



# TECH BULLETIN

**074**  
7/95

*Published regarding engineering changes and improvements*

## SUBJECT: Torque Chart

### Piston and Plunger Pumps

ITEM		THREAD SIZE	TOOL SIZE	TOOL PART NO.	TORQUE		
					in. lbs.	ft. lbs.	Nm
<b>Bearing Cover Screws</b>							
1CX, 1DX, 2DX, 3DNX, 3DX, 3GXT, 66DX PLGR	All Models	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
2SF, 2SFSEEL, 2SFX, 4SF PLGR	All Models	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
3CP PLGR	All Models	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
3SP, 3SPX PLGR	All Models	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
3, 4, 5, 10 FR PSTN	280, 290, 333, 430, 323, 390, 623, 820, 1010	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
3, 5 FR PLGR	All Models	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
4HP, 5DX, 6DX, 67DX PLGR	All Models	M8	M13 Hex	25324	<b>115</b>	<b>9.58</b>	<b>13.0</b>
5CP, 7CP PLGR	All Models	M8	M13 Hex	25324	<b>115</b>	<b>9.58</b>	<b>13.0</b>
7, 8 FR PLGR	51, 53, 55, 56, 57, 59, 60, 70, 530, 550, 781	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
15, 18 FR PLGR	650, 651, 660, 661, 661C, 661D, 1050, 1051, 1051C, 1051D, 1057, 1530, 1531, 1540, 1540E, 1541, 1810, 1851, 1861	M6	M10 Hex	25082	<b>50</b>	<b>4.0</b>	<b>5.4</b>
25 FR PSTN	1020, 1520, 2020, 2520, 2520C	M8	M13 Hex	25324	<b>115</b>	<b>9.58</b>	<b>13.0</b>
25, 28 FR PLGR	2510, 2511, 2530, 2530E, 2531, 2537, 2831	M8	M13 Hex	25324	<b>115</b>	<b>9.58</b>	<b>13.0</b>
35, 38 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560	M8	M13 Hex	25324	<b>115</b>	<b>9.58</b>	<b>13.0</b>
	3801, 3811, 3821, 3831, 3841						
60 FR PSTN	6020, 6024, 6040, 6044	M10	M17 Hex	25083	<b>220</b>	<b>18.0</b>	<b>24.0</b>
60, 68 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777, 6811, 6821, 6831, 6841, 6861	M10	M17 Hex	25083	<b>220</b>	<b>18.0</b>	<b>24.0</b>
<b>Bubble Oil Gauge</b>							
	All Models	M28	Oil Gauge Tool	44050	<b>45</b>	<b>3.8</b>	<b>5.0</b>
<b>Connecting Rod Screws</b>							
3CP, 5CP, 7CP PLGR	All Models	M7	M10 Hex	25082	<b>95</b>	<b>8.0</b>	<b>11.0</b>
3, 4, 5 FR PSTN	280, 290, 333, 430, 323, 390	M7	M10 Hex	25082	<b>95</b>	<b>8.0</b>	<b>11.0</b>
3, 5 FR PLGR	All Models	M7	M10 Hex	25082	<b>95</b>	<b>8.0</b>	<b>11.0</b>
10, 25 FR PSTN	623, 820, 1010, 1020, 1520, 2020, 2520, 2520C	M8	M13 Hex	25324	<b>130</b>	<b>10.8</b>	<b>15.0</b>
7, 8, 15, 18, 25, 28 FR PLGR	All Models	M8	M13 Hex	25324	<b>130</b>	<b>10.8</b>	<b>15.0</b>
35, 38 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560	M10	M17 Hex	25083	<b>395</b>	<b>33.0</b>	<b>45.0</b>
	3801, 3811, 3821, 3831, 3841						
60 FR PSTN	6020, 6024, 6040, 6044	M10	M17 Hex	25083	<b>390</b>	<b>32.5</b>	<b>44.0</b>
60, 68 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777, 6811, 6821, 6831, 6841, 6861	M10	M17 Hex	25083	<b>390</b>	<b>32.5</b>	<b>44.0</b>

FR = Frame size PSTN = Piston Pump PLGR = Plunger Pump

**CAT PUMPS**  
Technical Services Department

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## Piston and Plunger Pumps

ITEM		THREAD SIZE	TOOL SIZE	TOOL PART NO.	TORQUE		
					in. lbs.	ft. lbs.	Nm
<b>Direct Mount Screws (Threaded holes on bottom of pump)</b>							
3CP, 5CP PLGR	All Models	M8	M13 Hex	25324	115	9.58	13.0
3, 4, 5 FR PSTN	All Models	M8	M13 Hex	25324	115	9.58	13.0
3, 5, 7, 8 FR PLGR	All Models	M8	M13 Hex	25324	115	9.58	13.0
10 FR PSTN	623, 820, 1010	M10	M17 Hex	25083	205	17.0	23.0
15, 18 FR PLGR	All Models	M10	M17 Hex	25083	355	30.0	40.0
35, 38 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560, 3801, 3811, 3821, 3831, 3841	M14	M22 Hex	N/A	570	47.5	64.0
60 FR PSTN	6020, 6024, 6040, 6044	M16	M24 Hex	N/A	792	66.0	90.0
60, 68 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777 6811, 6821, 6831, 6841, 6861	M16	M24 Hex	N/A	792	66.0	90.0
<b>Discharge Manifold Screws</b>							
3CP PLGR	3CP1121, 1131, 1141, 3CP1221, 1231, 1241	M10	M8 Allen	33046	140	12.0	16.0
3 FR PLGR	230, 231, 237, 240, 241, 247, 270, 271, 277	M10	M8 Allen	33046	220	18.0	24.0
5CP PLGR	5CP6121, 6141, 6151, 5CP6221, 6241CS, 6251	M12	M10 Allen	33047	260	22.0	30.0
8, 15 FR PLGR	781, 1540, 1540E, 1541	M10	M8 Allen	33046	250	21.0	28.0
15 FR PLGR	1530, 1531	M12	M10 Allen	33047	355	30.0	40.0
18 FR PLGR	1810	M10	M8 Allen	33046	480	40.0	54.0
25, 28 FR PLGR	2510, 2511, 2530, 2530E, 2531, 2537, 2831	M12	M10 Allen	33047	355	30.0	40.0
35, 38 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560, 3801, 3811, 3821, 3831, 3841	M12	M10 Allen	33047	355	30.0	40.0
60 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777	M16	M14 Allen	33049	565	47.0	64.0
68 FR PLGR	6811, 6821, 6831 (Upper) 6841, 6861	M16	M14 Allen	33049	660	55.0	75.0
68 FR PLGR	6811, 6821, 6831 (Lower)	M12	M10 Allen	33047	355	30.0	40.0
<b>Inlet Manifold Screws</b>							
3CP, 5CP PLGR	All Stainless Steel Models	M8	M6 Allen	30941	115	9.58	13.0
3 FR PLGR	230, 231, 237, 240, 241, 247, 270, 271, 277	M10	M8 Allen	33046	220	18.0	24.0
5 FR PSTN	323	M10	M17 Hex	25083	220	18.0	24.0
5 FR PSTN	390	M10	M8 Allen	33046	220	18.0	24.0
8 FR PLGR	781	M10	M8 Allen	33046	250	21.0	28.0
15, 18 FR PLGR	1530, 1531, 1540, 1540E, 1541, 1810	M10	M8 Allen	33046	222	18.5	25.0
25, 28 FR PLGR	2510, 2511, 2530, 2530E, 2531, 2537, 2831	M12	M10 Allen	33047	355	30.0	40.0
35 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560	M14	M12 Allen	33048	480	40.0	54.0
38 FR PLGR	3801, 3811, 3821, 3831, 3841	M14	M12 Allen	33048	500	41.6	56.0
60 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777	M16	M24 Hex	44046	565	47.0	64.0
68 FR PLGR	6811, 6821, 6831, 6841, 6861	M16	M14 Allen	33049	620	51.6	70.0
<b>Manifold Head Screws</b>							
1CX, 1DX, 2DX, 3DNX, 3DX 3GXT, 3SP, 3SPX, PLGR	All Models	M6	M5 Allen	N/A	55	4.6	6.2
2SF, 2SFX, 2SFSEEL, 4SF, 67DX PLGR	All Models	M8	M6 Allen	30941	115	9.58	13.0
3CP PLGR	3CP1120, 1130, 1140 (Except 3CP Stainless Steel)	M8	M6 Allen	30941	115	9.58	13.0
4HP, 5DX, 6DX, 66DX, 67DX PLGR	All Models	M8	M6 Allen	30941	132	11.0	15.0
5CP PLGR	All Models (Except 5CP Stainless Steel)	M8	M6 Allen	30941	115	9.58	13.0
5 FR PLGR	31, 34, 35, 310, 310B, 310S, 310W, 311, 317 340, 341, 347, 350, 350B, 350S, 350W, 351, 357 42HS, 43HS, 45, 56, 57, 59, 60	M10	M8 Allen	33046	220	18.0	24.0
7CP PLGR	All Models	M8	M6 Allen	30941	115	9.58	13.0
<b>Manifold Stud / Nut or Cylinder Bolts</b>							
3, 4, 5 FR PSTN	280, 284, 290, 333, 430, 323, 390	M8	M12 Hex	N/A	115	9.58	13.0
7 FR PLGR	51, 53, 55, 58, 70, 530, 550	M10	M14 Hex	25053	220	18.0	24.0
10 FR PSTN	623, 820, 1010	M10	M17 Hex	25083	220	18.0	24.0
15 FR PLGR	650, 651, 660, 661, 661C, 661D 1050, 1051 1051C, 1051D, 1057	M10	M17 Hex	25083	220	18.0	24.0
18 FR PLGR	1851, 1861	M10	M17 Hex	25083	250	21.0	28.0
25 FR PSTN	1020, 1520, 2520, 2520C	M12	M19 Hex	N/A	350	29.0	39.5
60 FR PSTN	6020, 6024, 6040, 6044	M16	M24 Hex	44046	565	47.0	64.0
<b>Piston/Plunger Rod Nut</b>							
2SF, 2SFX, 4SF	All Models	M6	M10 Hex	25082	55	4.6	6.2
3 FR PSTN	284	M4	M8 Hex	25052	25	2.0	3.0
3, 4, 5, 10 FR PSTN	280, 290, 333, 430, 323, 390, 623, 820, 1010	M6	M10 Hex	25082	55	4.6	6.2
25 FR PSTN	1020, 1520, 2520, 2520C	M8	M13 Hex	25324	115	9.58	13.0
60 FR PSTN	6020, 6040	M14	M24 Hex	44046	390	32.5	44.0
60 FR PSTN	6024, 6044	M10	M17 Hex	25083	220	18.0	24.0

FR = Frame size PSTN = Piston Pump PLGR = Plunger Pump

## Piston and Plunger Pumps

ITEM		THREAD SIZE	TOOL SIZE	TOOL PART NO.	TORQUE		
					in. lbs.	ft. lbs.	Nm
<b>Plunger Retainer</b>							
1CX, 1DX, 2DX, 3DNX, 3DX, 3GXT 4HP 5DX, 6DX, 66DX, 67DX PLGR	All Models	M6	M10 Hex	25082	55	4.6	6.2
3CP, 5CP, 7CP PLGR	All Models	M6	M10 Hex	25082	55	4.6	6.2
3 FR PLGR	230, 240, 270	M6	M11 Hex	44044	55	4.6	6.2
3 FR PLGR	231, 237, 241, 247, 271, 277	M6	M12 Hex	N/A	55	4.6	6.2
3SP 3SPX PLGR	3SP30G11, 3SP35GEI, 3SPX30G11, 3SPX35GEI	M6	M10 Hex	25082	55	4.6	6.2
5, 7 FR PLGR	All OEM Models	M6	M11 Hex	44044	55	4.6	6.2
5, 7, 8 FR PLGR	310, 310B, 310W, 311, 317, 340, 340B, 340S, 340W, 341 347, 350, 350B, 350S, 350W, 351, 357, 530, 550, 781	M6	M12 Hex	N/A	55	4.6	6.2
15, 18 FR PLGR	All Models	M6	M12 Hex	N/A	55	4.6	6.2
18 FR PLGR	1810	M6	M19 Hex	N/A	96	8.0	10.8
25, 28 FR PLGR	2510, 2511, 2530, 2530E, 2531, 2537, 2831	M7	M14 Hex	25053	108	9.0	12.2
35 FR PLGR	3501, 3507, 3510, 3560	M7	M14 Hex	25053	90	7.5	10.0
35 FR PLGR	3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545	M10	M21 Hex	N/A	220	18.0	24.0
38 FR PLGR	3801	M7	M14 Hex	25053	90	7.5	10.0
38 FR PLGR	3811, 3821, 3831, 3841	M10	M21 Hex	N/A	220	18.0	24.0
60, 68 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777 6841, 6861	M14	M30 Hex	N/A	520	43.0	58.0
68 FR PLGR	6811, 6821, 6831	M10	M21 Hex	N/A	220	18.0	24.0
<b>Rear Cover Screws</b>							
4HP, 5DX, 6DX, 66DX	All Models	M6	M10 Hex	25082	50	4.0	5.4
3, 4, 5, 10 FR PSTN	280, 290, 333, 430, 323, 390, 623, 820, 1010	M6	M10 Hex	25082	50	4.0	5.4
3CP, 5CP, 7CP PLGR	All Models	M6	M10 Hex	25082	50	4.0	5.4
3, 5 FR PLGR	All Models	M6	M10 Hex	25082	50	4.0	5.4
7, 8 FR PLGR	51, 53, 55, 56, 57, 58, 59, 60, 70, 530, 550, 781	M6	M10 Hex	25082	50	4.0	5.4
15, 18 FR PLGR	All Models	M6	M10 Hex	25082	50	4.0	5.4
25 FR PSTN	1020, 1520, 2520, 2520C	M8	M13 Hex	25324	115	9.58	13.0
25, 28 FR PLGR	2510, 2511, 2530, 2530E, 2531, 2537, 2831	M8	M13 Hex	25324	115	9.58	13.0
35, 38 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517, 3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545, 3560 3801, 3811, 3821, 3831, 3841	M8	M13 Hex	25324	115	9.58	13.0
60 FR PSTN	6020, 6024, 6040, 6044	M10	M17 Hex	25083	220	18.0	24.0
60, 68 FR PLGR	6747, 6760, 6761, 6762, 6767, 6771, 6775, 6777	M10	M17 Hex	25083	220	18.0	24.0
<b>Seal Cases</b>							
5, 7 FR PLGR	All Models	N/A	1/2 SOC. DRIVE	33004, 33005	354	29.5	40.0
15 FR PLGR	650, 651, 660, 661, 661C, 661D	N/A	1/2 SOC. DRIVE	33006	346	28.8	39.0
15 FR PLGR	1050, 1051, 1051C, 1051D, 1057	N/A	1/2 SOC. DRIVE	33006	390	32.5	44.0
<b>Set Screws</b>							
3SP, 3SPX	3SP35GEI, 3SPX35GEI	M4	M3 Allen	N/A	40	3.0	4.1
3SP, 3SPX, 4HP, 4SF, 5DX 6DX, 66DX, 67DX	All Models	M5	M4 Allen	N/A	50	4.0	5.4
Motorized Pump Units		#10-32	M4 Allen	N/A	60	5.0	6.8
<b>Valve Plugs</b>							
1DX, 2DX, 3DNX, 3DX, 3GXT, 3SP, 3SPX	All Models	M20	M19 Hex	N/A	520	43.0	58.0
4HP, 5DX, 6DX, 66DX, 67DX	All Models	M22	M24 Hex	44046	870	72.5	98.0
3CP, 5CP PLGR	All Models	M22	M24 Hex	44046	870	72.5	98.0
5 FR PLGR	All Models (Except 43HS, 45)	M22	M24 Hex	44046	870	72.5	98.0
5 FR PLGR	43HS, 45	M25	M24 Hex	44046	520	43.0	58.0
7CP	All Models	M26	M27 Hex	44045	870	72.5	98.0
7, 15 FR PLGR	All Models	M26	M27 Hex	44045	870	72.5	98.0
15 FR PLGR	1530, 1531, 1540, 1540E, 1541	M36	M32 Hex	N/A	1060	88.0	119.0
25 FR PLGR	2510, 2511	M42	M36 Hex	N/A	1680	140.0	190.0
35 FR PLGR	3520, 3521, 3527, 3531, 3535, 3537, 3541, 3545	M45	M41 Hex	N/A	1305	109.0	148.0
60 FR PLGR	6747, 6760, 6767, 6775, 6777	M70	M41 Hex	N/A	1390	116.0	157.0
<b>Valve Plug / Cover Screws</b>							
15 FR PLGR	1560	M12	M10 Allen	33047	250	21.0	28.0
35 FR PLGR	3501, 3507, 3510, 3511, 3515, 3517	M10	M8 Allen	33046	220	18.0	24.0
35 FR PLGR	3560	M14	M12 Allen	33048	486	40.5	55.0
38 FR PLGR	3801, 3811, 3821, 3831, 3841	M10	M8 Allen	33046	250	21.0	28.0
60 FR PLGR	6761, 6762, 6771	M16	M14 Allen	33049	250	21.0	28.0
68 FR PLGR	6811, 6821, 6831	M10	M8 Allen	33046	250	21.0	28.0
<b>Valve Block Screws</b>							
18 FR PLGR	1851, 1861	M12	M10 Allen	33047	355	30.0	40.0
28 FR PLGR	2831	M12	M10 Allen	33047	355	30.0	40.0
68 FR PLGR	6841, 6861	M16	M14 Allen	33049	660	55.0	75.0