



HYDRAULIC PUMP SELECTION GUIDE

- *Cranes*
- *Compressors*
- *Cranes & Compressors*
- *Use of Flow Dividers*

IOWA MOLD TOOLING CO., INC.

BOX 189, GARNER, IA 50438-0189

TEL: 641-923-3711

TECHNICAL SUPPORT FAX: 641-923-2424

MANUAL PART NUMBER 99900698

Iowa Mold Tooling Co., Inc. is an Oshkosh Truck Corporation company.

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REVISIONS LIST

DATE	LOCATION	DESCRIPTION OF CHANGE
-	-	-
20070220	COVER	UPDATED WITH OSHKOSH TAGLINE

PUMP SELECTION INSTRUCTION

PUMP SELECTION - CRANES

The first step in selecting a pump for a crane is to determine the specified flow (GPM) for that model crane. This information can be found in Chart A.

The second step is to determine the %PTO (see following NOTE). This information is available from the PTO manufacturer's catalog.

NOTE

% PTO is defined as: Output PTO shaft speed as a percentage of engine speed (RPM), assuming engine speed and transmission speed are equal.

Once %PTO and the specified flow are known, the required pump can be found from Charts A and B, if an IMT part number has been assigned to that pump. Use Chart A if %PTO is 100% (or close) and use Chart B if the %PTO is not 100%.

TO USE CHART B:

Identify the applicable %PTO column.
Within that column, find the specified flow.
Read the pump part number in the left column.

Example:

Find the part number of a 5 GPM pump when %PTO is 130%.

Solution:

Find 5 GPM in the 130% column.
Part number 73051858 is the correct pump for the application.

Chart C-1 shows single pumps with assigned IMT part numbers. In addition to pumps listed in Charts A and B, it lists a few larger ones. Pump flows shown are at 1200 engine RPM and 100%PTO.

When the specified flow and %PTO are known and no IMT part number exists for the needed pump, a pump manufacturer number must be built using Charts D.

NOTE

To use Chart D the required flow must be divided by %PTO because the GPM shown in the displacement block (item 8) is at 1200 engine RPM and 100%PTO.

Example:

9 GPM required, %PTO is 135%.
Determine the gear housing code of the pump required.

Solution:

$9 / 1.35 = 6.6$ GPM
Chart D shows a P315 pump that would produce 6.4 GPM.
Its gear housing code would be 10.

When ordering a pump, certain criteria must be kept in mind:

- ⌘ Engine RPM is controlled at approximately 1200 RPM.

⌘ Pump RPM (and flow) will be affected by %PTO.

⌘ Correct rotation must be selected. Direction of rotation of the PTO is viewed by standing at the rear of the vehicle and looking at the PTO output shaft. If the PTO output shaft turns in the same direction as the engine, it would rotate counterclockwise and a clockwise rotation pump is required. If it turns in the opposite direction from the engine, a counterclockwise rotation pump is required.

⌘ The pump must be ordered with a SAE 2 or 4 bolt mounting flange and 7/8-13 spline shaft if the pump is to be mounted directly onto the PTO. (For remote mounting, the driveshaft must have a 7/8-13 spline output end yoke - driveshaft angle cannot exceed 11°.)

PUMP SELECTION - COMPRESSORS

Follow same procedures as outlined for cranes. See Chart E for the flows (GPM) required to drive hydraulic compressors.

PUMP SELECTION - CRANES & COMPRESSORS

When cranes and compressors are used together on the same vehicle, the hydraulic pump driven by the PTO must satisfy the hydraulic requirements of each - the crane and the compressor - and of both if they are used simultaneously. To accomplish this, either a dual pump or a single pump with flow divider can be used.

⌘ When using a dual pump, one is connected to the crane circuit and the other to the compressor.

⌘ When using a single pump with flow divider, the pump must be able to provide the total flow required by the crane and the compressor. The flow divider "divides" the flow from the pump to provide both the crane and the compressor with its correct proportion (share) of the flow.

When selecting dual pumps, each must be sized separately. (Procedures are the same as explained for cranes.) Chart C-2 lists dual pumps which have been assigned part numbers.

If part numbers do not exist for needed dual pump, a manufacturer's part number must be "built" to identify this pump and to order it from the supplier. See Chart D.

The use of flow dividers in conjunction with single pumps is limited to vehicles carrying small cranes and underhood compressors. See Chart F. When using flow dividers, each outlet circuit must be protected by a relief valve.

CHART A

CRANES - Specified Hydraulic Flows (With %PTO of pumps that will provide desired flows)

CRANE MODELS			FLOW (GPM)	PRESSURE (PSI)	IMT PART NUMBER		PUMP DISP.	PUMP PRSR RTG (PSI)	*** %PTO	PUMP MFR
FORMER MODEL	CURRENT DOMESTIC SERIES	CURRENT METRIC SERIES			PUMP CCW (OPP) ROTATION	PUMP CW (ENG) ROTATION				
1014 PTO	-	-	3	2000	73051858 *3		0.775	3500	85	COMM INT
2015 PTO	-	-	5	2350	73051859 *3		1.111	3500	100	COMM INT
2115 PTO	2200	345	5	2500	73051859 *3		1.111	3500	100	COMM INT
2815	3000	445	5	2700	73051859 *3		1.111	3500	100	COMM INT
3016	-	-	7	2350	73051850 *3		1.550	3500	100	COMM INT
425	-	-	7	2350	73051850 *3		1.550	3500	100	COMM INT
-	4300	680	7	2600	73051850 *3		1.550	3500	100	COMM INT
5016	-	-	7	2500	73051850 *3		1.550	3500	100	COMM INT
516	7415	-	9	2350	73051849 *3		1.705	3250	100	COMM INT
-	5200	780	9	2500	73051849 *3		1.705	3250	100	COMM INT
5826	5800	880	9	2500	73051849 *3		1.705	3250	100	COMM INT
6425	-	1080	9	2750	73051849 *3		1.705	3250	100	COMM INT
7025	-	-	10	2500	73051851 *3		2.015	3000	100	COMM INT
7225	7200	1080A	9	3000	73051849 *3		1.705	3250	100	COMM INT
-	6016	-	10	3000	73051851 *3		2.015	3000	100	COMM INT
9031	9000	1295	11	2800	73051851 *3		2.015	2900	110	COMM INT
9831	9800	1495	13	2500	73051852 *3		2.480	2500	100	COMM INT
1216	12916	-	13	2300	73051852 *3		2.480	2500	100	COMM INT
18026	18000	2595	16	2500	73051854 *3		3.940	3000	90	COMM INT
20017	20017	-	16	2500	73051854 *3		3.940	3000	90	COMM INT
14046	14000	19140	17	4000	73051616**	73051642**	2.750	4570	130	REXROTH
15033	15000	21100	17	4000	73051616**	73051642**	2.750	4570	130	REXROTH
32018	32018	-	20	2500	73051616**	73051642**	2.750	4570	155	REXROTH
32030	32000	4490	20	2500	73051616**	73051642**	2.750	4570	155	REXROTH
17649	17649	-	20	3000	73051616**	73051642**	2.750	4570	155	REXROTH
13034	13034	-	16/16	2600	73051804*1		3.94/3.94	3000	90	COMM INT
16035	16035	-	20/20	3000	73051804*1		3.94/3.94	3000	110	COMM INT
T40	T40	-	22/22	2700	73051804*1		3.94/3.94	3000	120	COMM INT
T30	T30	-	15/15	3300	73051812*2		2.95/2.95	3500	110	COMM INT
T50	T50	-	25/25	3000	-	-	-	-	-	-

*1 Bi-rotational tandem pump with 1"-15 spline drive shaft.
 *2 Bi-rotational tandem pump.
 *3 Bi-rotational pump.
 ** Piston pump
 *** %PTO is defined as: *Output PTO shaft speed as a percentage of engine speed (RPM), assuming engine speed and transmission speed are equal.*

NOTE
 Staying within the 80-130%PTO range is recommended.

CHART B

Hydraulic Pump Flow (at various %PTO)

IMT PART NUMBER	MFR(*)	GPM @ % OF ENGINE SPEED (%PTO**) WITH ENGINE RPM OF 1200									
		70%	80%	90%	100%	110%	120%	130%	140%	150%	160%
73051858	CI	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4
73051859	CI	4.0	4.6	5.2	5.8	6.3	6.9	7.5	8.1	8.7	9.2
73051850	CI	5.6	6.4	7.2	8.0	8.9	9.7	10.5	11.3	12.0	12.9
73051849	CI	6.2	7.0	8.0	8.9	9.7	10.6	11.5	12.4	13.3	14.2
73051851	CI	7.3	8.4	9.4	10.5	11.5	12.6	13.6	14.7	15.7	16.7
73051852	CI	9.0	10.3	11.6	12.9	14.2	15.5	16.7	17.0	19.3	20.6
73051854	CI	14.3	16.3	18.4	20.4	22.5	24.6	26.6	28.6	30.7	32.7
73051855	CI	16.2	18.5	20.8	23.2	25.5	27.8	30.1	32.4	34.8	37.1
73051856	CI	18.5	21.2	23.8	26.5	29.1	31.8	34.4	37.0	39.7	42.4
73051616	RXR	10.0	11.4	12.8	14.2	15.7	17.1	18.6	20.0	21.4	22.8
73051642	RXR	10.0	11.4	12.8	14.2	15.7	17.1	18.6	20.0	21.4	22.8

* CI = Commercial Intertech Pump. RXR = Rexroth Pump.

** %PTO is defined as: *Output PTO shaft speed as a percentage of engine speed (RPM), assuming engine speed and transmission speed are equal.*

NOTE

Staying within the 80-130%PTO range is recommended.

CHART C-1**Commercial Intertech Pumps
with Assigned Part Numbers**

SINGLE PUMPS				
IMT PART NUMBER	COMMERCIAL INTERTECH MODEL NUMBER	PUMP DISPLACEMENT (IN³/REV)	GPM @ 1200 PUMP RPM (SEE NOTE)	DIRECTION OF ROTATION
73051858	P315A396VNEB06-65	0.775	4	Bi-Rotational
73051859	P315A396VNEB08-65	1.111	6	Bi-Rotational
73051850	P315A396VNEB12-65	1.550	8	Bi-Rotational
73051849	P315A396VNEB13-65	1.705	9	Bi-Rotational
73051851	P315A396VNEB16-65	2.015	10	Bi-Rotational
73051852	P315A396VNEB20-65	2.480	13	Bi-Rotational
73051058	P330A197XRAB10-25	0.990	10	CW (engine)
73051805	P330A242JFAB17-25	3.450	18	CCW (opp.)
73051854	P330A342VCEB20-25	3.940	20	Bi-Rotational
73051817	P330A597JFAB20-98	3.940	20	CCW (opp.)
73051855	P350A342VNEB17-25	4.460	23	Bi-Rotational
73051856	P350A342VNEB20-25	5.100	26	Bi-Rotational
73051701	P365A298BFAB25-7	9.000	47	CCW (opp.)

NOTE: GPM's shown are for 100%PTO of engine speed, which equates to an engine speed of 1200 RPM.

CHART C-2

Commercial Intertech Pumps with Assigned Part Numbers

DUAL PUMPS				
IMT PART NUMBER	COMMERCIAL INTERTECH MODEL NUMBER	PUMP DISPLACEMENT (IN ³ /REV)	GPM @ 1200 PUMP RPM (SEE NOTE)	DIRECTION OF ROTATION
73051860	P315B296EPAB20-65LMAB06-1	2.48 / 0.78	13 / 4	CCW (opp.)
73051485	P330B397VCAB10-25XXAB10-1	1.97 / 1.97	10 / 10	Bi-Rotational
73051484	P330B397VCAB17-25XXAB10-1	3.45 / 1.97	18 / 10	Bi-Rotational
73051861	P330L397VCEB12-98SPECEB12-1	2.46 / 2.46	13 / 13	Bi-Rotational
73051469	P330L397VCEB20-25SPECEB20-1	3.94 / 3.94	20 / 20	Bi-Rotational
73051804	P330L397VCEB20-98SPECEB20-1	3.94 / 3.94	20 / 20	Bi-Rotational
73051812	P330L397VCEB15-98SPECAB15-1	2.96 / 2.96	15 / 15	Bi-Rotational
73051862	P330L397VCEB12-25SPECEB10-1	2.46 / 1.97	13 / 10	Bi-Rotational
73051865	P330L397VCEB12-25SPECEB12-1	2.46 / 2.46	13 / 13	Bi-Rotational
73051468	P330L397VCEB20-43SPECEB20-1	3.94 / 3.94	20 / 20	Bi-Rotational

NOTE: GPM's shown are for 100%PTO of engine speed, which equates to an engine speed of 1200 RPM.

CHART D

Commercial Intertech Corp. Order Code Analysis

P300 Series

P	315	A	3	96	VN	EB	12	-	65
1	2	3	4	5	6	7	8		9

P300B Series

P	330	L	3	97	VC	EB	20	-	98	SPEC	EB	15	-	1
1	2	3	4	5	6	7	8		9	10	7	8		9

1	APPLICATION
M	Motor
P	Pump

4	ROTATION (*315 not available w/Bearing or as Bi-Rotational)
1	Clockwise
2	Counter-Clockwise
3	Bi-Rotational
4	*Clockwise w/Bearing
5	*Counter-Clockwise w/Bearing
6	*Bi-Rotational w/Bearing
8	*Motor w/Bearing
9	Motor wo/Bearing

2	MODEL
315	1.24 cir per 1" of gear width
330	1.97 cir per 1" of gear width
350	2.55 cir per 1" of gear width
365	3.60 cir per 1" of gear width

3	UNIT TYPE
A	Single
B	Multiple
L	Multiple with ext studs

5	MOUNTING	315	330	350	365
42	SAE 'B' 4-Bolt		X	X	X
78	SAE 'C' 4-Bolt		X	X	X
93	SAE 'A' 2-Bolt	X			
96	SAE 'B' 2-Bolt	X			
97	SAE 'B' 2-Bolt		X	X	
98	SAE 'C' 2-Bolt			X	X

6		ODT PORT END COVER PORTING								
I	O	315 REAR			315 SIDE			330 350* 365* SIDE ONLY		
		CW	CCW	DBL	CW	CCW	DBL	CW	CCW	DBL
24	20							FB*	BF*	
24	16							FC*	CF*	
20	20							FG*	GF*	VC
20	16	UC	CU		FB	BF		FJ	JF	
20	12	UN	NU		FG	GF				
16	16	UD	DU	RN	FL	LF	VN	FL	LF	VN
16	12	UQ	QU		FW	WF				
12	12	LR	RL	RQ	BJ	JB	VR			VR
12	8	LT	TL		BN	NB				
8	8			RS			VQ			

SEE FOLLOWING PAGE FOR ADDITIONAL CODES

CHART D

Commercial Intertech Corp. Order Code Analysis (continued)

7	GEAR HOUSING PORTING
AB	Pump (no ports available)
EB	Motor / Bi-Rotational (no ports available)

8	GEAR HOUSING DISPLACEMENT (in³ / rev)					GPM @ 1200 RPM			
	GW (inches)	315	330	350	365	315	330	350	365
03	0.375	0.47				2.4			
05	0.500	0.62	0.99	1.28		3.2	5.1	6.6	
06	0.625	0.78				4.0			
07	0.750	0.93	1.48	1.91	2.70	4.8	7.6	9.9	14.0
08	0.875	1.09				5.6			
10	1.000	1.24	1.97	2.55	3.60	6.4	10.2	13.2	18.7
11	1.125	1.40				7.2			
12	1.250	1.55	2.46	3.19	4.50	8.0	12.7	16.5	23.3
13	1.375	1.71				8.8			
15	1.500	1.86	2.96	3.83	5.40	9.6	15.3	19.8	28.0
16	1.625	2.02				10.4			
17	1.750	2.17	3.45	4.46	6.30	11.2	17.9	23.1	32.7
18	1.875	2.23				11.5			
20	2.000	2.48	3.94	5.10	7.20	12.8	20.4	26.4	37.4
22	2.250			5.74	8.10			29.8	42.0
25	2.500			6.38	9.00			33.1	46.7

9	MOUNTING	315	330	350	365
1	Connecting Shaft	X	X	X	X
7	SAE 'C' 1 1/4-14 th-Spline		X	X	X
11	SAE 'C' 1 1/4-Keyed				X
25	SAE 'B' 7/8-13 th-Spline		X	X	
30	SAE 'B' 7/8-Keyed		X		
41	SAE 'A' 5/8-Tapered	X			
43	SAE 'BB' 1-Keyed		X		
56	SAE 'B' 7/8-Tapered	X			
65	SAE 'B' 7/8-13 th-Spline	X			
96	SAE 'A' 5/8 th-Spline	X			
97	SAE 'A' 5/8-Keyed	X			
98	SAE 'BB' 1-15 th-Spline		X		

10	BEARING CARRIER
** SPEC	Bi-Rotational Special for IMT Available only on 330, 350, 365

CHART E

Hydraulic Compressors Pump flow requirements

IMT COMPRESSOR MODEL	MAXIMUM COMPRESSOR SPEED (RPM)	DRIVE PULLEYS RATIO*	HYDRAULIC DRIVE MOTOR DISPLACEMENT IN ³ /REV	REQUIRED PUMP GPM @ 1200 ENGINE RPM & 100%PTO
IMT-80	1000	11/19	1.93	16.0
IMT-100	1000	11/22	1.93	18.5
IMT-142	1000	11/22	3.03	28.0
DA425 (10 GPM)	1400	N/A	1.39	10.0
DA435 (10 GPM)	1400	N/A	1.39	10.0
DAR75H	6400	8/3	2.00	22.0

* Drive Pulley Ratio = Pulley diameter on hydraulic drive motor divided by Pulley diameter on compressor

CHART F

Use of Flow Dividers On cranes with DA435HAR & DA425H(10 GPM) compressors

IMT CRANE MODEL	GPM INTO FLOW DIVIDER	PART NO.	MODEL NO.	RATIO	GPM OUT SIDE 1/SIDE 2
1014	3+10=13 (MAX 14.5)	73054685	GPV-0550-35	2.75:1	3.46/9.53
2015 & 2115	5+10=15 (MAX 16)	73054684	GPV-0570-46	2:1	5/10
2815	5+10=15 (MAX 16)	73054684	GPV-0570-46	2:1	5/10
3016	7+10=17 (MAX 18.5)	73054839	GD-07AB-00-G0	1.38:1	7.14/9.86
5016	7+10=17 (MAX 18.5)	73054839	GD-07AB-00-G0	1.38:1	7.14/9.86
7025	10+10=20 (MAX 22)	73054829	GD-07BB-00-G0	1:1	10/10

NOTE: Viking rotary gear flow dividers.

PSG-CI:99900698: 20000706

IOWA MOLD TOOLING CO., INC.
BOX 189, GARNER, IA 50438-0189
TEL: 641-923-3711
TECHNICAL SUPPORT FAX: 641-923-2424