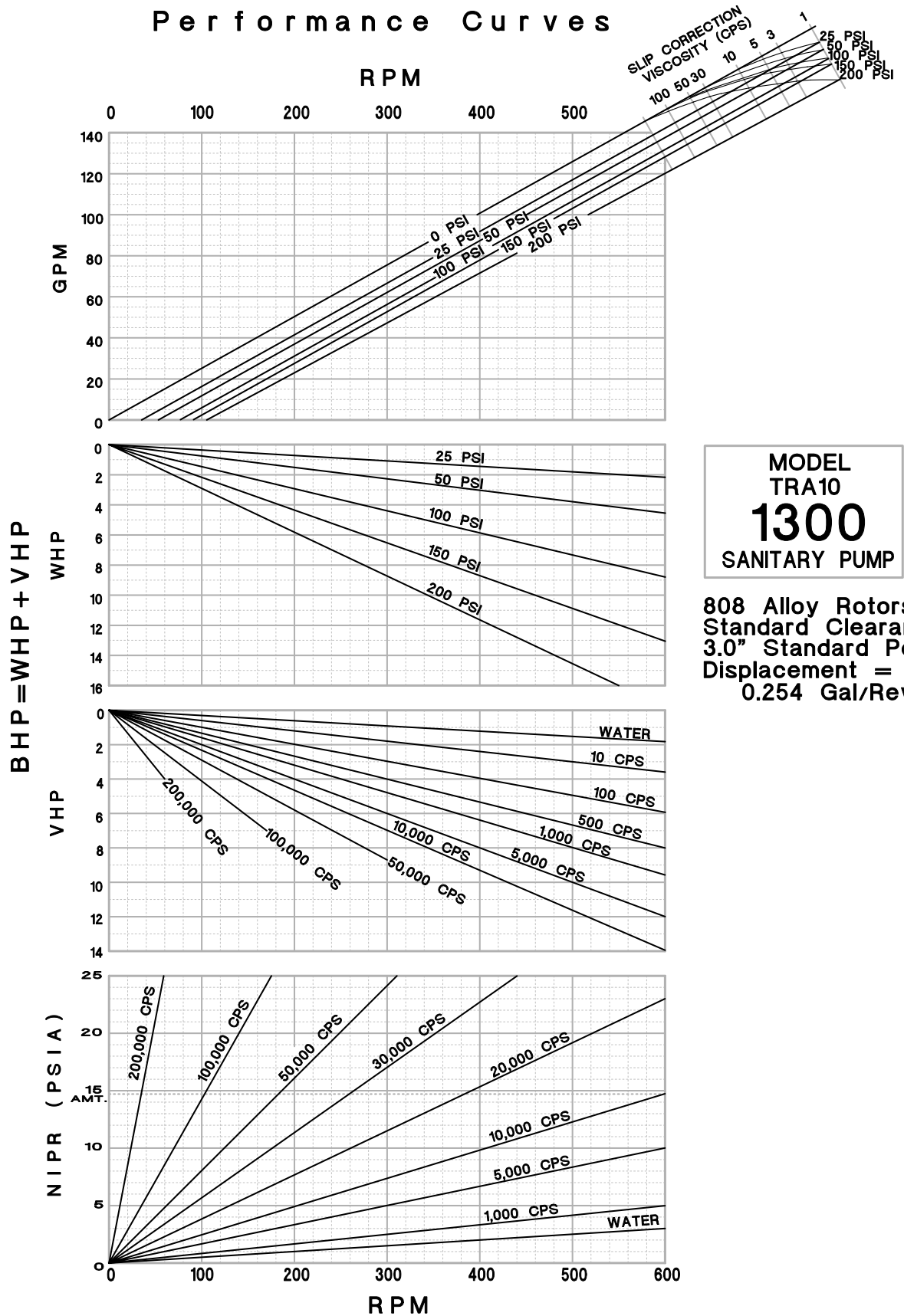
**MODEL
TRA10
0600
SANITARY PUMP**

**808 Alloy Rotors
Standard Clearance
2.5" Standard Port
Displacement =
0.153 Gal/Rev**

TRA10 Series Positive Displacement Pumps

Section	100
Page	100.13
Issue	B

Performance Curves



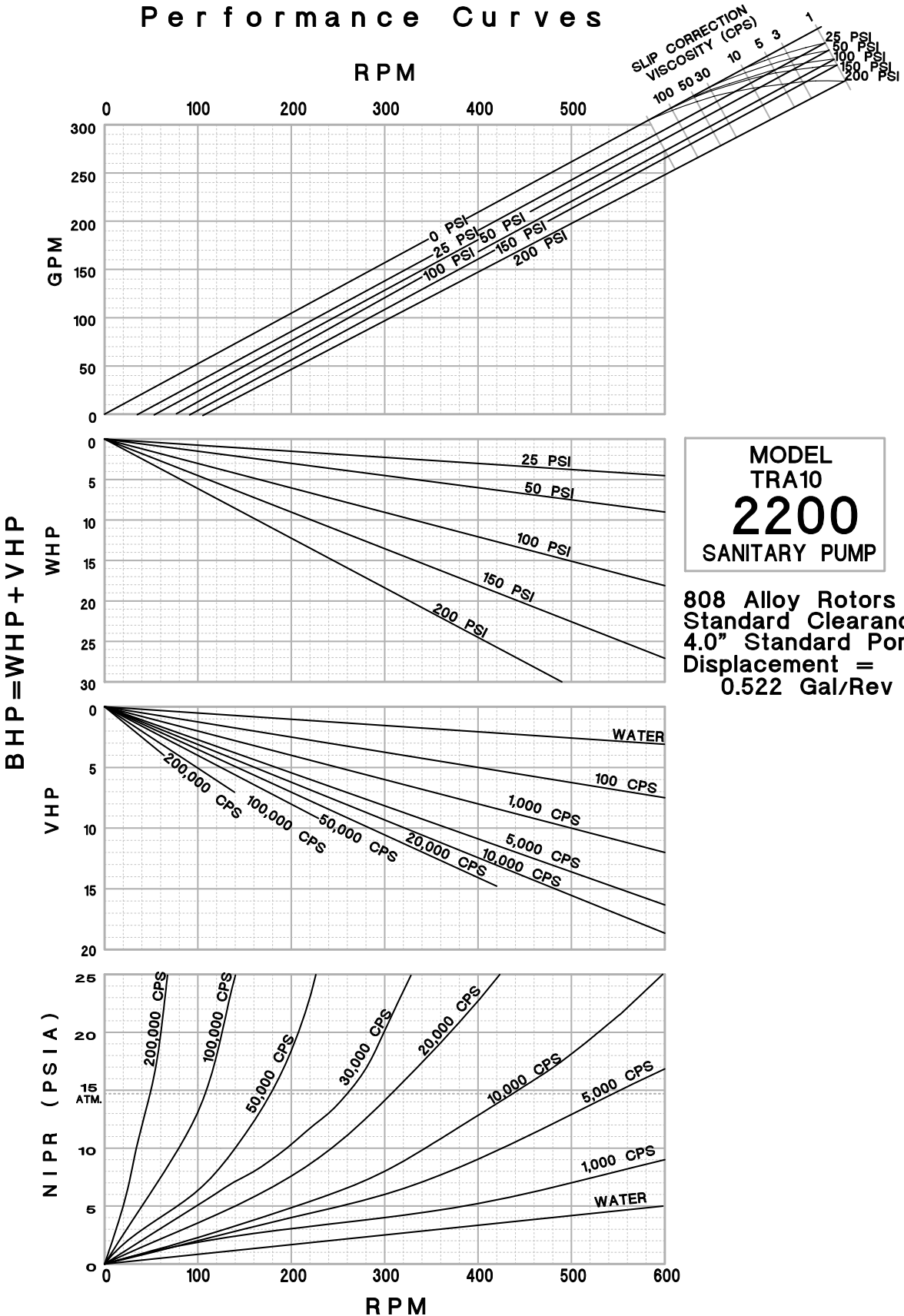
**MODEL
TRA10
1300
SANITARY PUMP**

808 Alloy Rotors
Standard Clearance
3.0" Standard Port
Displacement =
0.254 Gal/Rev

Section	100
Page	100.14
Issue	B

TRA10 Series Positive Displacement Pumps

Performance Curves

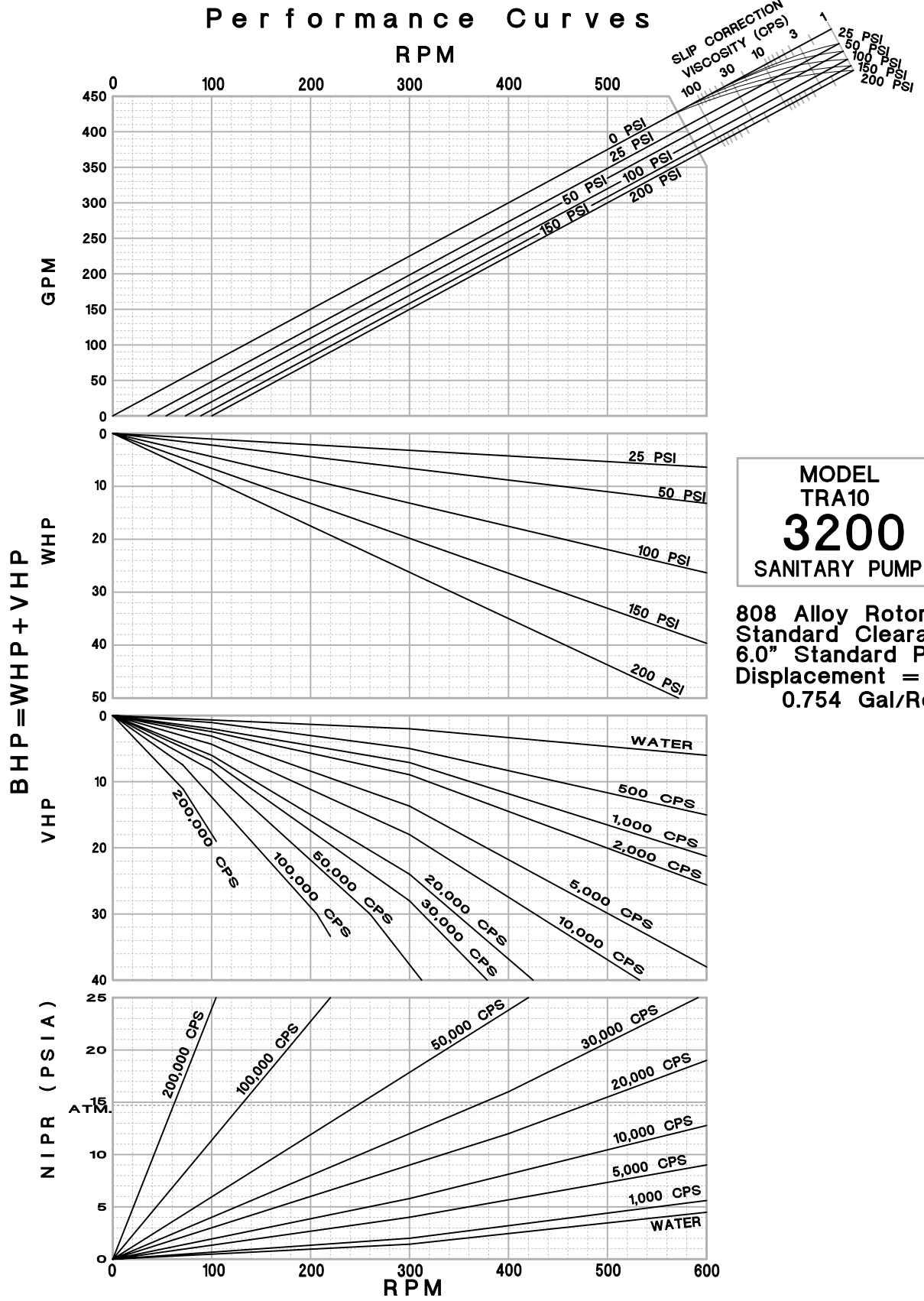


MODEL
TRA10
2200
SANITARY PUMP

808 Alloy Rotors
Standard Clearance
4.0" Standard Port
Displacement =
0.522 Gal/Rev

TRA10 Series Positive Displacement Pumps

Section	100
Page	100.15
Issue	B



MODEL
TRA10
3200
SANITARY PUMP

808 Alloy Rotors
Standard Clearance
6.0" Standard Port
Displacement =
0.754 Gal/Rev