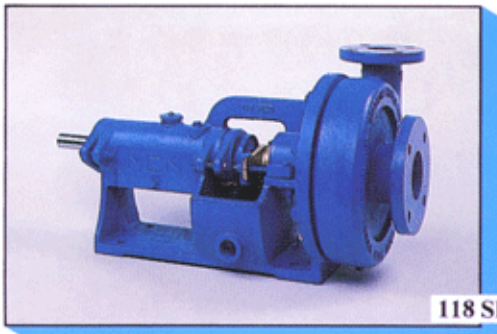
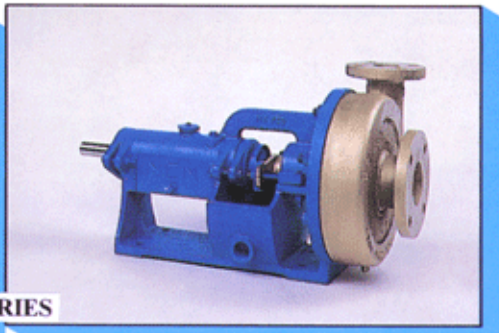
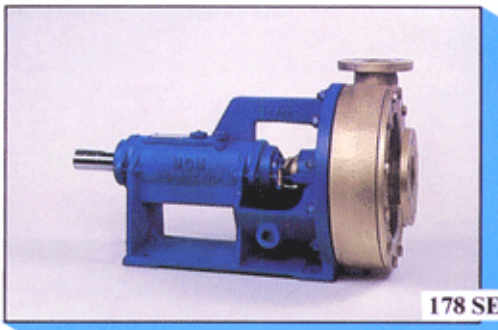
MCM

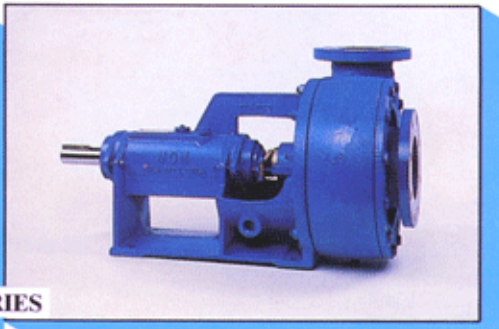
CENTRIFUGAL PUMPS





118 SERIES



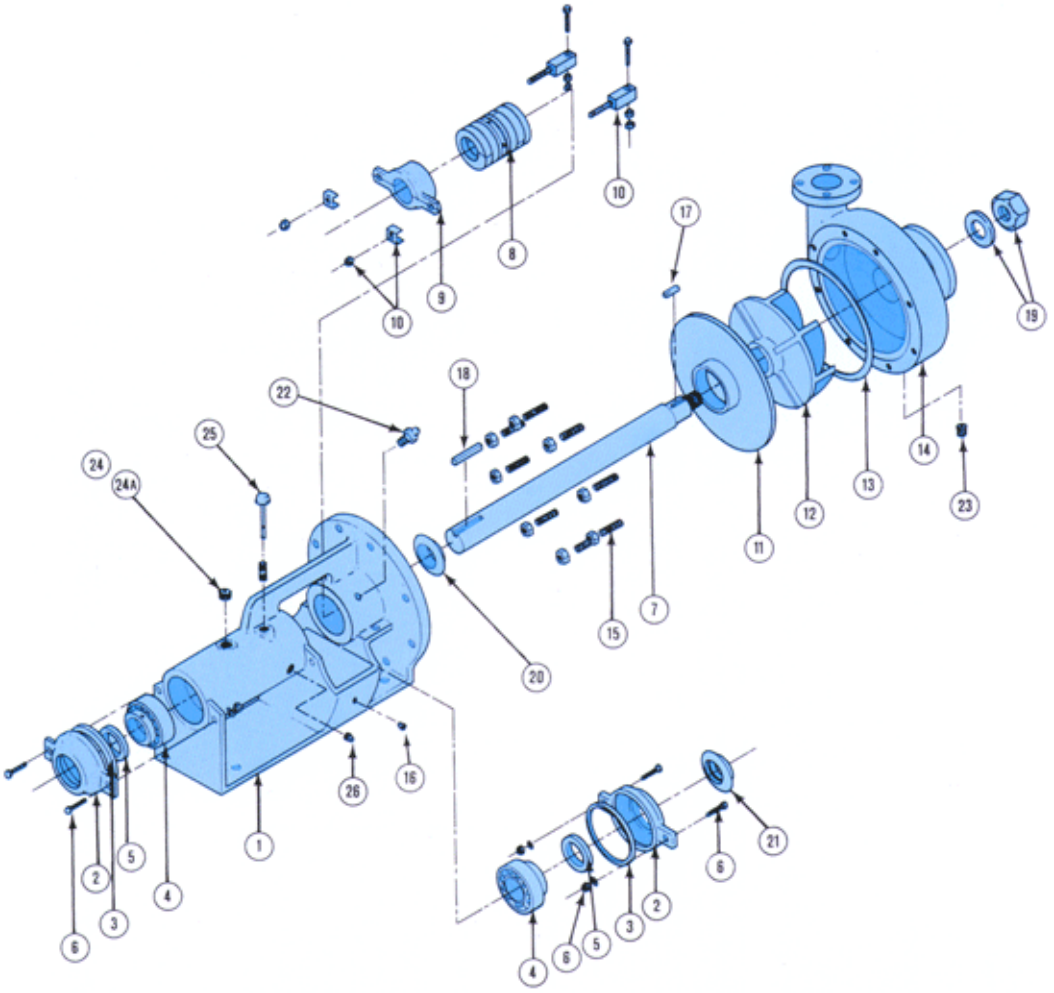


178 SERIES

250 SERIES

Since 1934

118 SERIES
PARTS DIAGRAM



TOLL FREE: 1-800-255-6263 E-MAIL: salesint@odrillmcm.com

PARTS CROSS REFERENCE CHART

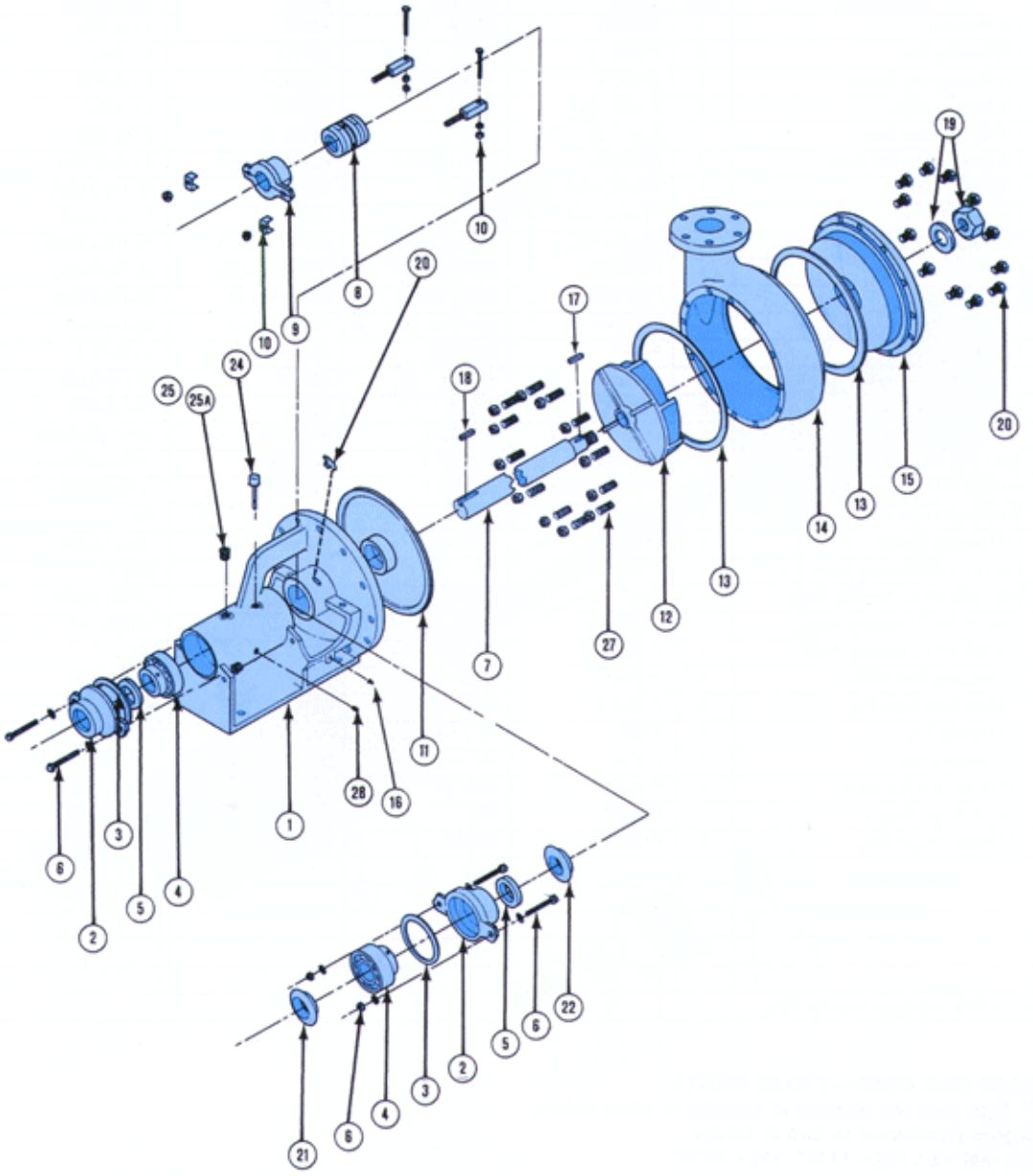
MCM parts are completely interchangeable with Mission , Halco ,Harrisburg ,Continental Emsco & Demco pumps

Itm No.	Description	Qty Req	MCM	Mission	Halco	Harrisburg
1	118 Pedestal	1	P18PED	E3768	H3768	1-118-PED
2	118 Bearing Cap	2	P18BC	3773A	H3771A	2-118-BC
3	118 Bearing Cap Gasket	2	P18BCG	10399-21-1	H10399-2-1	3-118-BCG
4	118 Bearing Assm.	2	P18BA	3944-1	H3944-1	4-118-BA
5	118 Oil & Grease Seal	2	P18OGS	3943-12	H3943-12	5-118-OGS
6	118 Bearing Cap Bolt Assm.	4	P18BCBA	3861-1/3932-2	H3861-1/3932-2	6-118-BCBNA
7	118 316-SS Shaft	1	P18SH316SS	3769-4A	H3769-4A	7C-118-316SS
	118 416-SS Shaft	1	P18SH416SS	3769-21A	H3769-21A	7-118-416SS
	118 Ceramic Coated 416-SS Shaft	1	P18SH416SC	17361-21G-7A	H17361-21G-7A	7A-118-416SSC
8	118 Graphite Packing	1	P18PMSG	8264-11S-OBA	H8264-11S-OBA	8A-118-PMSG
	118 King Packing	1	P18PMSK	8474-11S-1A	H8474-11S-1A	8C-118-PMSK
	118 Teflon Packing	1	P18PMST	8264-11S-7A	H8264-11S-7A	8D-118-PMST
9	118 Packing Gland	1	P18PG	8204-13A	H8204-13A	9-118-GPA
10	118 Gland Adjusting Bolt Assm.	2	P18GABA	A3701A	H3701A	10-118-GABA
11	118 Wear Plate Cast Iron	1	P18WPC	3762-1	H3762-1	11-118-WPC
12	118-1X1.5 RH Cast Iron Impeller	1	P18C11MRXXX	4571-XX-1	H4571-XX-1	1218142ICRXXX
	118-1.5X2 RH Cast Iron Impeller	1	P18C12MRXXX	4571-XX-1	H4571-XX-1	1218142ICRXXX
	118-2X3 RH Cast Iron Impeller	1	P18C23MRXXX	4575-XX-1	H4575-XX-1	121823ICRXXX
	118-3X4 RH Cast Iron Impeller	1	P18C34MRXXX	5710-XX-1	H5710-XX-1	N/A
13	118 Housing Gasket	1	P18HG	10399-19-1	H10399-19-1	13A-118-HGF
14	118-1X1.5 RH Housing Assm. C.I.	1	P18C11HR	N/A	N/A	N/A
	118-1.5X2 RH C.I Housing Assm.	1	P18C12HR	G4576-1A	H4576-1A	14118142CHR
	118-2X3 RH C.I Housing Assm.	1	P18C23HR	F4672-1A	H4672-1A	141823CHR
	118-3X4 RH C.I Housing Assm.	1	P18C34HR	F5162-1A	H5162-1A	N/A
15	118 Housing Stud W/Nut	8	P18HSN	11907-82/3932-1	H11907-82/3932-1	15-118-HSN
16	118 Drip Bowl Drain Plug	2	P18DBDP	8262-6	H8262-6	N/A
17	118 Impeller Key	1	P18IK	4372-1-4	H4372-1-4	17-118-IK
18	118 Coupling Key	1	P18CK	4372-2-21	H4372-2-21	17A-118-CK
19	118 Shaft Lock Nut Assm.	1	P18LNA	6209-7-4	H6209-7-4	18-118-LNA
20	118 Oil Slinger Ring	1	P18SRO	N/A	N/A	19-118-SRO
21	118 Water Slinger Ring	1	P18SRW	C3770A	H3770A	22-118-SRW
Note: XX or XXX Indicates Impeller Size						

IMPELLER SIZE CODE –(THREE DIGITS)
1st & 2nd Digit gives the diameter of Impeller in whole inches,
3rd Digit gives fractions of an inch in 1/8 ths
Example: 080 = 8", 134 = 13 ½" , 106 = 10 ¾"

TEL : (713) 541-2020 * FAX (713) 541-9090

178 SERIES
PARTS DIAGRAM

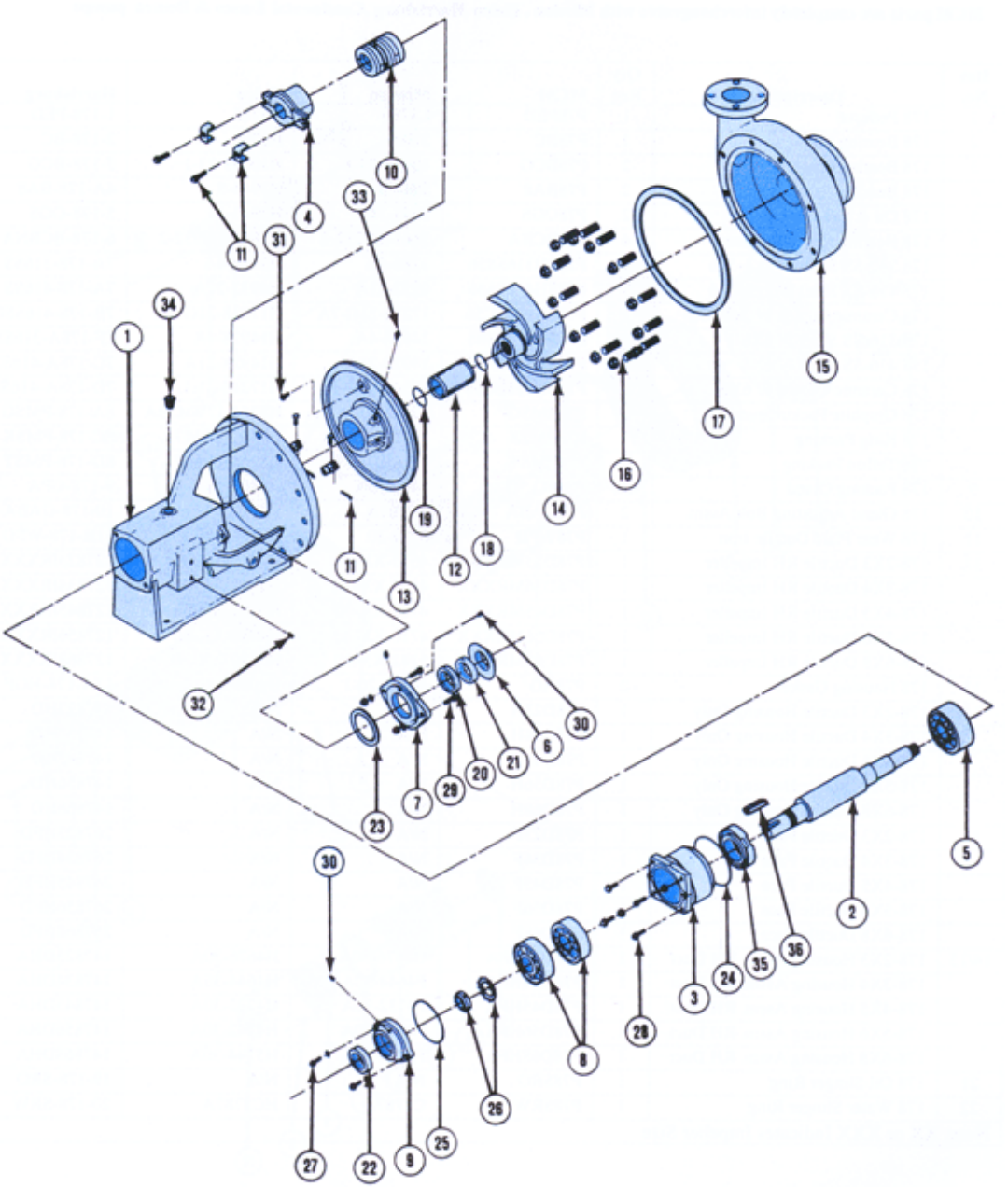


PARTS CROSS REFERENCE CHART

MCM parts are completely interchangeable with Mission , Halco ,Harrisburg ,Continental Emsco & Demco pumps

Itm No.	Description	Qty Req	MCM	Mission	Halco	Harrisburg
1	178 Pedestal	1	P78PED	L3785	H3785	1-178-PED
2	178 Bearing Cap	2	P78BC	3790	H3790	2-178-BC
3	178 Bearing Cap Gasket	2	P78BCG	10399-23-1	H10399-23-1	3-178-BCG
4	178 Bearing Assm.	2	P78BA8	3944-3	H3944-3	4A-178-BA8
5	178 Oil & Grease Seal	2	P78OGS	3943-14	H3943-14	5-178-OGS
6	178 Bearing Cap Bolt Assm.	4	P78BCBA	3861-1/3932-2	H3861-1/3932-2	6-178-BCBNA
7	178 316-SS Shaft F/ 2x3–5x6	1	P78SH316SS56	3786-4A	H3786-4A	7A-178-316SS
	178 416-SS Shaft F/ 2x3–5x6	1	P78SH416SS56	4932-21A	H4932-21A	7A-178-416SS
	178 Ceramic Coated F/ 2x3–5X6	1	P78SH416SC56	17238-21G-7A	H17238-21G-7A	7B-178-416SSC
	178 316-SS Shaft F/ 6X8	1	P78SH316SS68	14928-4A	H14928-4A	7F-178A-316SS
	178 416-SS Shaft F/ 6X8	1	P78SH416SS68	14928-21A	H14928-21A	7C-178A-416SS
	178 Ceramic Coated F/ 6X8	1	P78SH416SC68	17343-21G-1A	H17343-21-1A	7D-178A-416SSC
8	178 Graphite Packing	1	P78PMSG	8264-17W-OBA	H8264-17W-OBA	8A-178-PMSG
	178 King Packing	1	P78PMSK	8474-17W-7A	H8474-17W-7A	8C-178-PMSK
	178 Teflon Packing	1	P78PMST	8264-17W-7A	H8264-17W-7A	8D-178-PMST
9	178 Packing Gland	1	P78PG	7406-13A	H7406-13A	9-178-GPA
10	178 Gland Adjusting Bolt Assm.	2	P78GABA	A3701A	H3701A	10-178-GABA
11	178 Wear Plate Ductile Iron	1	P78WPD	3779-30	H3779-30	11B-178-WPD
12	178-2X3 Ductile RH Impeller	1	P78D23MRXXX	4610-XX-30	H4610-XX-30	127823IRXXX
	178-3X4 Ductile RH Impeller	1	P78D34MRXXX	4605-XX-30	H4605-XX-30	127834IRXXX
	178-4X5 Ductile RH Impeller	1	P78D45MRXXX	4705-XX-30	H4705-XX-30	127845IRXXX
	178-5X6 Ductile RH Impeller	1	P78D56MRXXX	4710-XX-30	H4710-XX-30	127856IRXXX
	178-6X8 Ductile RH Impeller	1	P78D68MRXXX	5142-XX-30	H5142-XX-30	127868IRXXX
13	178 Housing Gasket	2	P78HG	10399-20-1	H10399-20-1	13A-178-HGF
14	178-2X3 Ductile Housing Only	1	P78D23H	N/A	N/A	147823HD
	178-3X4 Ductile Housing Only	1	P78D34H	N/A	N/A	147834HD
	178-4X5 Ductile Housing Only	1	P78D45H	N/A	N/A	147845HD
	178-5X6 Ductile Housing Only	1	P78D56H	N/A	N/A	147856HD
	178-6X8 Ductile Housing Only	1	P78D68H	N/A	N/A	147868HD
15	178-2X3 Ductile Face	1	P78D23F	N/A	N/A	267823HFD
	178-3X4 Ductile Face	1	P78D34F	N/A	N/A	267834HFD
	178-4X5 Ductile Face	1	P78D45F	N/A	N/A	267845HFD
	178-5X6 Ductile Face	1	P78D56F	N/A	N/A	267856HFD
	178-6X8 Ductile Face	1	P78D68F	N/A	N/A	267868HFD
14/15	178-2X3 Housing Assm. RH Duct	1	P78D23HFA	G4676-30A	H4676-30A	147823DHA
	178-3X4 Housing Assm. RH Duct	1	P78D34HFA	F4644-30A	H4644-30A	147834DHA
	178-4X5 Housing Assm. RH Duct	1	P78D45HFA	F4732-30A	H4732-30A	147845DHA
	178-5X6 Housing Assm. RH Duct	1	P78D56HFA	F4742-30A	H4742-30A	147856DHA
	178-6X8 Housing Assm. RH Duct	1	P78D68HFA	F5144-30A	H5144-30A	147868DHA
21	178 Oil Slinger Ring	1	P78SRO	N/A	N/A	19-178-SRO
22	178 Water Slinger Ring	1	P78SRW	C3787A	HC3787A	20-178-SRW
Note: XX or XXX Indicates Impeller Size						

250 SERIES
PARTS DIAGRAM



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PARTS CROSS REFERENCE CHART

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Itm No.	Description	Qty Req	MCM	Mission	Halco	Harrisburg
1	250 Pedestal	1	P25PED	20618-12-1	H20618-12-1	1-250-PED
2	250 Shaft	1	P25SHFT	20612-02-33	H20612-02-33	7-250-416SS
3	250 Outboard Bearing Housing	1	P25OBBH	20624-01-01	H20624-01-01	4C-250-BH
4	250 Packing Gland	1	P25PG	20622A	H20622A	9-250-GPA
5	250 Inboard Bearing	1	P25IBBRG	20615-1	H20615-1	4B-250-BI
6	250 Slinger Ring Water	1	P25SRW	22210-1A	H22210-1A	23-250-SRW-U
7	250 Inboard Bearing Cover	1	P25IBBC	20626A	H20626A	2B-250-BC
8	250 Outboard Bearing	2	P25OBBRG	20616-1	H20616-1	4A-250-BO
9	250 Outboard Bearing Cover	1	P25OBBC	20617A	H20617A	2A-250-BC
10	250 Graphite Packing	1	P25PMSG	8264-24-OBA	H8264-24-OBA	8A-250-PMSG
	250 King Packing	1	P25PMSK	8474-24-1A	H8474-24-1A	8C-250-PMSK
	250 Teflon Packing	1	P25PMST	8264-24-7A	H8264-24-7A	8D-250-PMST
	250 Mechanical Seal	1	P25MS/TT	22451	H22451	34A-250-MS1
11	250 Gland Bolt Assembly	2	P25GABA	3701A	H3701A	10-250-GABA
12	250 Shaft Sleeve, Ceramic	1	P25SHSLVC	20613-21G-7A	H20613-21G-7A	7A-250-SSC
13	250 Stuffing Box F/Packing	1	P25SB/PK	20614-01-30	H20614-01-30	11-250-SBPS
	250 Stuffing Box F/Mech. Seal	1	P25SB/MS	22223-01-30A	H22223-01-30A	11C-250-SBMSS
14	250-2x3x13 Impeller	1	P25D233MRXXX	19204-XX-30	H19204-XX-30	122523IXXX
	250-3x4x13 Impeller	1	P25D343MRXXX	19206-XX-30	H19206-XX-30	122534IXXX
	250-4x5x14 Impeller	1	P25D454MRXXX	19224-XX-30	H19224-XX-30	122545IXXX
	250-5x6x11 Impeller	1	P25D561MRXXX	19121-XX-30	H19121-XX-30	122556IXXX
	250-5x6x14 Impeller	1	P25D564MRXXX	19121-XX-30	H19121-XX-30	122564XXX
	250-6x8x11 Impeller	1	P25D681MR XXX	19116-XX-30	H 19116-XX-30	1225681XXX
	250-6x8x14 Impeller	1	P25D684MRXXX	19116-XX-30	H19121-XX-30	122568IXXX
15	250-2x3x13 Housing Assembly	1	P25D233H	19203-01-30A	H19203-01-30A	142523HAS
	250-3x4x13 Housing Assembly	1	P25D343H	19205-01-30A	H19205-01-30A	142534HAS
	250-4x5x14 Housing Assembly	1	P25D454H	19222-01-30A	H19222-01-30A	N/A
	250-5x6x11 Housing Assembly	1	P25D561H	19122-01-30A	H19122-01-30A	1425561HAS-11
	250-5x6x14 Housing Assembly	1	P25D564H	19123-01-30A	H19123-01-30A	1425561HAS-14
	250-6x8x11 Housing Assembly	1	P25D681H	19763-01-30A	H19763-01-30A	N/A
	250-6x8x14 Housing Assembly	1	P25D684H	19117-01-30A	H19117-01-30A	142568HAS
16	250 Housing Stud W/Nut	12	P25HSN	3862-76/3932-61	H3862-76/3932-61	15-250-HSN
17A	250 Fluid End Gasket Kit		P25FEGK	10399-46-1A	H10399-46-1A	31-250-FEGK
17	250 Housing Gasket	1	P25HG	10399-46-1	H10399-46-1	13C-250-HGA
18	250 Impeller Seal – Oring	1	P25IMS	19110-72	H19110-72	12B250-ISOR
19	250 Shaft Sleeve Seal – Oring	1	P25SSS	7496-236	H7496-236	7B-250-SSOR
20A	250 Oil Seal Kit		P250SK	20619A	H20619A	33-250-GSK
20	250 Inboard Bearing Oil Seal	1	P25IBBOS	20619-01	H20619-01	5B-250-OGSI
21	250 Inboard Exclusion Seal	1	P25IBBES	20620-01	H0620-01	5C-250-SEXI
22	250 Outboard Bearing Oil Seal	1	P25OBBOS	20619-02	H20619-02	5A-250-OGSO
23A	250 Power End Gasket Kit		P25PEGK	20625A	H20625A	32-250-PEGK
23	250 Inboard Bearing Cover Gasket	1	P25IBBCG	20625	H20625	3A-250-BCG
24	250 Outbd. Bearing Hsg. Seal–Oring	1	P250BBHS	7496-253	H7496-253	4D-250-BHOR
25	250 Outbd. Brg. Cover Seal–Oring	1	P250BBCS	7496-26	H7496-26	3B-250-BCOR
26	250 Bearing Lock Nut Kit	1	P25BLNK	6123-4A	H6123-4A	4E-250-BBLNA

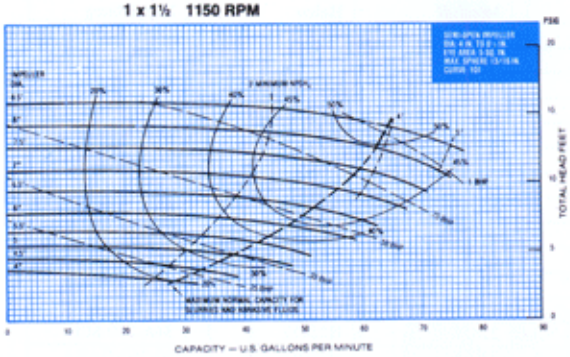
Note: XX or XXX Indicates Impeller Size

TEL : (713) 541-2020 · FAX : (713) 541-9090

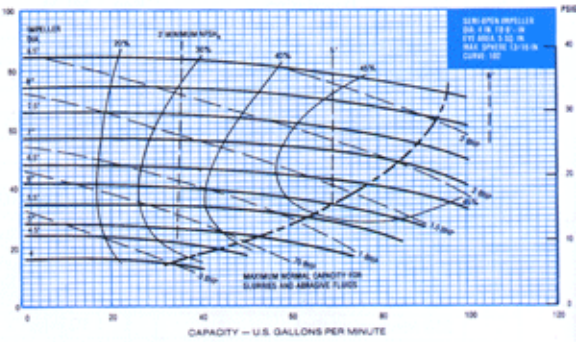
118 SERIES CHARTS

Curves show performance with clear water. If specific gravity is other than 1.0, curve HP must be corrected.

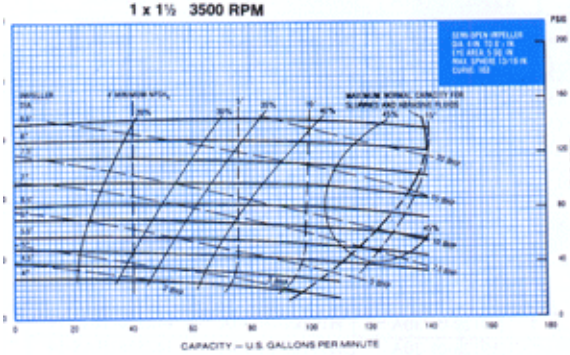
1 x 1½ 1150 RPM



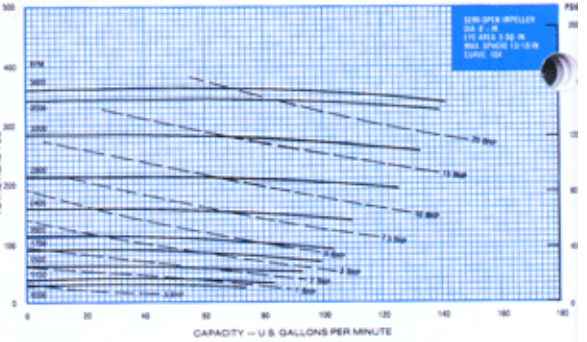
1 x 1½ 1750 RPM



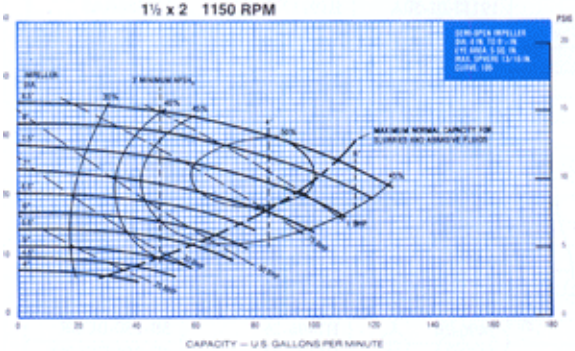
1 x 1½ 3500 RPM



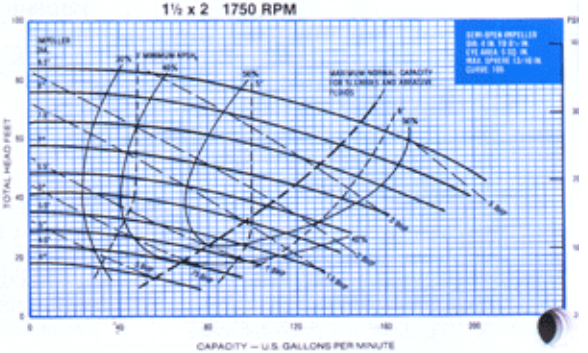
1 x 1½ 1000-3600 RPM



1½ x 2 1150 RPM



1½ x 2 1750 RPM



118 SERIES CHARTS

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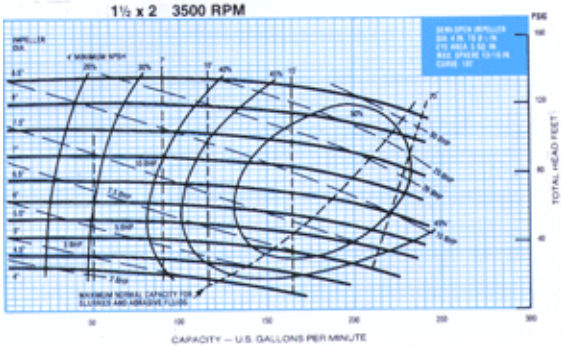
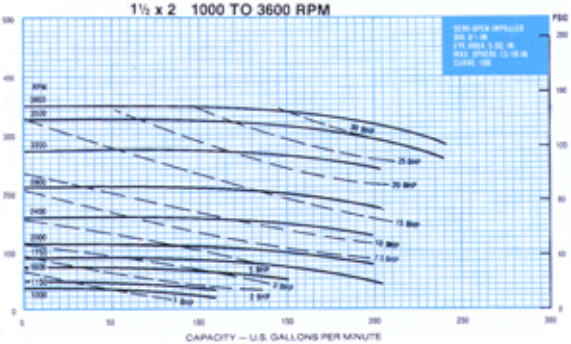
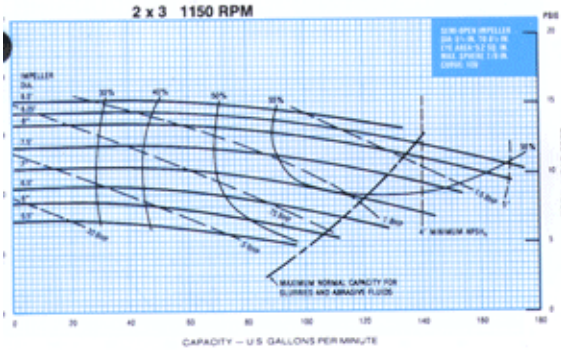
1½ x 2 3500 RPM



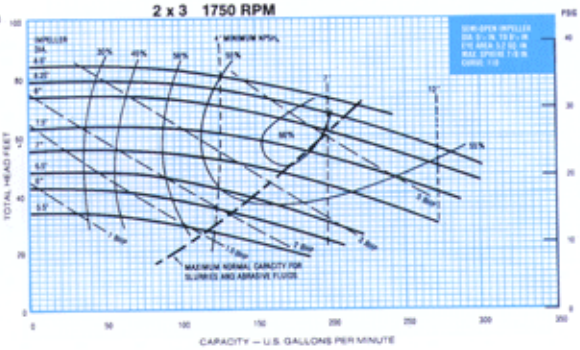
1½ x 2 1000 TO 3600 RPM



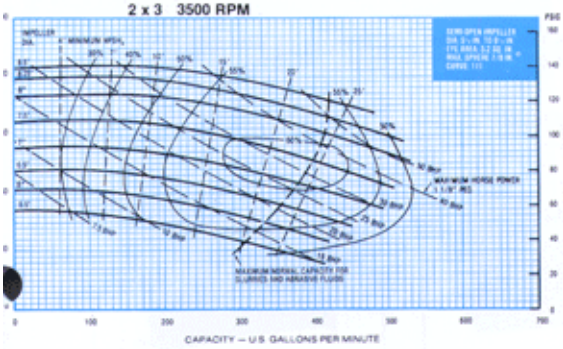
2 x 3 1150 RPM



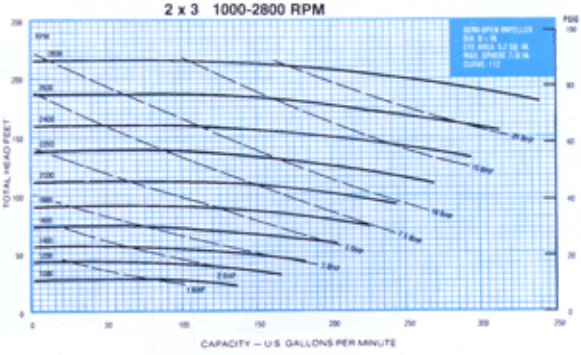
2 x 3 1750 RPM



2 x 3 3500 RPM



2 x 3 1000-2800 RPM



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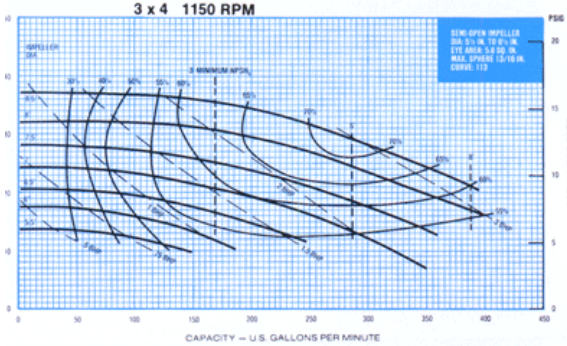
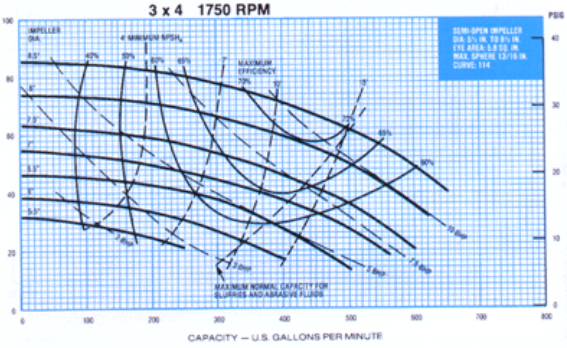
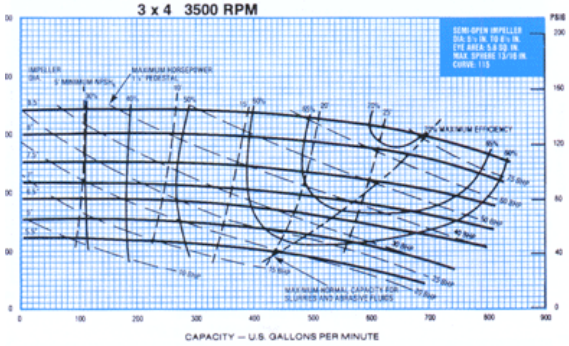
3 x 4 1150 RPM



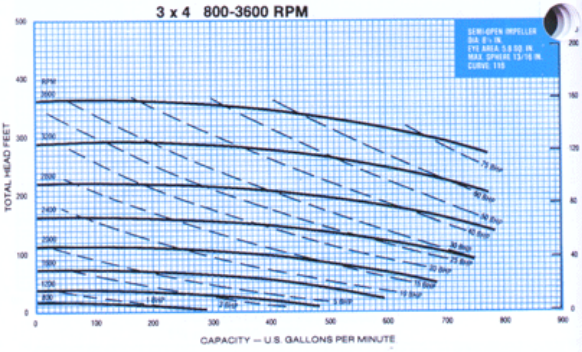
3 x 4 1750 RPM



3 x 4 3500 RPM

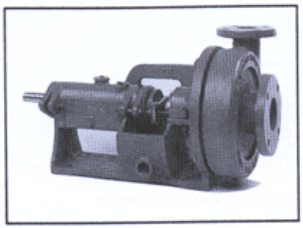


3 x 4 800-3600 RPM



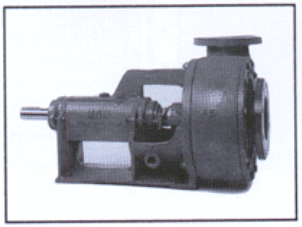
THE TOUGH PERFORMERS

TOUGH!



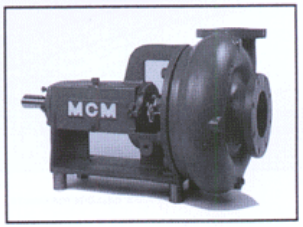
118 SERIES

TOUGHER!!



178 SERIES

TOUGHEST!!!

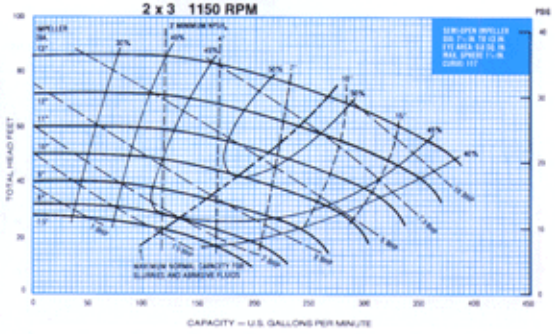


250 SERIES

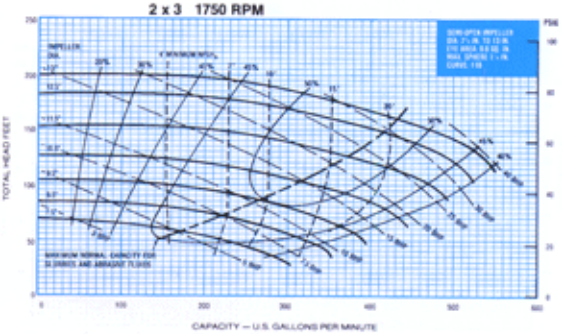
178 SERIES CHARTS

Curves show performance with clear water. If specific gravity is other than 1.0, curve HP must be corrected.

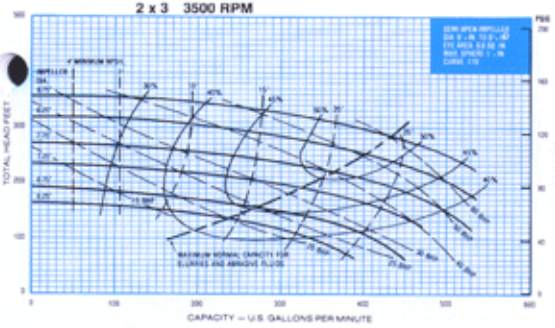
2 x 3 1150 RPM



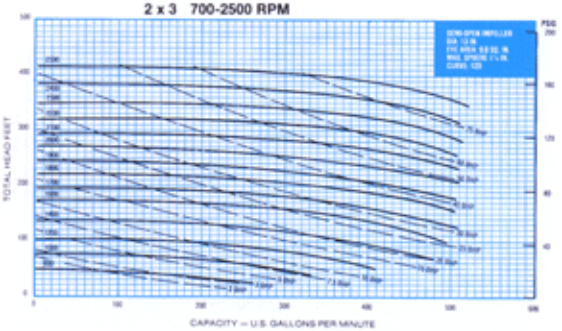
2 x 3 1750 RPM



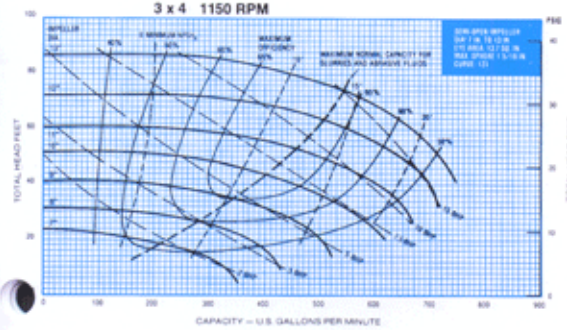
2 x 3 3500 RPM



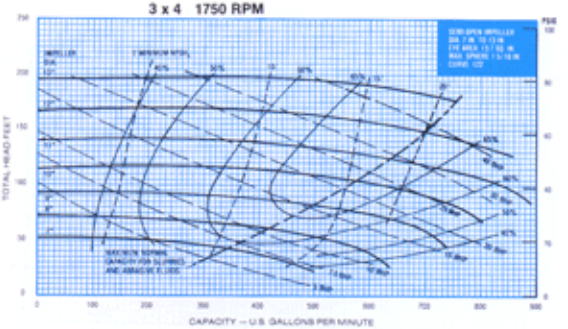
2 x 3 700-2500 RPM



3 x 4 1150 RPM



3 x 4 1750 RPM

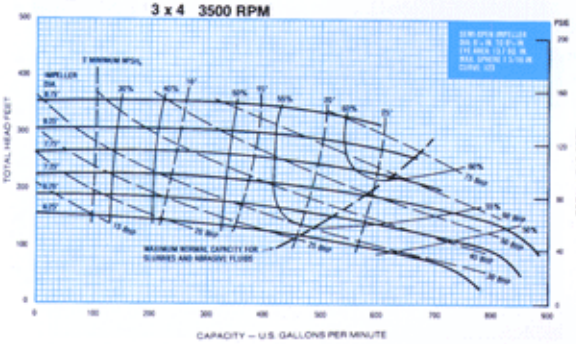


WARRANTY: MCM Pump Mfg. warrants it's products against defects of material and workmanship for a period of one year from date of purchase.

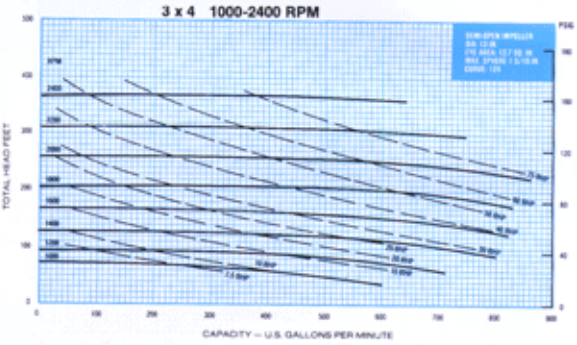
178 SERIES
CHARTS

Curves show performance with clear water. If specific gravity is other than 1.0, curve HP must be corrected.

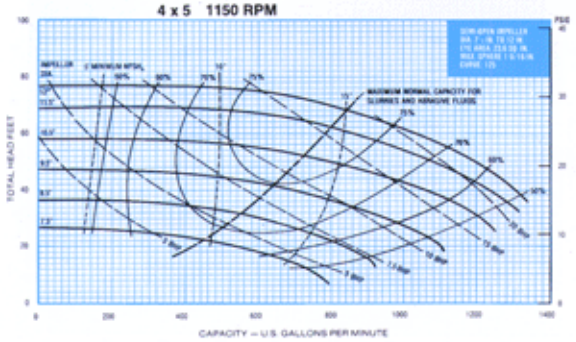
3 x 4 3500 RPM



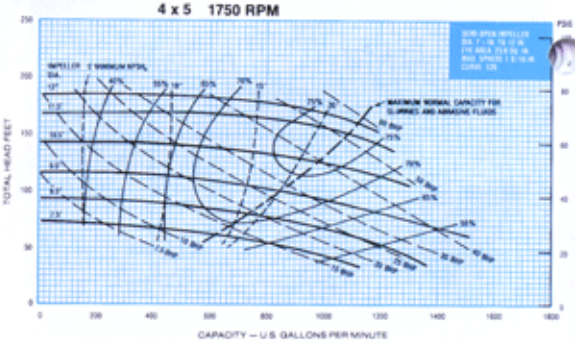
3 x 4 1000-2400 RPM



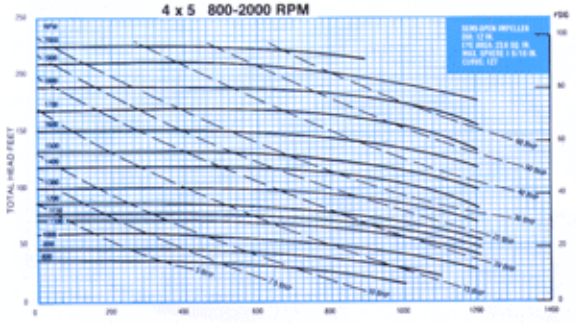
4 x 5 1150 RPM



4 x 5 1750 RPM



4 x 5 800-2000 RPM



CONVERSION DATA

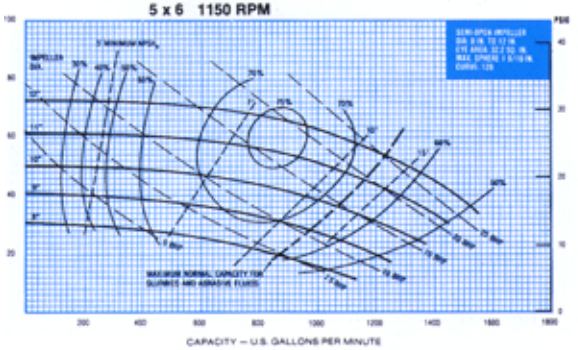
FEET	PSI	FEET	PSI
10	4.33	23.1	10
20	8.66	46.2	20
25	10.80	57.8	25
30	13.00	69.3	30
40	17.30	80.9	35
50	21.60	92.4	40
75	32.48	104.0	45
100	43.20	115.5	50
150	64.80	138.6	60
200	86.40	173.2	75
250	108.00	231.0	100
300	130.00	288.7	125
350	151.60	346.5	150
400	172.80	404.2	175

TOLL FREE: 1-800-255-6263 **E-MAIL:** salesint@odrillmcm.com

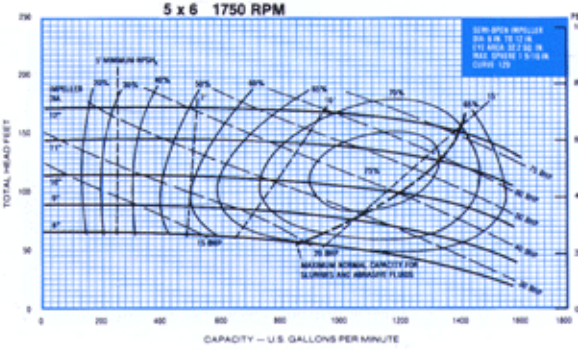
178 SERIES
PARTS DIAGRAM

Curves show performance with clear water. If specific gravity is other than 1.0, curve HP must be corrected.

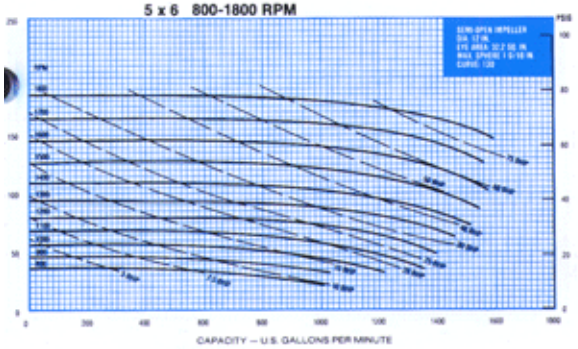
5 x 6 1150 RPM



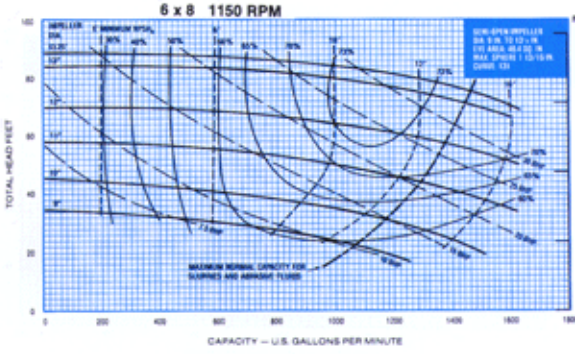
5 x 6 1750 RPM



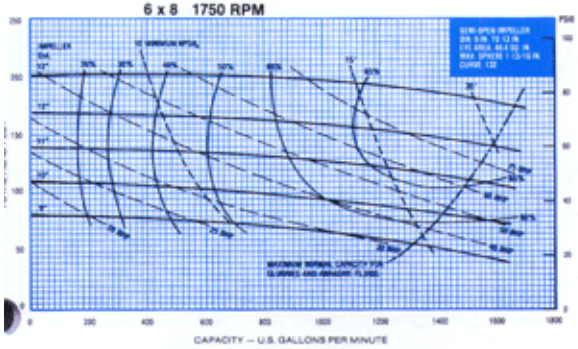
5 x 6 800-1800 RPM



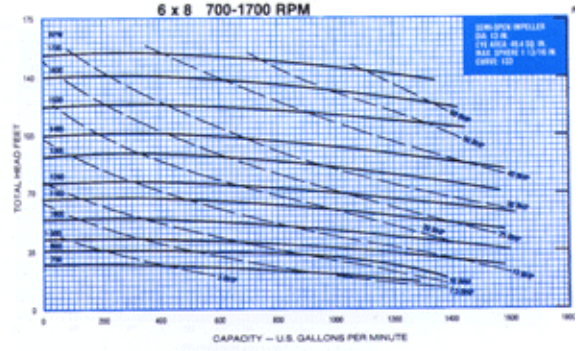
6 x 8 1150 RPM



6 x 8 1750 RPM



6 x 8 700-1700 RPM



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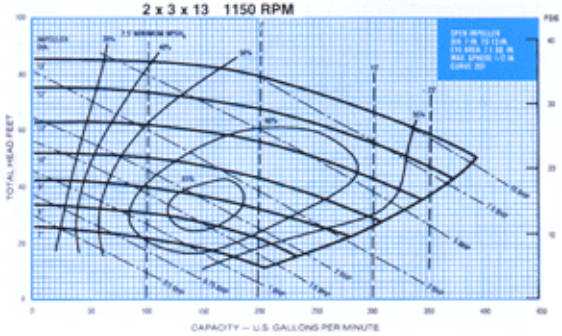
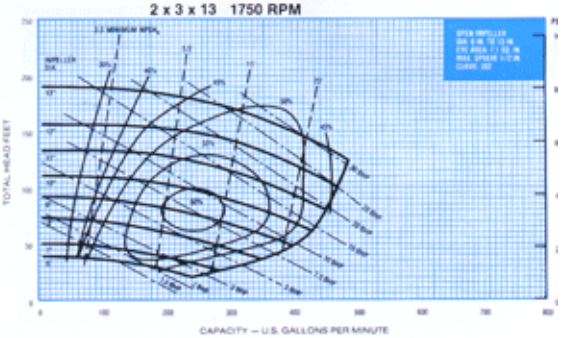
250 SERIES CHARTS

Curves show performance with clear water. If specific gravity is other than 1.0, curve HP must be corrected.

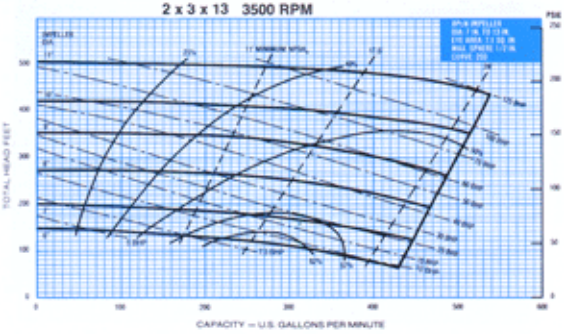
2 x 3 x 13 1150 RPM



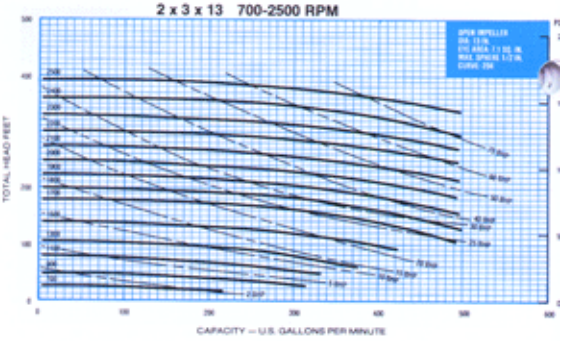
2 x 3 x 13 1750 RPM



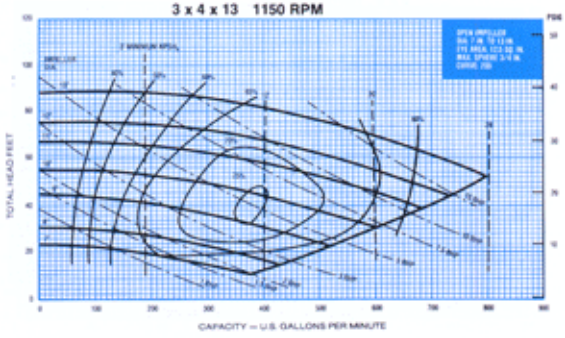
2 x 3 x 13 3500 RPM



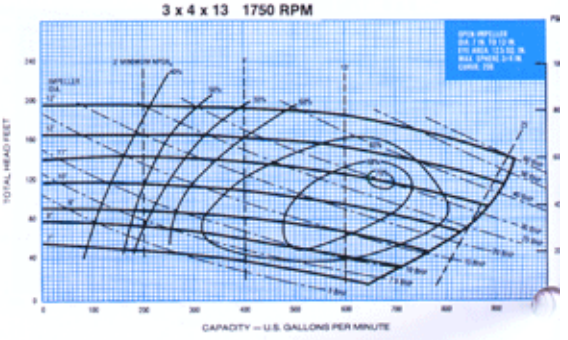
2 x 3 x 13 700-2500 RPM



3 x 4 x 13 1150 RPM



3 x 4 x 13 1750 RPM



MCM PUMPS ARE BUILT TOUGH…TO LAST LONGER !

250 SERIES CHARTS

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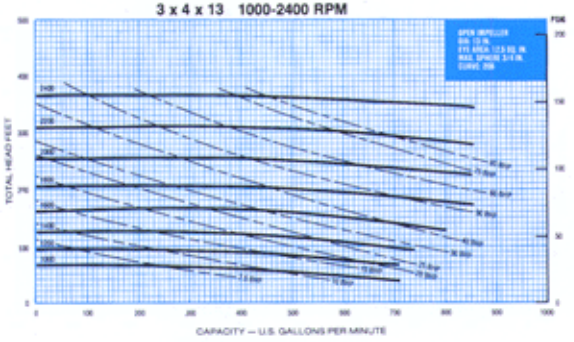
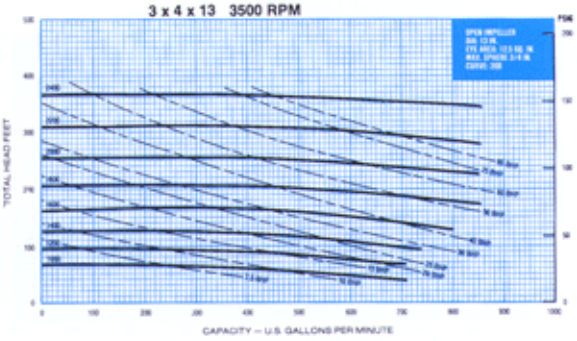
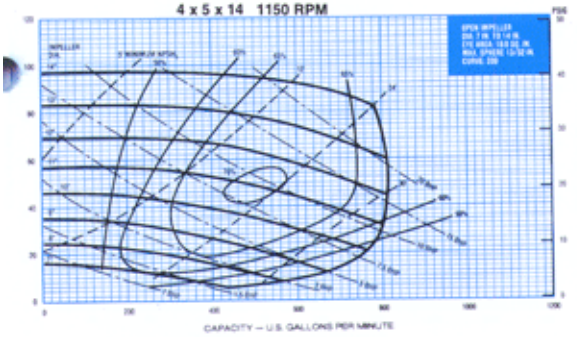
3 x 4 x 13 1000-2400 RPM



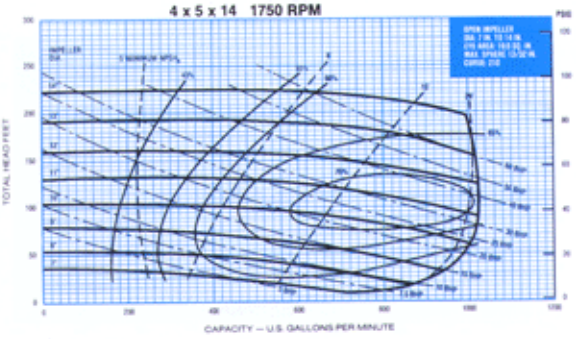
3 x 4 x 13 3500 RPM



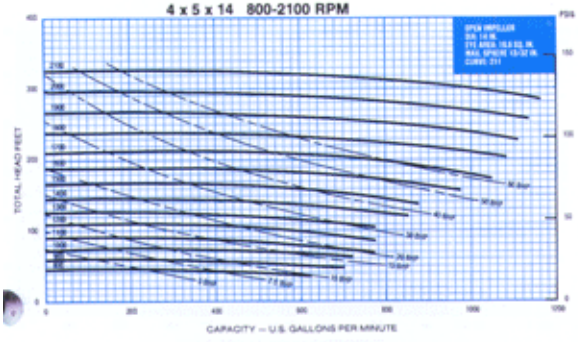
4 x 5 x 14 1150 RPM



4 x 5 x 14 1750 RPM



4 x 5 x 14 800-2100 RPM



CONVERSION DATA

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10	4.33	23.1	10
20	8.66	46.2	20
25	10.80	57.8	25
30	13.00	69.3	30
40	17.30	80.9	35
50	21.60	92.4	40
75	32.48	104.0	45
100	43.20	115.5	50
150	64.80	138.6	60
200	86.40	173.2	75
250	108.00	231.0	100
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250 SERIES CHARTS

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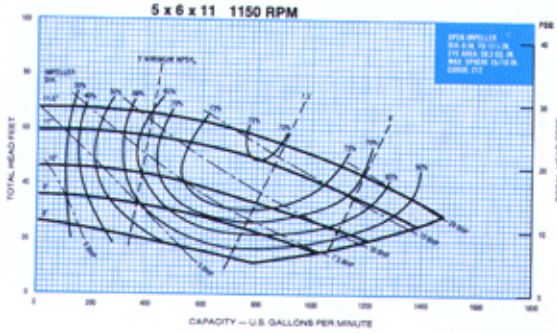
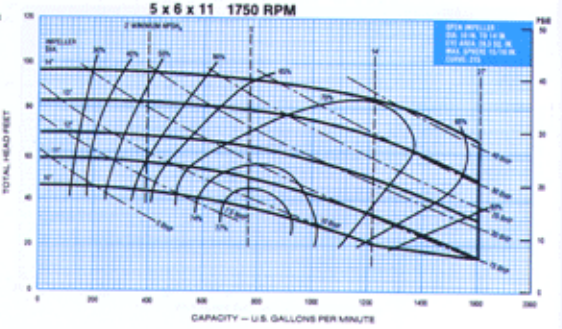
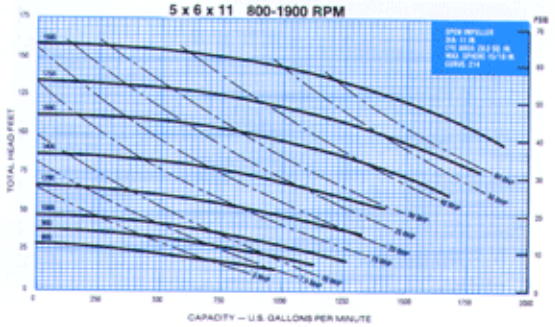
5 x 6 x 11 1150 RPM



5 x 6 x 11 1750 RPM



5 x 6 x 11 800-1900 RPM



CONVERSION DATA

FEET	PSI	FEET	PSI
10	4.33	23.1	10
20	8.66	46.2	20
25	10.80	57.8	25
30	13.00	69.3	30
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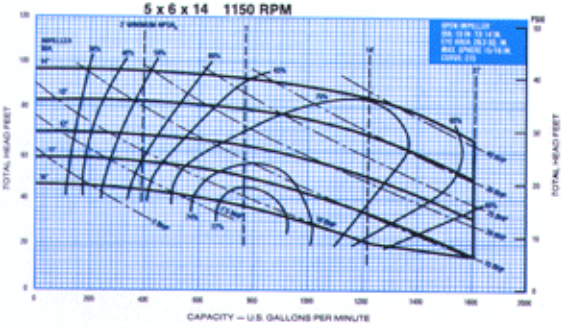
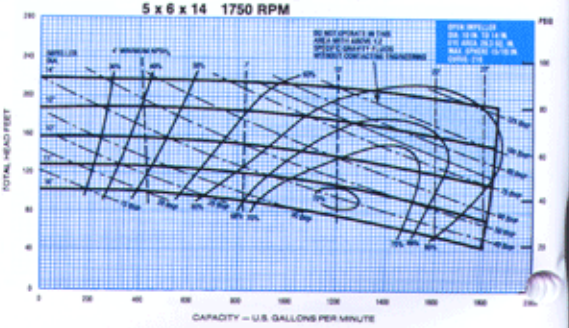
300	130.00	288.7	125
350	151.60	346.5	150
400	172.80	404.2	175

5 x 6 x 14 1150 RPM



5 x 6 x 14 1750 RPM



We've got the **Quality** … We've got the **Price** !

250 SERIES CHARTS

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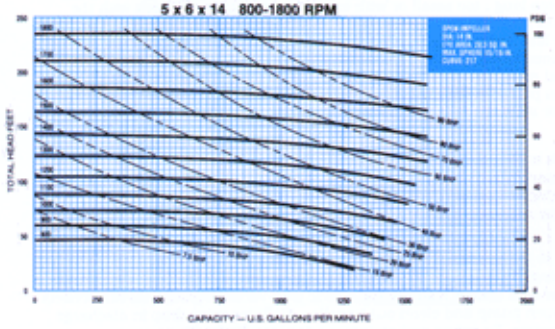
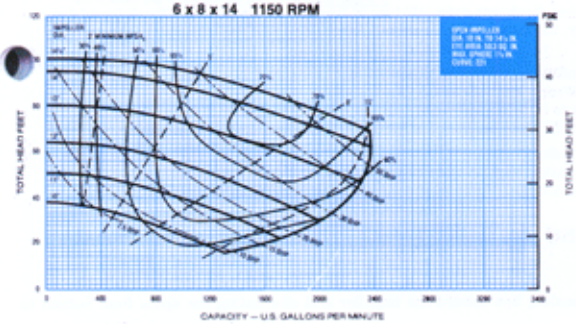
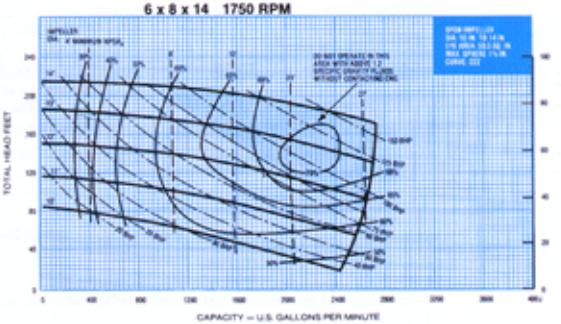
5 x 6 x 14 800-1800 RPM



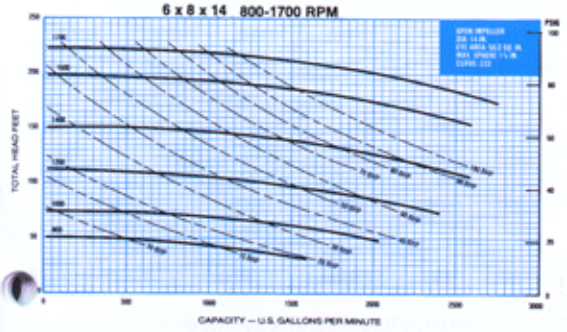
6 x 8 x 14 1150 RPM



6 x 8 x 14 1750 RPM



6 x 8 x 14 800-1700 RPM



MCM USA

PUMP TROUBLES AND REMEDIES

- **NOT ENOUGH OR NO LIQUID DELIVERED** - (1) Pump and suction pipe not completely filled with liquid. Re-prime the pump and suction lines. (2) Suction lift too high because suction piping is too long , too small or with excessive restrictions. Check with the vacuum gauge and/or revise suction piping. (3) Wrong direction of rotation. Re-check motor rotation with rotation arrow on the pump casing. Reverse, if necessary. (4) Air pocket in the suction line. Re-pipe suction lines to eliminate such restrictions. (5) Air leak in the suction line causing loss of prime. Re-check all piping connections. (6) Stuffing box packing worn to the point of allowing leakage of air into the pump casing. Re-lubricate stuffing box and re-adjust. (7) Discharge head higher than anticipated. Check discharge pressure gauge. (8) Foot valve too small. Check suction pressure with vacuum gauge. (9) Foot valve or suction pipe not fully immersed. Suction pipe immersion should be equal to five or more diameters of the pipe. (10) Impeller clogged. Open pump and clean out impeller.
- **NOT ENOUGH PRESSURE (HEAD)** - (1) Speed too low. Re-check motor RPM. (2) Air or gases in the liquid. Re-check for all possible air leaks. (3) Wrong direction of rotation. Re-check rotation of motor against arrow on pump casing. (4) Impeller diameter may be too small. Check with performance curves. (5) Under variable discharge conditions, it may be necessary to re-adjust and partially close the discharge butterfly valve to maintain adequate discharge pressure or to permanently install an orifice plate at the flange of the discharge valve.
- **PUMP WORKS AWHILE THEN STOPS PUMPING** - (1) Air leaks in the suction line. Re-check all suction piping connections. (2) Stuffing box packing worn allowing leakage of air into pump casing. Re-lubricate stuffing box packing and re-adjust packing gland. (3) Suction lift too high caused by suction piping long, too high or with undue restrictions. Check with vacuum gauge. (4) Air pockets in the suction line. Revise suction piping. (5) Impeller clogged. Open pump and clean out impeller. (6) Temporary drop in discharge pressure below normal rating will sometime cause pump to lose prime. Re-prime and maintain adequate discharge pressure.
- **PUMP TAKES TOO MUCH POWER** - (1) Speed too high. Re-check motor RPM. (2) Discharge pressure lower than rating and pumps too much liquid. Maintain proper discharge pressure by throttling discharge valve. (3) Liquid heavier than expected. Check liquid for viscosity and specific gravity. (4) Stuffing box packed too tightly. Check packing for proper lubrication and adjustment. (5) Impeller diameter too large. Check performance curves.
- **PUMP LEAKS EXCESSIVELY AT THE STUFFING BOX** - (1) Stuffing box packing is adequately lubricated and properly adjusted. (2) Packing is improperly installed and not adequately run in. (3) Wrong kind of packing for liquid handled. Check with the manufacturer for recommendation. (4) Shaft is running out due to impeller imbalance due to fluid wear. Check rotating shaft vibration at the packing gland and replace impeller if necessary. (5) Shaft is scored or severely worn. Replace shaft.
- **PUMP IS NOISY** - (1) Fluid noise caused by cavitation is a sure indication that the suction lift is too high. Check with vacuum gauge. (2) Shaft is running out due to unbalanced conditions. Check rotating shaft at the packing gland. (3) Pump and driving unit misaligned. Re-check alignment at coupling. (4) Bearings worn out. Check for excessive play and replace if necessary.

• KING PACKING INSTRUCTIONS •

I. Standard arrangement for grease lubrication
   - A. The first three king rings are installed with the sealing lips toward the impeller and alternating the splits from bottom to top.
   - B. Then the lantern ring is installed.
   - C. The fourth ring is installed with the sealing lip facing toward the packing gland. The split should be at the top.
   - D. Then install the graphite ring with the split at the bottom.

II. Arrangement for external flush setup
   - A. The first three king rings are installed with the sealing lips facing inward toward the impeller alternating the splits from bottom to up.
   - B. Then the lantern ring is installed.
   - C. The fourth king ring is installed with its sealing lip facing the lantern ring with the split at the top. This forces the flushing fluid into the pump to keep the fluid being pumped flushed away from the stuffing box.
   - D. The graphite ring is installed with the split at the bottom.
   - E. The flush fluid should be under pressure 7-15 PSI depending on PSI the pump is operating at.

GRAPHITE AND TEFLON PACKING INSTRUCTIONS

III. Standard arrangement for grease lubrication
   - A. The rubber ring goes in the bottom of the stuffing box. Therefore, it is installed first.
   - B. Then (2) braided rings of packing are installed. Alternate the split from bottom to top.
   - C. The lantern ring goes in next with the splits being horizontal.
   - D. Then (3) remaining braided packing rings are installed. Alternating the split from bottom to top with the split of the last ring at the bottom.
   - E. Replace the packaging gland and adjust until only finger tight.
   - F. Start up the pump and adjust the packing while the pump is running until it drips only 6 to 10 drops per minute.

CAUTION: Over tight packing will result in damage to the shaft and shorten the life of the packing.

How to size your pump

The following information is required:

• Rate of flow • Hd.Ft. • Sp.Gr. • HP

Conversion Data :

GPM = .03 X BPD

SPECIFIC GRAVITY = $\frac{\text{Weight of fluid in Lbs./Gal}}{8.34}$

SPECIFIC GRAVITY = $\frac{\text{Pounds/Cu. Ft.}}{62.4}$

FEET HEAD = $\frac{\text{PSI X 2.31}}{\text{Sp.Gr.}}$

PSI = $\frac{\text{Feet Head X Sp.Gr.}}{2.31}$

BRAKE HORSE POWER REQUIRED = Curve HP X Sp.Gr.

POUNDS PER GALLON = .133 X Pounds Per Cu. Ft.

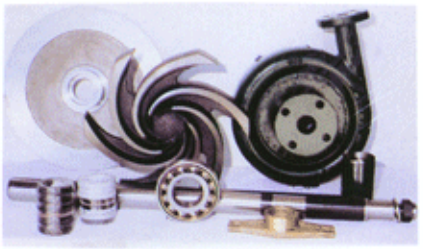
FOR WATER, SP. GR. = 1.0

CONVERSION DATA

Ft. Hd.	P.S.I	P.S.I	Ft.Hd.
10	4.33	10	23.10
20	8.66	20	46.20
30	12.99	25	57.8
40	17.32	30	69.30
50	21.65	35	80.90
70	32.48	40	92.40
100	43.30	45	104.00
150	64.95	50	115.00
200	86.60	60	138.60
250	108.25	75	173.20
300	129.9	100	231.00
350	151.55	125	288.70
400	173.2	150	346.50

BARRELS/ HOUR	BARRELS/ DAY	GPM
4.2	100	3
10.5	250	7.5
21	500	15
42	1000	30
63	1500	45
83	2000	60
125	3000	90
208	5000	150
312	7500	225
420	10000	300
625	15000	450

Centrifugal Pump Parts !



If you have the Pump, we have the parts!

MCM offers skid mounted centrifugal pumps. The bases are of a rigid construction with both motors and pumps blocked for permanent alignment. Pumps sizes range from 1.5 X 2 to 6 X 8. Any combination motor from 1 hp to 125 hp in 1200, 1800, or 3600 rpm. These can be ordered to accommodate a full variety of drilling applications. They are also available in an over/under space saving design.

MCM Parts are completely interchangeable with MISSION, HARRISBURG, HALCO & DEMCO