

4-Ball Lower Retrofit Connection Kits

311876M

EN

Connection kits for 4-Ball Lower. For professional use only.

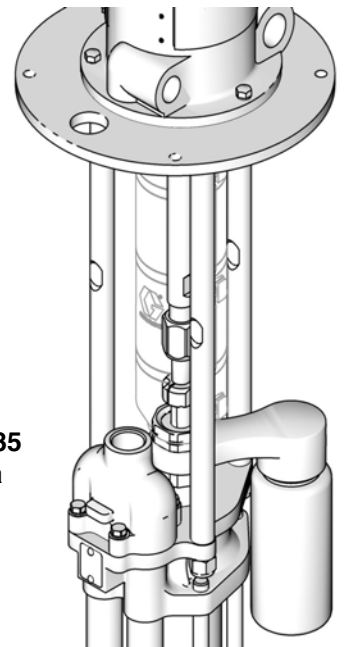


Important Safety Instructions

Read all warnings and instructions in your pump
Operation manual. Save all instructions.

See the **Connection Kit Usage Charts** on pages 3-6
to select the correct connection kit for your lower and motor.
A Shield Kit may also be required. See manual 406876
to order the correct shield kit for your pump.

**Connection Kit 24J185
shown mounted on a
President air motor**



TI16810a

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Connection Kit Usage Chart for President® Air Motors, E-Flo® Motors, and Viscount® I+ Hydraulic Motors

Refer to the following chart to select the correct Connection Kit for your pump lower and motor.

Pump Lower Part No.	Pump Lower Size (cc)	Connection Kit Part No. (see page numbers)			
		President	President (stubby size)	Viscount I+	Original E-Flo
17K656	750	17K523 (16, 33)	not available	17K519 (19, 35)	17K524 (10, 27)
17K657	1000	17K523 (16, 34)	not available	17K519 (19, 35)	17K524 (10,27)
17K658	1500	17K523 (16, 34)	not available	17K519 (19, 36)	17K524 (10, 27)
17K659	2000	17K523 (16, 34)	not available	17K519 (19, 36)	17K524 (10, 27)
17K660	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	not applicable
17K661	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
17K662	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
17K663	2000	<i>not recommended</i>	<i>not recommended</i>	24F065 (18, 36)	
17K664	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
17K665	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
17K666	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
17K667	2000	<i>not recommended</i>	<i>not recommended</i>	24F065 (18, 36)	
17K668	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
17K669	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
17K670	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
17K671	2000	<i>not recommended</i>	<i>not recommended</i>	24F065 (18, 36)	
24F413	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
24F414	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
24F415	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
24F416	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
24F420	750	24J185 (15, 33)	24J186 (15, 33)	24F065 (18, 35)	
24F421*	750	24J185 (15, 33)	not recommended	not recommended	
24F422*	750	24J185 (15, 33)	not recommended	not recommended	
24F423*	750	24J185 (15, 33)	not recommended	not recommended	
24F424	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F425	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F426	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F427	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F431	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F432	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
24F433	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
24F434	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	

Connection Kit Usage Chart for President® Air Motors, E-Flo® Motors, and Viscount® I+ Hydraulic Motors

Pump Lower Part No.	Pump Lower Size (cc)	Connection Kit Part No. (see page numbers)			
		President	President (stubby size)	Viscount I+	Original E-Flo
24F435	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	not applicable
24F439	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
24F440	2000	not recommended	not recommended	24F065 (18, 36)	
24F441	2000	not recommended	not recommended	24F065 (18, 36)	
24F442	2000	not recommended	not recommended	24F065 (18, 36)	
24F443	2000	not recommended	not recommended	24F065 (18, 36)	
24F447	2000	not recommended	not recommended	24F065 (18, 36)	
253033	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253034	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253035	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253061	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253062	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253063	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253085	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253086	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253396	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253397	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253398	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253423	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253520	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253521	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253522	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253523	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253524	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253525	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
253568	1000	288504 (14, 31)	24J186 (15, 34)	24F065 (18, 35)	
253569	1500	288504 (14, 32)	24J186 (15, 34)	24F065 (18, 36)	
253570	2000	288504 (14, 32)	24J186 (15, 32)	24F065 (18, 36)	
24E664†	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24F062†	1000	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 35)	
24H346†	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
24H347†	1500	24J185 (15, 34)	24J186 (15, 34)	24F065 (18, 36)	
24H348†	2000	288504 (15, 32)	24J186 (15, 34)	24F065 (18, 36)	
24H349†	2000	288504 (15, 32)	24J186 (15, 34)	24F065 (18, 36)	

† Retrofitted lowers.

* Drum mounted pump lower with open wet-cup and spring loaded packings.

Connection Kit Usage Chart for Senator®, Bulldog®, NXT® 2200, and NXT® 3400 Air Motors, E-Flo® DC Electric Motors, and Viscount® II Hydraulic Motors

Refer to the following chart to select the correct Connection Kit for your pump lower and motor.

Pump Lower Part No.	Pump Lower Size (cc)	Connection Kit Part No. (see page numbers)					
		Senator	NXT 2200	Bulldog	NXT 3400	Viscount II	E-Flo DC
17K656	750	not recommended	not recommended	not recommended	not recommended	not recommended	17K525 (8, 24)
17K657	1000	17K517 (13, 28)	17K525 (9, 22)	not recommended	not recommended	not recommended	17K525 (8, 25)
17K658	1500	17K517 (13, 29)	17K525 (9, 22)	17K517 (13, 29)	17K525 (9, 23)	not recommended	17K525 (8, 26)
17K659	2000	17K517 (13, 29)	17K525 (9, 22)	17K517 (13, 29)	17K525 (9, 23)	17K520 (21, 37)	17K525 (8, 26)
17K660	750	not recommended	not recommended	not recommended	not recommended	not recommended	288209 (8, 24)
17K661	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
17K662	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
17K663	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
17K664	750	not recommended	not recommended	not recommended	not recommended	not recommended	288209 (8, 24)
17K665	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
17K666	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
17K667	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
17K668	750	not recommended	not recommended	not recommended	not recommended	not recommended	288209 (8, 24)
17K669	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
17K670	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
17K671	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
239834	1000	not applicable	288202 (7, 22)	not applicable	not recommended	not recommended	288202 (7, 25)
239835	1500	not applicable	288202 (7, 22)	not applicable	288202 (7, 23)	not recommended	288202 (7, 26)
239837	1000	not applicable	288202 (7, 22)	not applicable	not recommended	not recommended	288202 (7, 25)
239838	1500	not applicable	288202 (7, 22)	not applicable	288202 (7, 23)	not recommended	288202 (7, 26)
24F424	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F425	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F426	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F427	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F431	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F432	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	not recommended	not recommended	288209 (8, 26)
24F433	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	not recommended	not recommended	288209 (8, 26)
24F434	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	not recommended	not recommended	288209 (8, 26)
24F435	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	not recommended	not recommended	288209 (8, 26)
24F439	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	not recommended	not recommended	288209 (8, 26)
24F440	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
24F441	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
24F442	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
24F443	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
24F447	2000	24F308 (12, 30)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
240606	1500	not applicable	288202 (7, 22)	not applicable	288202 (7, 23)	not recommended	288202 (7, 26)
240607	1500	not applicable	288202 (7, 22)	not applicable	288202 (7, 23)	not recommended	288202 (7, 26)

Connection Kit Usage Chart for Senator[®], Bulldog[®], NXT[®] 2200, and NXT[®] 3400 Air Motors, E-Flo[®] DC Electric Motors, and Viscount[®] II Hydraulic Motors

Pump Lower Part No.	Pump Lower Size (cc)	Connection Kit Part No. (see page numbers)					
		Senator	NXT 2200	Bulldog	NXT 3400	Viscount II	E-Flo DC
240608	1000	not applicable	288202 (7, 22)	not applicable	not recommended	not recommended	288202 (7, 25)
240609	1000	not applicable	288202 (7, 22)	not applicable	not recommended	not recommended	288202 (7, 25)
253033	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253034	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253035	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
253061	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253062	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253063	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
253085	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253086	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
253396	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
253397	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253398	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253423	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253520	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253521	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253522	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
253523	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253524	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
253525	2000	288208 (11, 29)	288209 (8, 22)	288208 (30-32)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 25)
253568	1000	288208 (11, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
253569	1500	288208 (11, 29)	288209 (8, 22)	288208 (11, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
24E664†	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24F062†	1000	24F308 (12, 28)	288209 (8, 22)	not recommended	not recommended	not recommended	288209 (8, 25)
24H346†	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
24H347†	1500	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	not recommended	288209 (8, 26)
24H348†	2000	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)
24H349†	2000	24F308 (12, 29)	288209 (8, 22)	24F308 (12, 30)	288209 (8, 23)	24J390 (20, 37)	288209 (8, 26)


† Retrofitted lowers.

NXT 2200, NXT 3400, or E-Flo DC Electric Motors


Connection Kit 288202

Connects Old Style 4-Ball Lower to NXT 2200 or NXT 3400 Air Motor, or E-Flo DC Electric Motor

NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 288202.



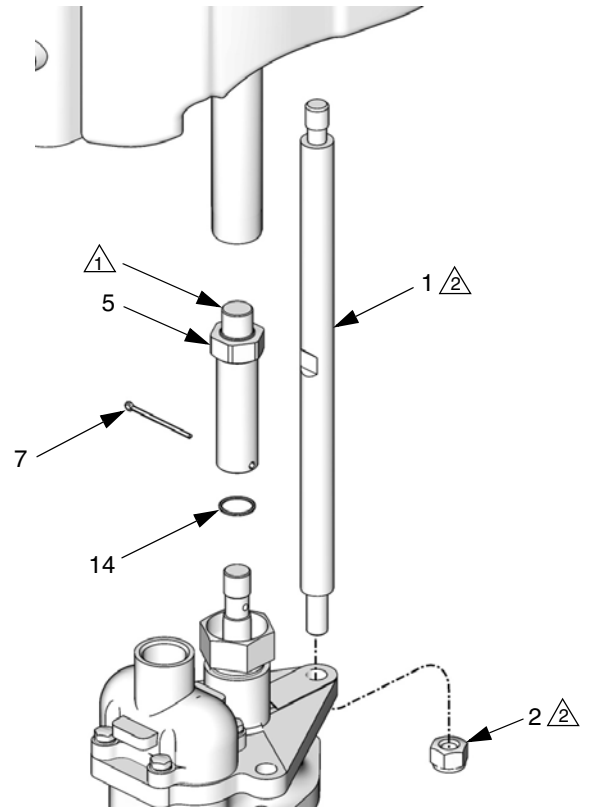
WARNING




Using an NXT 2200 motor or an E-Flo DC 2 HP motor with a 750cc lower or using an NXT 3400 motor with a 750cc or 1000cc lower could cause dangerous overpressurization.


Parts List and Drawing

Ref. Part.	Description	Qty
1	15G924 ROD, tie	3
2	108683 NUT, lock, hex	3
3	111368 SEALANT; 0.5 cc	1
5	15H980 ADAPTER, lg mr	1
7	100103 PIN, cotter	1
14	108284 PACKING, o-ring	1



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 Apply sealant (3) and torque to 145-155 ft-lb (196 -210 N•m)

 Torque to 50-60 ft-lb (68-81 N•m).

Connection Kit 288209

Connects 4-Ball Lower with Open or Enclosed Wet Cup to NXT 2200 or NXT 3400 Air Motor, or E-Flo DC Electric Motor

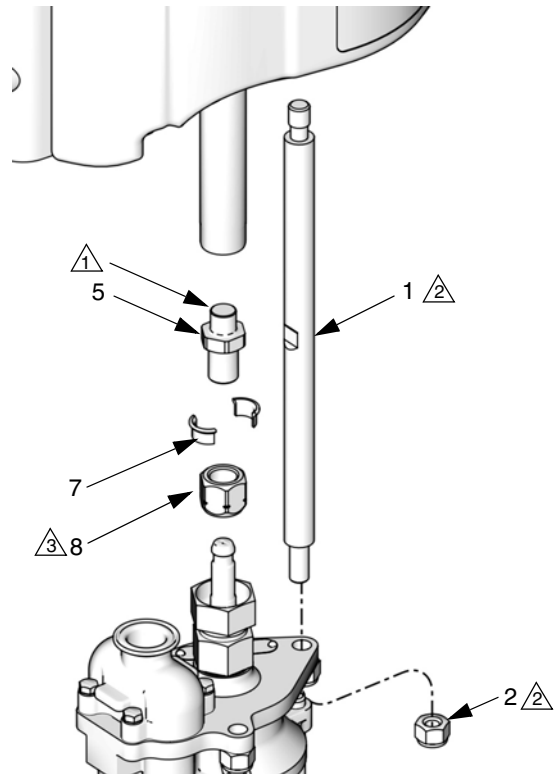
NOTE: See the **Connection Kit Usage Charts** on pages 3-6 to find the lowers and motors that use Connection Kit 288209.

WARNING

Using an NXT 2200 motor or an E-Flo DC 2 HP motor with a 750cc lower or using an NXT 3400 motor with a 750cc or 1000cc lower could cause dangerous overpressurization.

Parts List and Drawing

Ref. Part.	Description	Qty
1	15G924 ROD, tie	3
2	108683 NUT, lock, hex	3
3	111368 SEALANT; 0.5 cc	1
5	15H369 ADAPTER	1
7	184128 COLLAR, coupling	2
8	17F000 NUT, coupling	1



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Apply sealant (3) and torque to 145-155 ft-lb (196 -210 N•m).


Torque to 50-60 ft-lb (68-81 N•m).

Torque to 90-100 ft-lb (122-135 N•m).


Connection Kit 17K525

Connects Sealed 4-Ball Lower to NXT Air Motor or the E-Flo DC Electric Motor

NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 17K525.



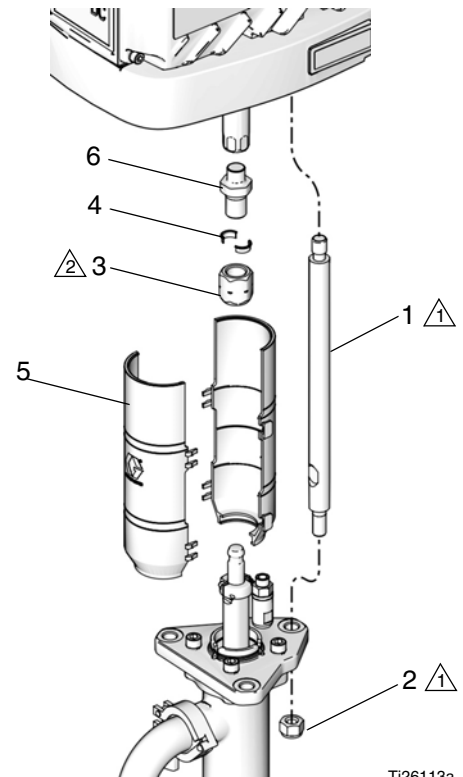
WARNING




Using an NXT 2200 motor or an E-Flo DC 2 HP motor with a 750cc lower or using an NXT 3400 motor with a 750cc or 1000cc lower could cause dangerous overpressurization.


Parts List and Drawing

Ref.	Part.	Description	Qty
1	16X771	ROD, tie	3
2	108683	NUT, lock, hex	3
3	17F000	NUT, coupling	1
4	184128	COLLAR, coupling	2
5	24F251	KIT, SHIELD; includes 2	1
6	15H369	ADAPTER	1



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 Torque to 50-60 ft-lb (68-81 N•m).

 Torque to 90-100 ft-lb (122-135 N•m).

Original E-Flo Electric Motor

Connection Kit 17K524

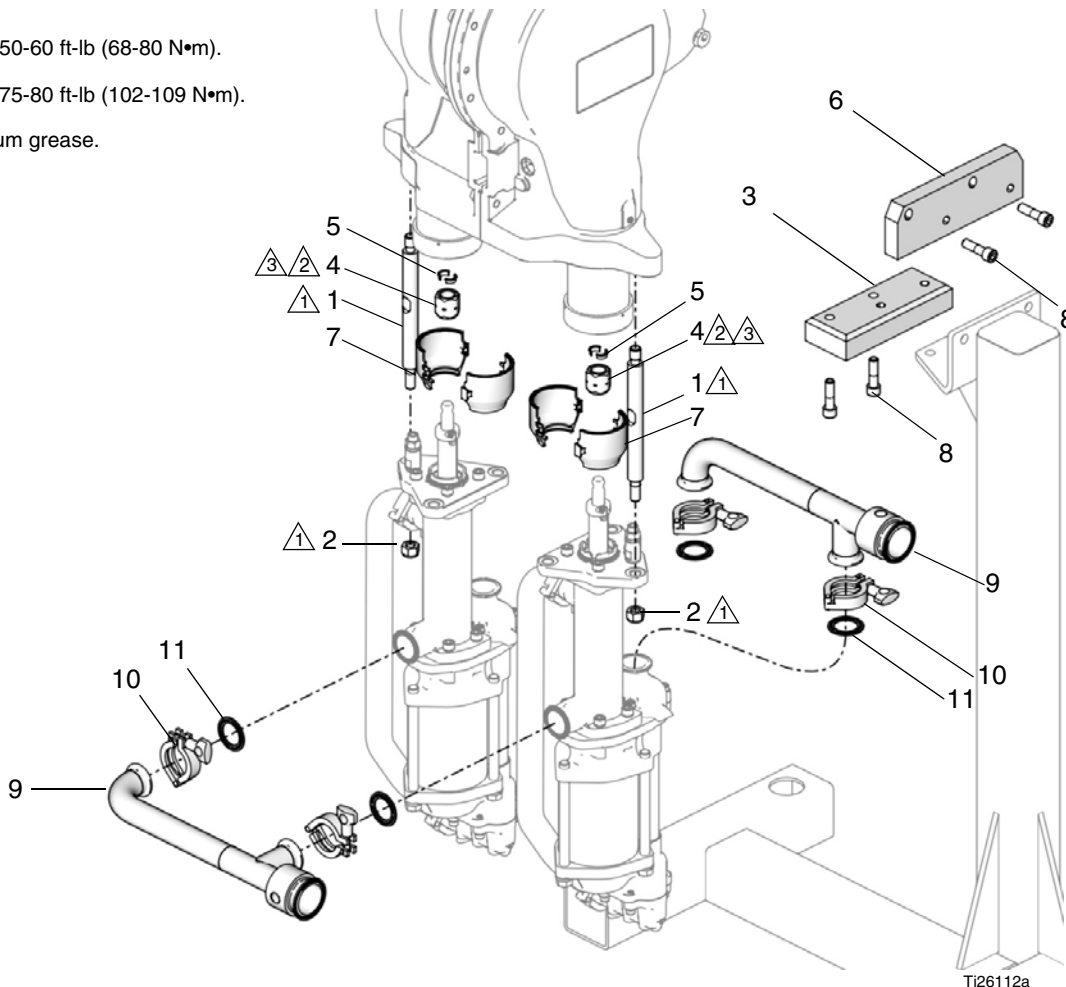
Connects Sealed 4-Ball Lower to the Original E-Flo Motor.

NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 17K524.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	17C455	ROD, tie	6
2	108683	NUT, lock, hex	6
3	17F533	ADAPTER, riser	1
4	17F000	NUT, coupling	2
5	184128	COLLAR, coupling	4
6	17F534	ADAPTER, plate	1
7	24F253	KIT, shield, coupling; <i>includes 2</i>	2
8	110343	SCREW, cap	4
9	17D589	MANIFOLD	2
10	118598	CLAMP, sanitary, 1.5 in.	4
11	120351	GASKET, sanitary	4

- ⚠ Torque to 50-60 ft-lb (68-80 N•m).
- ⚠ Torque to 75-80 ft-lb (102-109 N•m).
- ⚠ Apply lithium grease.



Bulldog and Senator Air Motors

Connection Kit 288208

Connects Old-Style 4-Ball Lower with Torqueable Wet Cup to Bulldog or Senator Air Motor

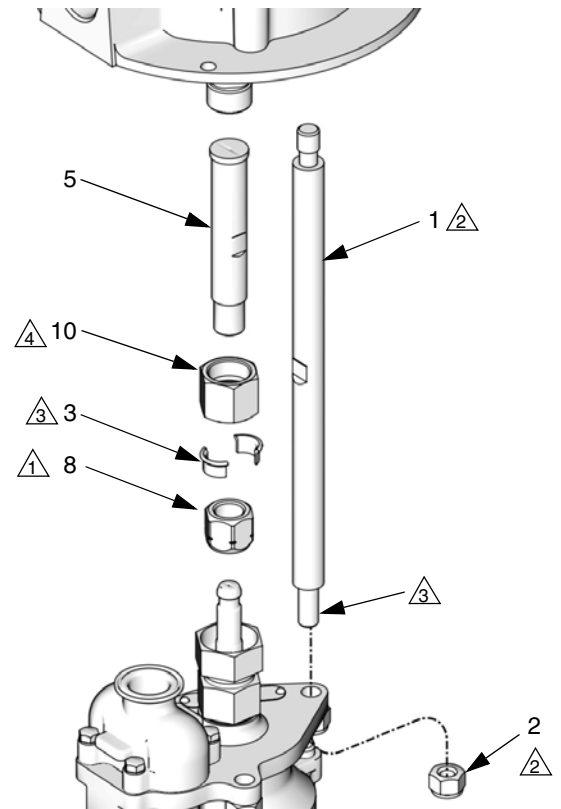
NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 288208.

WARNING

Using a Bulldog or Senator air motor with a 750cc lower, or a Bulldog air motor with a 1000cc lower, could cause dangerous overpressurization.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	183089	ROD, tie	3
2	108527	NUT, lock, hex	3
3	184128	COLLAR, coupling	2
5	15H981	ADAPTER, lg mr	1
8	17F000	NUT, coupling	1
10	183079	NUT, adapter	1



T132824a

△1 Torque to 90-100 ft-lb (122-135 N•m).

△2 Torque to 50-55 ft-lb (68-75 N•m).

△3 Apply lubricant.

^

Connection Kit 24F308

Connects 4-Ball Lower with Open or Enclosed Wet Cup to Bulldog or Senator Air Motor

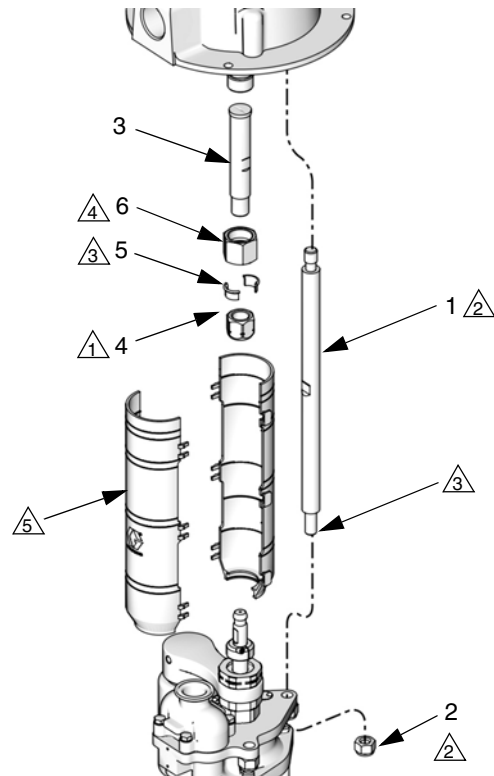
NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 24F308.

WARNING

Using a Bulldog or Senator air motor with a 750cc lower, or a Bulldog air motor with a 1000cc lower, could cause dangerous overpressurization.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	183089	ROD, tie	3
2	108527	NUT, lock, hex	3
3	16F214	ADAPTER, lg mr	1
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	183079	NUT, adapter	1



- ① Torque to 145-150 ft-lb (196-203 N•m).
- ② Torque to 50-55 ft-lb (68-75 N•m).
- ③ Apply lubricant.
- ④ Torque to 75-80 ft-lb (102-109 N•m).
- ⑤ Shield Kit is not included. See manual 406876 to order the correct shield kit for your pump.

T18985c

Connection Kit 17K517

Connects Sealed 4-Ball Lower to Bulldog or Senator Air Motor

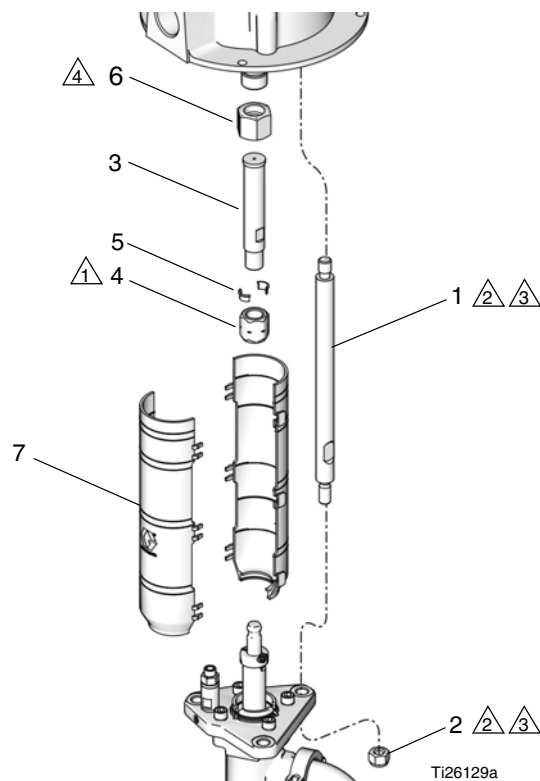
NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 17K517.

WARNING

Using a Bulldog or Senator air motor with a 750cc lower, or a Bulldog air motor with a 1000cc lower, could cause dangerous overpressurization.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	17F456	ROD, tie	3
2	108683	NUT, lock, hex	3
3	16F214	ADAPTER	1
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	183079	NUT, adapter	1
7	24F252	KIT, SHIELD, coupling, includes 2	1



- Torque to 90-100 ft-lb (122-135 N•m).
- Torque to 50-55 ft-lb (68-75 N•m).
- Lubricate threads.
- Torque to 75-80 ft-lb (102-109 N•m).

President Air Motor

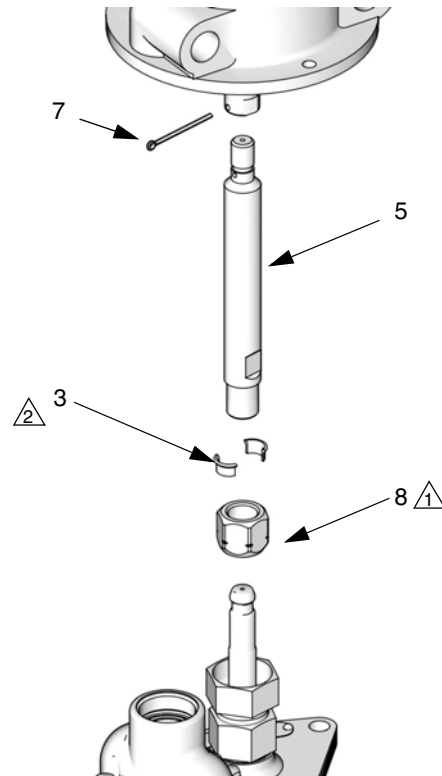
Connection Kit 288504

Connects 4-Ball Lower with Torqueable Wet Cup to President Air Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 288504.

Parts List and Drawing

Ref.	Part.	Description	Qty
3	184128	COLLAR, coupling	2
5	15J948	ADAPTER	1
7	100579	PIN, cotter	1
8	17F000	NUT, coupling	1



T132825a

△1 Torque to 90-100 ft-lb (122-135 N•m).

△2 Apply lubricant.

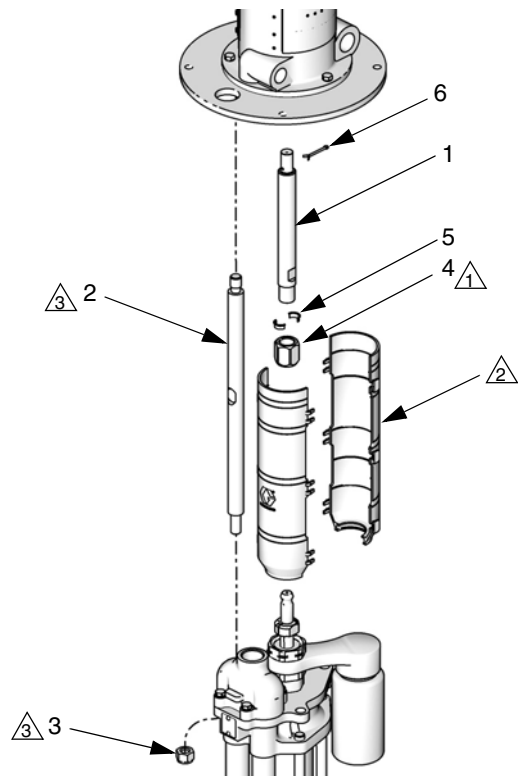
Connection Kit 24J185

Connects Standard-Length 4-Ball Lower with Open or Enclosed Wet Cup to President Air Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 24J185.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	16H544	ADAPTER	1
2	15G924	TIE ROD	3
3	108683	NUT, lock, hex	3
4	15T311	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	100103	PIN, cotter	1



T16809a

- ① Torque to 90-100 ft-lb (122-135 N•m).
- ② Shield Kit is not included. See manual 406876 to order the correct shield kit for your pump.
- ③ Torque to 50-55 ft-lb (68-75 N•m).

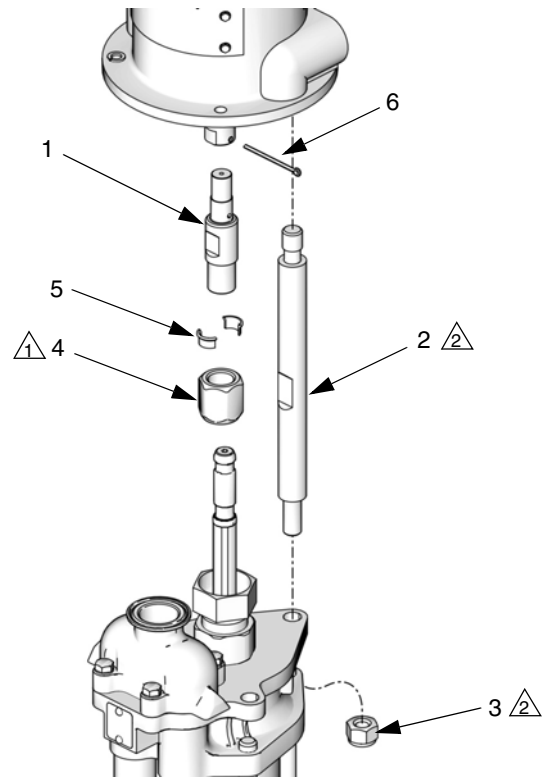
Connection Kit 24J186

Connects Stubby-Length 4-Ball Lower with Open or Enclosed Wet Cup to President Air Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 24J186.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	16H375	ADAPTER	1
2	16H434	TIE ROD	3
3	108683	NUT, lock, hex	3
4	15T311	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	100103	PIN, cotter	1



T16809a

△1 Torque to 90-100 ft-lb (122-135 N•m).

△2 Torque to 50-55 ft-lb (68-75 N•m).

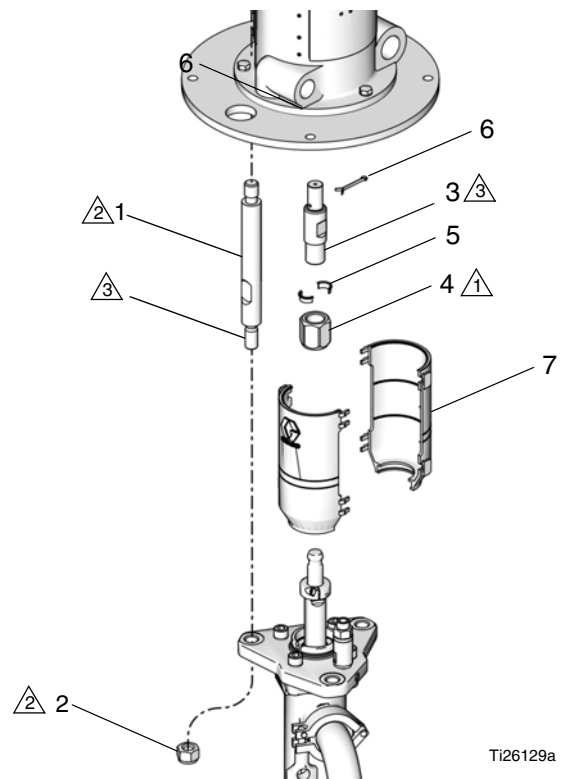
Connection Kit 17K523

Connects Sealed 4-Ball Lower to the President Air Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 17K523.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	17C261	ROD, tie	3
2	108683	NUT, lock, hex	3
3	16H375	ADAPTER	1
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	100103	PIN, cotter	1
7	24A640	KIT, SHIELD, coupling, includes 2	1



T126129a

① Torque to 90-100 ft-lb (122-135 N•m).

② Torque to 50-55 ft-lb (68-75 N•m).

③ Apply lubricant

Viscount 1 Hydraulic Motor

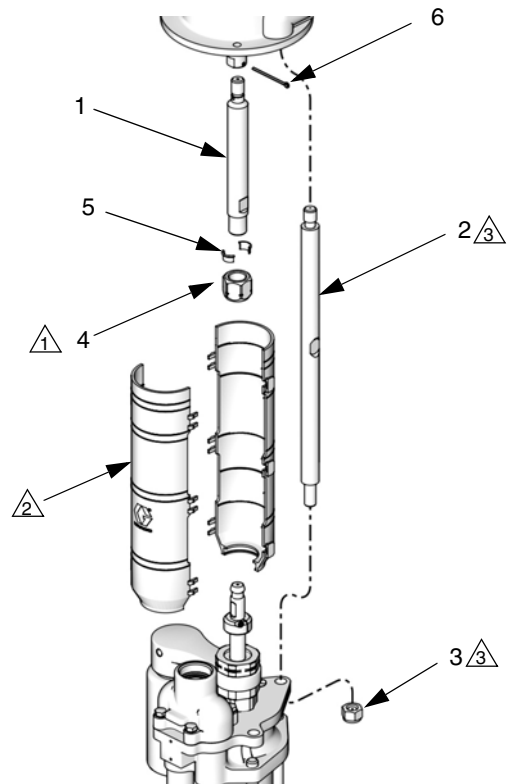
Connection Kit 24F065

Connects 4-Ball Lower with Open or Enclosed Wet Cup to Viscount I+ Hydraulic Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 24F065.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	16C373	ADAPTER	1
2	15G924	TIE ROD	3
3	108683	NUT, lock, hex	3
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	100579	PIN, cotter	1



T18986c

⚠ Torque to 90-100 ft-lb (122-135 N•m).

⚠ Shield Kit is not included. See manual 406876 to order the correct shield kit for your pump.

⚠

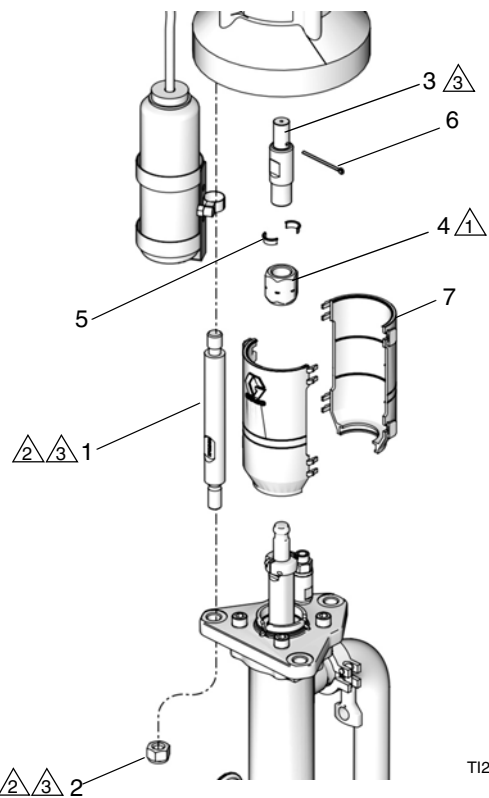
Connection Kit 17K519

Connects Sealed 4-Ball Lower to the Viscount I Hydraulic Motor

NOTE: See the **Connection Kit Usage Chart** on pages 3-4 to find the lowers and motors that use Connection Kit 17K519.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	17C261	ROD, tie	3
2	108683	NUT, lock, hex	3
3	17E258	ADAPTER	1
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	100103	PIN, cotter	1
7	24A640	KIT, SHIELD, coupling, includes 2	1



TI28144b

① Torque to 90-100 ft-lb (122-135 N•m).

② Torque to 50-60 ft-lb (68-81 N•m).

③ Lubricate threads.

Viscount II Hydraulic Motor

Connection Kit 24J390

Connects 4-Ball Lower with Open or Enclosed Wet Cup to Viscount II Hydraulic Motor

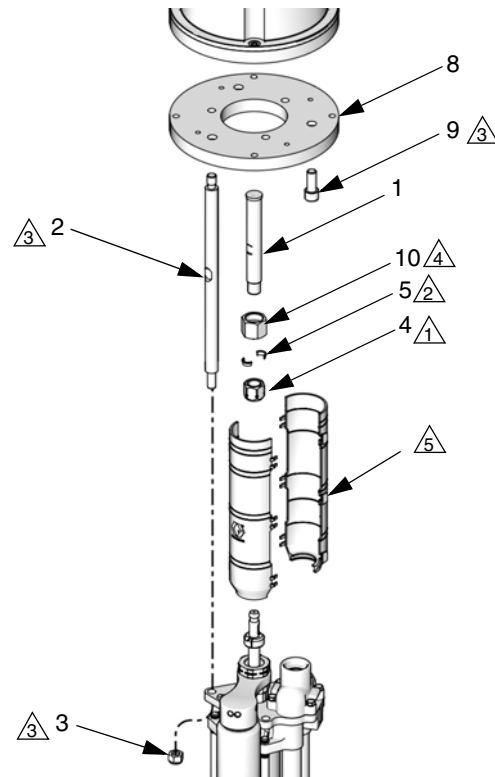
NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 24J390.

WARNING

Using a Viscount II hydraulic motor with a 750cc, 1000cc, or 1500cc lower could cause dangerous overpressurization.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	15K736	ADAPTER	1
2	15G924	TIE ROD	3
3	108683	NUT, lock, hex	3
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
8	120558	PLATE, mounting	1
9	C19789	SCREW, cap, socket hd	3
10	183079	NUT, adapter	1



T116940c

① Torque to 90-100 ft-lb (122-135 N•m).

② Apply lubricant.

③ Torque to 50-55 ft-lb (68-75 N•m).


④ Torque to 75-80 ft-lb (102-109 N•m).

⑤ Shield Kit is not included. See manual 406876

Connection Kit 17K520

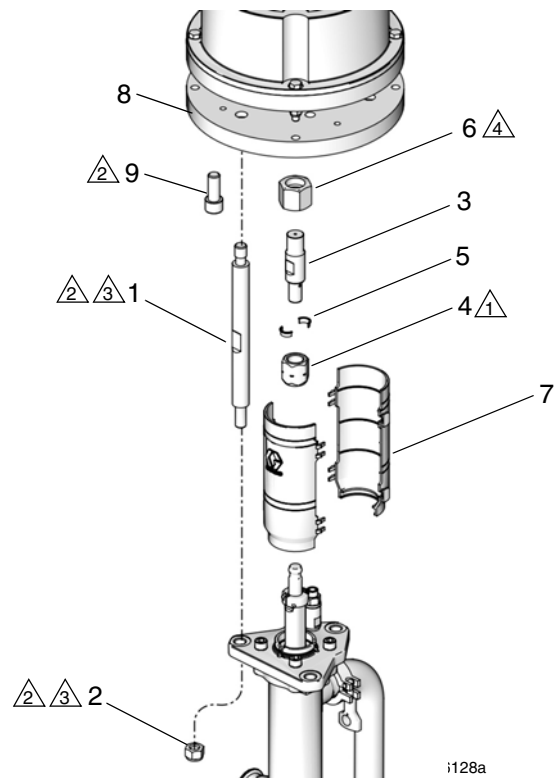
Connects Sealed 4-Ball Lower to the Viscount II Hydraulic Motor

NOTE: See the **Connection Kit Usage Chart** on pages 5-6 to find the lowers and motors that use Connection Kit 17K520.





! WARNING	
	Using a Viscount II hydraulic motor with a 750cc, 1000cc, or 1500cc lower could cause dangerous overpressurization.

Parts List and Drawing

Ref.	Part.	Description	Qty
1	16H434	ROD, tie	3
2	108683	NUT, lock, hex	3
3	17E257	ADAPTER	1
4	17F000	NUT, coupling	1
5	184128	COLLAR, coupling	2
6	183079	NUT, adapter	1
7	24F251	KIT, SHIELD, coupling, includes 2	1
8	120558	PLATE, mounting	1
9	C19789	SCREW, cap	3



i128a

-  Torque to 90-100 ft-lb (122-135 N•m).
-  Torque to 50-55 ft-lb (68-75 N•m).
-  Lubricate threads.
-  Torque to 75-80 ft-lb (102-109 N•m).

Performance Charts

NXT 2200

Fluid Outlet Pressure - Black Curves

To find Fluid Outlet Pressure (psi/MPa/bar) at a specific fluid flow (gpm/lpm) and operating air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black).
3. Follow left to scale to read fluid outlet pressure.

Air Consumption - Gray Curves

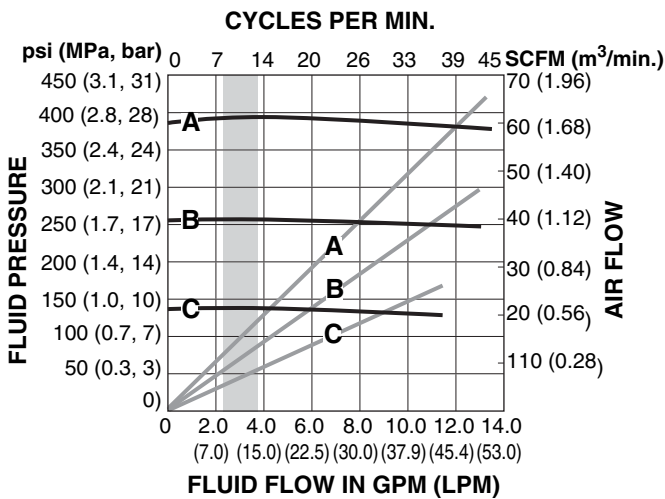
To find Pump Air Consumption (scfm or m³/min.) at a specific fluid flow (gpm/lpm) and air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (dashes).
3. Follow right to scale to read air consumption.

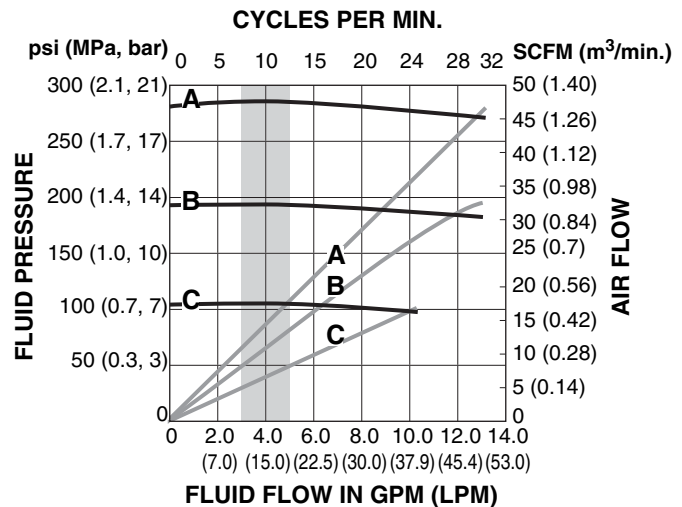
Key:

- A 100 psi (0.7 MPa, 7.0 bar) air pressure
- B 70 psi (0.49 MPa, 4.9 bar) air pressure
- C 40 psi (0.28 MPa, 2.8 bar) air pressure

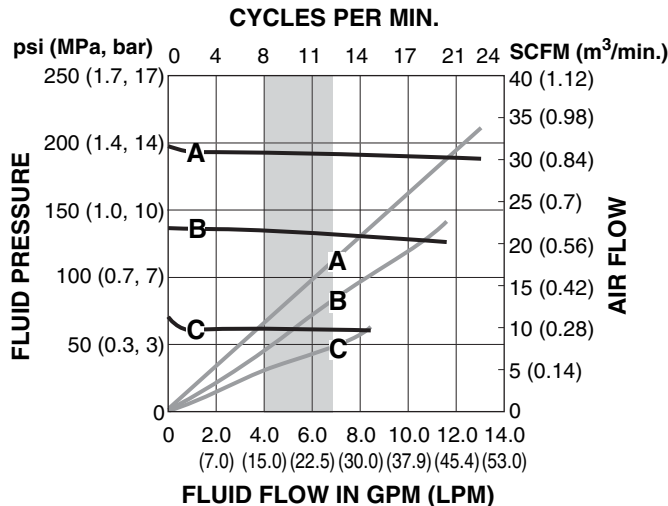
NXT 2200 Air Motor, 1000cc Lower



NXT 2200 Air Motor, 1500cc Lower



NXT 2200 Air Motor, 2000cc Lower



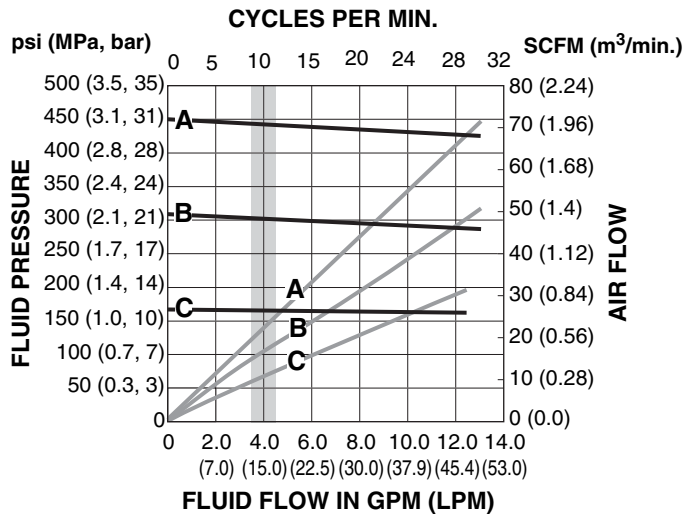
NXT 3400

Key:

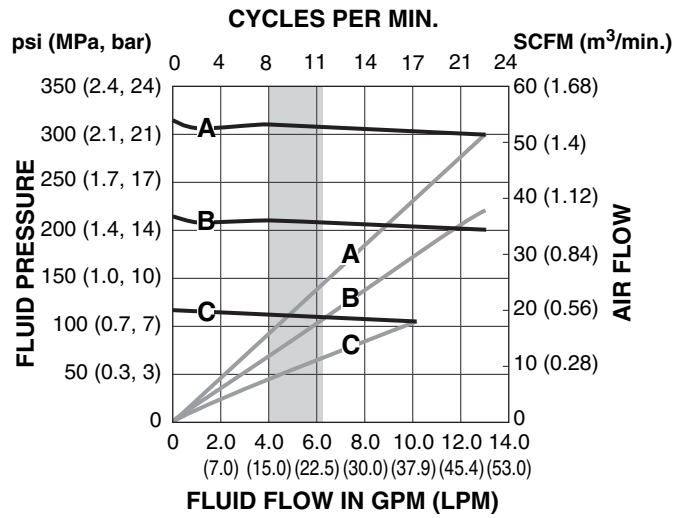
- A 100 psi (0.7 MPa, 7.0 bar) air pressure
- B 70 psi (0.49 MPa, 4.9 bar) air pressure
- C 40 psi (0.28 MPa, 2.8 bar) air pressure

The shaded area within the table shows the recommended range for continuous duty circulation applications.

NXT 3400 Air Motor, 1500cc Lower



NXT 3400 Air Motor, 2000cc Lower



E-Flo DC

Fluid Outlet Pressure

To find fluid outlet pressure (psi/MPa/bar) at a specific flow (gpm/lpm) and percentage of maximum force (A/B/C):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected percentage of maximum force (see the **Key** below).
3. Follow left to vertical scale to read fluid outlet pressure.

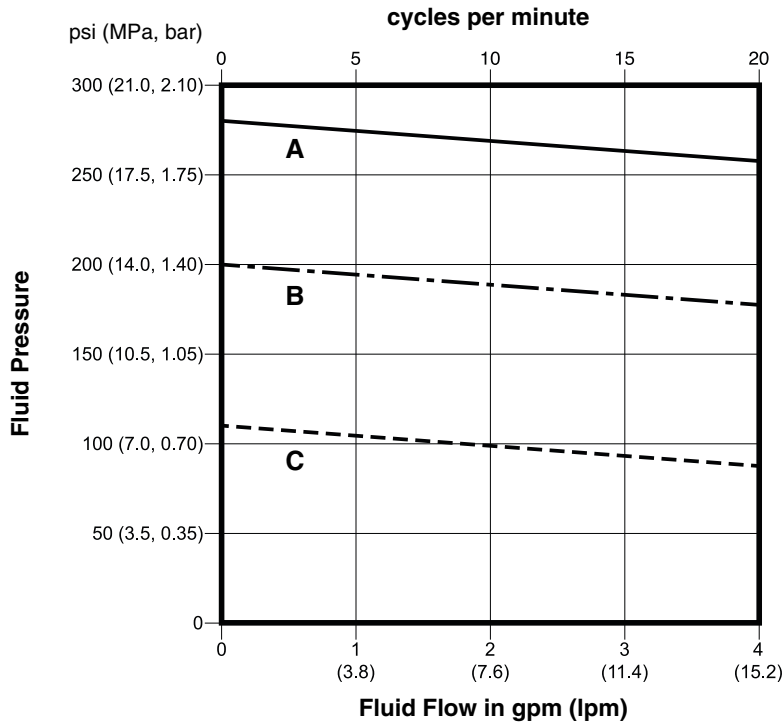
Key to E-Flo DC Performance Charts

NOTE: The charts show the motor operating at 100%, 70%, and 40% of maximum force. These values are approximately equivalent to an air motor operating at 100, 70, and 40 psi..

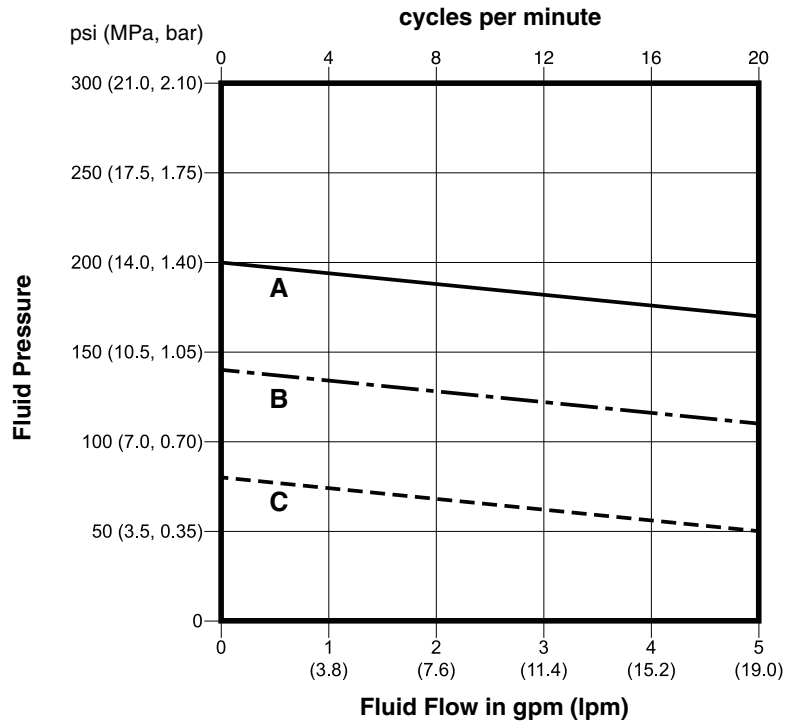
- A** ————— 100% of maximum force
- B** - - - - - 70% of maximum force
- C** - - - - - 40% of maximum force

Test Fluid: No. 10 Weight Oil

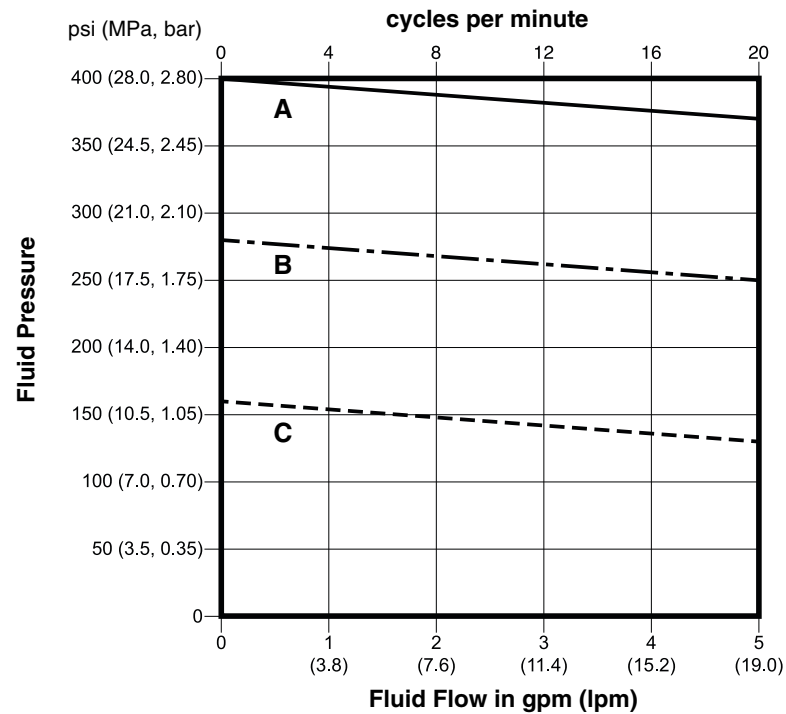
1 HP Motor (1400 lb maximum force) with 750cc Lower



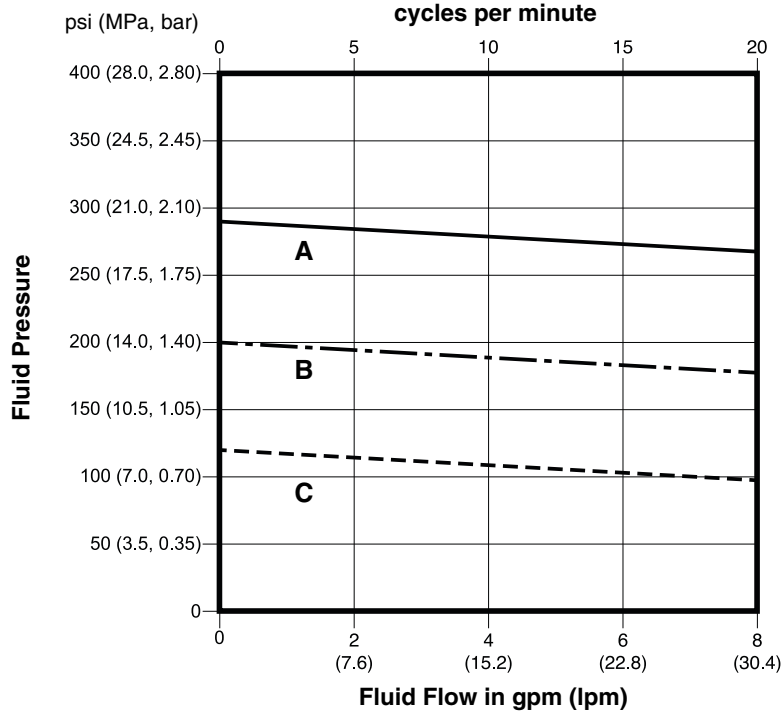
1 HP Motor (1400 lb maximum force) with 1000cc Lower



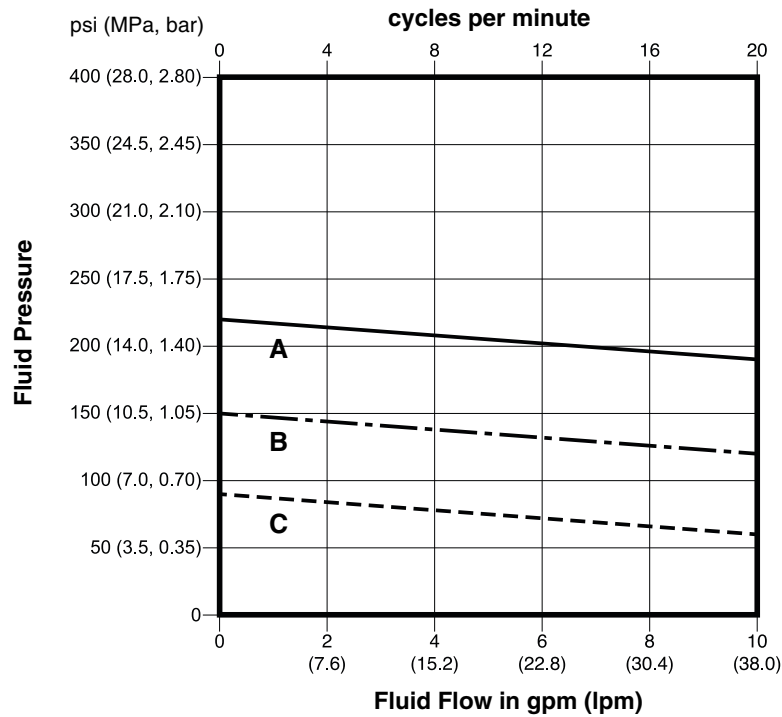
2 HP Motor (2800 lb maximum force) with 1000cc Lower



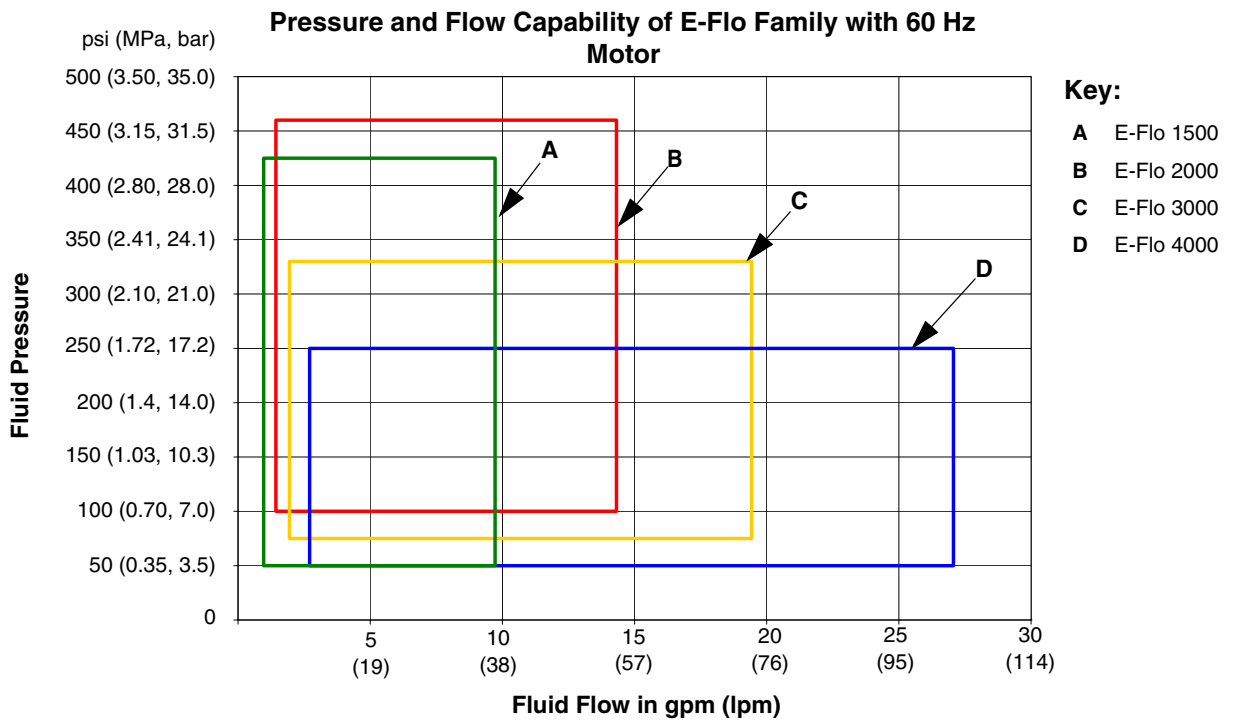
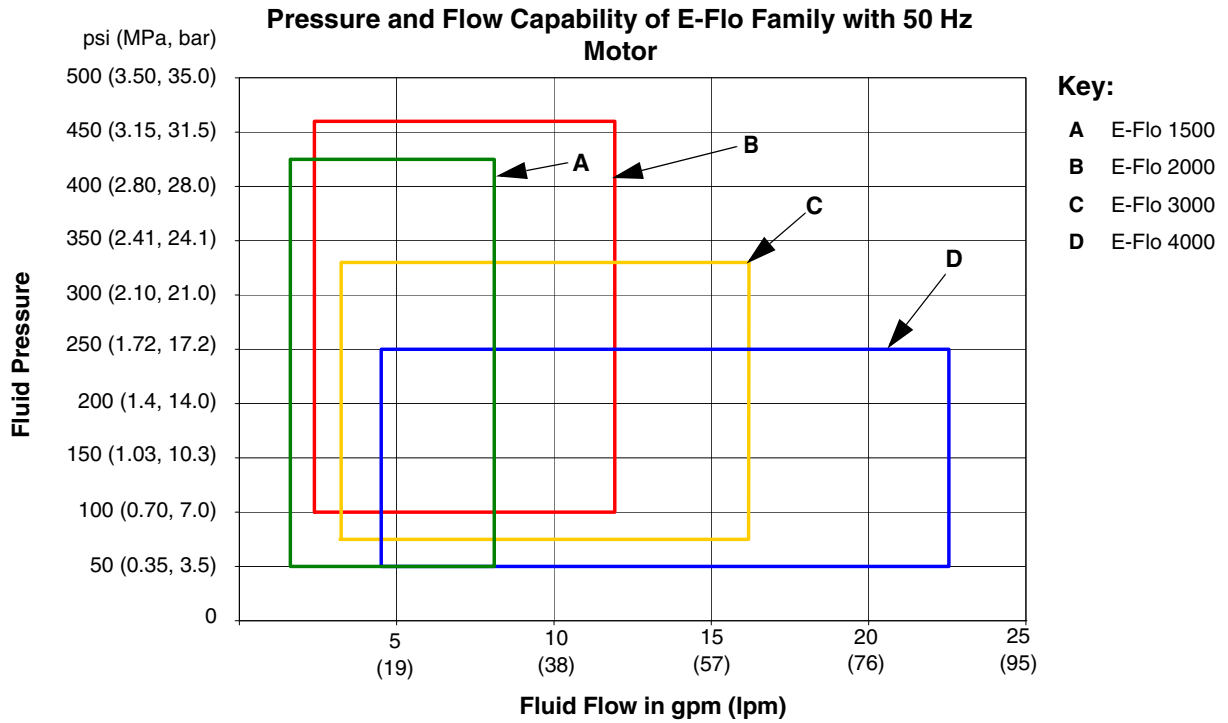
2 HP Motor (2800 lb maximum force) with 1500cc Lower



2 HP Motor (2800 lb maximum force) with 2000cc Lower



Original E-Flo



Senator and Bulldog

Fluid Outlet Pressure

To find fluid outlet pressure (MPa/bar/psi) at a specific flow (lpm/gpm) and operating pressure (A/B/C):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected operating pressure curve (solid line). Follow left to scale to read fluid outlet pressure.

Air Consumption

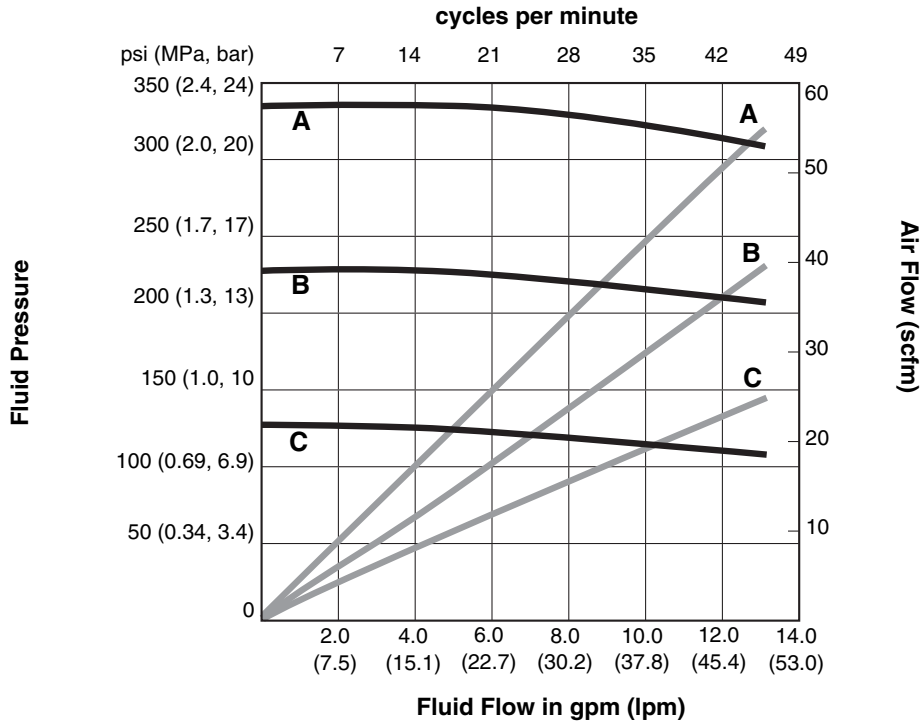
To find air consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm) and operating pressure (A/B/C):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (gray line). Follow right to scale to read air consumption.

Key

- A** 0.7 MPa, 7 bar (100 psi) air pressure
- B** 0.5 MPa, 4.9 bar (70 psi) air pressure
- C** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

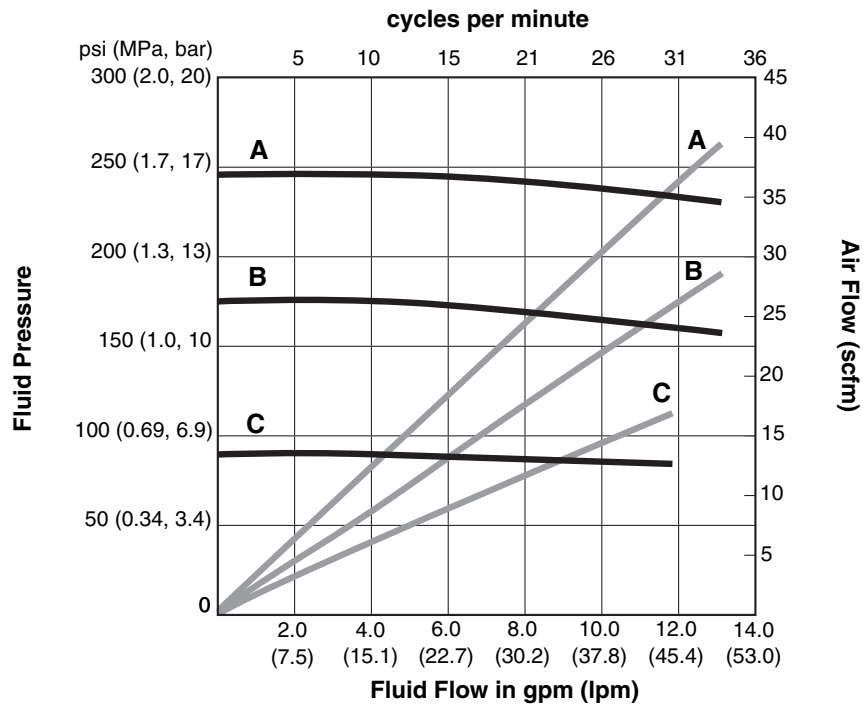
Senator with 1000cc Lower



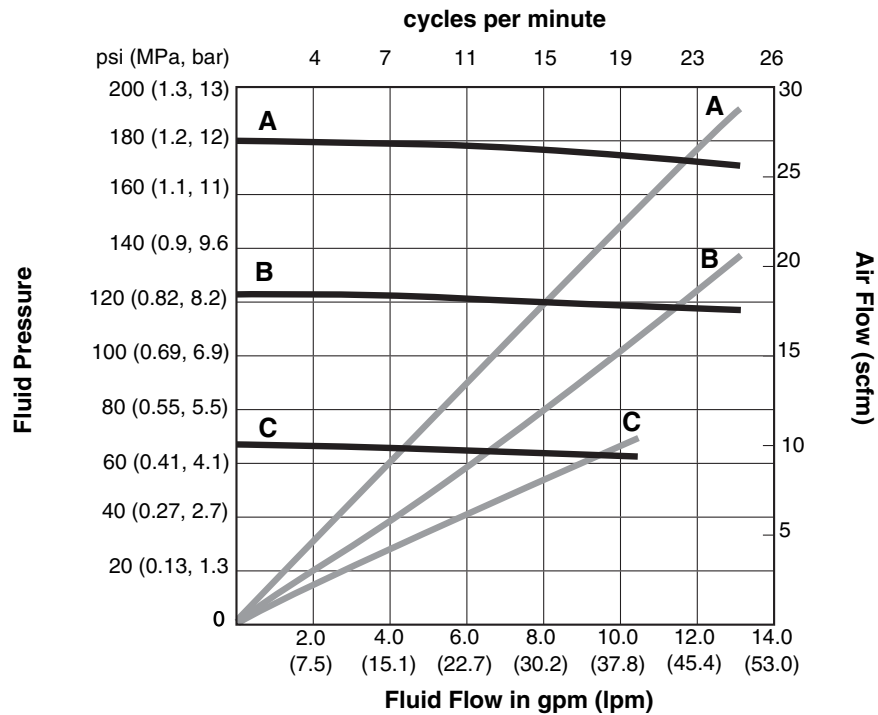
Key

- A** 0.7 MPa, 7 bar (100 psi) air pressure
 - B** 0.5 MPa, 4.9 bar (70 psi) air pressure
 - C** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

Senator with 1500cc Lower



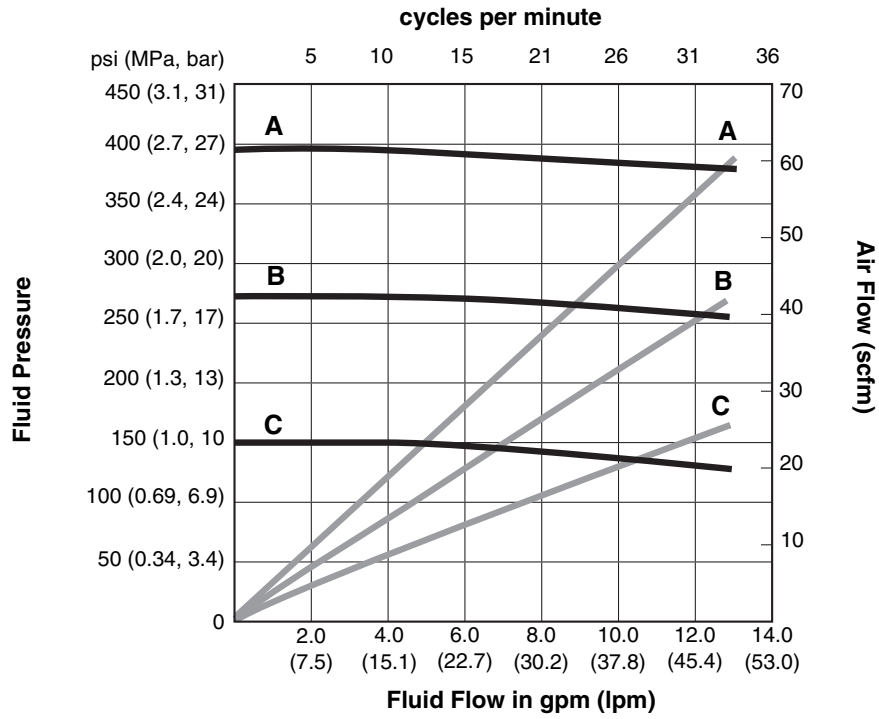
Senator with 2000cc Lower



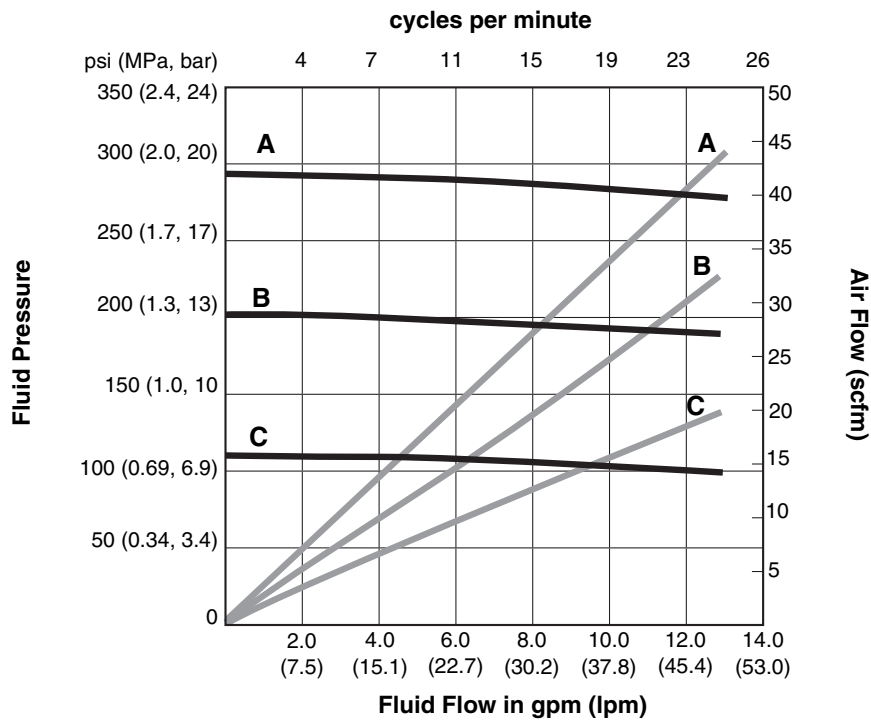
Key

- A** 0.7 MPa, 7 bar (100 psi) air pressure
- B** 0.5 MPa, 4.9 bar (70 psi) air pressure
- C** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

Bulldog with 1500cc Lower



Bulldog with 2000cc Lower



President, 4-Ball Lower, Torqueable Throat Packings

Fluid Outlet Pressure

To find fluid outlet pressure (MPa/bar/psi) at a specific flow (lpm/gpm) and operating pressure (A/B/C/D):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected operating pressure curve (solid line). Follow left to scale to read fluid outlet pressure.

Air Consumption

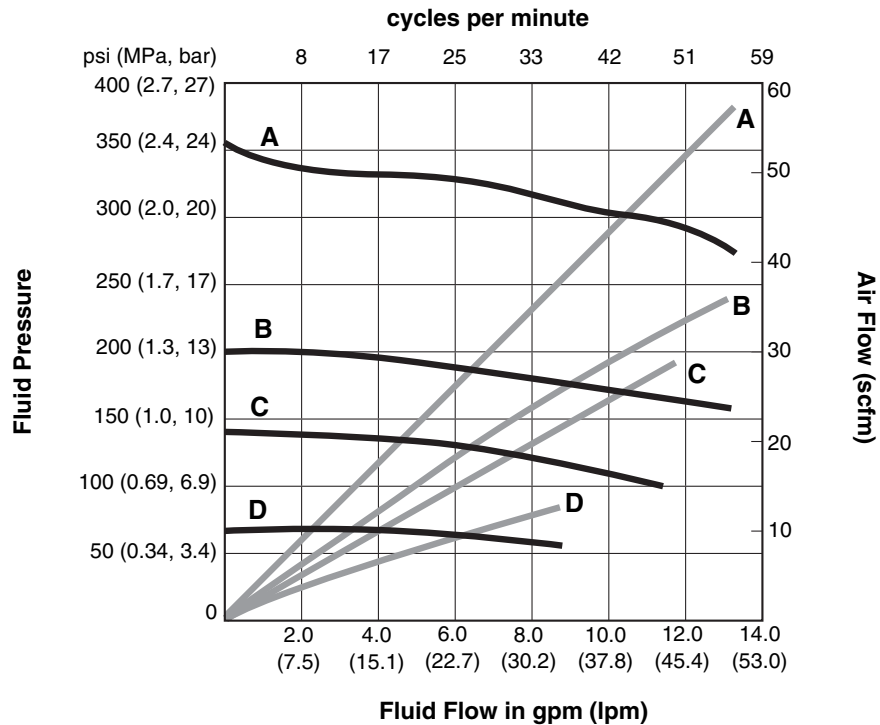
To find air consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm) and operating pressure (A/B/C/D):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (gray line). Follow right to scale to read air consumption.

Key

- A** 1.17 MPa, 11.7 bar (170 psi) air pressure
 - B** 0.7 MPa, 7 bar (100 psi) air pressure
 - C** 0.5 MPa, 4.9 bar (70 psi) air pressure
 - D** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

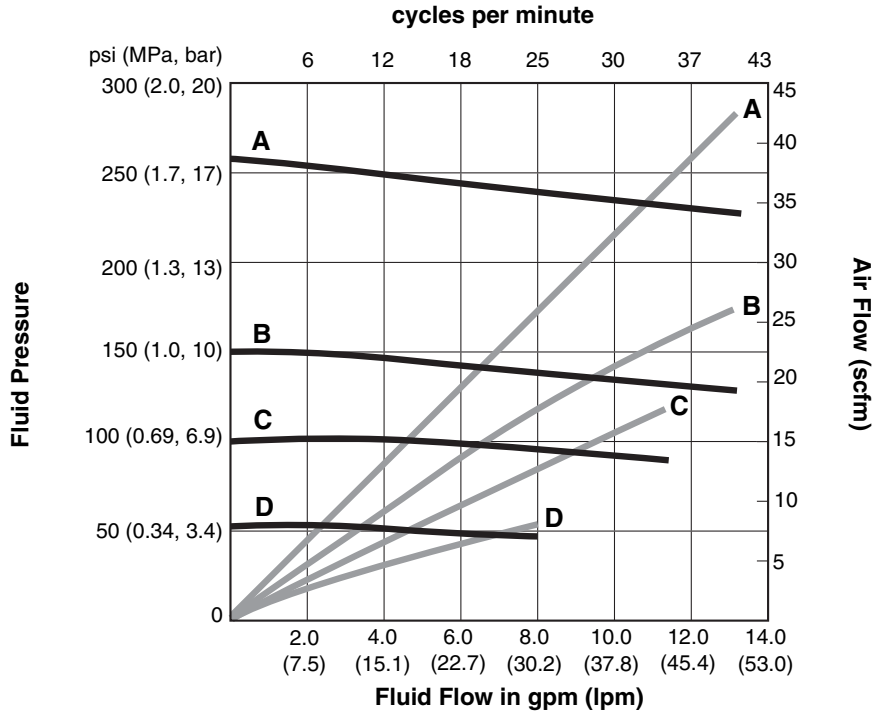
President with 1000cc Lower



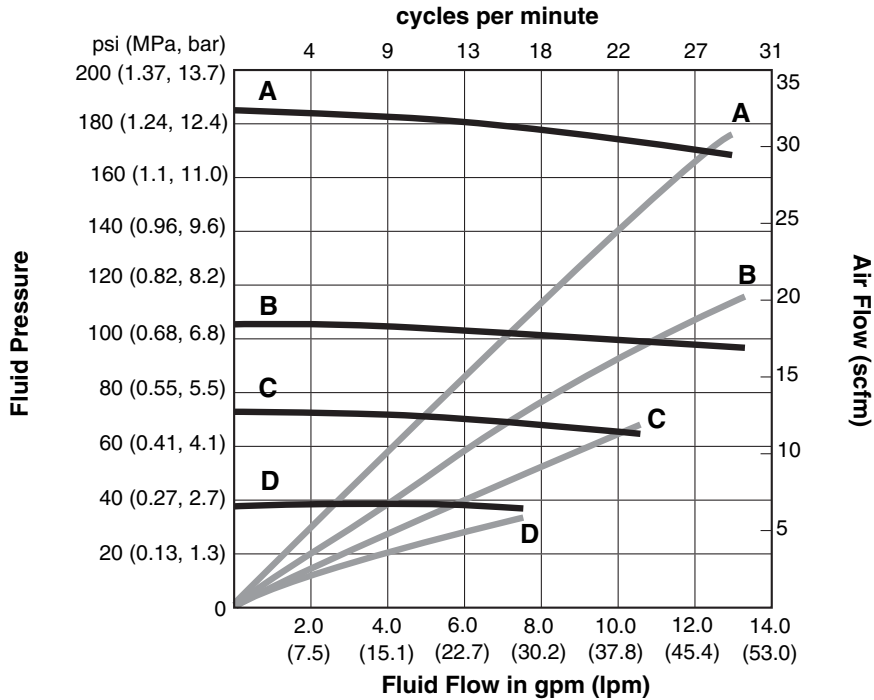
Key

- A** 1.17 MPa, 11.7 bar (170 psi) air pressure
 - B** 0.7 MPa, 7 bar (100 psi) air pressure
 - C** 0.5 MPa, 4.9 bar (70 psi) air pressure
 - D** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid: No. 10 Weight Oil

President with 1500cc Lower



President with 2000cc Lower



President, 4-Ball Lower, Open or Enclosed Wet Cups

Fluid Outlet Pressure

To find fluid outlet pressure (MPa/bar/psi) at a specific flow (lpm/gpm) and operating pressure (A/B/C):

1. Locate desired flow at bottom of chart.
2. Follow vertical line up to intersection with selected operating pressure curve (solid line). Follow left to scale to read fluid outlet pressure.

Air Consumption

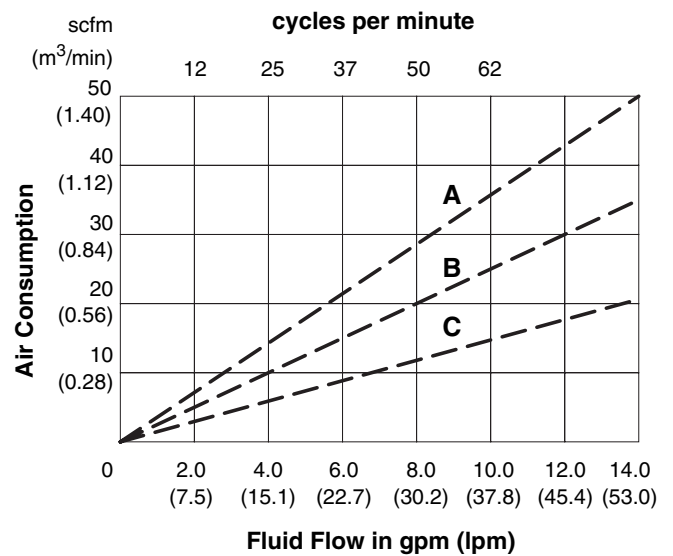
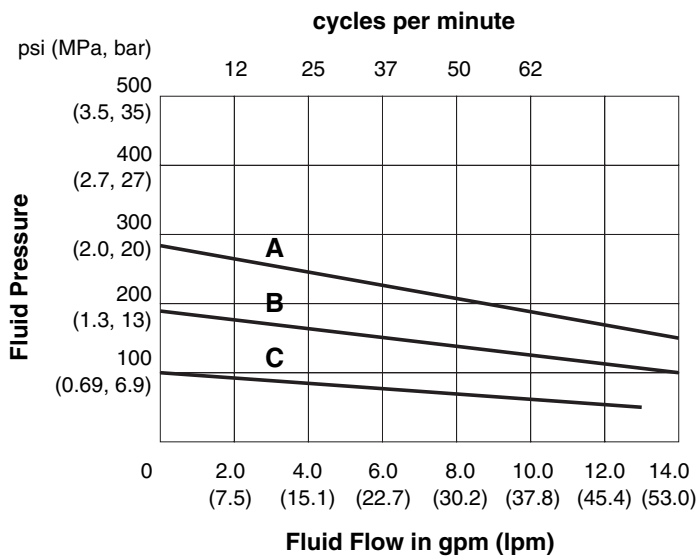
To find air consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm) and operating pressure (A/B/C):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (dashed line). Follow left to scale to read air consumption.

Key

- A** 0.7 MPa, 7 bar (100 psi) air pressure
 - B** 0.5 MPa, 4.9 bar (70 psi) air pressure
 - C** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

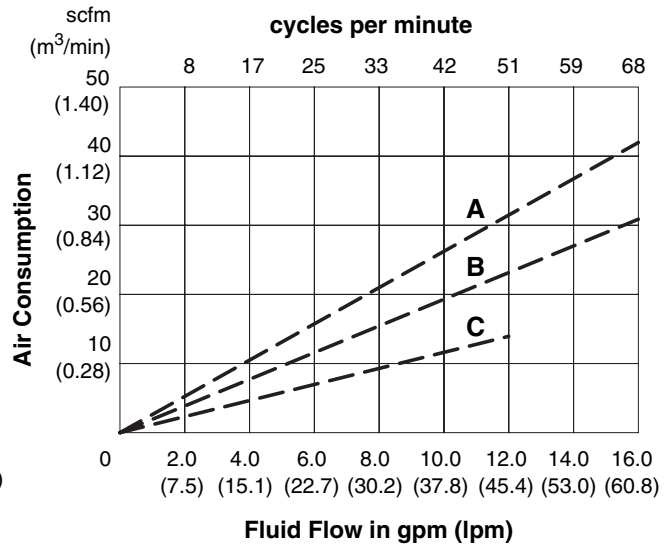
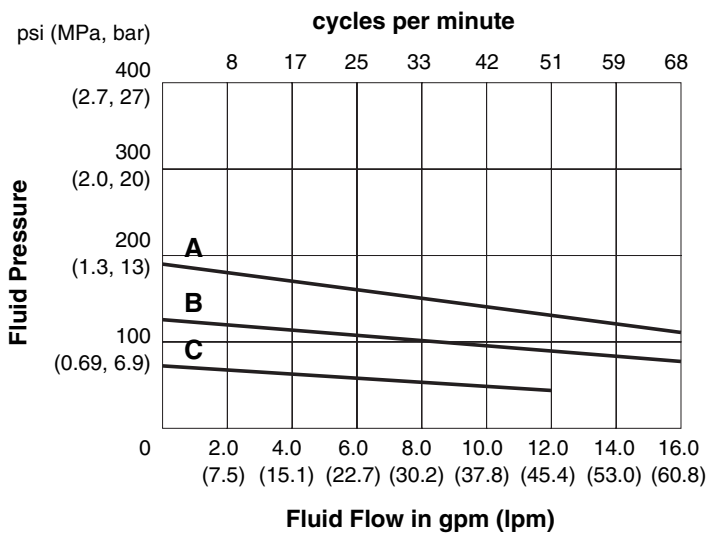
President with 750cc Lower



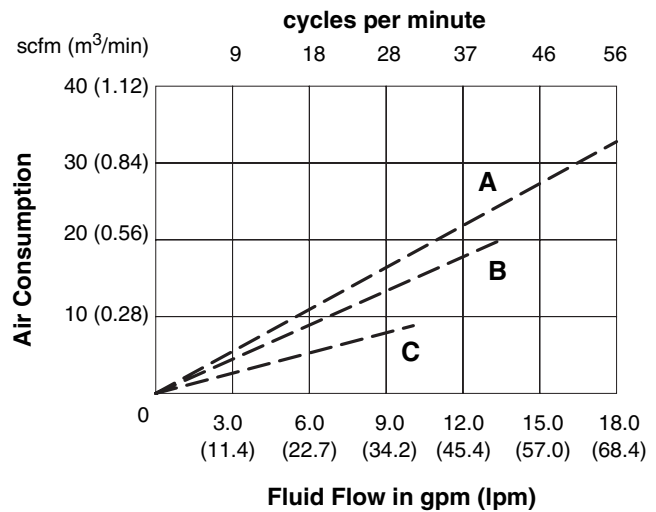
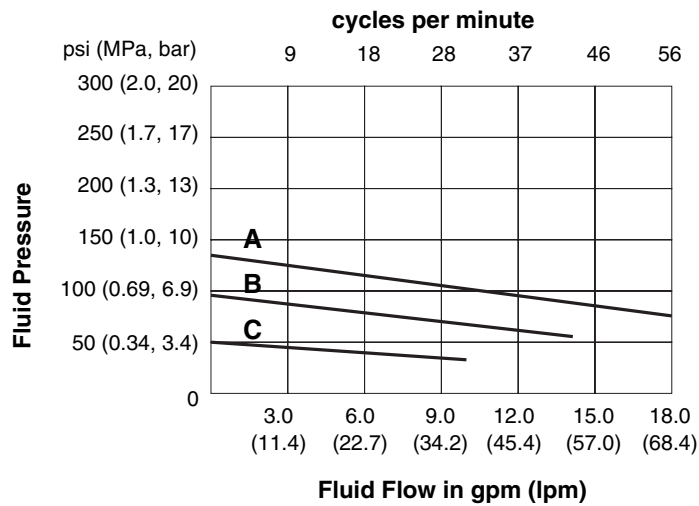
Key

- A** 0.7 MPa, 7 bar (100 psi) air pressure
- B** 0.5 MPa, 4.9 bar (70 psi) air pressure
- C** 0.3 MPa, 2.8 bar (40 psi) air pressure
- Test Fluid:** No. 10 Weight Oil

President with 1000cc Lower



President with 1500cc Lower



Viscount 1

Fluid Outlet Pressure

To find fluid outlet pressure (psi/MPa/bar) at a specific fluid flow (lpm/gpm) and operating hydraulic pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale to read fluid outlet pressure.

Key:

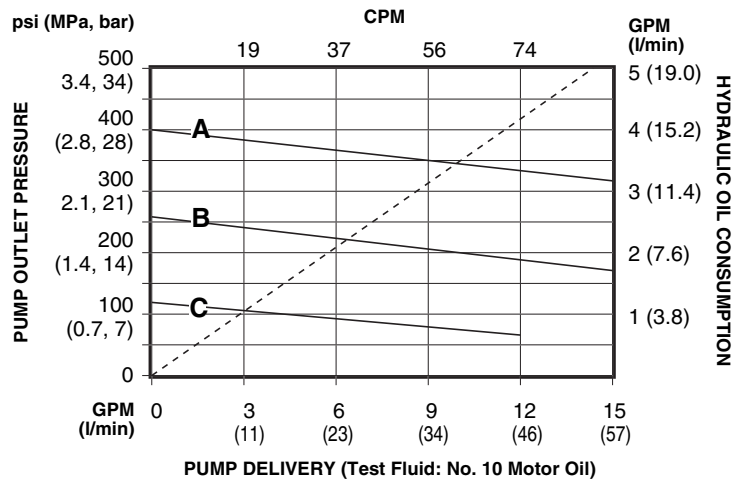
- A 10.3 MPa, 103 bar (1500 psi) hydraulic pressure
- B 7.2 MPa, 72.4 bar (1050 psi) hydraulic pressure
- C 4.1 MPa, 41 bar (600 psi) hydraulic pressure

Hydraulic Oil Consumption

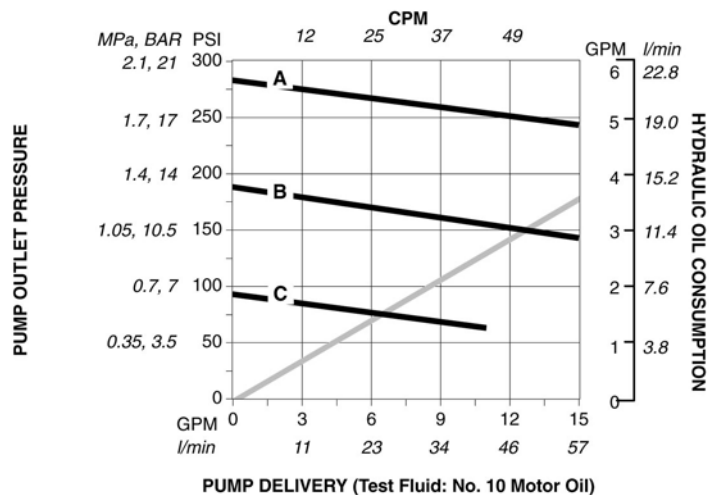
To find motor hydraulic oil consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with hydraulic oil consumption curve (dashes or gray line). Follow right to scale to read hydraulic oil consumption.

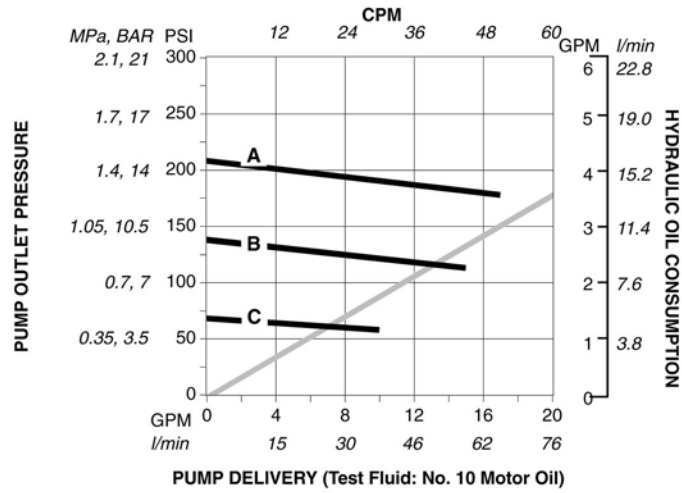
Viscount I+ Motor, 750cc Lower



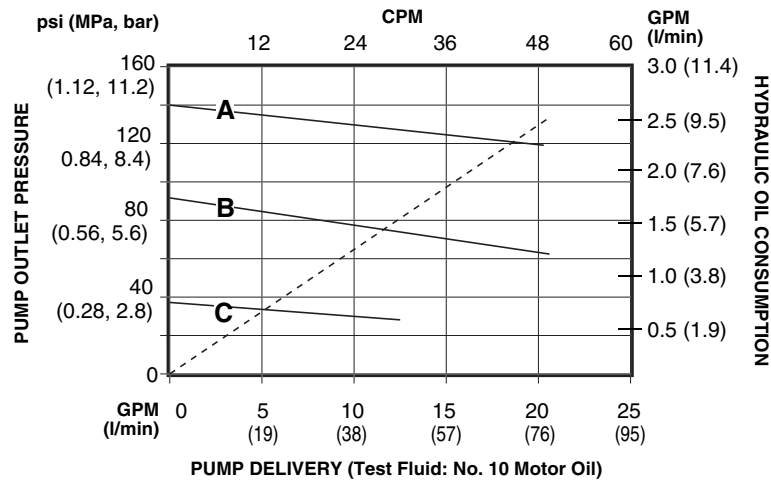
Viscount I+ Motor, 1000cc Lower



Viscount I+ Motor, 1500cc Lower



Viscount I+ Motor, 2000cc Lower



Viscount II

Fluid Outlet Pressure

To find fluid outlet pressure (psi/MPa/bar) at a specific fluid flow (lpm/gpm) and operating hydraulic pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale to read fluid outlet pressure.

Key:

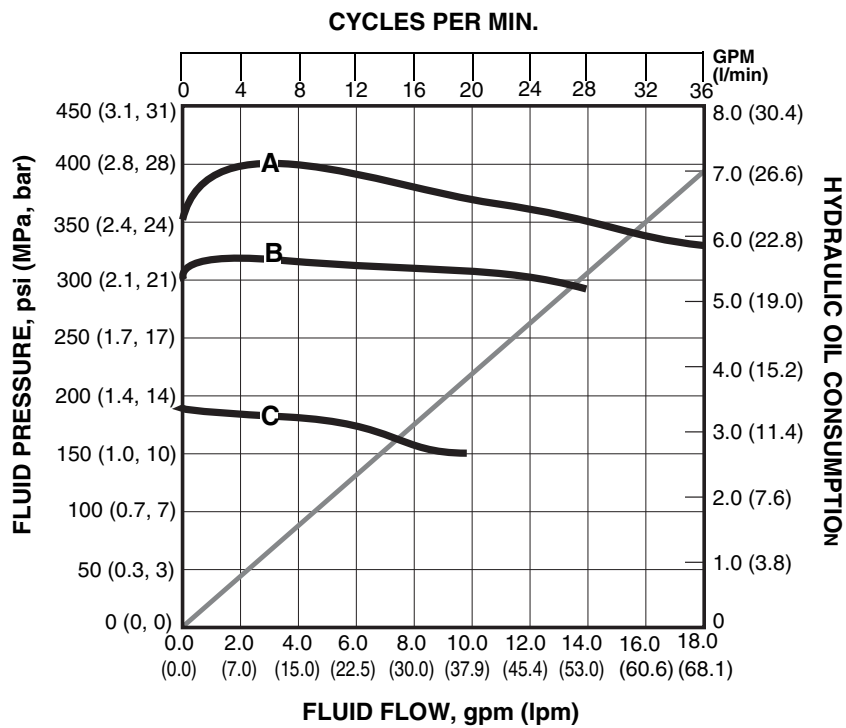
- A 10.3 MPa, 103 bar (1500 psi) hydraulic pressure
- B 7.2 MPa, 72.4 bar (1050 psi) hydraulic pressure
- C 4.1 MPa, 41 bar (600 psi) hydraulic pressure

Hydraulic Oil Consumption

To find motor hydraulic oil consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with hydraulic oil consumption curve (dashes or gray line). Follow right to scale to read hydraulic oil consumption.

Viscount II Motor, 2000cc Lower



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Original instructions. This manual contains English. MM 311876

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