

**PT MAJU MANDIRI UTAMA**



# **Product Catalog**

**Electrical Submersible Pump System Indonesia**

2017

## Introduction

PT. Maju Mandiri Utama (MMU) is a Local Indonesian Registered Company, established in 5 December 1986 by Mr. Ismet Jayanto, and now he is as President Director.

## Vision

To be a preferred company in supplies, repair and servicing for its commitment to excellent on quality of goods / equipment, Submersible Pump, spare part, repair and services.

## Mission

PT. MMU runs businesses in trading and servicing for Up-stream Oil & Gas Companies in order to make profit for shareholders, to satisfy customers, and to provide works for its employees. In conducting and sustaining its businesses, PT. MMU strongly commits to always enhancing quality of goods/equipment and services. The qualities enhancement is primarily achieved by:

- improving employees' competencies and commitment,
- improving company's management system,
- improving infrastructure/facilities and technology, and
- improving cost/funding effectiveness

## Values

In pursuit of its Mission, MMU as a responsible corporate citizen will:

- Comply with all applicable laws and regulations
- Adhere to commonly acceptable ethical standards
- Recognize its employees as the most valuable resource
- Adopt continuous quality improvement as a way of business
- Maintain a safe and healthy environment for its employees and business partners

## Quality Policy

PT. Maju Mandiri Utama derives its success from a focus on customer satisfaction, team / employee and stake-holder involvement, profitable growth and continual improvement.

This quality policy is practically applied thru the following actions:

- ❑ Commit to implement ISO 9001:2008 and ISO 14001:2004, Quality Management System (QMS) and Environment Management System at all teams and levels
- ❑ Follow established respective standard, such as API Best Practices, Standard Operating Procedures (SOP), Manufactured Service Manual, etc, for repair and services of oil and gas equipment, especially for lifting equipment
- ❑ Test all repaired oil and gas equipment, especially for lifting equipment using the appropriate tester before sending to the customer. The test result must be the same as manufactured specification or meet/exceed the customer requirement
- ❑ Enhance human resources knowledge continuously and respectively
- ❑ Ensure the oil and gas equipment, especially for lifting equipment reliability, on time delivery, and reasonable cost
- ❑ Apply appropriate technology, process, and best practices / services for customer satisfaction
- ❑ Commit to prioritize the Health, Safety, and Environment aspects
- ❑ Respect to all Environment Regulation related to ISO 14001:2004

## Company History

No	Description
1	AktePendirian Perusahaan : Nomor : 07, tanggal : 5 Desember 1986 Notaris : MisahardiWilamata SH di : Jakarta
2	PerubahanAktePendirian Perusahaan : Nomor : 01, tanggal : 8 September 2006 Notaris : NofinusGinting SH di : Jakarta
3	PengesahanAktePendirian Perusahaan : Dari : MenteriKehakiman Nomor : C2-913.HT.01.01-TH.90 , tanggal : 21 Februari 1990
4	SuratIjin Usaha Perusahaan (SIUP) Dari : Diperindag, No : 00829 / 1.824.271, tgl : 5 Maret 2007 Masalaku : Mulaitgl 05 Maret 2007 s/d tgl 5 Maret 2012
5	Surat Usaha IjinJasaKonstruksi (SIUJK) Dari : Pemprov DKI Jakarta Nomor :1.901626.3173.2.02953 Masalaku : Mulaitgl 24 Juni 2009 s/d tgl : 3 Juni 2012
6	BuktiPembayaranPajak : ~ SPT WP BadanTahun 2008 ~ SuratSetoranPajak (SSP) PphPasal 29 tahun 2008 ~ SuratSetoranPajak (SSP) PphPasal 25 bulan Nopember 2009 – Januari 2010
7	Neraca Perusahaan tahun : 2008 (Audit) ~ LaporanKeuandangdariAkuntanPublik (ada) DilengkapiOpini Auditor ataskewajaranlaporankeuangan
8	KartuNomorPokokWajibPajak (NPWP) No. 01.324.554.3-073.000
9	SKT MIGAS No. 515/SKT/DU.2/DMT/2008 tgl 12 Juni 2008 untuk Bidang : B : Jasa Konstruksi (Perawatan dan Perbaikan Electric Submersible Pump) C : Jasa Produksi Bahan dan Barang Jadi (Switchboard, Junction Box, Relay PSI) D : Jasa Konsultan (Penyewaan Pompa ESP)

# ISO Certificate



## Certificate of Registration

### PT. MAJU MANDIRI UTAMA

Head Office: Jl. Dugur Besar No. 87 A/B/C/D, Jakarta Pusat, 10620, Indonesia  
Workshop: Jl. Raja Perancis No. 13, Komplek Pergudangan Mutiara Kosambi I,  
Blk D No. 3-5, Desa Dalem, Kembangan, Tangerang, Banten, Indonesia

Operate a Management System That Complies With The Requirements  
Of

### ISO 9001:2008

With the scope:  
Provision of Supply, Repair & Service, Maintain and Rent of Down Hole  
and Surface Production Equipments for Oil and Gas Industries

IA Code: 29 /52.74

Signed on behalf of WQA

WORLDWIDE QUALITY ASSURANCE – South East Asia  
Graha Aksara, 8<sup>th</sup> Floor, Suite 806, J. Senen Raya 135,  
Jakarta 10450, Indonesia

To check the validity of this certificate,  
Telephone +62(21) 351 6676 or Fax +62(21) 351 6675

Certificate No : QS 5045  
Originally Registered : 12<sup>th</sup> December, 2006  
Registered by WQA : 12<sup>th</sup> December, 2006  
Re-certification : 3<sup>rd</sup> January, 2011  
Amendment to : 17<sup>th</sup> June, 2020



This certificate remains the property of Worldwide Quality Assurance and must be returned on request.  
And the certificate will be issued annually for agreement. 30 months re-registered.  
WQA-156, Issue 1



## Certificate of Registration

### PT. MAJU MANDIRI UTAMA

Head Office: Jl. Dugur Besar No. 87 A/B/C/D, Jakarta Pusat, 10620, Indonesia  
Workshop: Jl. Raja Perancis No. 13, Komplek Pergudangan Mutiara Kosambi I,  
Blk D No. 3-5, Desa Dalem, Kembangan, Tangerang, Banten, Indonesia

Operate a Management System That Complies With The Requirements  
Of

### ISO 14001:2004

With the scope:  
Provision of Supply, Repair & Service, Maintain and Rent of Down Hole  
and Surface Production Equipments for Oil and Gas Industries

IA Code: 29 /52.74

Signed on behalf of WQA

WORLDWIDE QUALITY ASSURANCE – South East Asia  
Graha Aksara, 8<sup>th</sup> Floor, Suite 806, J. Senen Raya 135,  
Jakarta 10450, Indonesia

To check the validity of this certificate,  
Telephone +62(21) 351 6676 or Fax +62(21) 351 6675

Certificate No : QS 7242  
Originally Registered : 7<sup>th</sup> January, 2010  
Registered by WQA : 7<sup>th</sup> January, 2010  
Re-certification : 7<sup>th</sup> January, 2011  
Amendment to : 17<sup>th</sup> June, 2020



This certificate remains the property of Worldwide Quality Assurance and must be returned on request.  
And the certificate will be issued annually for agreement. 30 months re-registered.  
WQA-156, Issue 1

## Product Certificate

  
**REPUBLIK INDONESIA**  
**DEPARTEMEN HUKUM DAN HAK ASASI MANUSIA**  
**SERTIFIKAT MEREK**

Menteri Hukum dan Hak Asasi Manusia atas nama Negara Republik Indonesia berdasarkan Undang-undang Nomor 15 Tahun 2001 Tentang Merek, memberikan hak Merek kepada :

Nama dan alamat pemilik merek terdaftar : **PT. MAJU MANDIRI UTAMA**  
Jl. Bungur Besar Raya No. 87B/F  
Kemayoran, Jakarta Pusat 10620

Nama dan alamat kuasa / Konsultan HKI : \_\_\_\_\_

Tanggal Pendaftaran Merek : **4 Maret 2009**

Nama Negara dan tanggal Permohonan : \_\_\_\_\_  
pendaftaran merek (apabila permintaan  
pendaftaran merek diajukan dengan  
menggunakan hak prioritas).

Kelas Barang / Jasa : **07**

Perlindungan Hak Merek diberikan selama 10 tahun sejak tanggal Penerimaan dan jangka waktu perlindungan itu dapat diperpanjang.

Dengan Nomor : IDM000195798, tanggal penerimaan permohonan : 18 Juli 2007  
Sertifikat Merek ini dilampirkan dengan etiket merek, jenis barang/jasa yang dilindungi merupakan bagian yang tidak dapat dipisahkan dari sertifikat merek ini.

Jakarta, **12 OCT 2009**  
a.n. MENTERI HUKUM DAN HAK ASASI MANUSIA  
REPUBLIK INDONESIA  
DIREKTUR JENDERAL HAK KEKAYAAN INTELEKTUAL  
u.b.  
Direktur Merek

  
Herdiyati, S.H.  
NIP. 195011251980032002





( 250 ) MEREK INDONESIA

( 111 ) IDM000195798

DIREKTORAT MEREK

( 151 ) 4 Maret 2009

- ( 210 ) Nomor Permohonan Merek : D002007023207  
( 220 ) Tanggal Pengajuan Permohonan Merek : 18 Juli 2007  
( 591 ) Uraian warna : Merah, biru, hitam  
( 566 ) Arti bahasa/huruf/angka asing dalam contoh merek : PPI Patra Pump Indonesia : suatu penamaan  
( 540 ) Contoh Merek



( 510 ) Uraian Barang / Jasa

=== Pompa (elektrik), motor untuk sumur minyak (ESP - electric submersible pump), gas separator/intake electric submersible pump (ESP).===

## Submersible Pump 400 Series Pumps

### Minimum Casing size 5½ inches

#### Bolt-On Discharge Head

Part Number	Description	Length (Feet)	Weight (Lbs.)
MBOH238	2-3/8". 8 Rd EUE	0.6	10
MBOH278	2-7/8". 8 Rd EUE	0.6	12

#### Check Valve

Part Number	Description	Length (Feet)	Weight (Lbs.)
MCV238	2-3/8". 8 Rd EUE	0.6	10
MCV278	2-7/8". 8 Rd EUE	0.6	12
MCV312	3-1/2". 8 Rd EUE	0.6	14

#### Bleeder Valve

Part Number	Description	Length (Feet)	Weight (Lbs.)
MBV238	2-3/8". 8 Rd EUE	0.6	10
MBV278	2-7/8". 8 Rd EUE	0.6	12
MBV312	3-1/2". 8 Rd EUE	0.6	14

#### Intake

Part Number	Type	Length (Feet)	Weight (Lbs.)
MI400SD	400 SERIES STD	1.0	28
MI400AR	400 SERIES ARZ	1.0	29

#### Gas Separator

Part Number	Description	Length (Feet)	Weight (Lbs.)
MG400GS	400 SERIES GS	2.4	71



## Submersible Pump 400 Series

**MD230/ 400 Series Pumps**  
*Minimum Casing size 5½ inches*

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP23040018	18	TBA		10	2.1	44
MP23040037	37	TBA		20	3.5	73
MP23040057	57	TBA		30	4.9	106
MP23040076	76	TBA		40	6.3	134
MP23040096	96	TBA		50	7.8	165
MP230400115	115	TBA		60	9.2	196
MP230400134	134	TBA		70	10.6	225
MP230400154	154	TBA		80	12.0	258
MP230400173	173	TBA		90	13.4	287
MP230400193	193	TBA		100	14.8	317
MP230400212	212	TBA		110	16.2	348
MP230400232	232	TBA		120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD230/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
249	130	1	1					
268	140		2					
288	150		1	1				
308	160			2				
327	170			1	1			
346	180				2			
366	190				1	1		
386	200					2		

Section type defaults to FL unless otherwise noted.

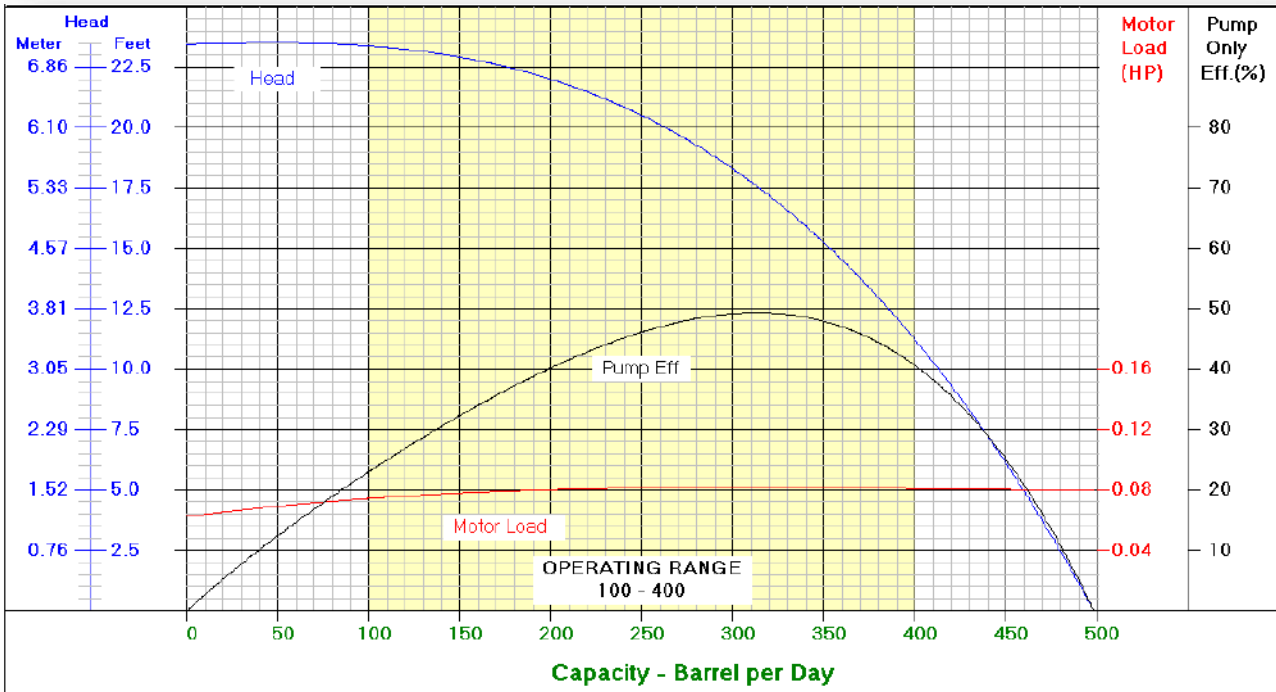
# MMU – ESP

# MD-230 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg.

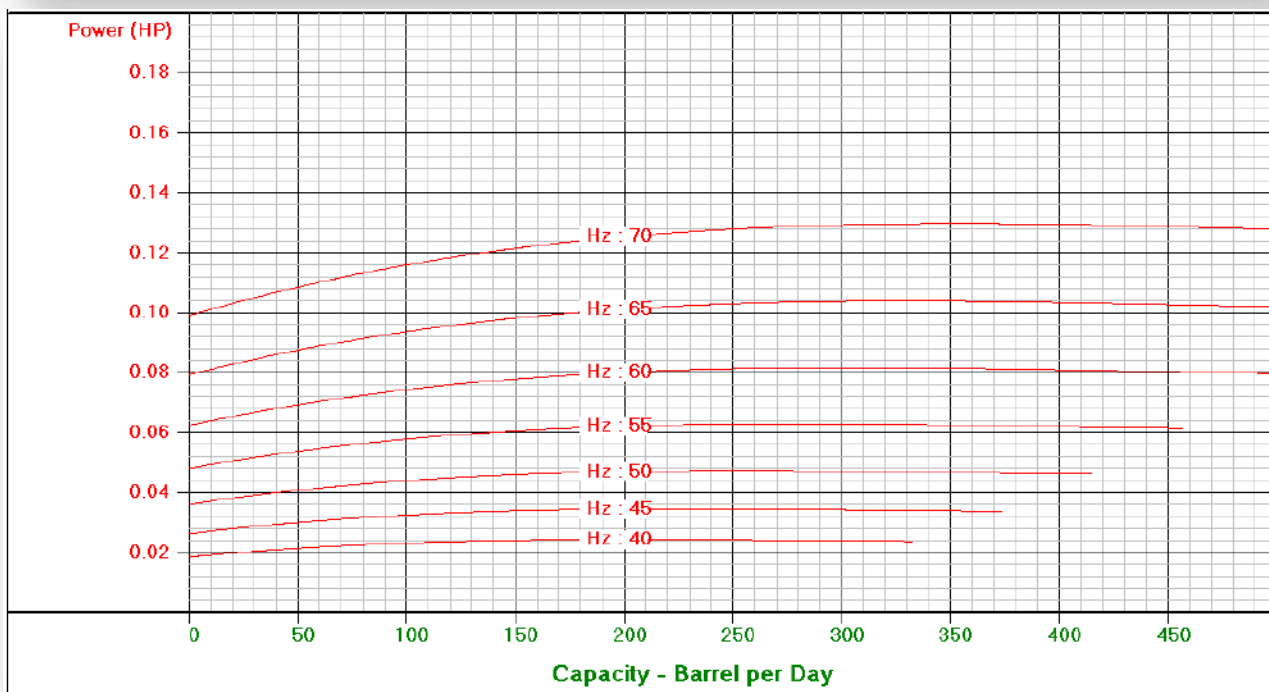
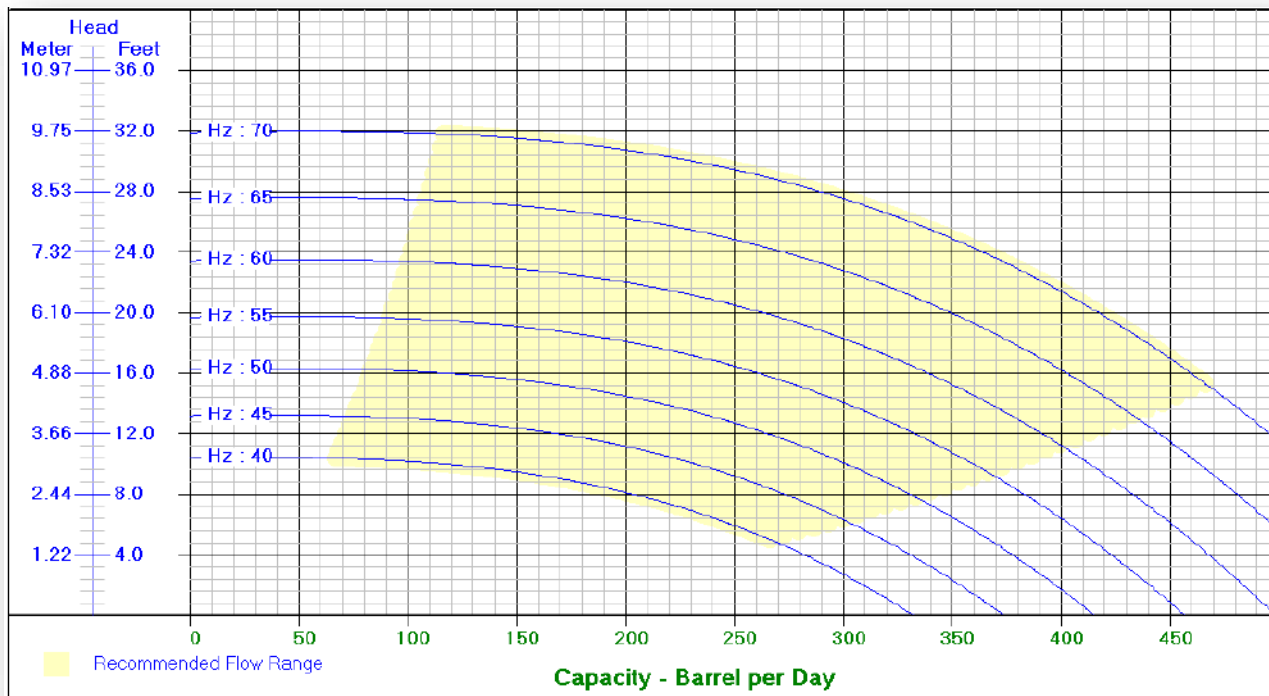
Optimum operating range	100 – 400 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	150 hp
Shaft diameter	0.687 in.		Standard	5,000 psi
Shaft cross-sectional area	0.310in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-230 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 400 Series

**MD280/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP28040018	18	TBA		10	2.1	44
MP28040037	37	TBA		20	3.5	73
MP28040057	57	TBA		30	4.9	106
MP28040076	76	TBA		40	6.3	134
MP28040096	96	TBA		50	7.8	165
MP280400115	115	TBA		60	9.2	196
MP280400134	134	TBA		70	10.6	225
MP280400154	154	TBA		80	12.0	258
MP280400173	173	TBA		90	13.4	287
MP280400193	193	TBA		100	14.8	317
MP280400212	212	TBA		110	16.2	348
MP280400232	232	TBA		120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD280/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
249	130	1	1					
268	140		2					
288	150		1	1				
308	160			2				
327	170			1	1			
346	180				2			
366	190				1	1		
386	200					2		

Section type defaults to FL unless otherwise noted.

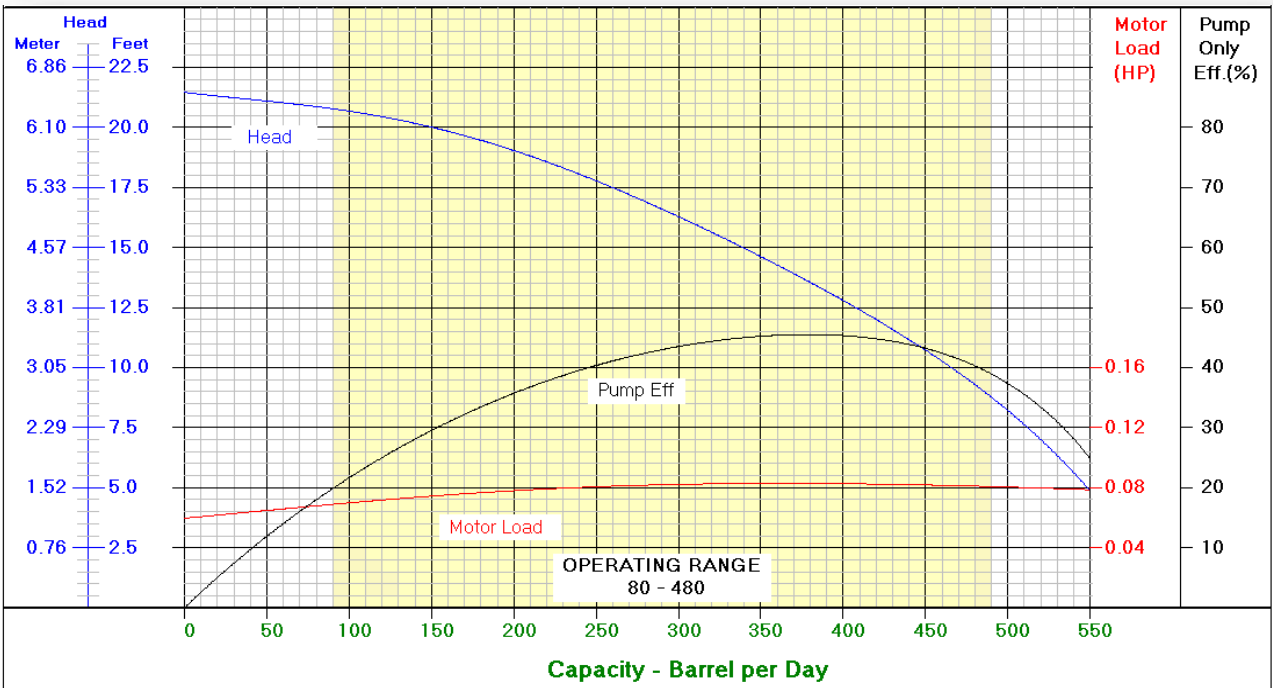
**MMU – ESP**

**MD-280 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

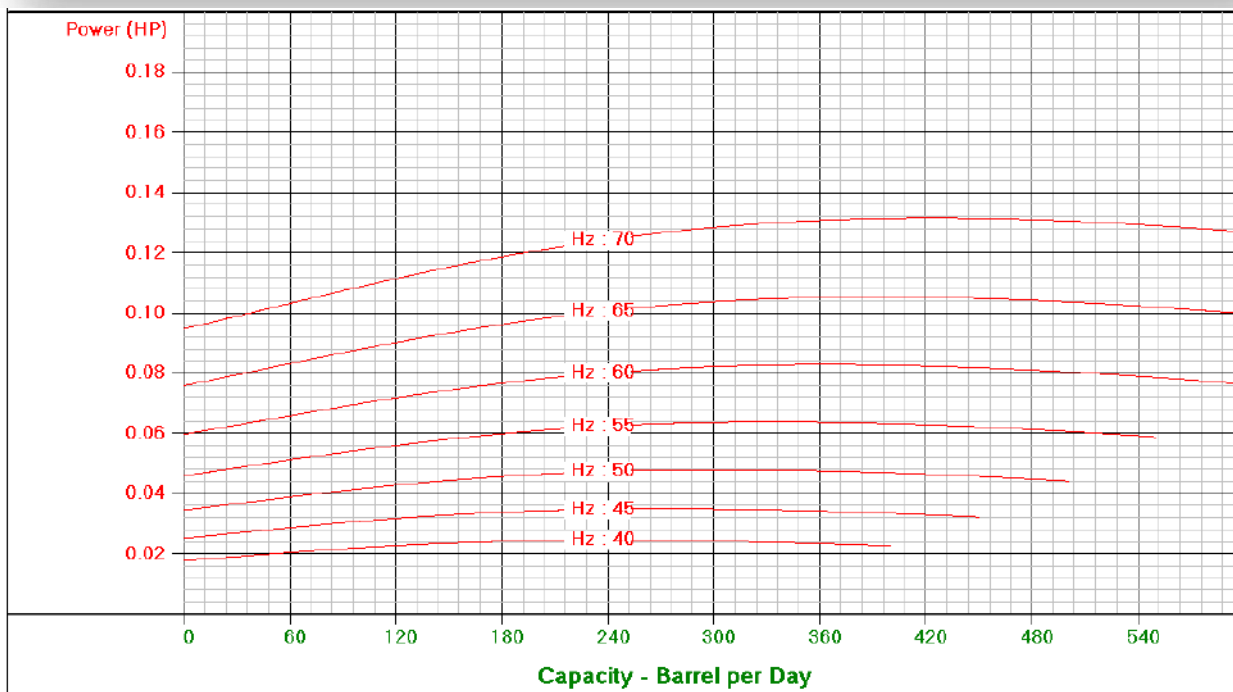
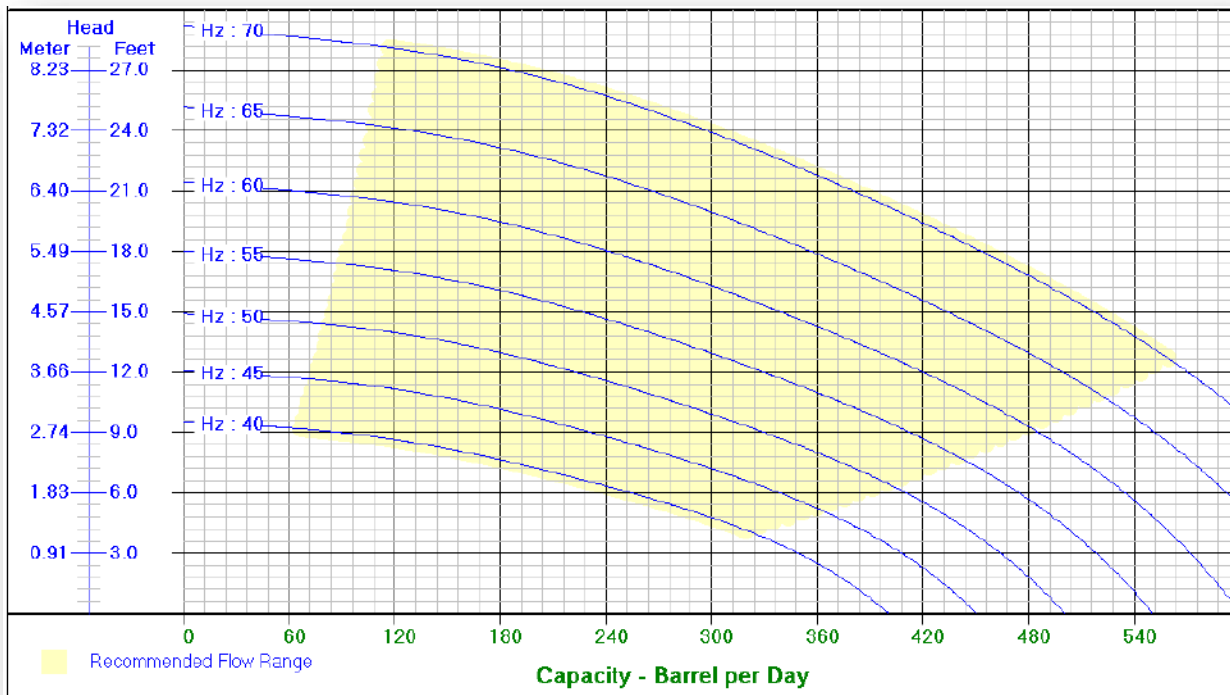
Optimum operating range	80 – 480 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.		High strength	150 hp
Shaft diameter	0.687 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.370in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-280 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg





## Submersible Pump 400 Series

**MD440/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP44040016	16	TBA		10	2.1	44
MP44040034	34	TBA		20	3.5	73
MP44040052	52	TBA		30	4.9	106
MP44040070	70	TBA		40	6.3	134
MP44040089	89	TBA		50	7.8	165
MP440400107	107	TBA		60	9.2	196
MP440400125	125	TBA		70	10.6	225
MP440400143	143	TBA		80	12.0	258
MP440400161	161	TBA		90	13.4	287
MP440400179	179	TBA		100	14.8	317
MP440400198	198	TBA		110	16.2	348
MP440400216	216	TBA		120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD440/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
232	130	1	1					
250	140		2					
268	150		1	1				
286	160			2				
304	170			1	1			
322	180				2			
340	190				1	1		
358	200					2		
377	210					1	1	
396	220						2	
414	230						1	1
430	240							2

Section type defaults to FL unless otherwise noted.

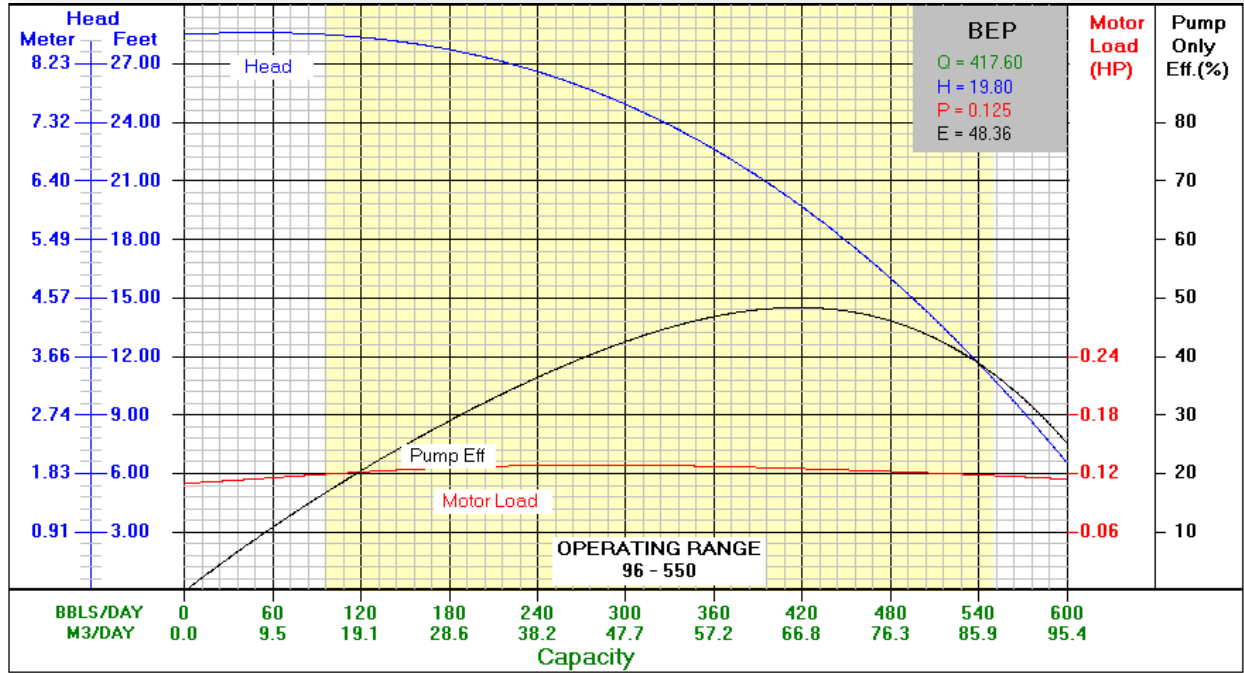
# MMU – ESP

# MD-440 Pump Performance Curve

# 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

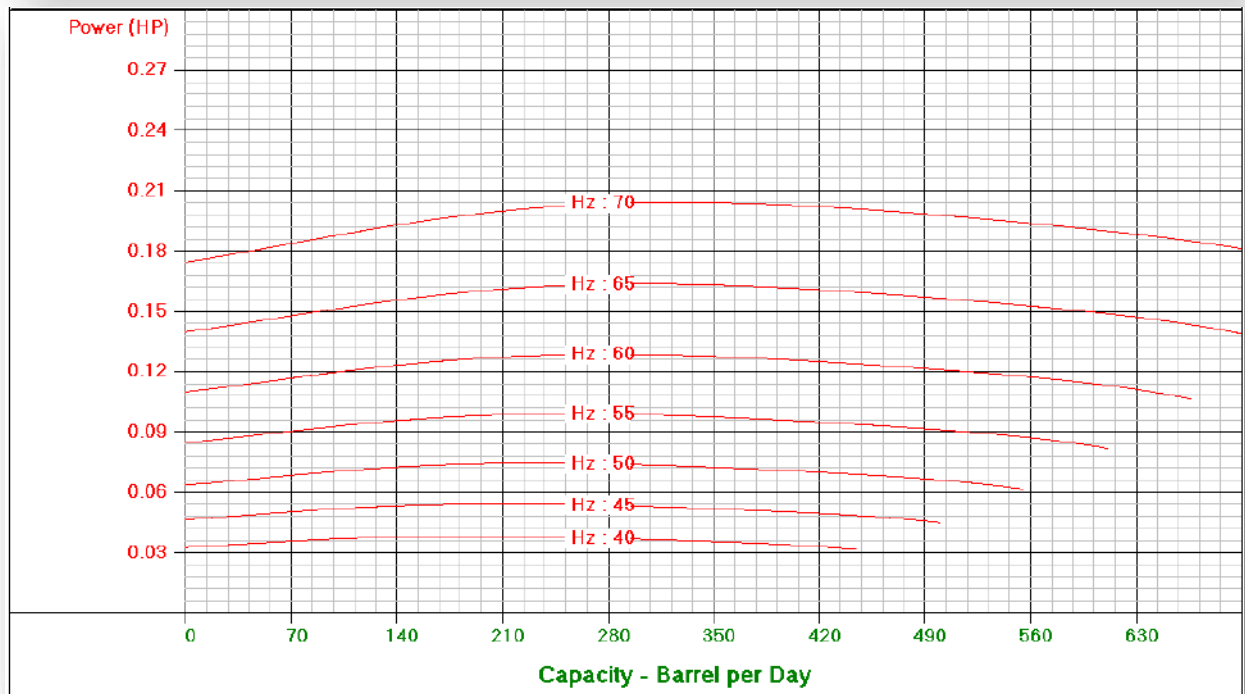
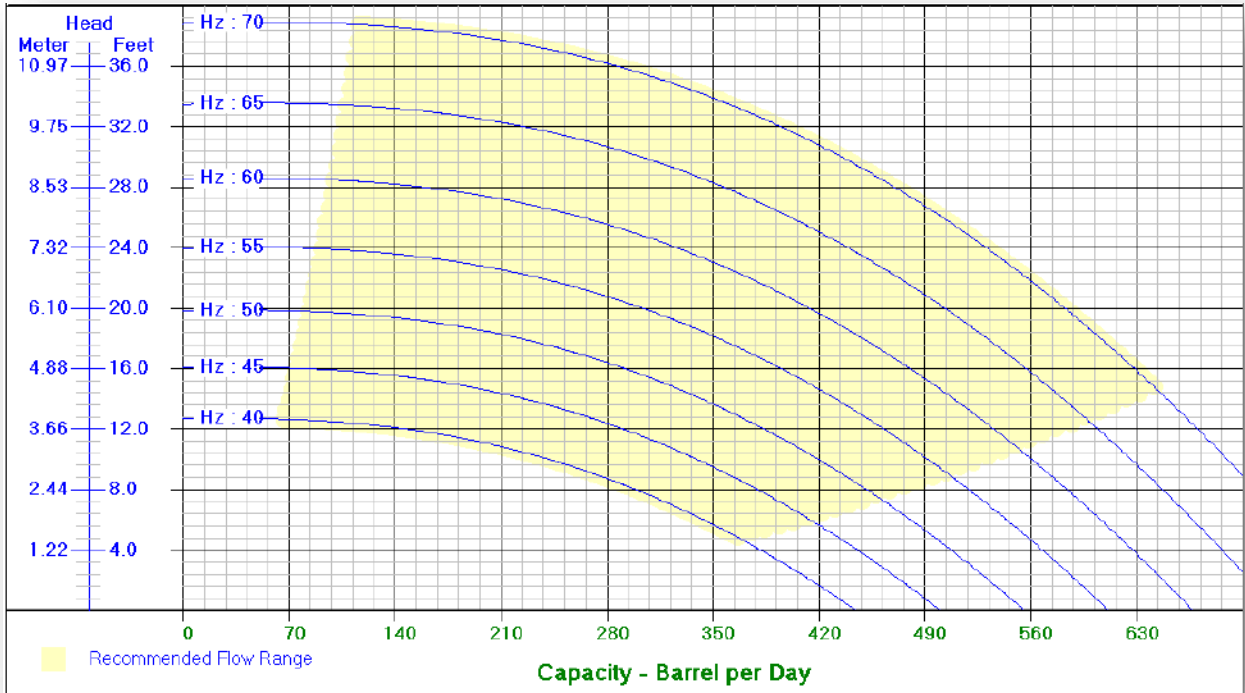
Optimum operating range	96 – 550 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	150 hp
Shaft diameter	0.625 in.		Standard	5,000 psi
Shaft cross-sectional area	0.307in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-440 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD550/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP55040018	18	TBA		10	2.1	44
MP55040037	37	TBA		20	3.5	73
MP55040056	56	TBA		30	4.9	106
MP55040076	76	TBA		40	6.3	134
MP55040095	95	TBA		50	7.8	165
MP550400114	114	TBA	113	60	9.2	196
MP550400133	133	TBA	133	70	10.6	225
MP550400153	153	TBA	152	80	12.0	258
MP550400172	172	TBA	171	90	13.4	287
MP550400191	191	TBA	190	100	14.8	317
MP550400210	210	TBA	209	110	16.2	348
MP550400230	230	TBA	229	120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD550/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
247	130	1	1					
267	140	1		1				
286	150	1			1			
305	160	1				1		
324	170	1					1	
342	180		1				1 BFL	
362	190		1					1 BFL
382	200			1				1 BFL
401	210				1 BFL			1
420	220					1 BFL		1
439	230						1 BFL	1
459	240							1 BFL+1
475	250		2				1 BFL	
495	260		2					1 BFL
515	270			2			1 BFL	
535	280			2				1 BFL
552	290				2 BFL		1	
572	300				2 BFL			1

# Submersible Pump 400 Series

**MD550/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
590	310					2 BFL	1	
610	320					2 BFL		1
628	330						2 BFL +1	
648	340						2 BFL +1	1
668	350						1	2 BFL +1
688	360							2 BFL +1
704	370				3 BFL	1		
723	380				3 BFL		1	
743	390				3 BFL			1

Section type defaults to FL unless otherwise noted.

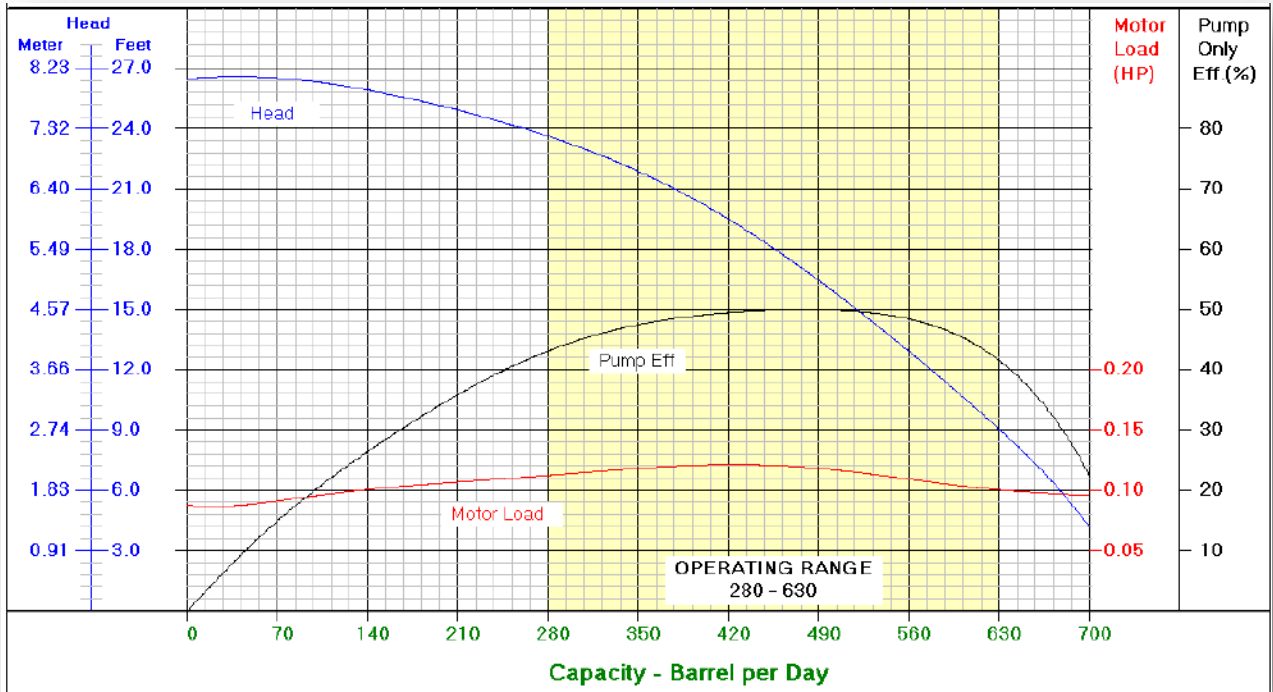
# MMU – ESP

# MD-550 Pump Performance Curve

# 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

Optimum operating range	280 – 630 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.		High strength	150 hp
Shaft diameter	0.625 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.307in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi

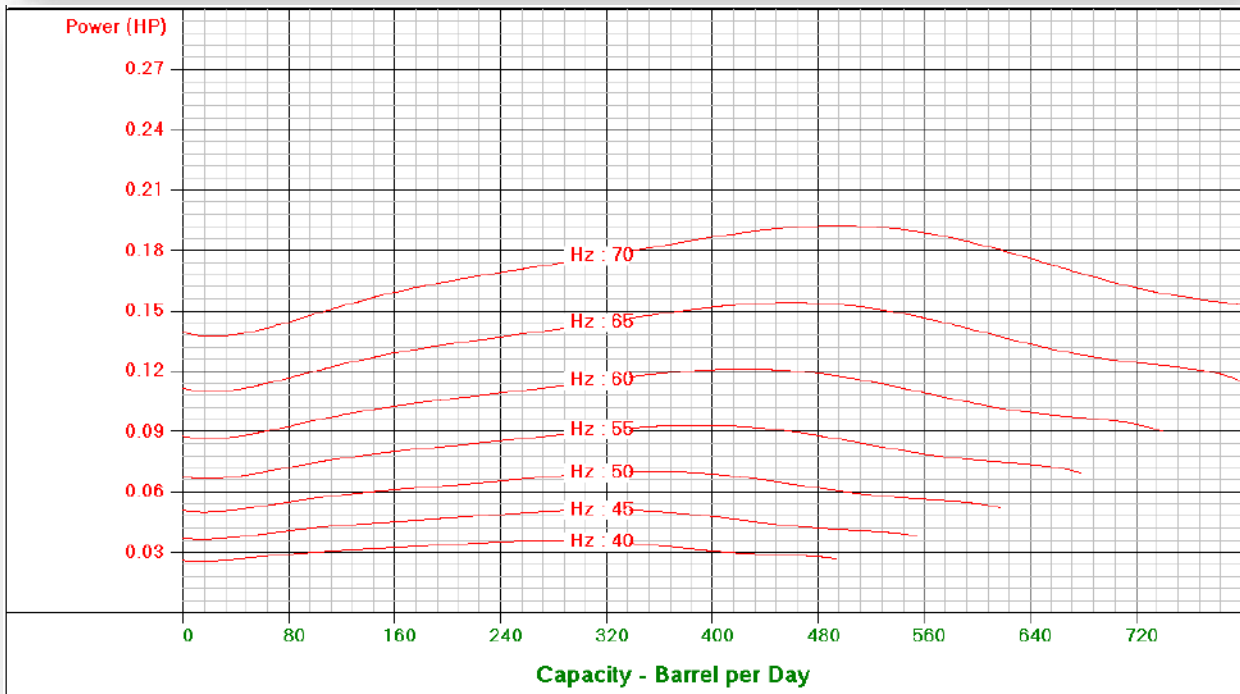
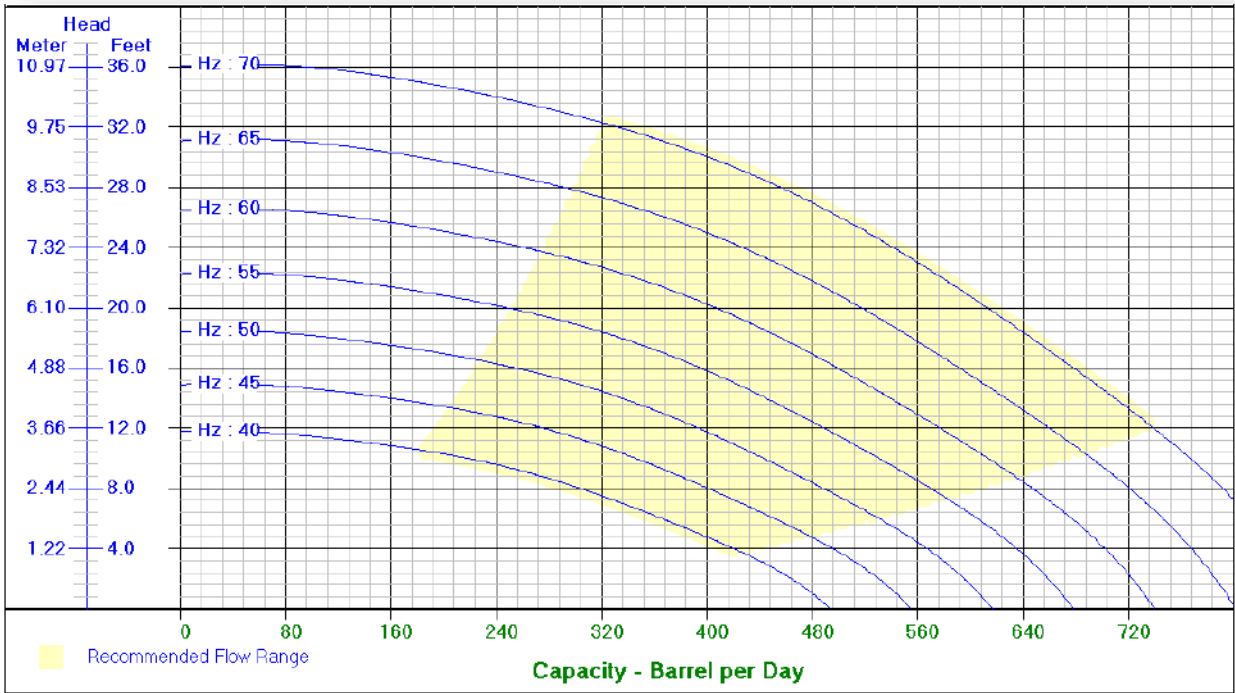


This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.



# MD-550 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD650/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP55040018	18	TBA		10	2.1	44
MP55040037	37	TBA		20	3.5	73
MP55040056	56	TBA		30	4.9	106
MP55040076	76	TBA		40	6.3	134
MP55040095	95	TBA		50	7.8	165
MP550400114	114	TBA	113	60	9.2	196
MP550400133	133	TBA	133	70	10.6	225
MP550400153	153	TBA	152	80	12.0	258
MP550400172	172	TBA	171	90	13.4	287
MP550400191	191	TBA	190	100	14.8	317
MP550400210	210	TBA	209	110	16.2	348
MP550400230	230	TBA	229	120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD650/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
247	130	1	1					
267	140	1		1				
286	150	1			1			
305	160	1				1		
324	170	1					1	
342	180		1				1 BFL	
362	190		1					1 BFL
382	200			1				1 BFL
401	210				1 BFL			1
420	220					1 BFL		1
439	230						1 BFL	1
459	240							1 BFL+1
475	250		2				1 BFL	
495	260		2					1 BFL
515	270			2			1 BFL	
535	280			2				1 BFL
552	290				2 BFL		1	
572	300				2 BFL			1

# Submersible Pump 400 Series

**MD650/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
590	310					2 BFL	1	
610	320					2 BFL		1
628	330						2 BFL +1	
648	340						2 BFL +1	1
668	350						1	2 BFL +1
688	360							2 BFL +1
704	370				3 BFL	1		
723	380				3 BFL		1	
743	390				3 BFL			1

Section type defaults to FL unless otherwise noted.

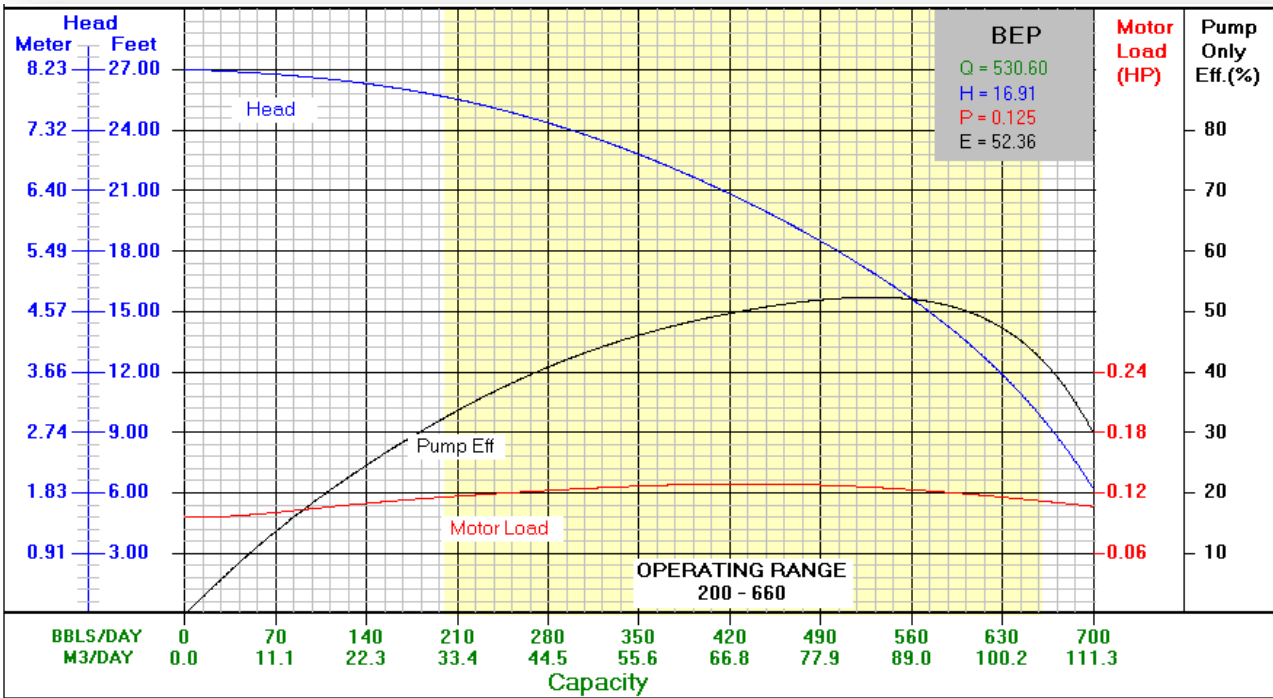
**MMU – ESP**

**MD-650 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

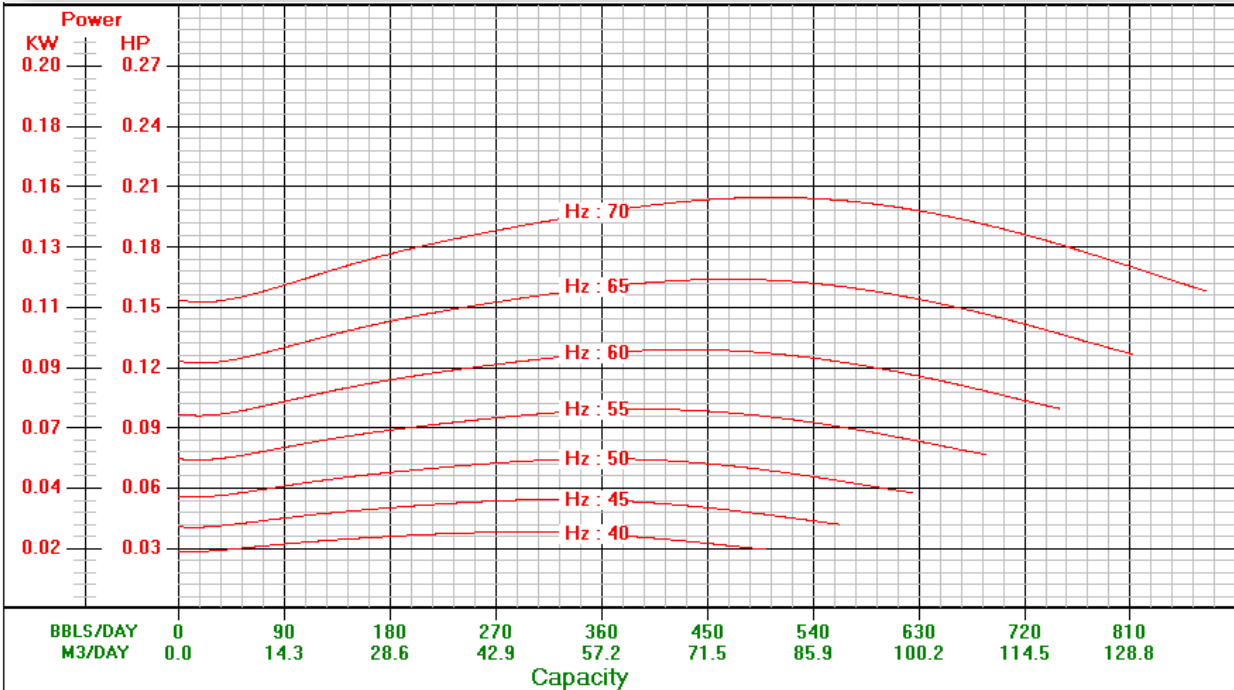
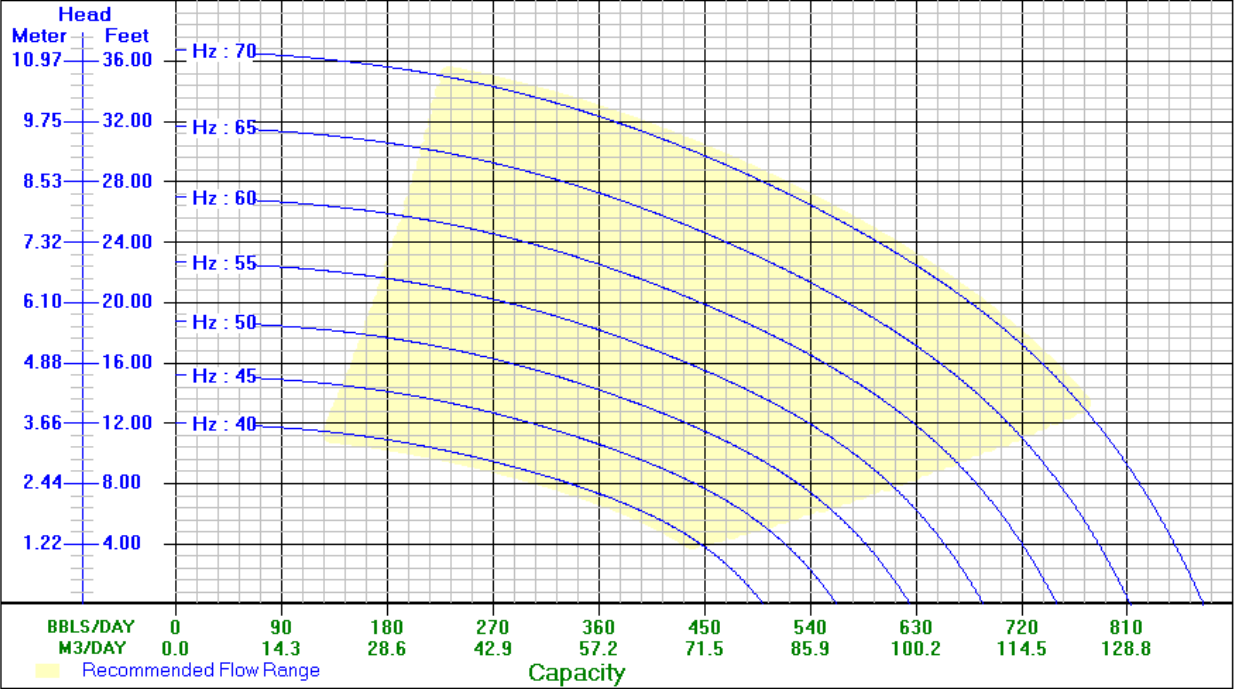
Optimum operating range	200 – 660 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.		High strength	150 hp
Shaft diameter	0.625 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.307in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-650 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD750/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP75040018	18	TBA		10	2.1	44
MP75040037	37	TBA		20	3.5	74
MP75040056	56	TBA		30	4.9	105
MP75040076	76	TBA		40	6.3	135
MP75040095	95	TBA	94	50	7.8	166
MP750400114	114	TBA	113	60	9.2	196
MP750400133	133	TBA	133	70	10.6	226
MP750400153	153	TBA	152	80	12.0	257
MP750400172	172	TBA	171	90	13.4	287
MP750400191	191	TBA	190	100	14.8	318
MP750400210	210	TBA	209	110	16.2	348
MP750400230	230	TBA	229	120	17.6	378

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD750/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
246	130	1BFL	1					
268	140	1BFL		1				
285	150	1BFL			1			
304	160	1BFL				1		
323	170	1BFL					1	
343	180	1BFL						1
363	190		1BFL					1
382	200			1BFL				1
401	210				1BFL			1
420	220					1BFL		1
439	230						1BFL	1

Section type defaults to FL unless otherwise noted.



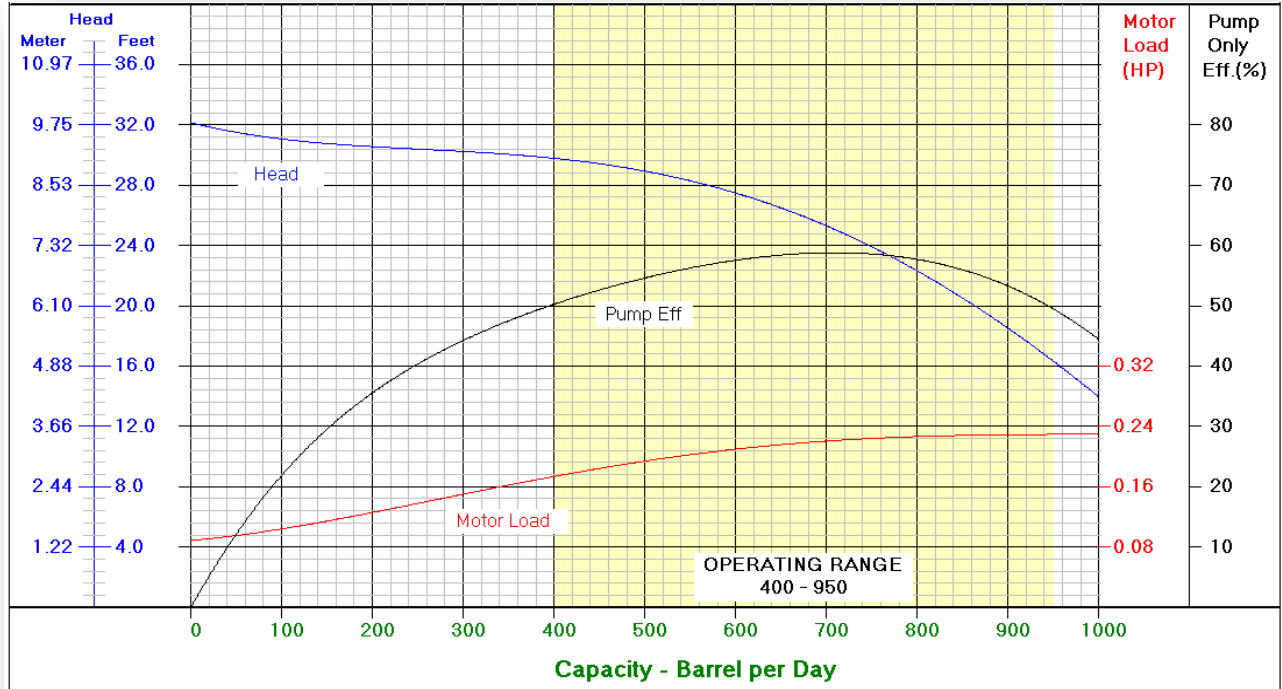
**MMU – ESP**

**MD-750 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

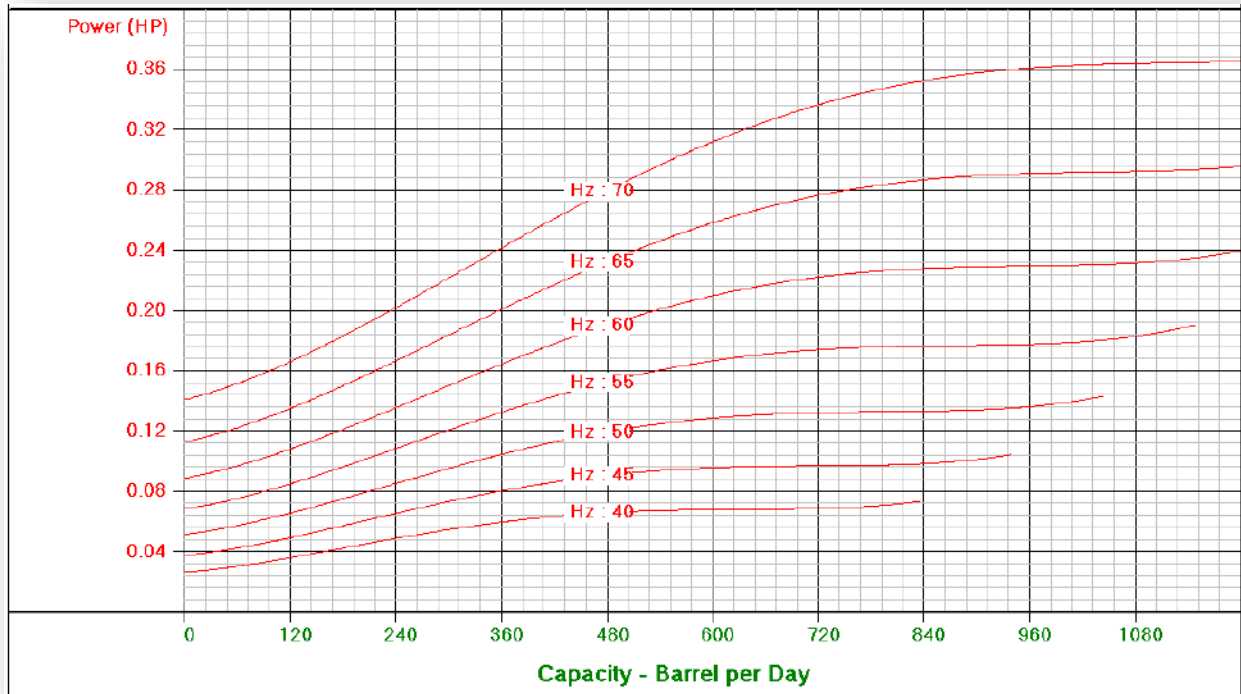
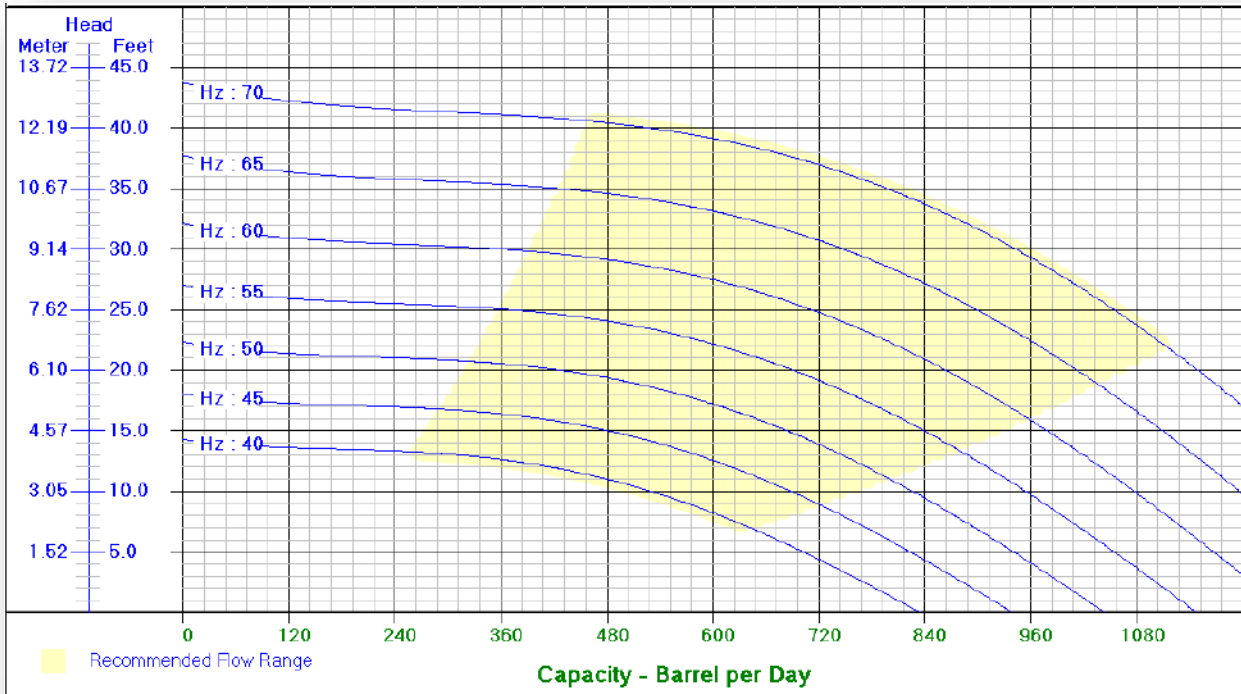
Optimum operating range	400 – 950 B/D	Shaft brake-power limit	Standard	94 hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	150 hp
Shaft diameter	0.625 in.		Standard	5,000 psi
Shaft cross-sectional area	0.307in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-750 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD980/ 400 Series Pumps**  
*Minimum Casing size 5½ inches*

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP98040011	11	TBA		10	2.1	63
MP98040025	25	TBA		20	3.5	102
MP98040038	38	TBA		30	4.9	142
MP98040052	52	TBA		40	6.3	181
MP98040065	65	TBA		50	7.8	221
MP98040078	78	TBA	77	60	9.2	261
MP98040092	92	TBA	91	70	10.6	300
MP980400105	105	TBA	104	80	12.0	340
MP980400119	119	TBA	118	90	13.4	381
MP980400132	132	TBA	131	100	14.8	419
MP980400145	145	TBA	144	110	16.2	459
MP980400159	159	TBA	158	120	17.6	494

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD980/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
172	130	1	1					
182	140	1		1 BFL				
196	150	1			1 BFL			
209	160	1				1 BFL		
222	170	1					1 BFL	
236	180	1						1 BFL
250	190		1					1
263	200			1 BFL				1
277	210				1 BFL			1
290	220					1 BFL		1

Section type defaults to FL unless otherwise noted.

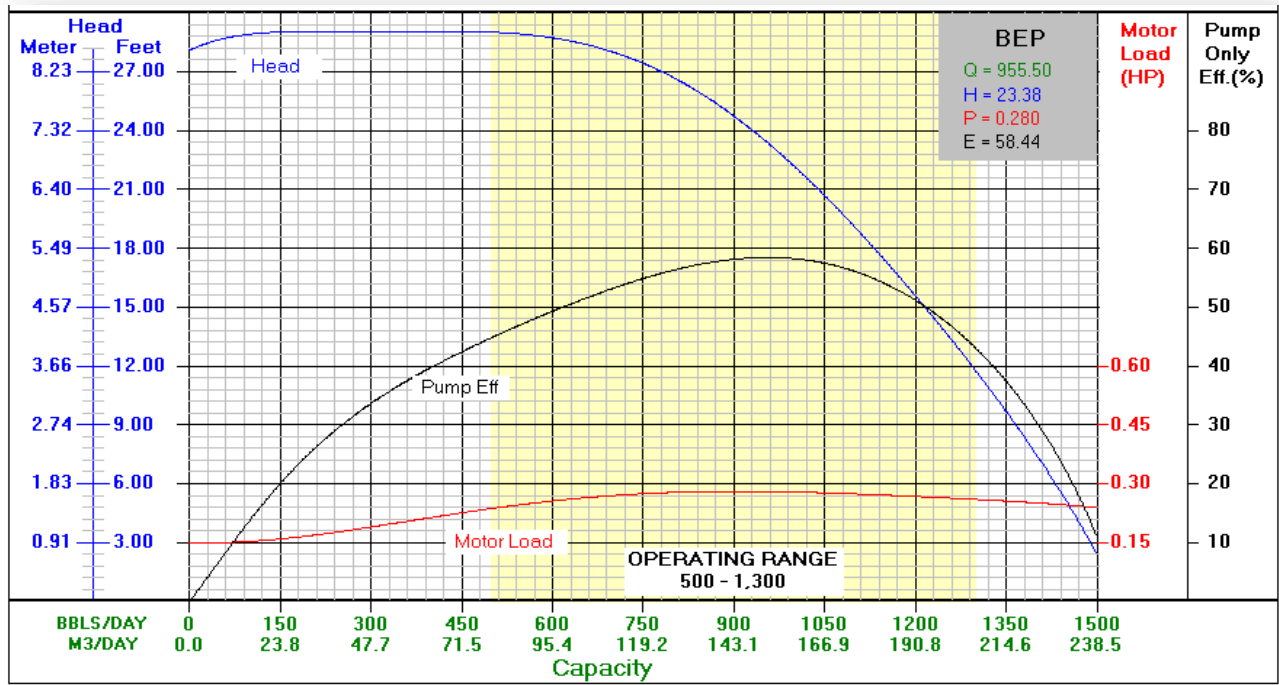
**MMU – ESP**

**MD-980 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

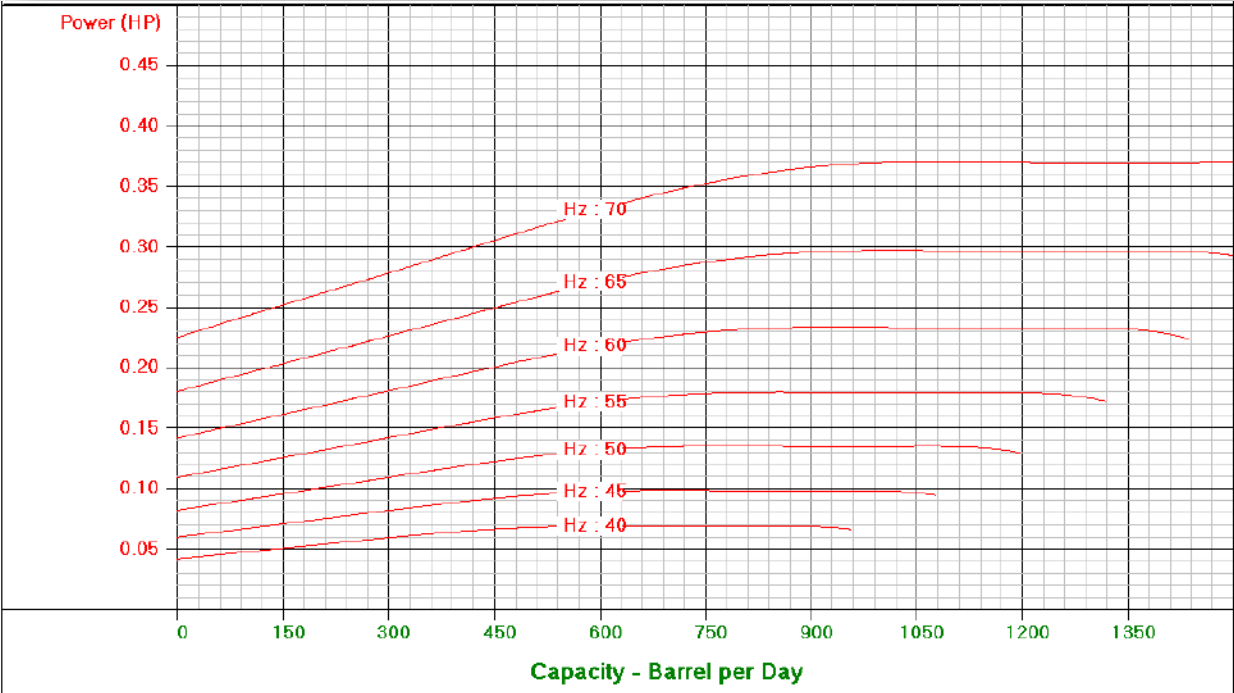
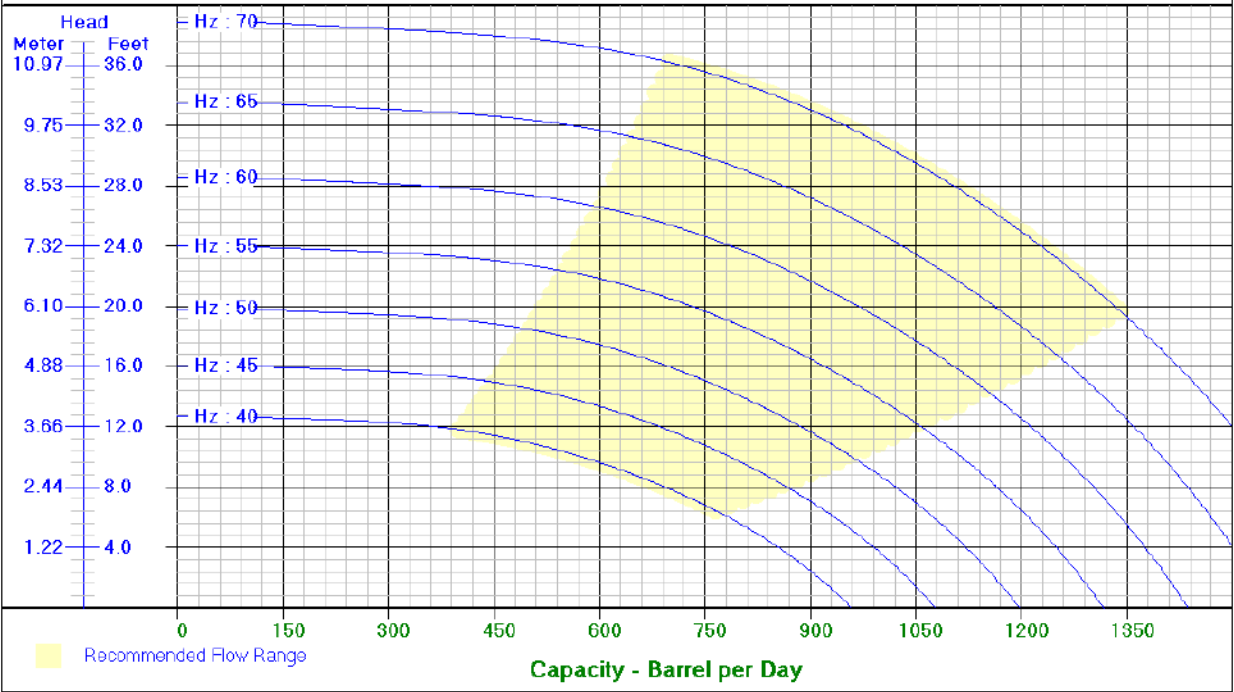
Optimum operating range	500 – 1300 B/D	Shaft brake-power limit	Standard	125hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	200hp
Shaft diameter	0.687 in.		Standard	5,000 psi
Shaft cross-sectional area	0.37in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-980 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD1000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP100040018	18	TBA		10	2.1	44
MP100040037	37	TBA		20	3.5	73
MP100040056	56	TBA		30	4.9	106
MP100040076	76	TBA		40	6.3	134
MP100040095	95	TBA		50	7.8	165
MP1000400114	114	TBA	113	60	9.2	196
MP1000400133	133	TBA	132	70	10.6	225
MP1000400153	153	TBA	152	80	12.0	258
MP1000400172	172	TBA	171	90	13.4	287
MP1000400191	191	TBA	190	100	14.8	317
MP1000400210	210	TBA	210	110	16.2	348
MP1000400229	229	TBA	229	120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD1000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
247	130	1	1					
267	140	1		1 BFL				
285	150	1			1 BFL			
304	160	1				1 BFL		
324	170	1					1 BFL	
343	180	1						1 BFL
362	190		1					1
381	200			1 BFL				1
400	210				1 BFL			1
419	220					1 BFL		1

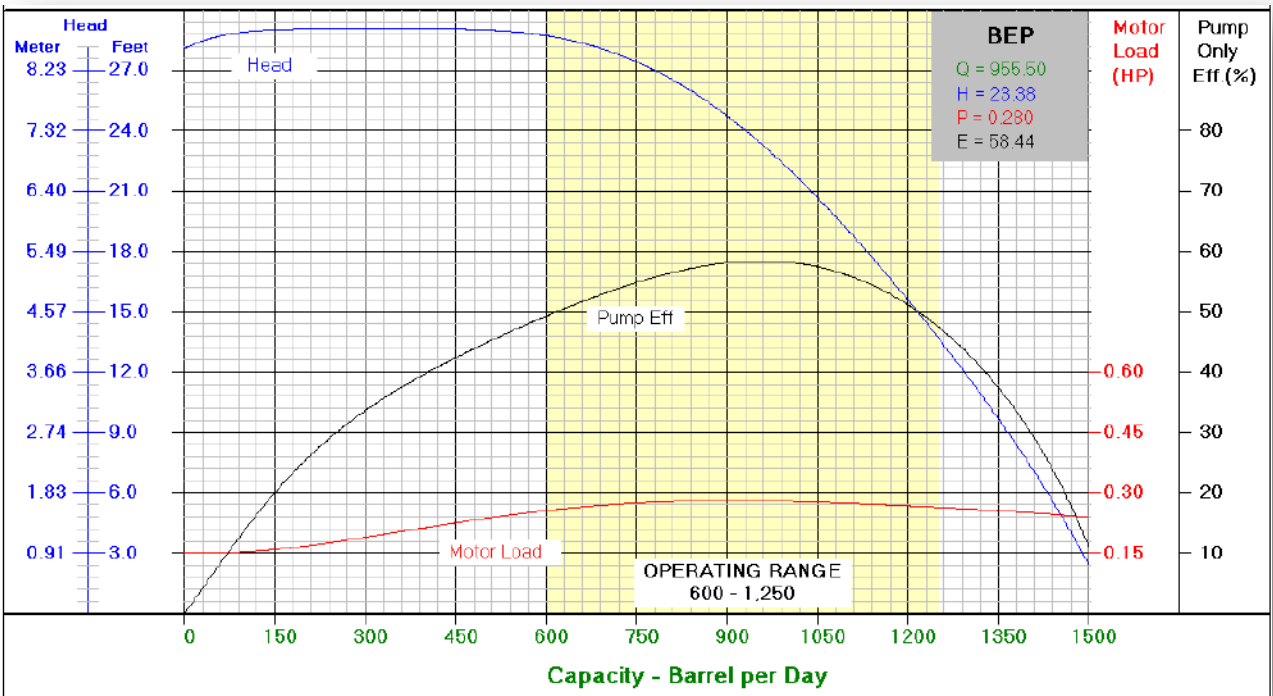
Section type defaults to FL unless otherwise noted.



## MMU – ESP MD-1000 Pump Performance Curve 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

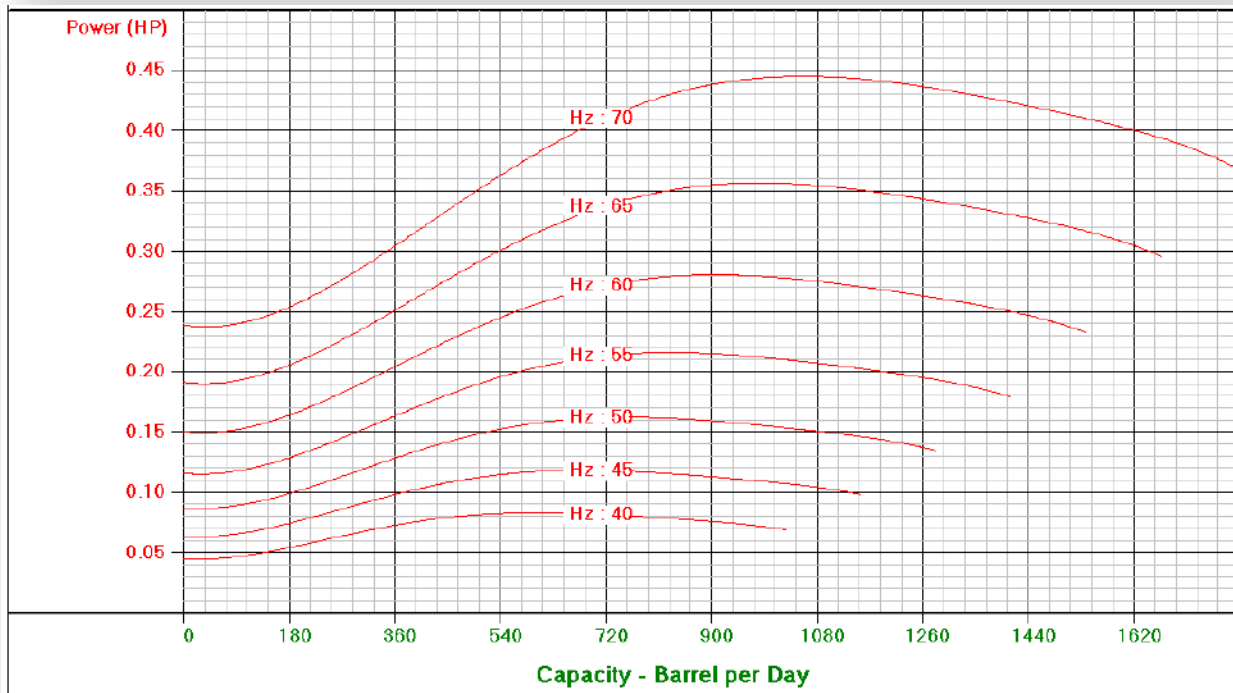
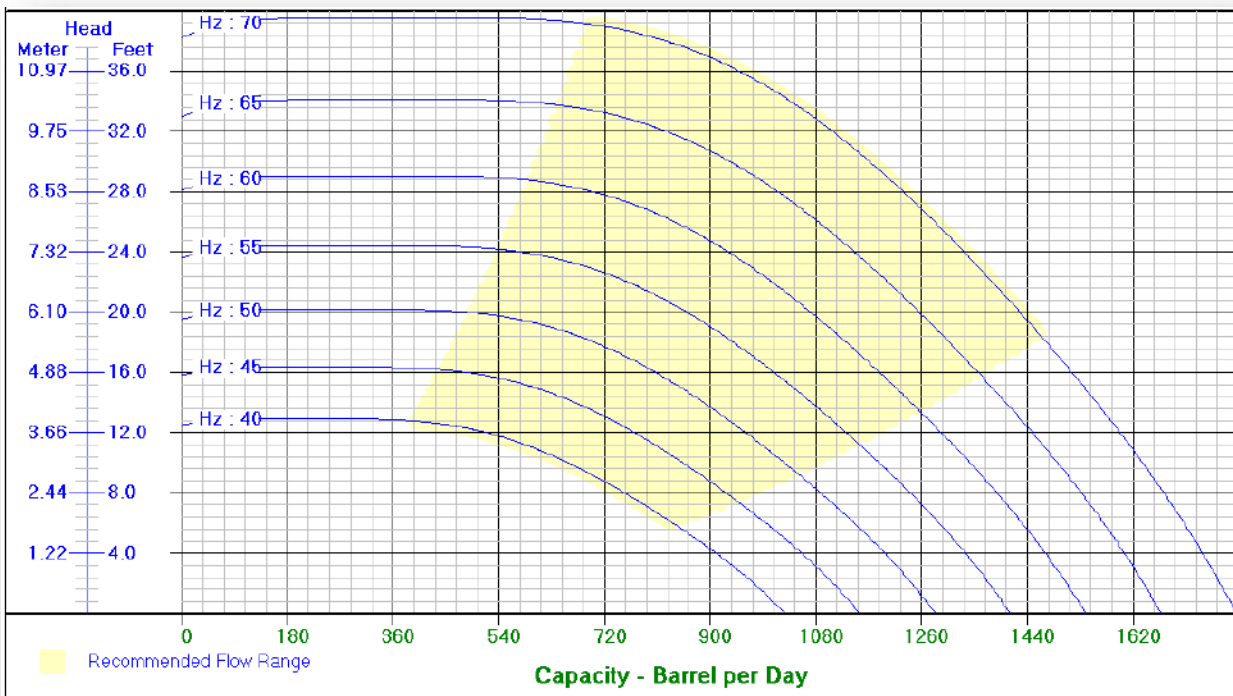
Optimum operating range	600 – 1250 B/D	Shaft brake-power limit	Standard	125hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	200hp
Shaft diameter	0.687 in.		Standard	5,000 psi
Shaft cross-sectional area	0.37in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

## MD-1000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 400 Series

**MD1300/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP130040017	17	TBA		10	2.1	44
MP130040036	36	TBA		20	3.5	73
MP130040054	54	TBA		30	4.9	106
MP130040073	73	TBA		40	6.3	134
MP130040092	92	TBA		50	7.8	165
MP1300400110	110	TBA	110	60	9.2	196
MP1300400129	129	TBA	128	70	10.6	225
MP1300400147	147	TBA	147	80	12.0	258
MP1300400166	166	TBA	165	90	13.4	287
MP1300400185	185	TBA	184	100	14.8	317
MP1300400202	202	TBA	202	110	16.2	348
MP1300400221	221	TBA	221	120	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD1300/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
239	130	1	1					
257	140	1		1				
275	150	1			1 BFL			
294	160	1				1 BFL		
312	170	1					1 BFL	
331	180	1						1 BFL
350	190		1					1 BFL
368	200			1				1 BFL
386	210				1 BFL			1
405	220					1 BFL		1
423	230						1 BFL	1

Section type defaults to FL unless otherwise noted.

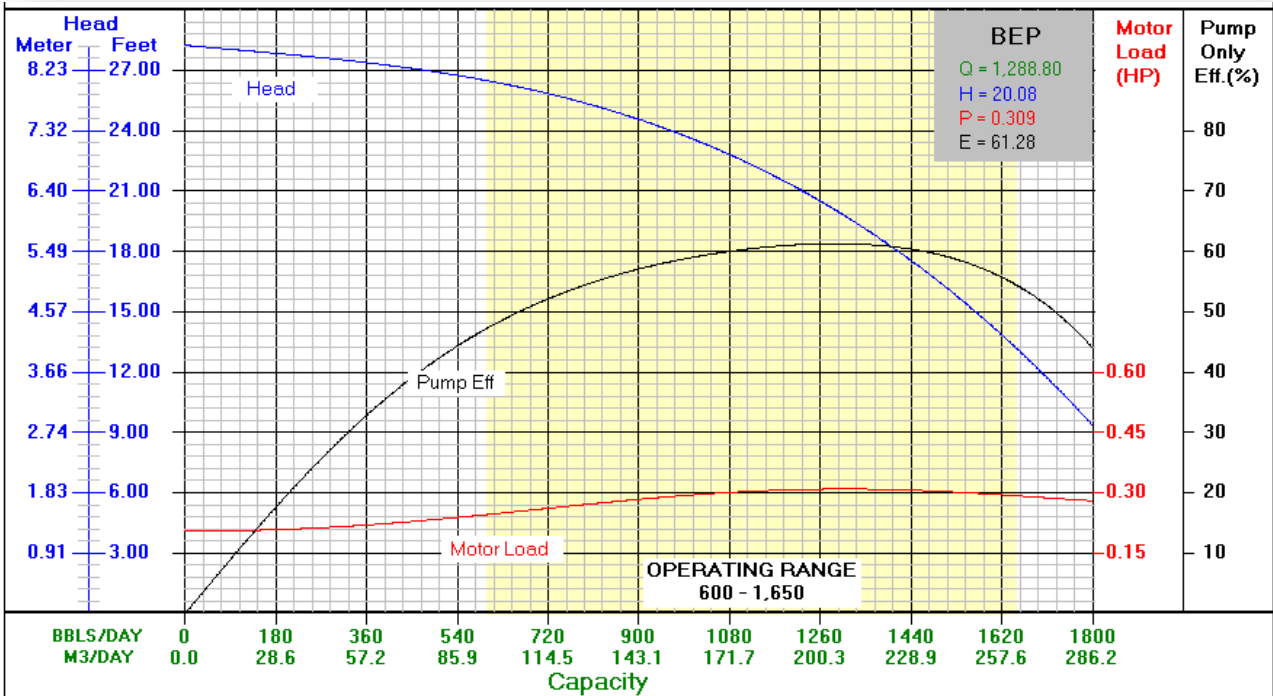
**MMU – ESP**

**MD-1300 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

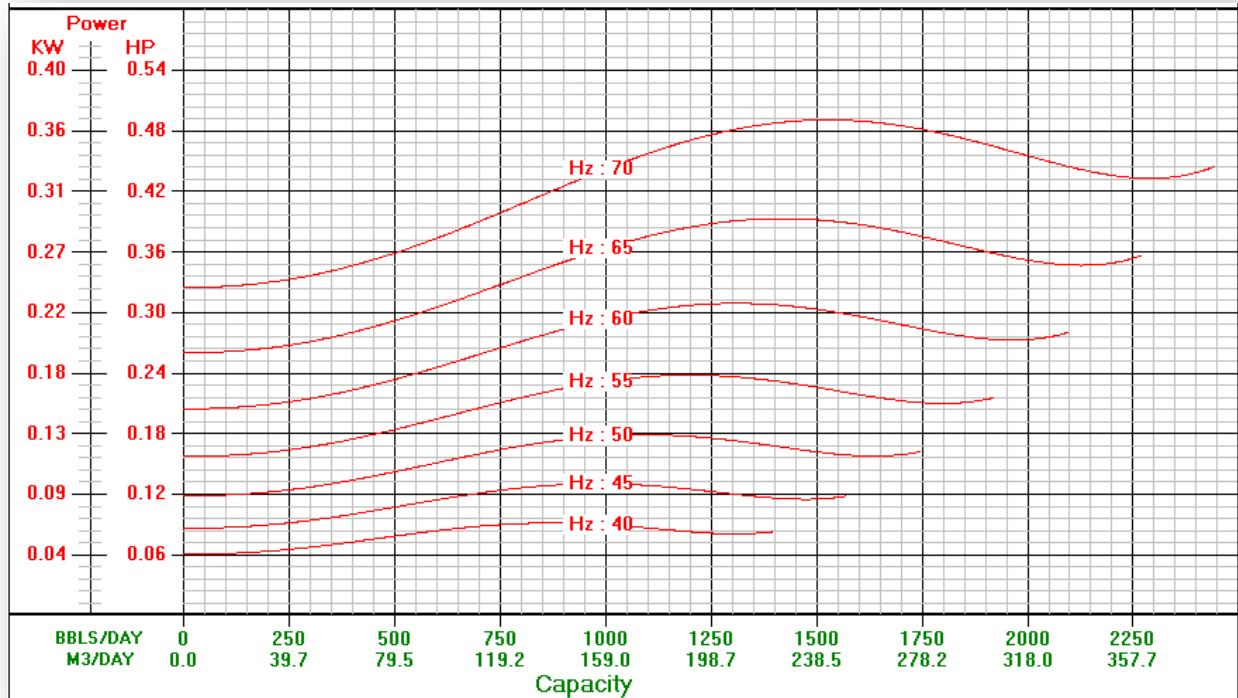
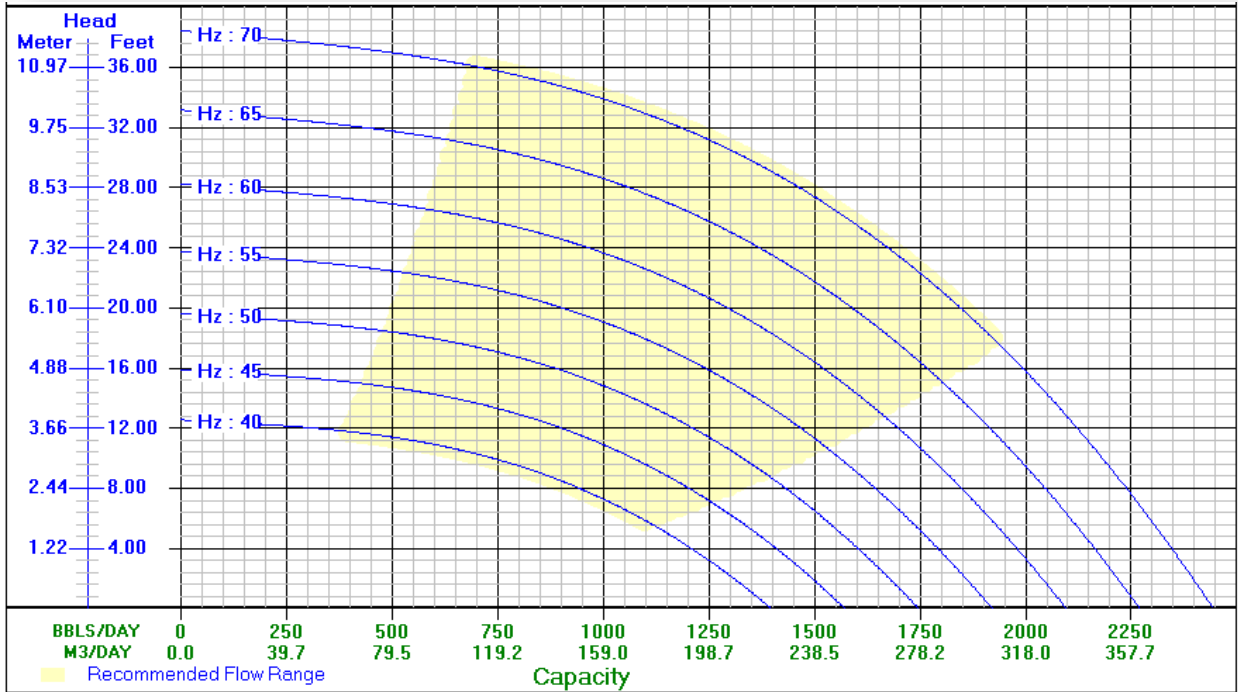
Optimum operating range	600 – 1650 B/D	Shaft brake-power limit	Standard	125hp
Nominal housing diameter	4.00 in.		High strength	200hp
Shaft diameter	0.687 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.37in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-1300 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.





## Submersible Pump 400 Series

**MD1750/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP17504008	8	TBA		10	2.1	44
MP175040016	16	TBA		20	3.5	73
MP175040024	24	TBA		30	4.9	106
MP175040033	33	TBA		40	6.3	134
MP175040041	41	TBA		50	7.8	165
MP175040050	50	TBA	49	60	9.2	196
MP175040058	58	TBA	57	70	10.6	225
MP175040067	67	TBA	66	80	12.0	258
MP175040075	75	TBA	74	90	13.4	287
MP175040084	84	TBA	83	100	14.8	317
MP175040092	92	TBA	91	110	16.2	348
MP1750400100	100	TBA	100	120	17.6	377
MP1750400108	108	TBA	109	130	19.0	500
MP1750400116	116	TBA	116	140	20.4	538
MP1750400125	125	TBA	125	150	21.9	578

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.



# Submersible Pump 400 Series

**MD1750/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Tandem Combinations Chart**

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
134	160	2							
142	170	1	1						
151	180	1		1					
159	190	1			1				
167	200	1				1			
175	210	1					1		
183	220	1						1	
192	230	1							1
200	240		1						1
209	250			1					1
217	260				1				1
225	270					1			1
233	280						1		1
241	290							1 BFL	1
250	300								1 BFL+1
259	310	2							1 BFL
266	320		2					1 BFL	
275	330		2						1 BFL
284	340			2				1 BFL	
293	350			2					1 BFL
300	360				2			1 BFL	
309	370				2				1 BFL
316	380					2		1 BFL	
325	390					2			1 BFL
332	400						2	1 BFL	
341	410						2		1 BFL
350	420					1			2 BFL

Section type defaults to FL unless otherwise noted.

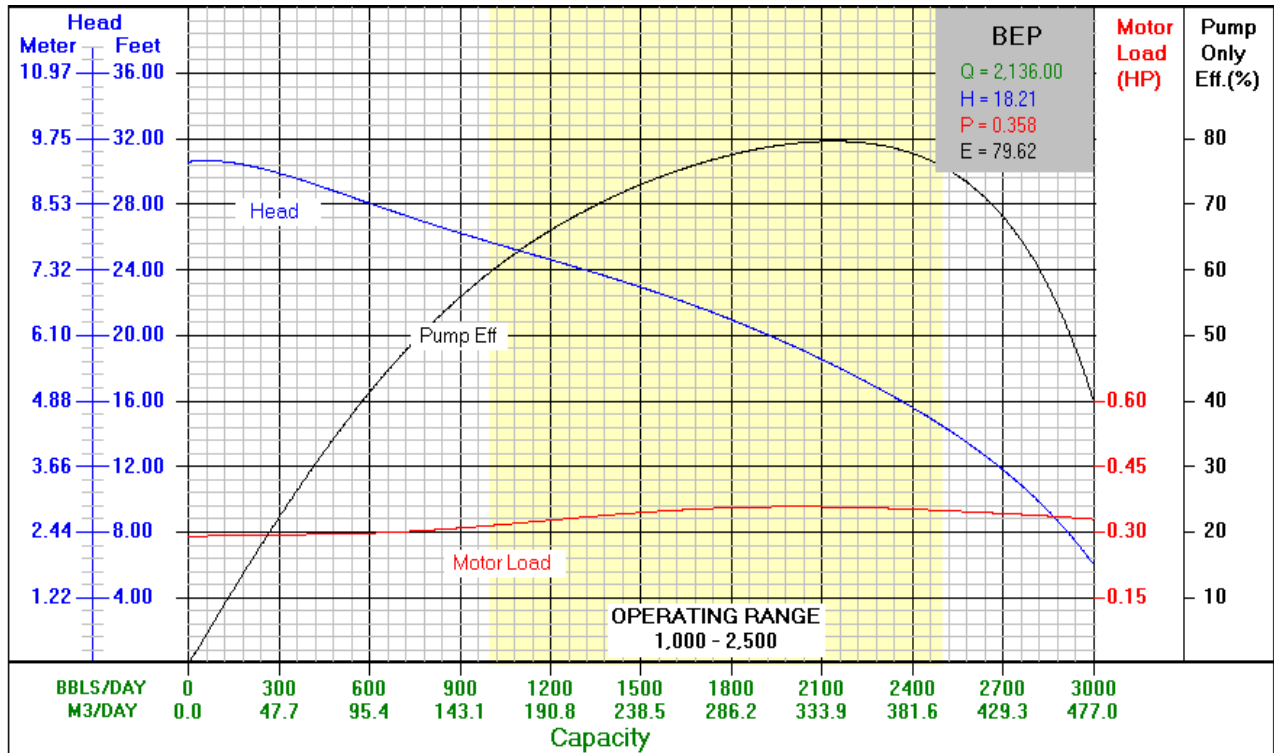
# MMU – ESP

# MD-1750 Pump Performance Curve

## 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

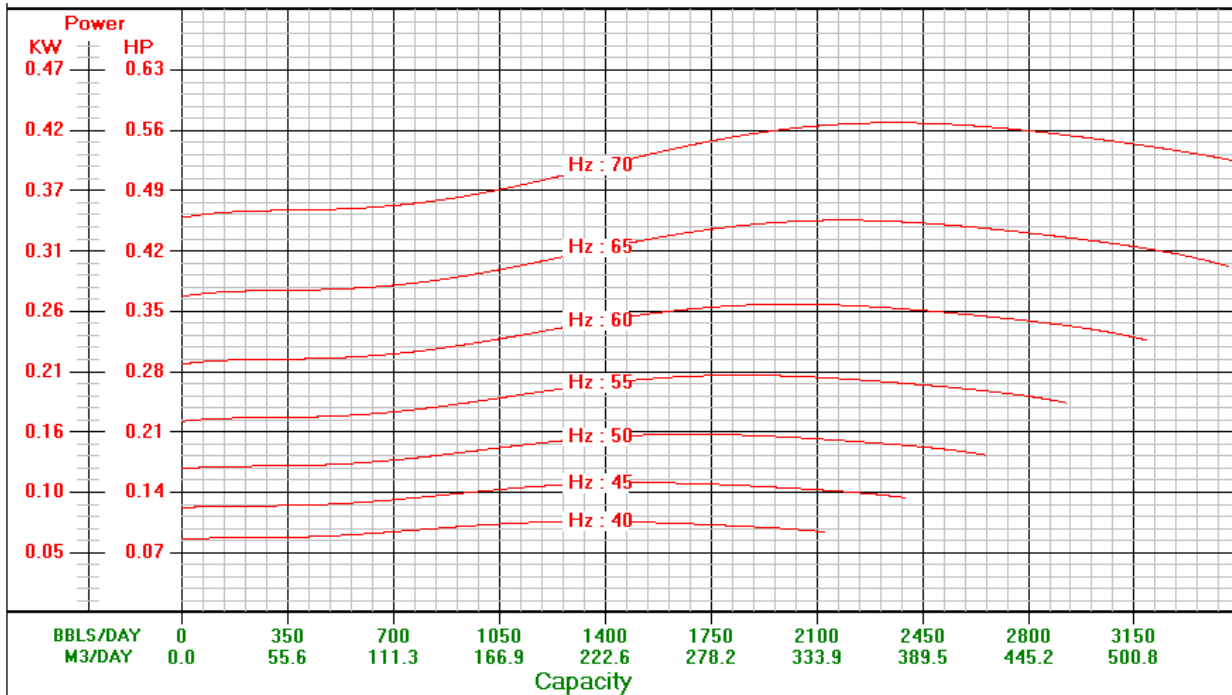
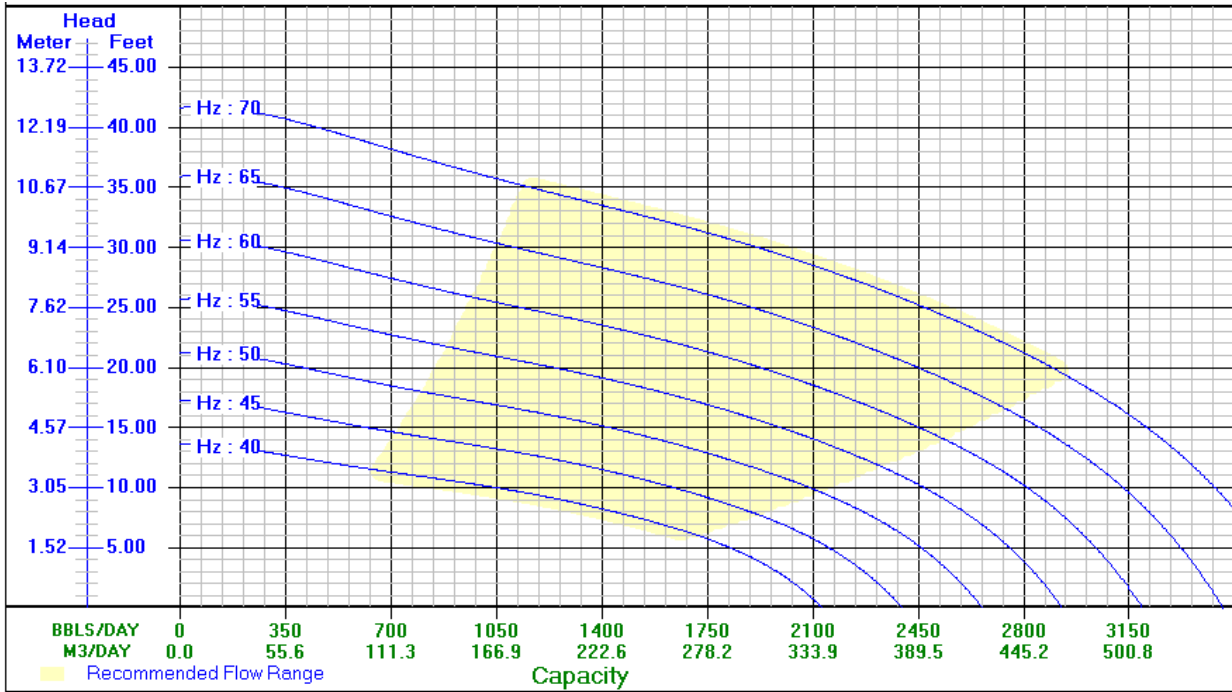
Optimum operating range	1000 – 2500 B/D	Shaft brake-power limit	Standard	125hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	200hp
Shaft diameter	0.687 in.		Standard	5,000 psi
Shaft cross-sectional area	0.37in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-1750 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 400 Series

**MD2000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP200040011	11	TBA		12	2.1	44
MP200040024	24	TBA		26	3.5	73
MP200040036	36	TBA		40	4.9	106
MP200040049	49	TBA		54	6.3	134
MP200040062	62	TBA		67	7.8	165
MP200040074	74	TBA	73	81	9.2	196
MP200040087	87	TBA	86	95	10.6	225
MP200040099	99	TBA	99	108	12.0	258
MP2000400112	112	TBA	111	122	13.4	287
MP2000400124	124	TBA	123	136	14.8	317
MP2000400137	137	TBA	136	150	16.2	348
MP2000400149	149	TBA	149	163	17.6	377

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft. Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD2000/ 400 Series Pump**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
160	130	1 BFL	1					
172	140	1 BFL		1				
185	150	1 BFL			1			
197	160	1 BFL				1		
210	170	1 BFL					1	
222	180	1 BFL						1
235	190		1 BFL					1

Section type defaults to FL unless otherwise noted.

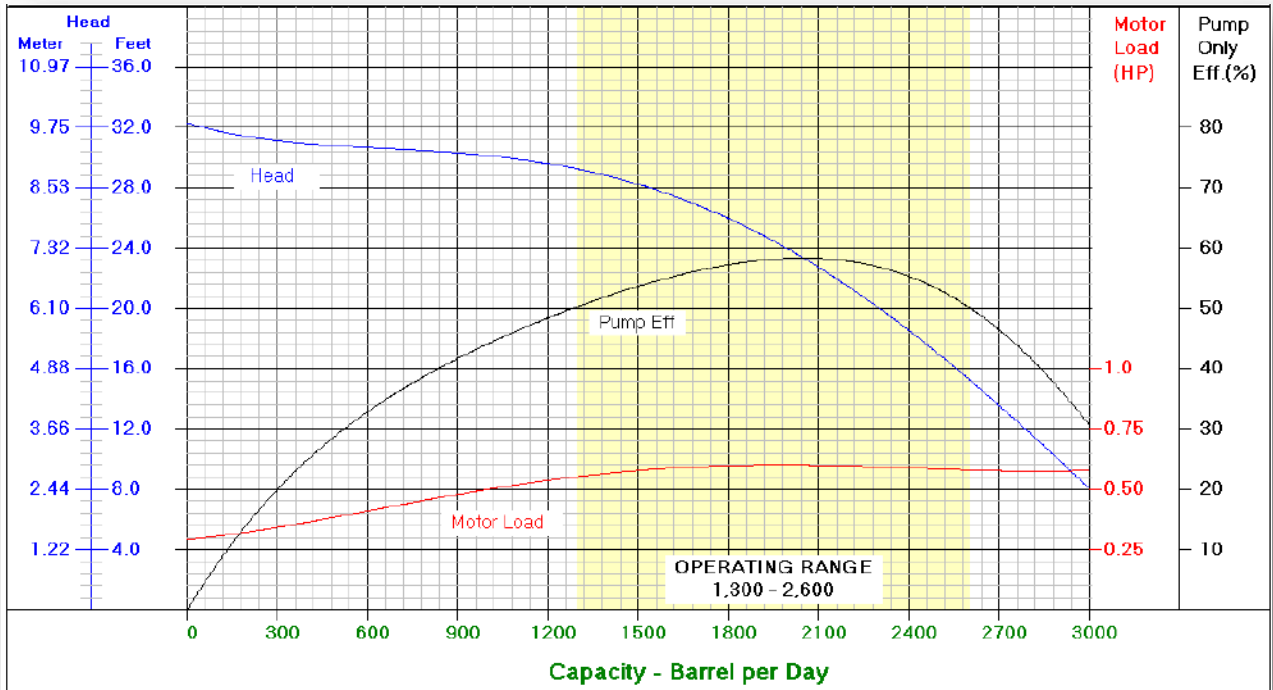
**MMU – ESP**

**MD-2000 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

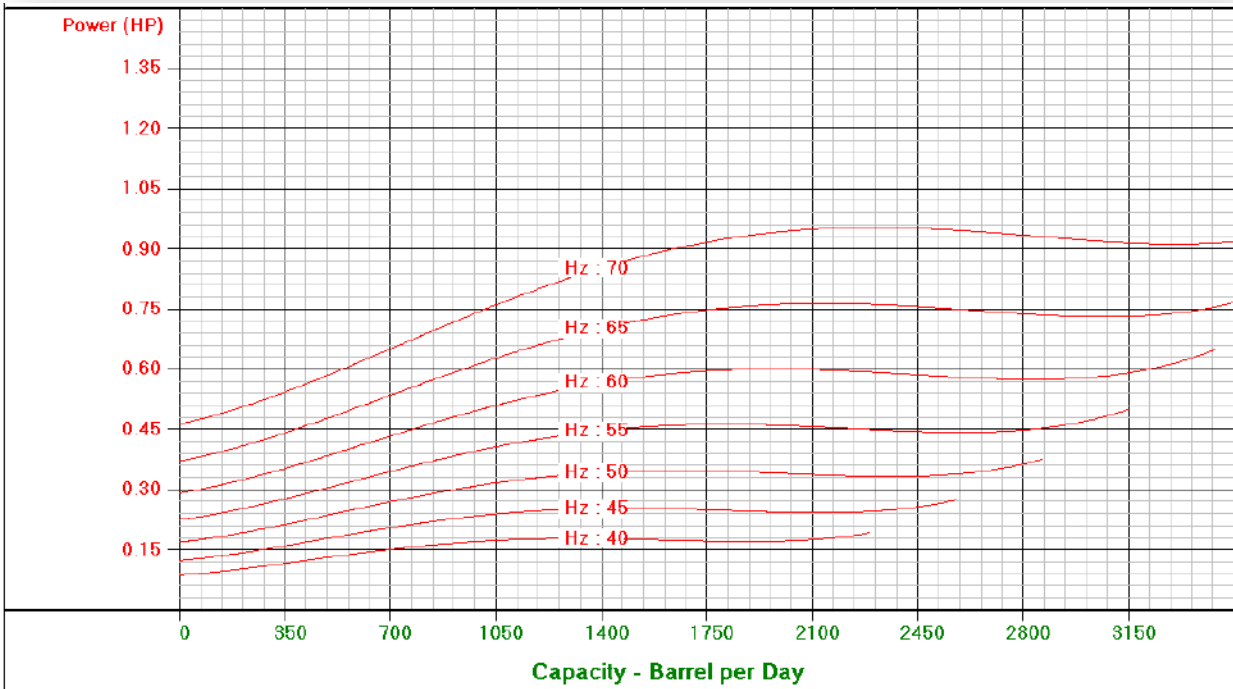
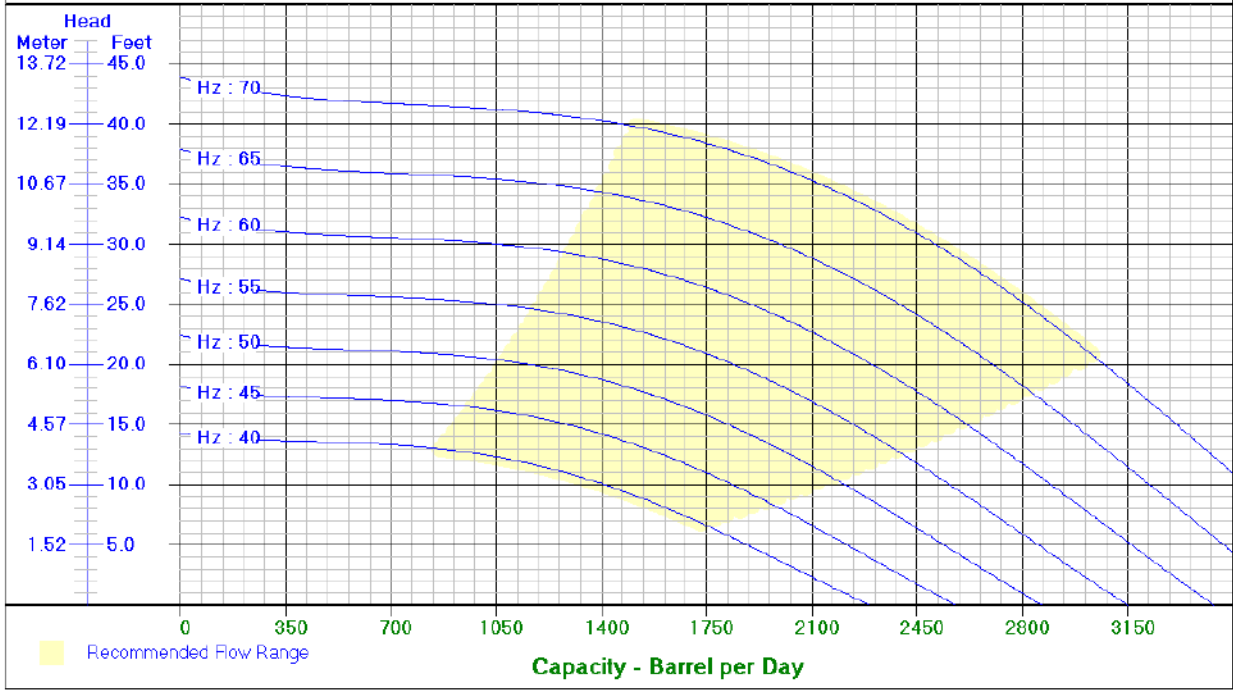
Optimum operating range	1300 – 2600 B/D	Shaft brake-power limit	Standard	125hp
Nominal housing diameter	4.00 in.		High strength	200hp
Shaft diameter	0.687 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.371in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-2000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 400 Series

### MD3000/ 400 Series Pumps

Minimum Casing size 5½ inches

Maximum bottom hole temperature = 300 °F

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP30004006	6	TBA		10	2.1	44
MP300040014	14	TBA		20	3.5	73
MP300040021	21	TBA		30	4.9	106
MP300040029	29	TBA		40	6.3	134
MP300040036	36	TBA		50	7.8	165
MP300040044	44	TBA	44	60	9.2	196
MP300040051	51	TBA	51	70	10.6	225
MP300040059	59	TBA	59	80	12.0	258
MP300040066	66	TBA	66	90	13.4	287
MP300040074	74	TBA	74	100	14.8	317
MP300040081	81	TBA	81	110	16.2	348
MP300040089	89	TBA	89	120	17.6	377
MP300040096	96	TBA	96	130	19.0	500
MP3000400104	104	TBA	104	140	20.4	538
MP3000400111	111	TBA	111	150	21.9	578

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.



# Submersible Pump 400 Series

**MD3000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
118	160	2							
125	170	1	1						
133	180	1		1					
140	190	1			1				
148	200	1				1			
155	210	1					1 BFL		
163	220	1						1 BFL	
170	230	1							1 BFL
177	240		1						1 BFL
185	250			1					1 BFL
192	260				1 BFL				1
200	270					1 BFL			1
207	280						1 BFL		1
215	290							1 BFL	1
222	300								1 BFL +1
229	310	2							1 BFL
236	320		2					1 BFL	
243	330		2						1 BFL
252	340			2				1 BFL	
259	350			2					1 BFL

Section type defaults to FL unless otherwise noted.

# Submersible Pump 400 Series

**MD3000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
266	360				2 BFL			1	
273	370				2 BFL				1
282	380					2 BFL		1	
289	390					2 BFL			1
296	400						2 BFL	1	
303	410						2 BFL		1
311	420					1			2 BFL
319	430							2 BFL	1
326	440							1	2 BFL
333	450								2 BFL +1
339	460				3 BFL		1		
347	470				3 BFL			1	
354	480				3 BFL				1
363	490					3 BFL	1		
371	500					3 BFL		1	
378	510					3 BFL			1
384	520						3 BFL +1		
392	530						3 BFL	1	
399	540						3 BFL		1
408	550						1	3 BFL	

Section type defaults to FL unless otherwise noted.

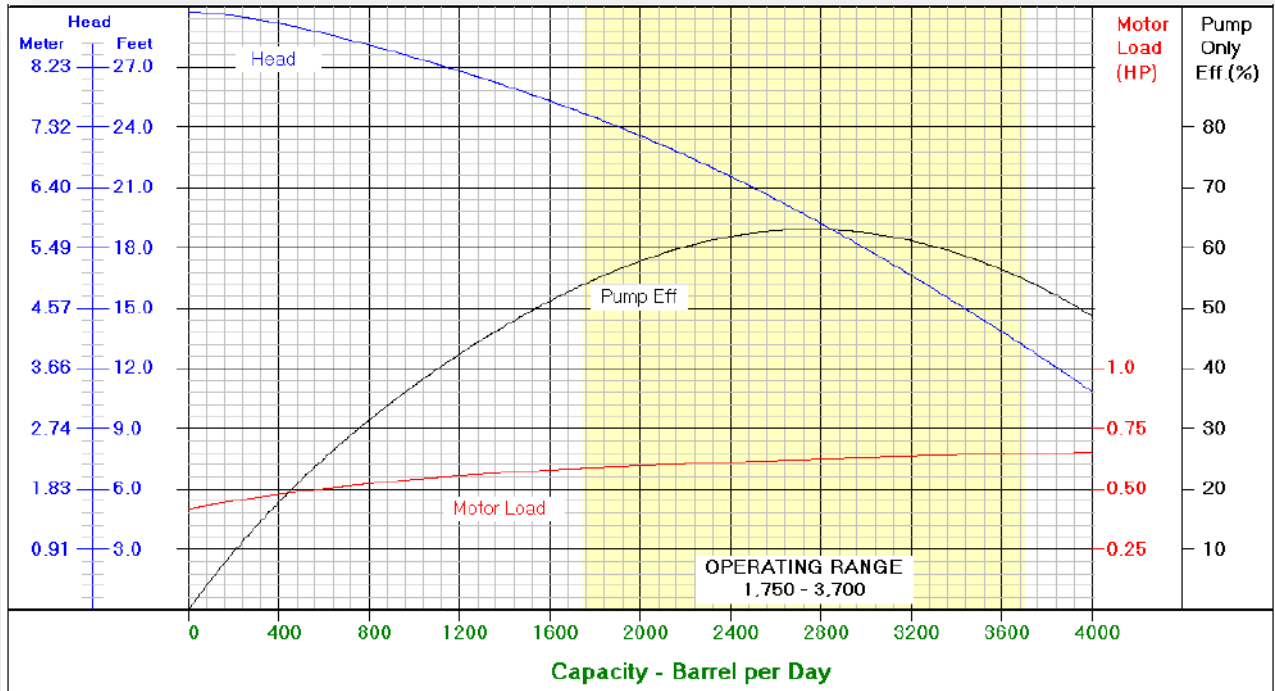
# MMU – ESP

# MD-3000 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

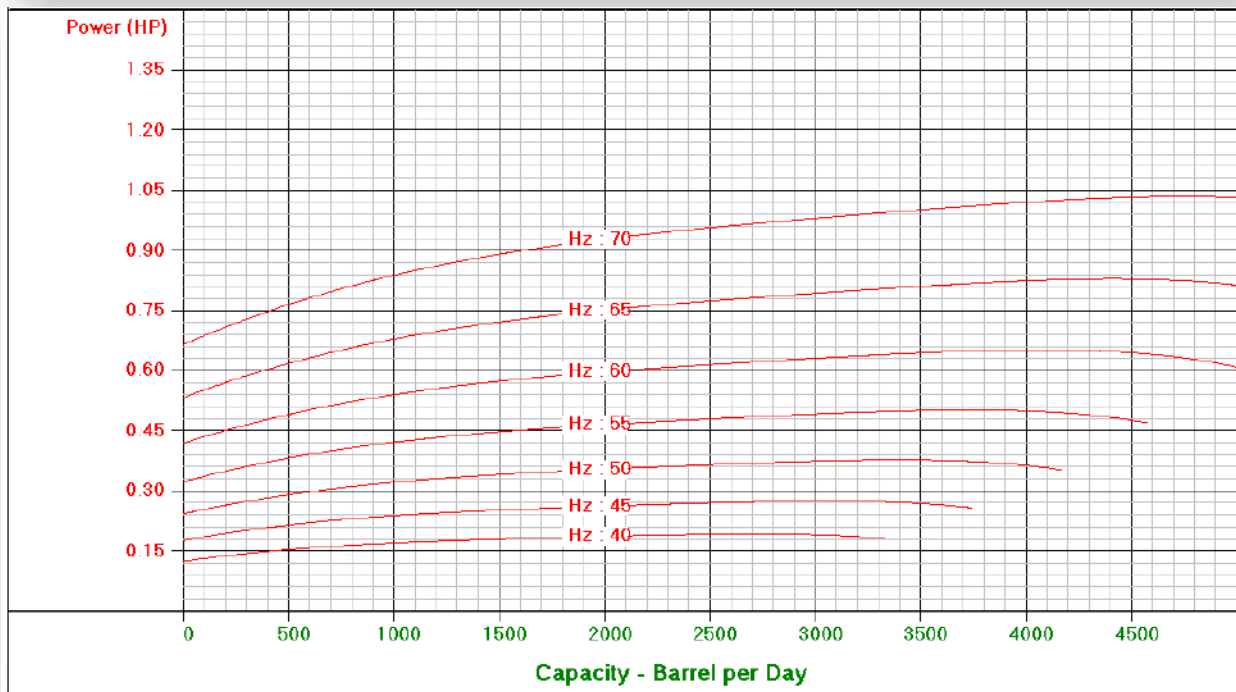
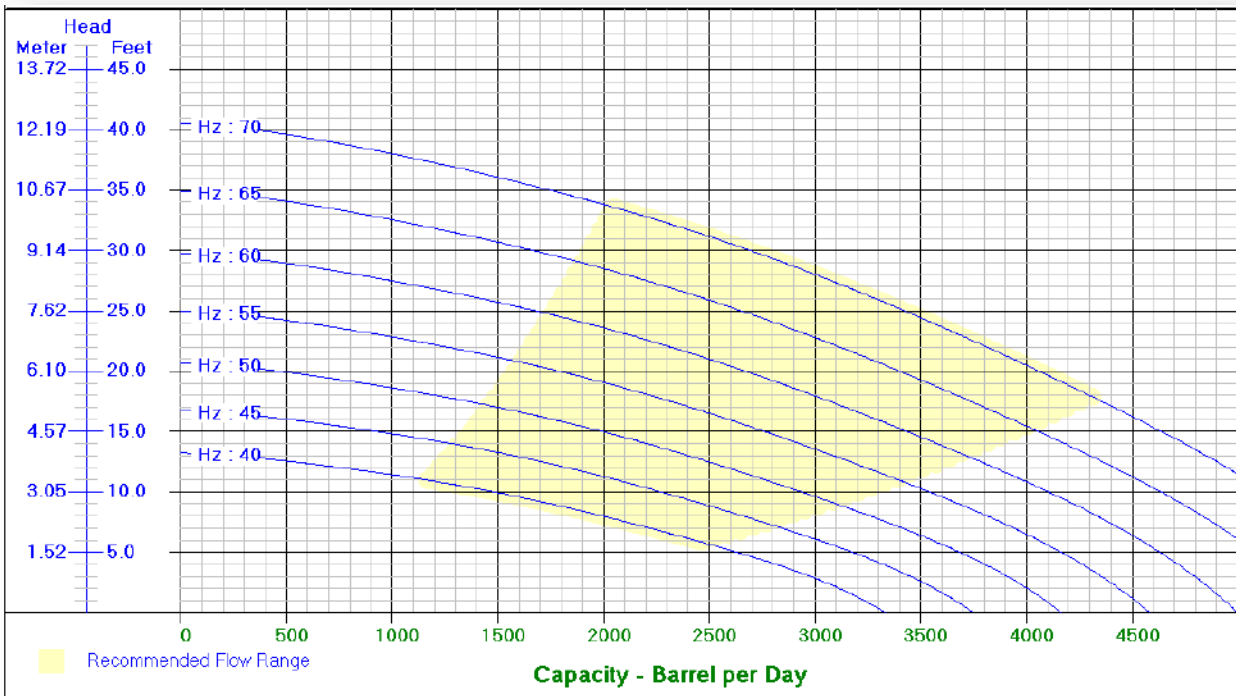
Optimum operating range	1750 – 3700 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MD-3000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 400 Series

**MD4500/ 400 Series Pumps**  
*Minimum Casing size 5½ inches*

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP40004005	5			10	2.1	44
MP400040011	11			20	3.5	73
MP400040017	17			30	4.9	106
MP400040022	22			40	6.3	134
MP400040028	28			50	7.8	165
MP400040034	34	TBA	34	60	9.2	196
MP400040039	39	TBA	39	70	10.6	225
MP400040045	45	TBA	45	80	12.0	258
MP400040051	51	TBA	51	90	13.4	287
MP400040057	57	TBA	57	100	14.8	317
MP400040062	62	TBA	62	110	16.2	348
MP400040068	68	TBA	68	120	17.6	377
MP400040074	74	TBA	74	130	19.0	500
MP400040080	80	TBA	80	140	20.4	538
MP400040085	85	TBA	85	150	21.9	578

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.  
 Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 400 Series

**MD4000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Housing Sections- Number							
		80	90	100	110	120	130	140	150
90	160	2							
96	170	1	1						
102	180	1		1					
107	190	1			1				
113	200	1				1			
119	210	1					1		
125	220	1						1	
130	230	1							1
136	240		1						1
142	250			1					1
147	260				1				1
153	270					1			1
159	280						1		1
165	290							1 BFL	1
170	300								1 BFL + 1
175	310	2							1 BFL
182	320		2					1 BFL	
187	330		2						1 BFL
194	340			2				1 BFL	
199	350			2					1 BFL
204	360				2			1 BFL	

Section type defaults to FL unless otherwise noted.

# Submersible Pump 400 Series

**MD4000/ 400 Series Pumps**  
**Minimum Casing size 5½ inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Housing Sections- Number							
		80	90	100	110	120	130	140	150
209	370				2				1 BFL
216	380					2		1 BFL	
221	390						2		1 BFL
228	400					1			1 BFL + 1
233	410							2 BFL	1
238	420							1	2 BFL
245	430								2 BFL + 1
250	440				1 BFL + 2		1		
255	450				1 BFL + 2			1	
260	460				1 BFL + 2				1
266	470					2 BFL + 1	1		
271	480					2 BFL + 1		1	
278	490					2 BFL + 1			1
284	500						2 BFL + 2		
289	510						2 BFL + 1	1	
296	520						2 BFL + 1		1
302	530						1	2 BFL + 1	
307	540							2 BFL + 2	
314	550							3 BFL	1
320	560						1		2 BFL + 1
325	570								
329	580								

Section type defaults to FL unless otherwise noted

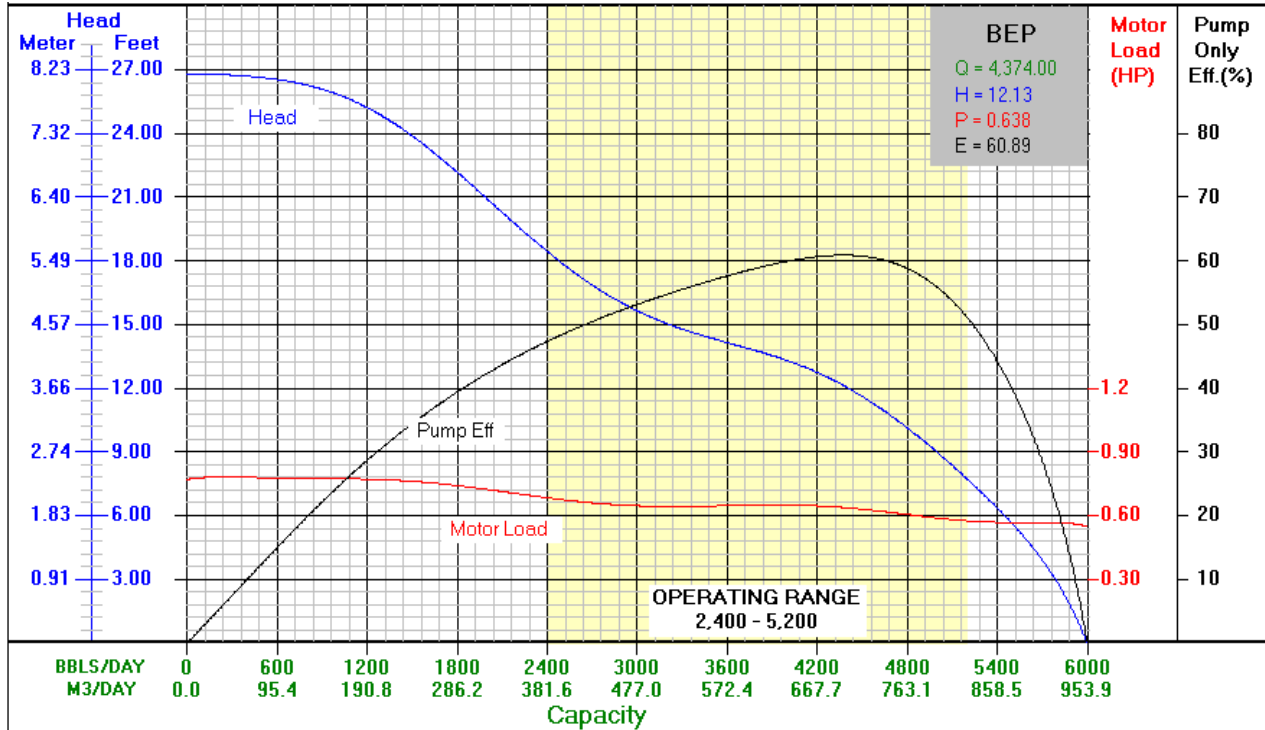
# MMU – ESP

# MD-4500 Pump Performance Curve

# 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

Optimum operating range	2400 – 5200 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	4.00 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	5.000 in.		Welded	6,000 psi

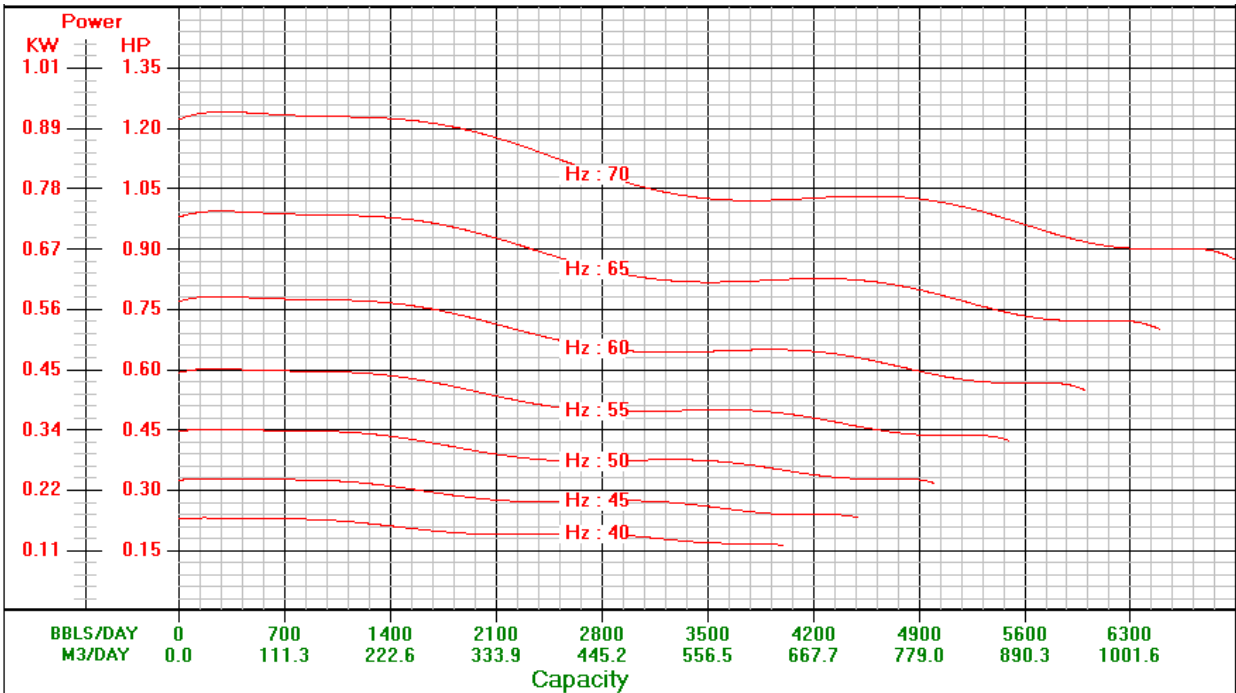
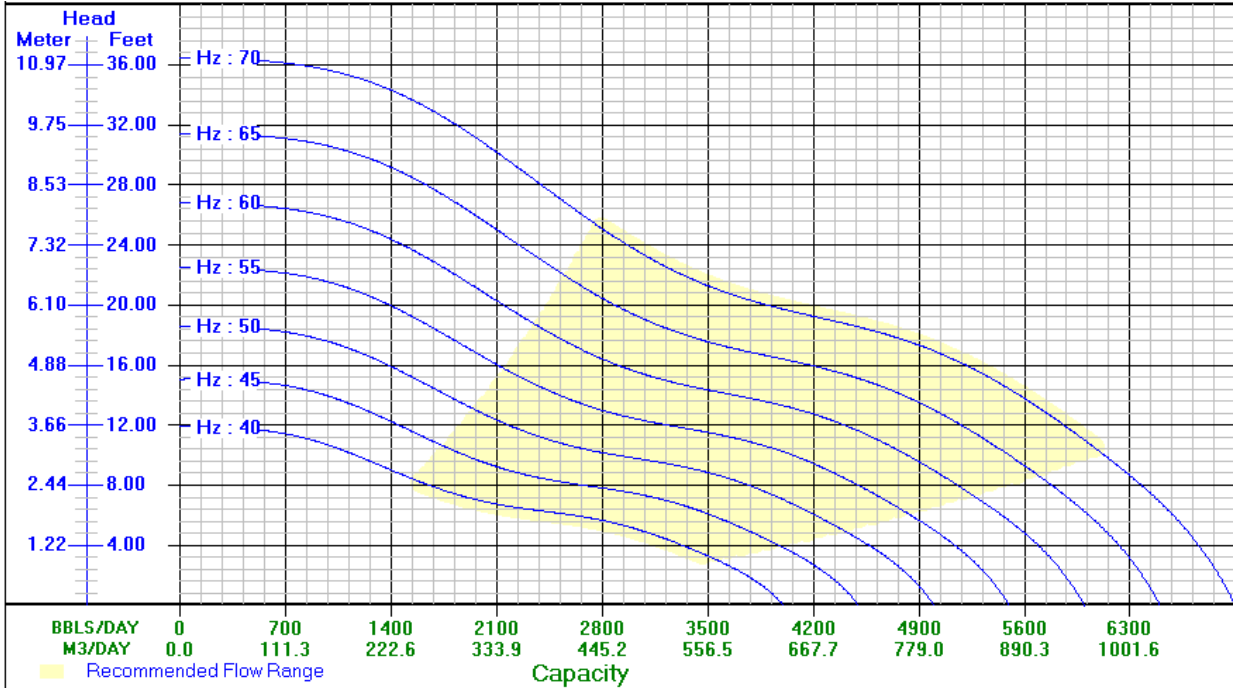


This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.



# MD-4500 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

**540 Series Pumps**  
**Minimum Casing size 7 inches**

Bolt-On Discharge Head

<b>Part Number</b>	<b>Description</b>	<b>Length (Feet)</b>	<b>Weight (Lbs.)</b>
MBOH312	3 1/2" 8rd EUE	0.5	11

Bolt-On Intake

<b>Part Number</b>	<b>Type</b>	<b>Length (Feet)</b>	<b>Weight (Lbs.)</b>
MI54070	INTAKE 540 TYPE 70	1.2	51
MI540AR	INTAKE 540 ARZ	1.2	51

Gas Separator

<b>Part Number</b>	<b>Description</b>	<b>Length (Feet)</b>	<b>Weight (Lbs.)</b>
MGS540	GS540	3.9	154

## Submersible Pump 540 Series

**MG1600 / 540 Series Pumps**  
**Minimum Casing size 7inches**

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP160054012	12			10	2.1	77
MP160054028	28			20	3.5	146
MP160054043	43			30	4.9	212
MP160054059	59			40	6.3	271
MP160054075	75			50	7.7	340
MP160054090	90	TBA	90	60	9.1	408
MP1600540106	106	TBA	106	70	10.5	467
MP1600540122	122	TBA	122	80	11.9	536
MP1600540137	137	TBA	137	90	13.3	602
MP1600540153	153	TBA	153	100	14.7	661
MP1600540169	169	TBA	169	110	16.1	730
MP1600540185	185	TBA	185	120	17.5	789

All pumps are in center tandem(CT)construction. BFL (bottom floater pump) use asupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.

Maximum O.D. of pump =5.13inches  
 feet/cap) to componentlength.

To compute shipping length, add shipping cap (0.23

# Submersible Pump 540 Series

**MG1600 / 540 Series Pumps**  
**Minimum Casing size 7 inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combination (Housing No.)						
		60	70	80	90	100	110	120
196	130	1	1					
212	140	1		1				
227	150	1			1			
243	160	1				1 BFL		
259	170	1					1 BFL	
275	180	1						1 BFL
291	190		1					1 BFL
307	200			1 BFL				1
322	210				1 BFL			1
338	220					1 BFL		1
354	230						1 BFL	1
370	240							1 BFL+1
381	250		2				1 BFL	

Section type defaults to FL unless otherwise noted.

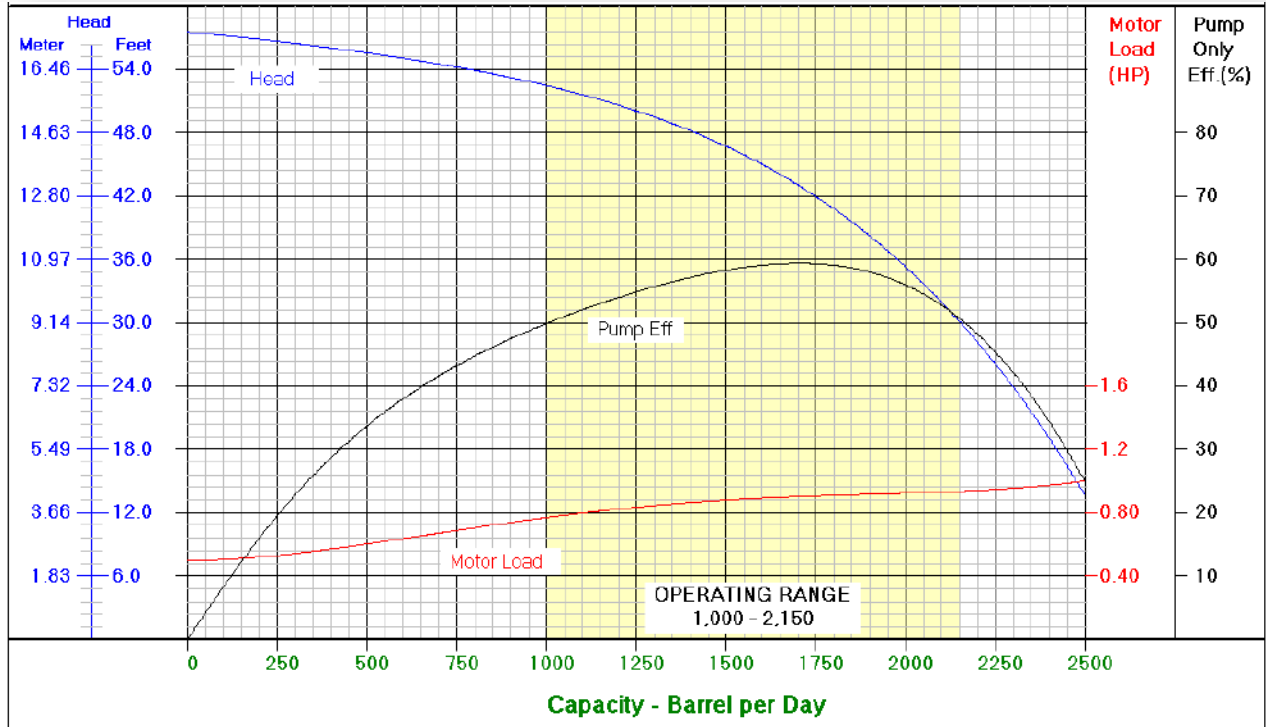
# MMU – ESP

# MG-1600 Pump Performance Curve

# 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

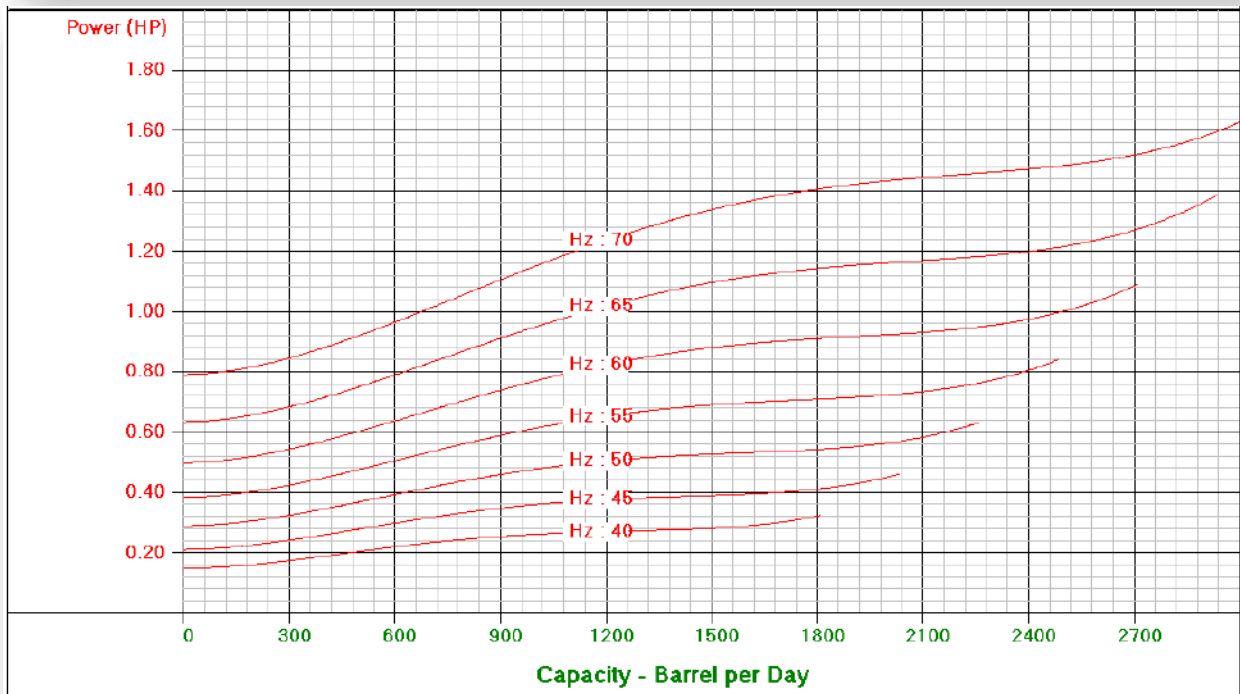
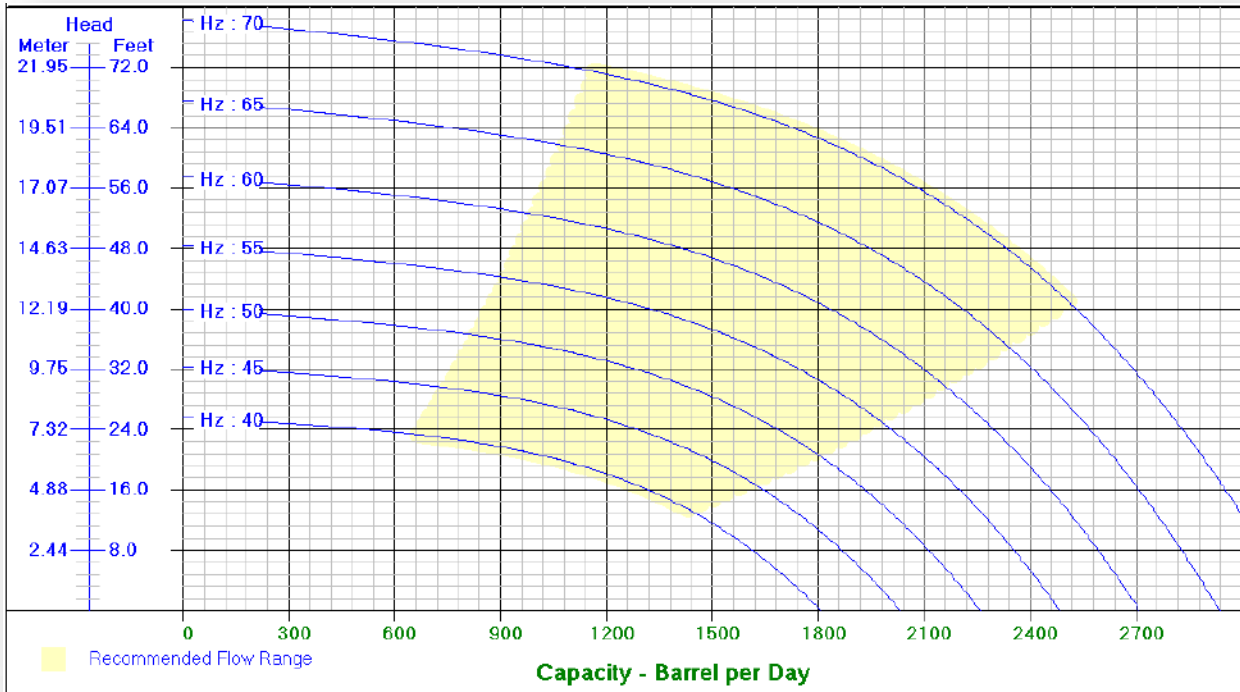
Optimum operating range	1000 – 2150 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-1600 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

**MG2000 / 540 Series Pumps**  
*Minimum Casing size 7inches*

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP200054010	10			10	2.1	77
MP200054022	22			20	3.5	146
MP200054034	34			30	4.9	212
MP200054047	47			40	6.3	271
MP200054059	59			50	7.7	340
MP200054071	71	TBA	71	60	9.1	408
MP200054083	83	TBA	83	70	10.5	467
MP200054096	96	TBA	95	80	11.9	536
MP2000540108	108	TBA	108	90	13.3	602
MP2000540120	120	TBA	120	100	14.7	661
MP2000540132	132	TBA	132	110	16.1	730
MP2000540145	145	TBA	144	120	17.5	789

All pumps are in center tandem(CT)construction. BFL (bottom floater pump) use asupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.

Maximum O.D. of pump =5.13inches  
 feet/cap) to componentlength.

To compute shipping length, add shipping cap (0.23

# Submersible Pump 540 Series

**MG2000 / 540 Series Pumps**  
**Minimum Casing size 7inches**

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combination (Housing No.)						
		60	70	80	90	100	110	120
154	130	1	1					
167	140	1		1				
179	150	1			1			
191	160	1				1 BFL		
203	170	1					1 BFL	
215	180	1						1 BFL
227	190		1					1 BFL
240	200			1 BFL				1
253	210				1 BFL			1
265	220					1 BFL		1
277	230						1 BFL	1
289	240							1 BFL+1
298	250		2				1 BFL	

Section type defaults to FL unless otherwise noted.



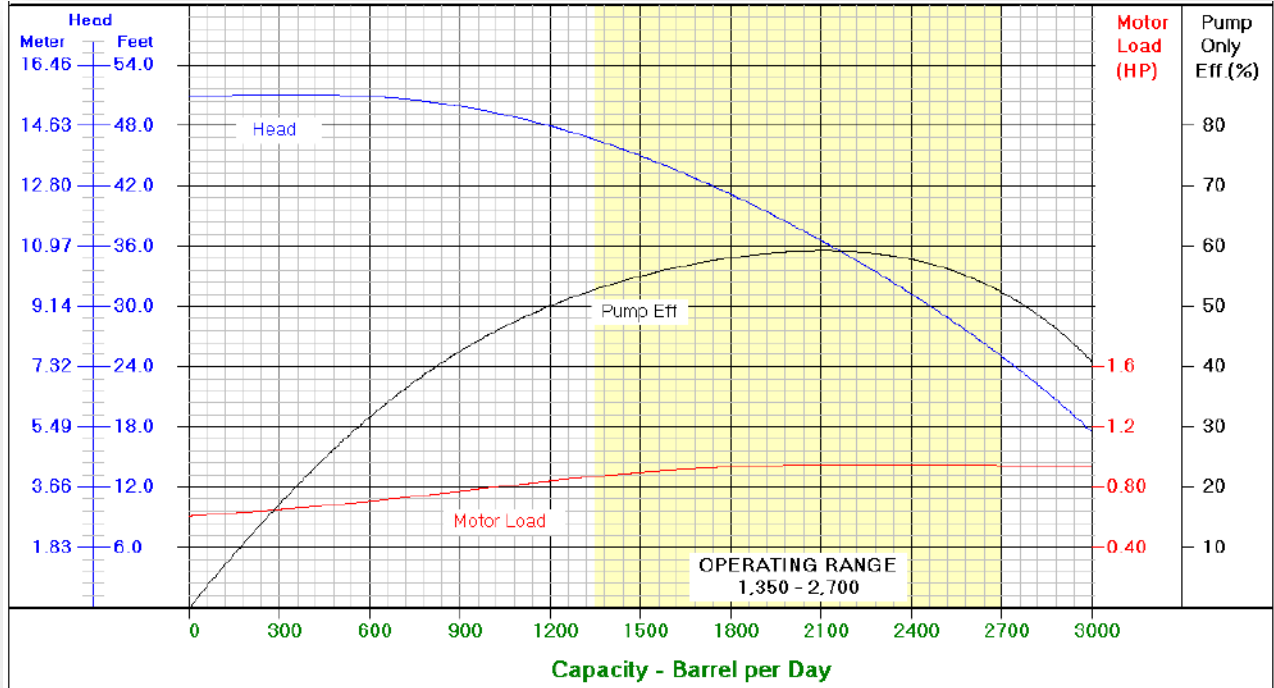
# MMU – ESP

# MG-2000 Pump Performance Curve

# 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

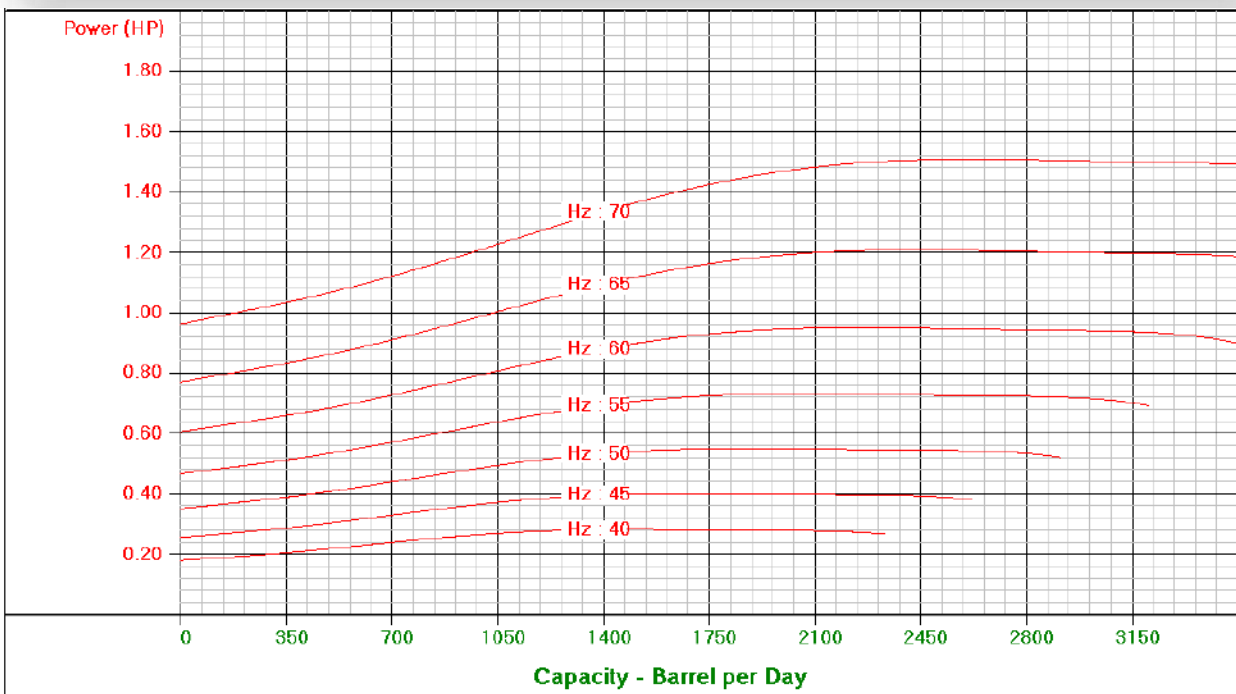
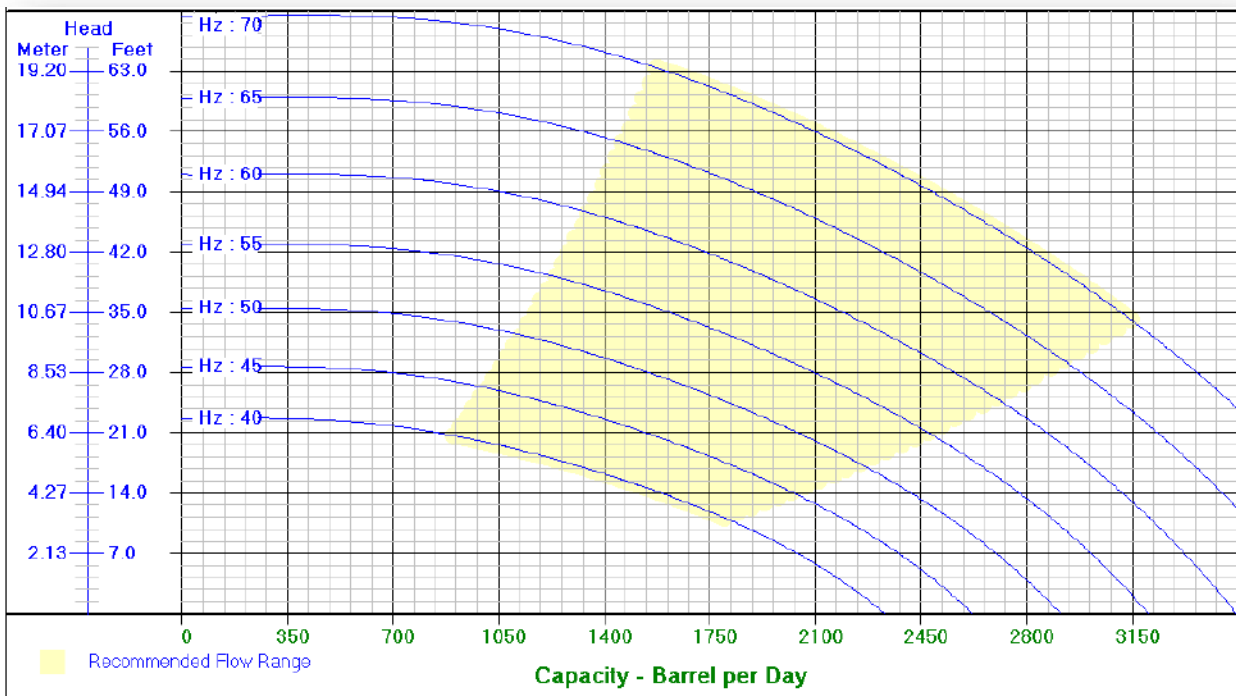
Optimum operating range	1350 – 2700 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-2000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

**MG2500 / 540 Series Pumps**  
*Minimum Casing size 7inches*

**Maximum bottom hole temperature = 300 °F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP250054010	10			10	2.1	77
MP250054022	22			20	3.5	146
MP250054034	34			30	4.9	212
MP250054047	47			40	6.3	271
MP250054059	59			50	7.7	340
MP250054071	71	TBA	71	60	9.1	408
MP250054083	83	TBA	83	70	10.5	467
MP250054096	96	TBA	95	80	11.9	536
MP2500540108	108	TBA	108	90	13.3	602
MP2500540120	120	TBA	120	100	14.7	661
MP2500540132	132	TBA	132	110	16.1	730
MP2500540145	145	TBA	144	120	17.5	789

All pumps are in center tandem(CT)construction. BFL (bottom floater pump) use asupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.

Maximum O.D. of pump =5.13inches  
 feet/cap) to componentlength.

To compute shipping length, add shipping cap (0.23

# Submersible Pump 540 Series

**MG2500 / 540 Series Pumps**  
*Minimum Casing size 7 inches*

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
154	130	1	1					
167	140	1		1				
179	150	1			1 BFL			
191	160	1				1 BFL		
203	170	1					1 BFL	
215	180	1						1 BFL

Section type defaults to FL unless otherwise noted.

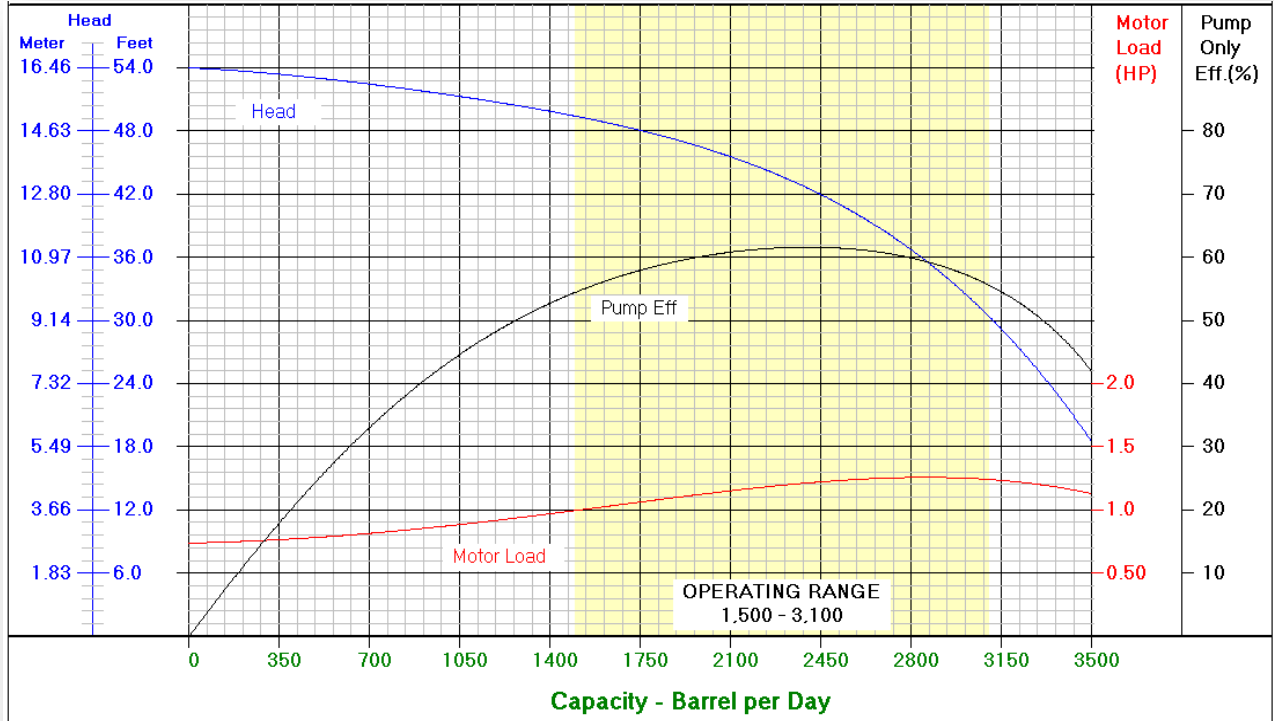
**MMU – ESP**

**MG-2500 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

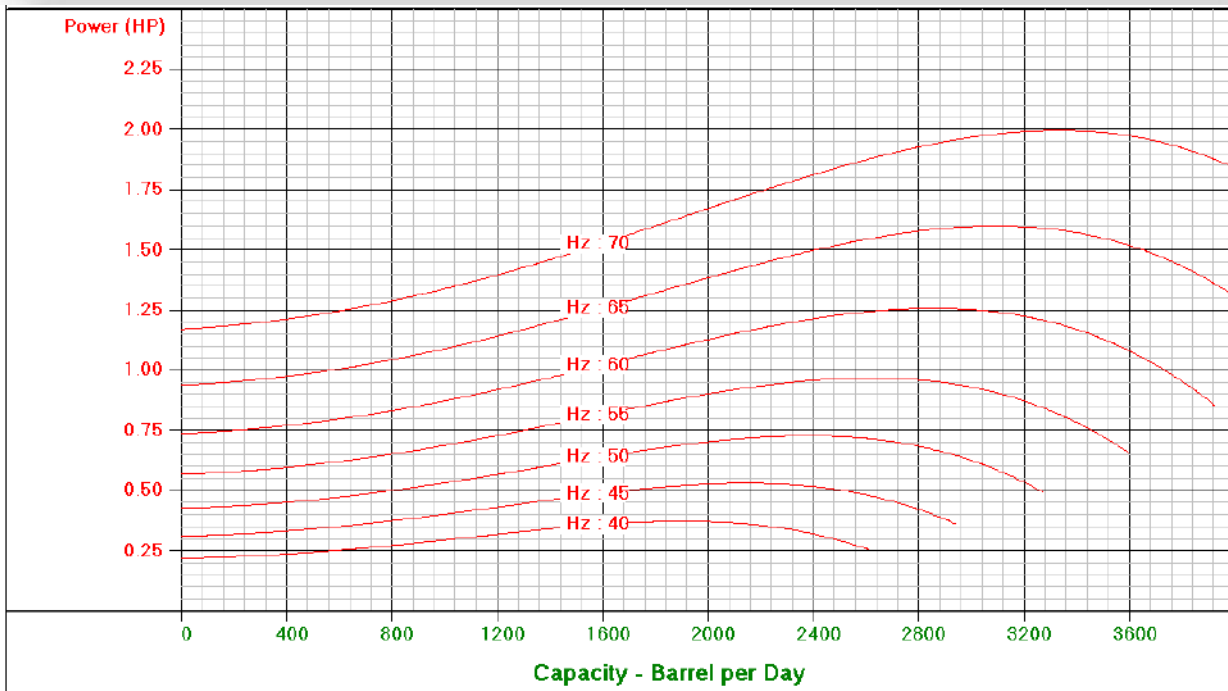
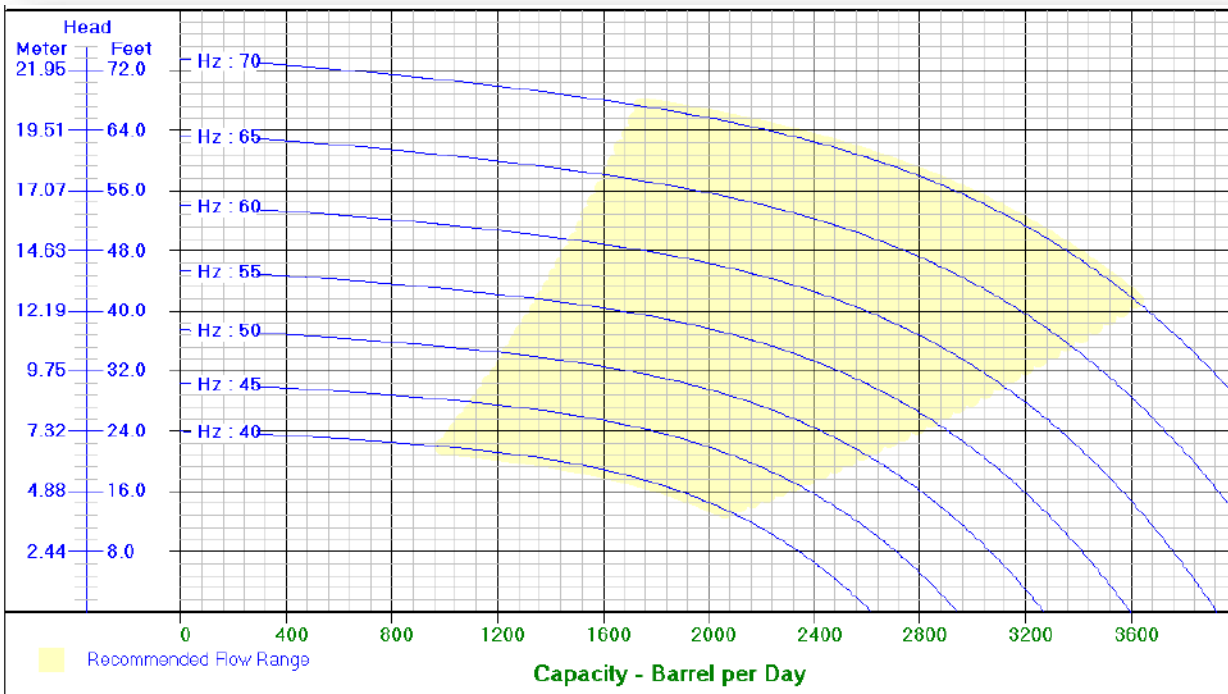
Optimum operating range	1500 – 3100 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-2500 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.





## Submersible Pump 540 Series

### MG3100 / 540 Series Pumps

Minimum Casing size 7inches

Maximum bottom hole temperature = 300 °F

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP310054010	10			10	2.1	77
MP310054022	22			20	3.5	146
MP310054034	34			30	4.9	212
MP310054047	47			40	6.3	271
MP310054059	59			50	7.7	340
MP310054071	71	TBA	71	60	9.1	408
MP310054083	83	TBA	83	70	10.5	467
MP310054096	96	TBA	95	80	11.9	536
MP3100540108	108	TBA	108	90	13.3	602
MP3100540120	120	TBA	120	100	14.7	661
MP3100540132	132	TBA	132	110	16.1	730
MP3100540145	145	TBA	144	120	17.5	789

All pumps are in center tandem (CT) construction. BFL (bottom floater pump) use a super pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 5.13 inches  
feet/cap) to component length.

To compute shipping length, add shipping cap (0.23



## Submersible Pump 540 Series

**MG3100 / 540 Series Pumps**  
**Minimum Casingsize 7 inches**

Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
154	130	1	1					
167	140	1		1				

Section type defaults to FL unless otherwise noted.

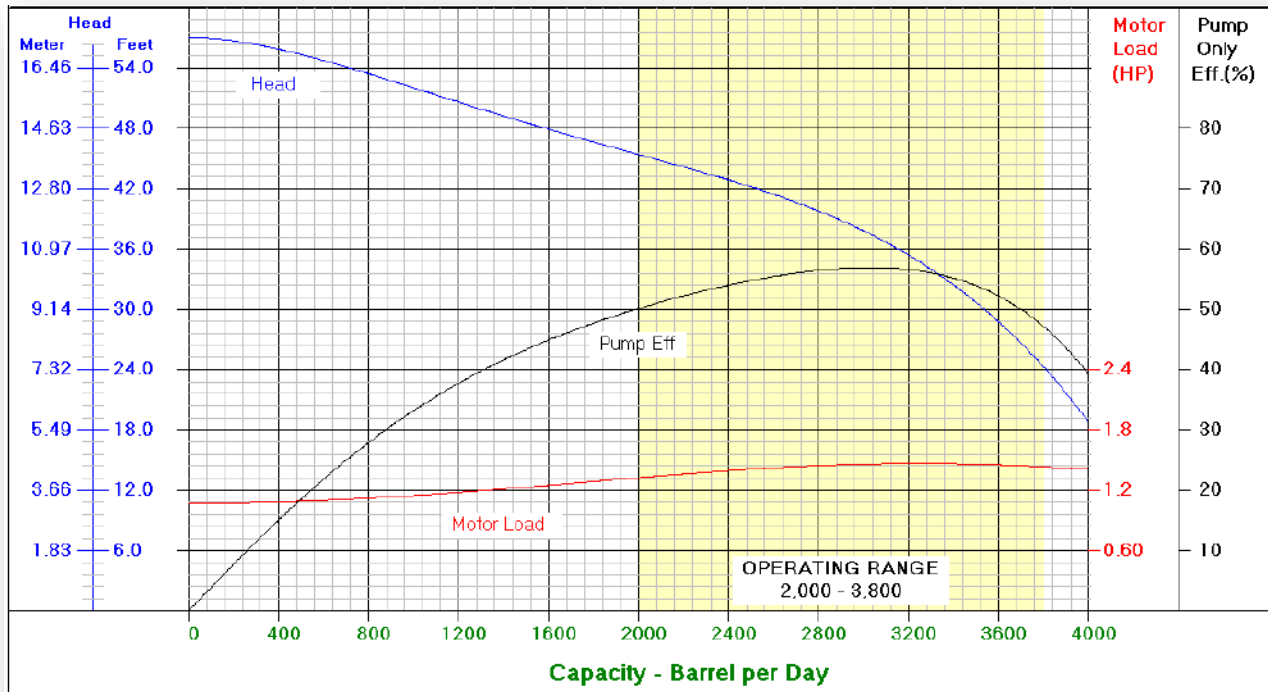
# MMU – ESP

# MG-3100 Pump Performance Curve

## 60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

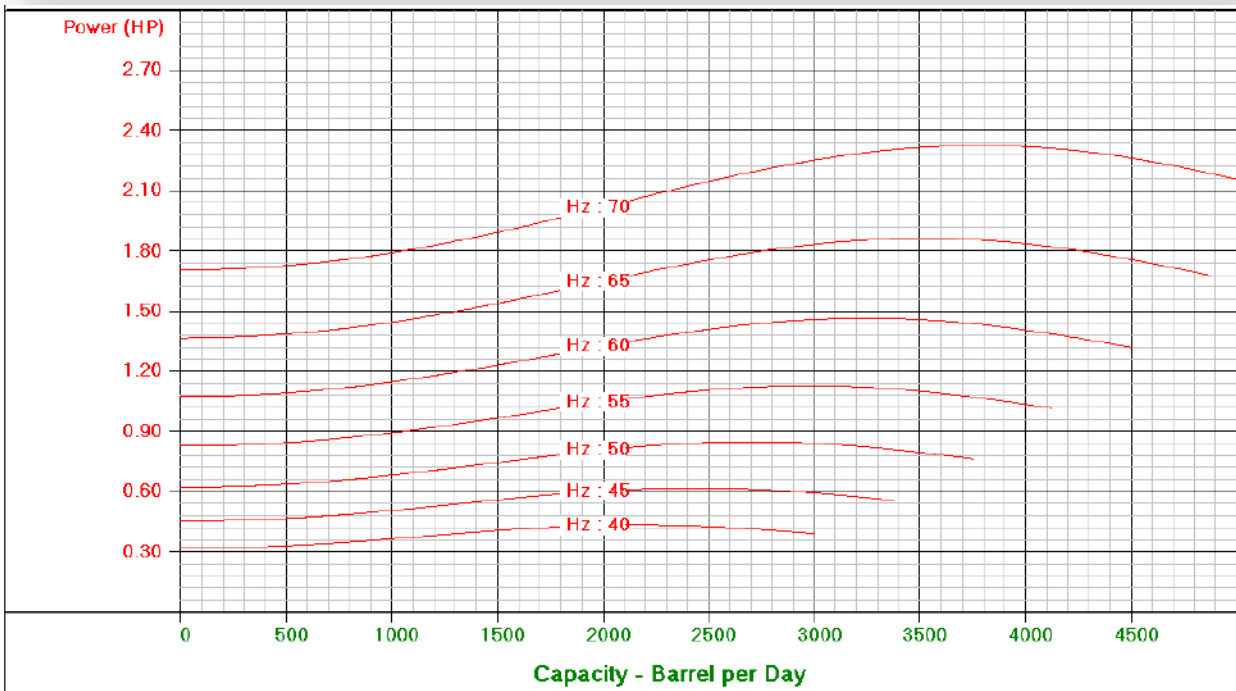
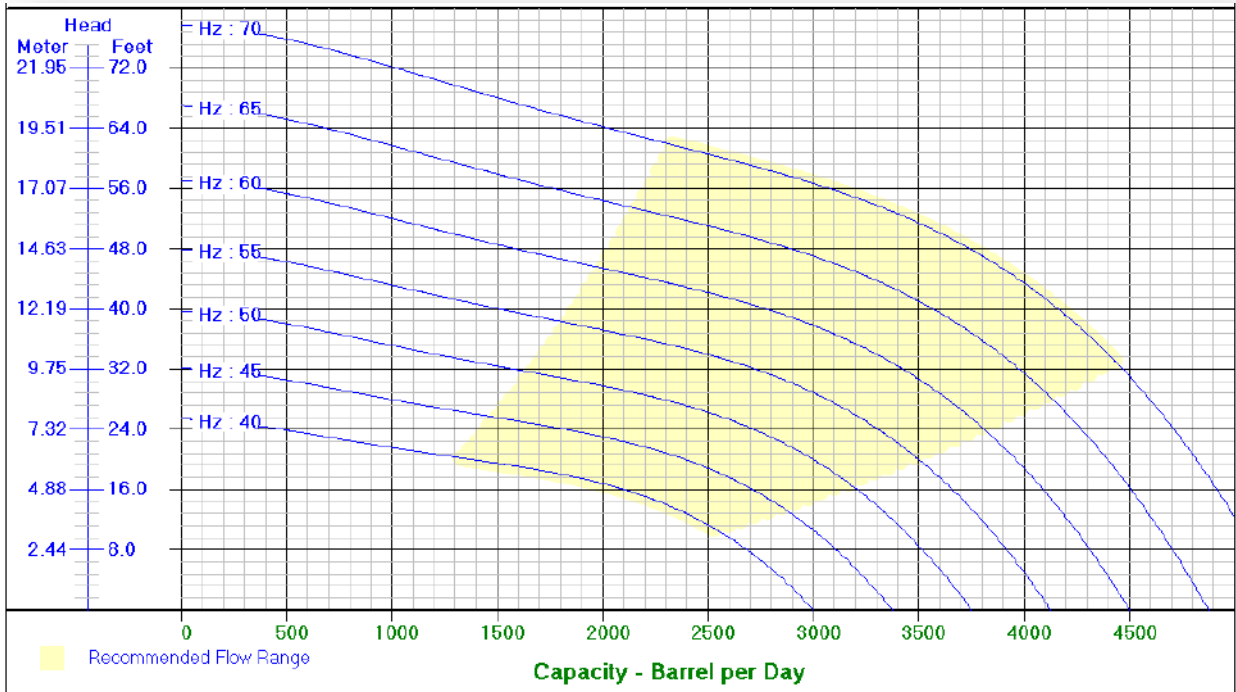
Optimum operating range	2000 – 3800 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-3100 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

### MG3200 / 540 Series Pumps

Minimum Casing size 7inches

Maximum bottom hole temperature = 300 °F

FL		BFL		HousingNo.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP32005409	9			10	2.1	77
MP320054020	20			20	3.5	146
MP320054032	32			30	4.9	212
MP320054044	44			40	6.3	271
MP320054055	55			50	7.7	340
MP320054067	67	TBA	67	60	9.1	408
MP320054079	79	TBA	79	70	10.5	467
MP320054090	90	TBA	90	80	11.9	536
MP3200540102	102	TBA	102	90	13.3	602
MP3200540114	114	TBA	114	100	14.7	661
MP3200540125	125	TBA	125	110	16.1	730
MP3200540137	137	TBA	137	120	17.5	789

All pumps are in center tandem (CT) construction. BFL (bottom floater pump) use a super pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.

Maximum O.D. of pump = 5.13 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 540 Series

**MG3200 / 540 Series Pumps**  
**Minimum Casingsize 7 inches**

Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)						
		60	70	80	90	100	110	120
146	130	1	1					
157	140	1		1				

Section type defaults to FL unless otherwise noted.

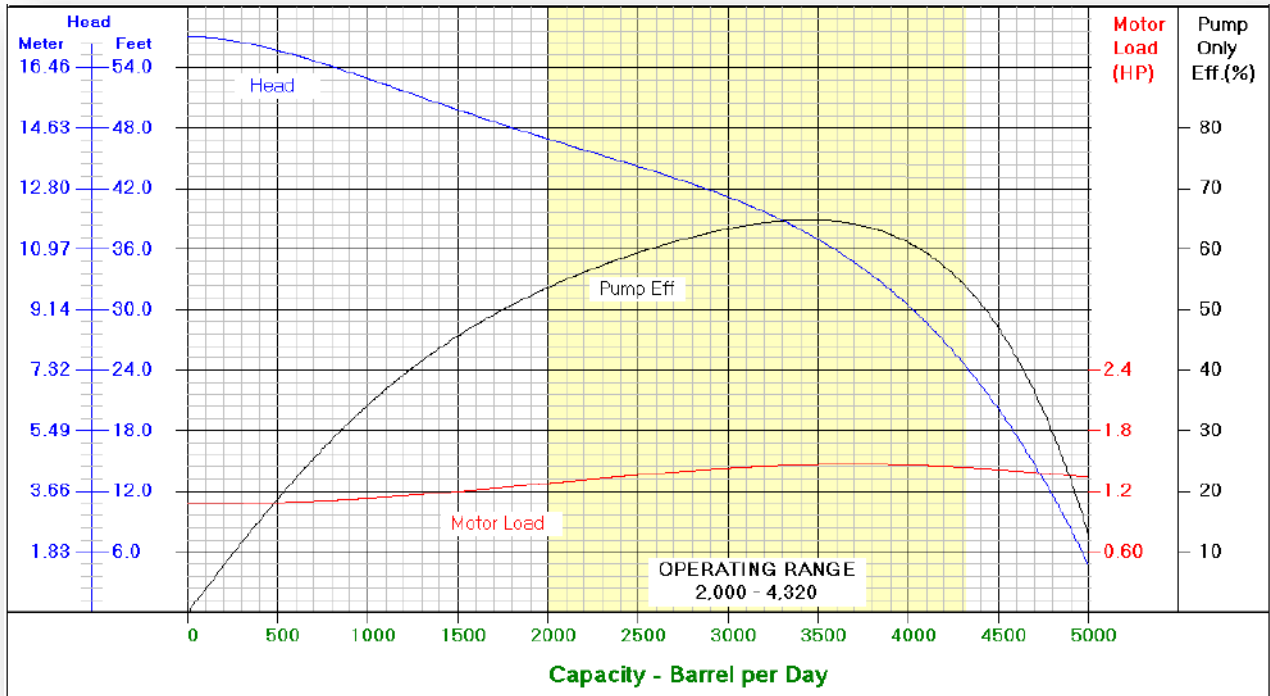
**MMU – ESP**

**MG-3200 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

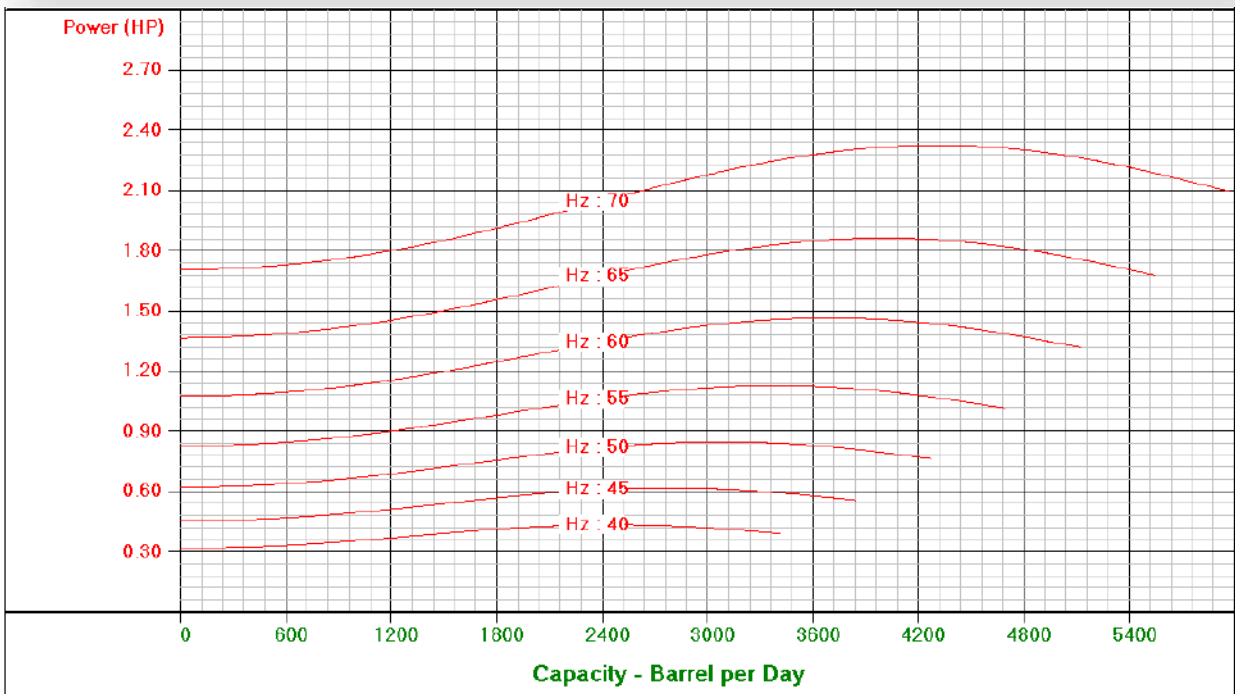
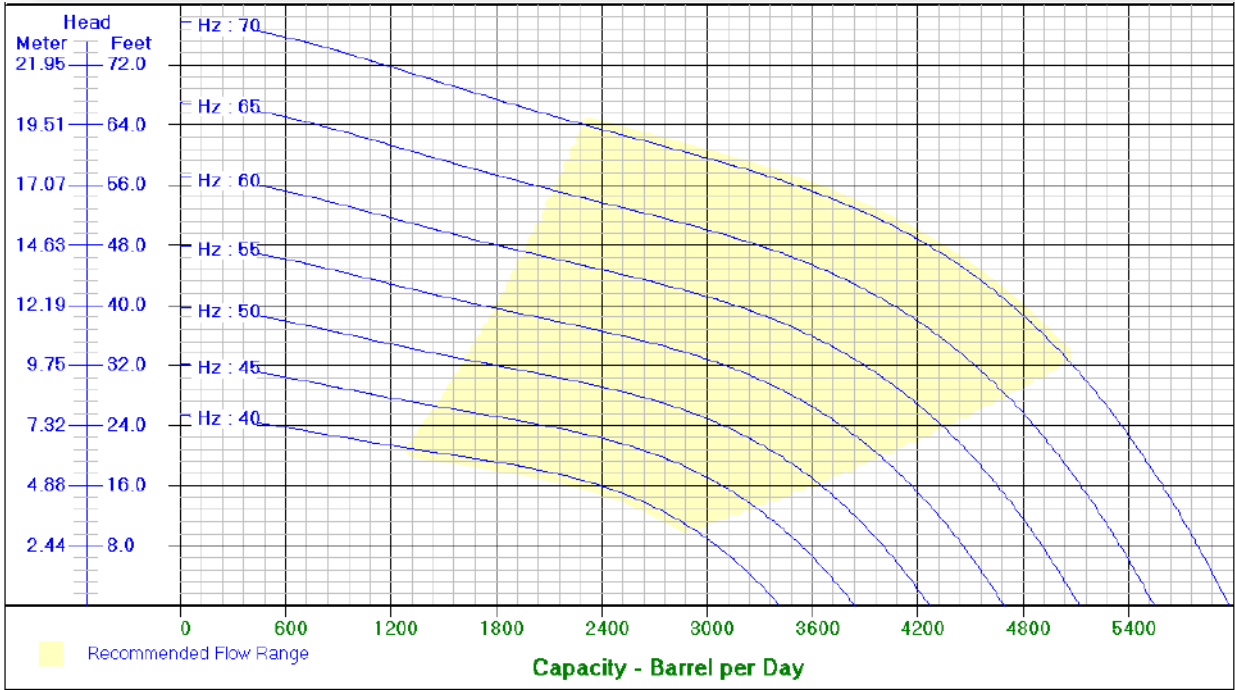
Optimum operating range	2000 – 4320 B/D	Shaft brake-power limit	Standard	256hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	410hp
Shaft diameter	0.875 in.		Standard	5,000 psi
Shaft cross-sectional area	0.601in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-3200 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

### MG4000 / 540 Series Pumps

Minimum Casingsize 7inches

Maximum bottom hole temperature = 300°F

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP40005405	5			10	2.1	77
MP400054012	12			20	3.5	146
MP400054018	18			30	4.9	212
MP400054025	25			40	6.3	271
MP400054032	32			50	7.7	340
MP400054039	39	TBA	39	60	9.1	408
MP400054046	46	TBA	46	70	10.5	467
MP400054052	52	TBA	52	80	11.9	536
MP400054059	59	TBA	59	90	13.3	602
MP400054066	66	TBA	66	100	14.7	661
MP400054073	73	TBA	73	110	16.1	730
MP400054079	79	TBA	79	120	17.5	789
MP400054086	86	TBA	86	130	19.0	858
MP400054093	93	TBA	93	140	20.4	924
MP4000540100	100	TBA	100	150	21.9	983

All pumps are in center tandem(CT)construction. BFL (bottom floater pump) use asupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.Maximum O.D. of pump =5.13.

To compute shipping length, add shipping cap (0.23 feet/cap) to componentlength.



# Submersible Pump 540 Series

**MG4000 / 540 Series Pumps**  
*Minimum Casingsize 7 inches*

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
104	160	2							
111	170	1	1						
118	180	1		1					
125	190	1			1				
131	200	1				1			
138	210	1					1 BFL		
145	220	1						1 BFL	
152	230	1							1 BFL
159	240		1						1 BFL
166	250			1					1 BFL
173	260				1 BFL				1
189	270					1 BFL			1
186	280						1 BFL		1
193	290							1 BFL	1
200	300								1 BFL +1
204	310	2							1 BFL
211	320		2					1 BFL	
218	330		2						1 BFL
225	340			2				1 BFL	
232	350			2					1 BFL
239	360				2 BFL			1	
246	370				2 BFL				1
251	380					2 BFL		1	
258	390					2 BFL			1

Section type defaults to FL unless otherwise noted.

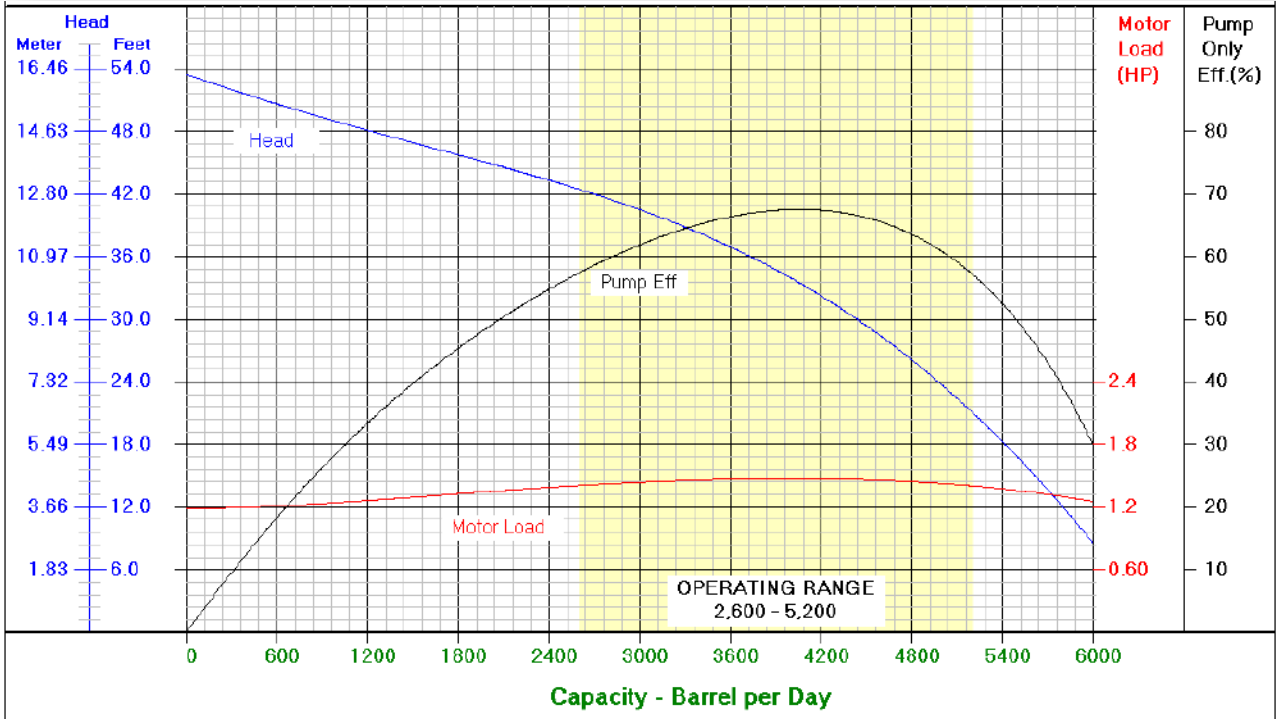
# MMU – ESP

# MG-4000 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

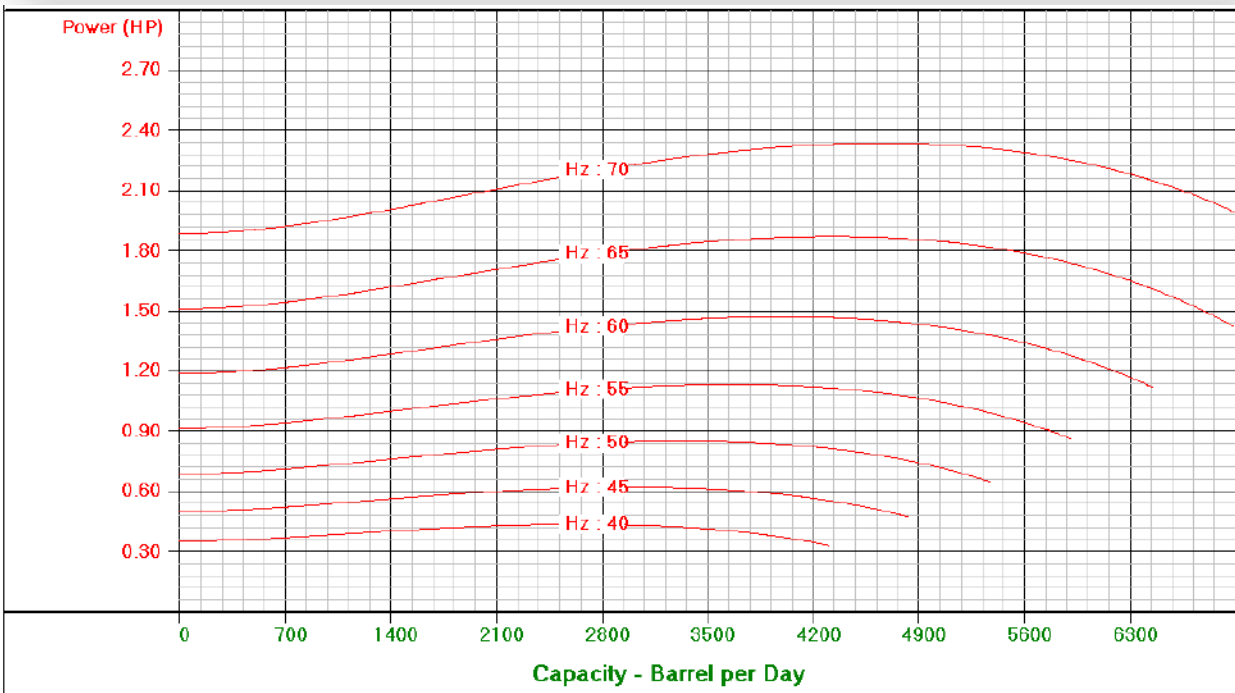
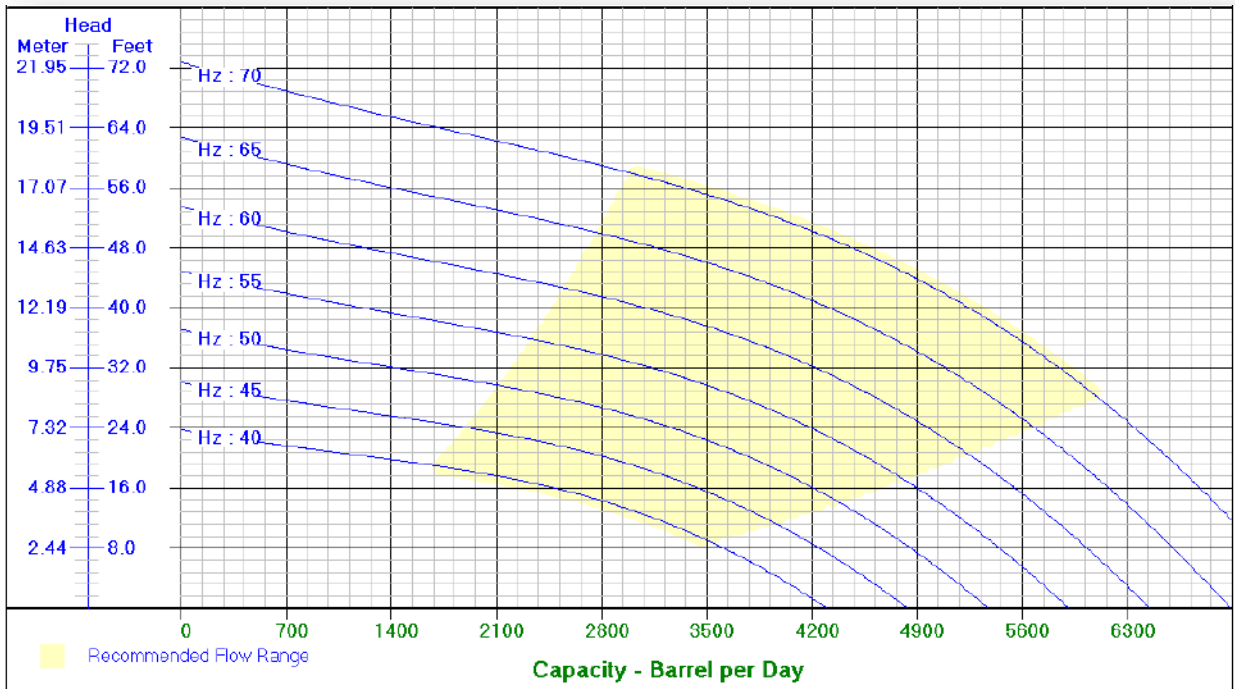
Optimum operating range	2600 – 5200 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	600hp
Shaft diameter	1.000 in.		Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-4000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

**MG5200 / 540 Series Pumps**  
Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP52005403	3			10	2.1	77
MP52005408	8			20	3.5	146
MP520054013	13			30	4.9	212
MP520054017	17			40	6.3	271
MP520054022	22			50	7.7	340
MP520054027	27	TBA	27	60	9.1	408
MP520054031	31	TBA	31	70	10.5	467
MP520054036	36	TBA	36	80	11.9	536
MP520054041	41	TBA	41	90	13.3	602
MP520054045	45	TBA	45	100	14.7	661
MP520054050	50	TBA	50	110	16.1	730
MP520054054	54	TBA	54	120	17.5	789
MP520054059	59	TBA	59	130	18.9	858
MP520054064	64	TBA	64	140	20.3	924
MP520054068	68	TBA	68	150	21.7	983

All pumps are in center tandem (CT) construction

BFL (bottom floater pump) use as upper pump. Standard features: carbon steel head, base and housing.

Monel K500 shaft. Maximum O.D. of pump = 5.13 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

# Submersible Pump 540 Series

**MG5200 / 540 Series Pumps**  
**Minimum Casing size 7 inches**

**Tandem Combinations Chart**

Stages	Housing No.	Tandem Housing Sections- Number							
		80	90	100	110	120	130	140	150
72	160	2							
77	170	1	1						
81	180	1		1					
86	190	1			1				
90	200	1				1			
95	210	1					1		
100	220	1						1	
104	230	1							1
109	240		1						1
113	250			1					1
118	260				1				1
122	270					1			1
127	280						1		1
132	290							1	1
136	300								2
140	310	2							1
146	320		2					1	
150	330		2						1

# Submersible Pump 540 Series

MG5200 / 540 Series Pumps  
Minimum Casing size 7 inches

Tandem Combinations Chart

Stages	Housing No.	Tandem Housing Sections- Number							
		80	90	100	110	120	130	140	150
154	340			2				1 BFL	
158	350			2					1 BFL
164	360				2			1 BFL	
168	370				2				1 BFL
172	380					2		1 BFL	
176	390					2			1 BFL
182	400						2	1 BFL	
186	410						2		1 BFL
190	420					1			2 BFL
196	430							2 BFL	1
200	440							1	1 BFL+1
204	450								1 BFL+2
209	460				3		1 BFL		
214	470				3			1 BFL	
218	480				3				1 BFL
221	490					2 BFL+1	1		

Section type defaults to FL unless otherwise noted.

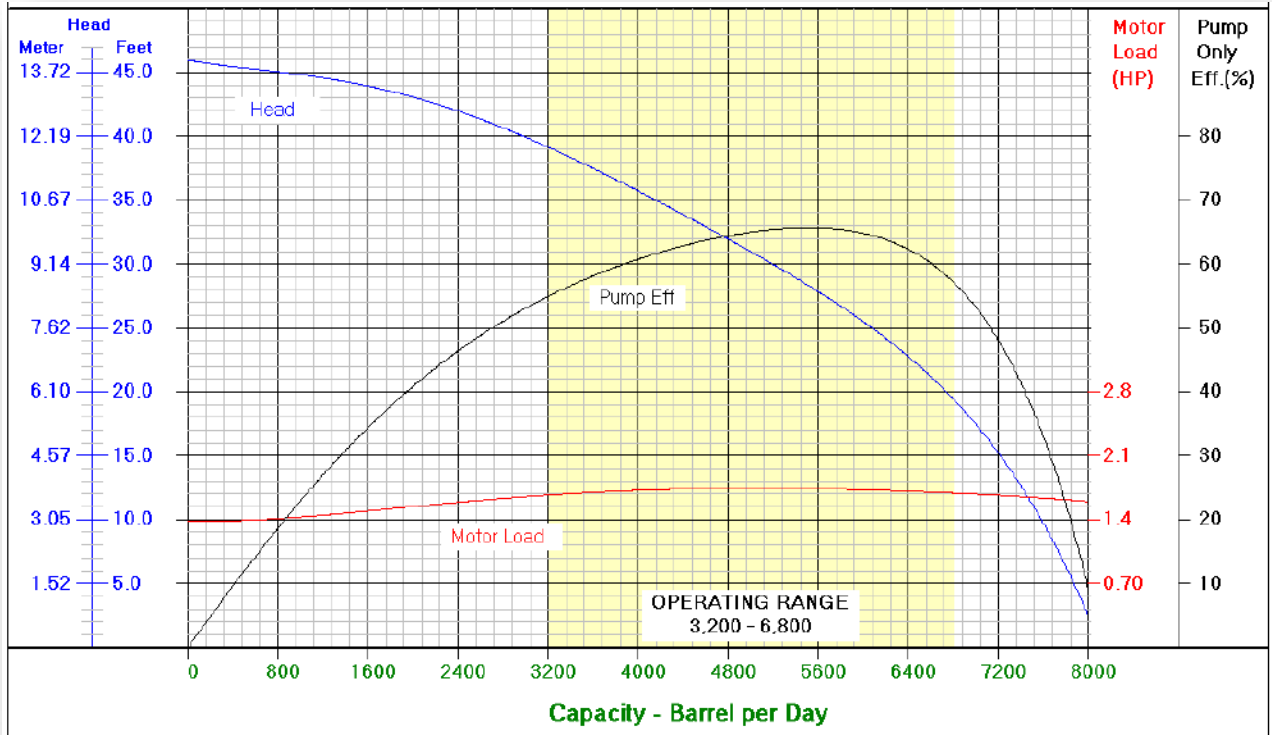
# MMU – ESP

# MG-5200 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

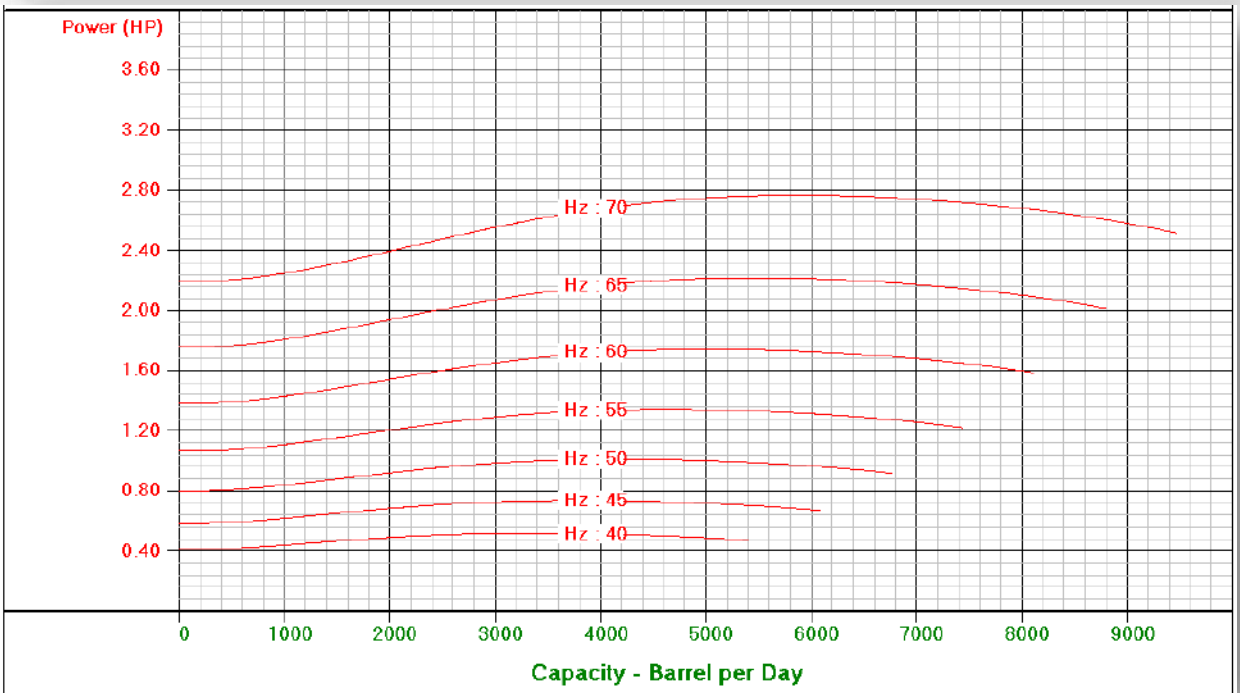
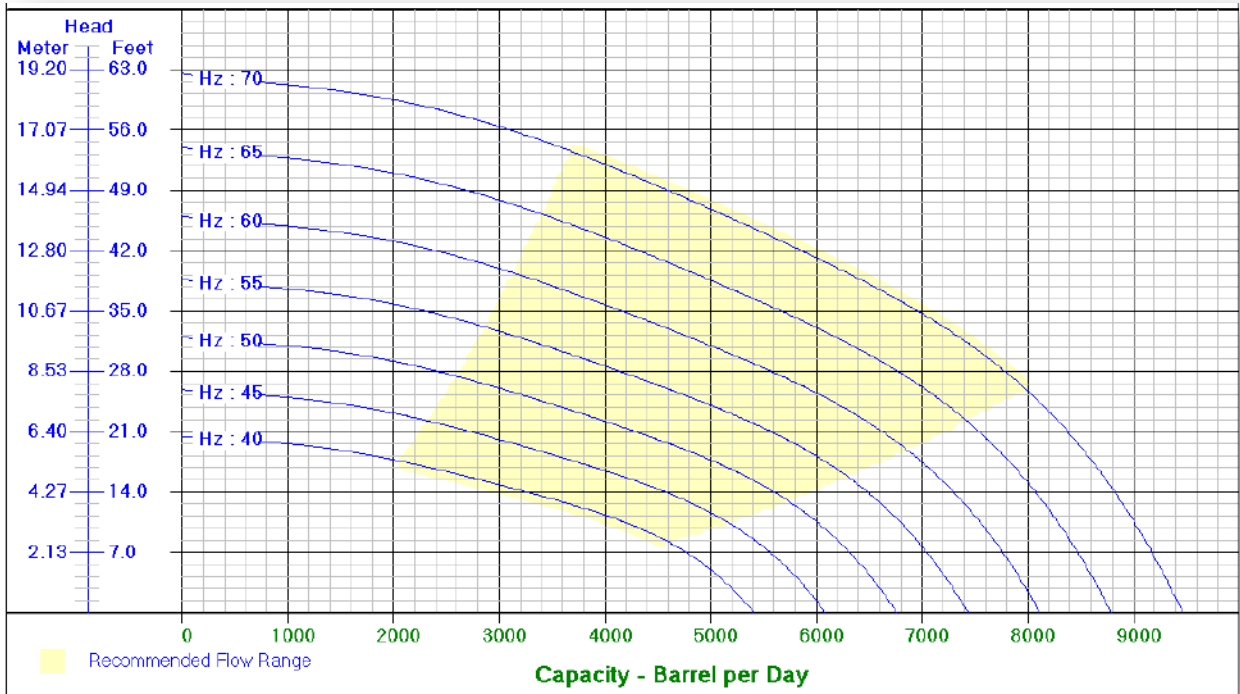
Optimum operating range	3200 – 6800 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.130 in.		High strength	600hp
Shaft diameter	1.000 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-5200 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.





## Submersible Pump 540 Series

**MG5600 / 540 Series Pumps**  
**Minimum Casing size 7inches**

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP56005403	3			10	2.1	35
MP56005408	8			20	3.5	66
MP560054013	13			30	4.9	96
MP560054017	17			40	6.3	123
MP560054022	22			50	7.7	154
MP560054027	27	TBA	27	60	9.1	185
MP560054031	31	TBA	31	70	10.5	212
MP560054036	36	TBA	36	80	11.9	243
MP560054041	41	TBA	41	90	13.3	273
MP560054045	45	TBA	45	100	14.7	300
MP560054050	50	TBA	50	110	16.1	331
MP560054054	54	TBA	54	120	17.5	358
MP560054059	59	TBA	59	130	18.9	389
MP560054064	64	TBA	64	140	20.4	419
MP560054068	68	TBA	68	150	21.8	446

All pumps are in center tandem(CT)construction BFL(bottomfloaterpump)useasupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.

Maximum O.D. of pump =5.13inches  
 feet/cap) to componentlength.

To compute shipping length, add shipping cap (0.23

# Submersible Pump 540 Series

**MG5600 / 540 Series Pumps**  
**Minimum Casing size 7 inches**

Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
72	160	2							
77	170	1	1						
81	180	1		1					
86	190	1			1				
90	200	1				1			
95	210	1					1		
100	220	1						1	
104	230	1							1
109	240		1						1
113	250			1					1
118	260				1				1
122	270					1			1
127	280						1		1
132	290							1	1
136	300								2
140	310	2							1
146	320		2					1	

Section type defaults to FL unless otherwise noted.

# Submersible Pump 540 Series

**MG5600 / 540 Series Pumps**  
**Minimum Casing size 7 inches**

Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
150	330		2						1
154	340			2				1	
158	350			2					1
164	360				2			1 BFL	
168	370				2				1 BFL
172	380					2		1 BFL	
176	390					2			1 BFL
182	400						2	1 BFL	
186	410						2		1 BFL
190	420					4			2 BFL
196	430							2 BFL	1
200	440							1	2 BFL
204	450								2 BFL +1

Section type defaults to FL unless otherwise noted.

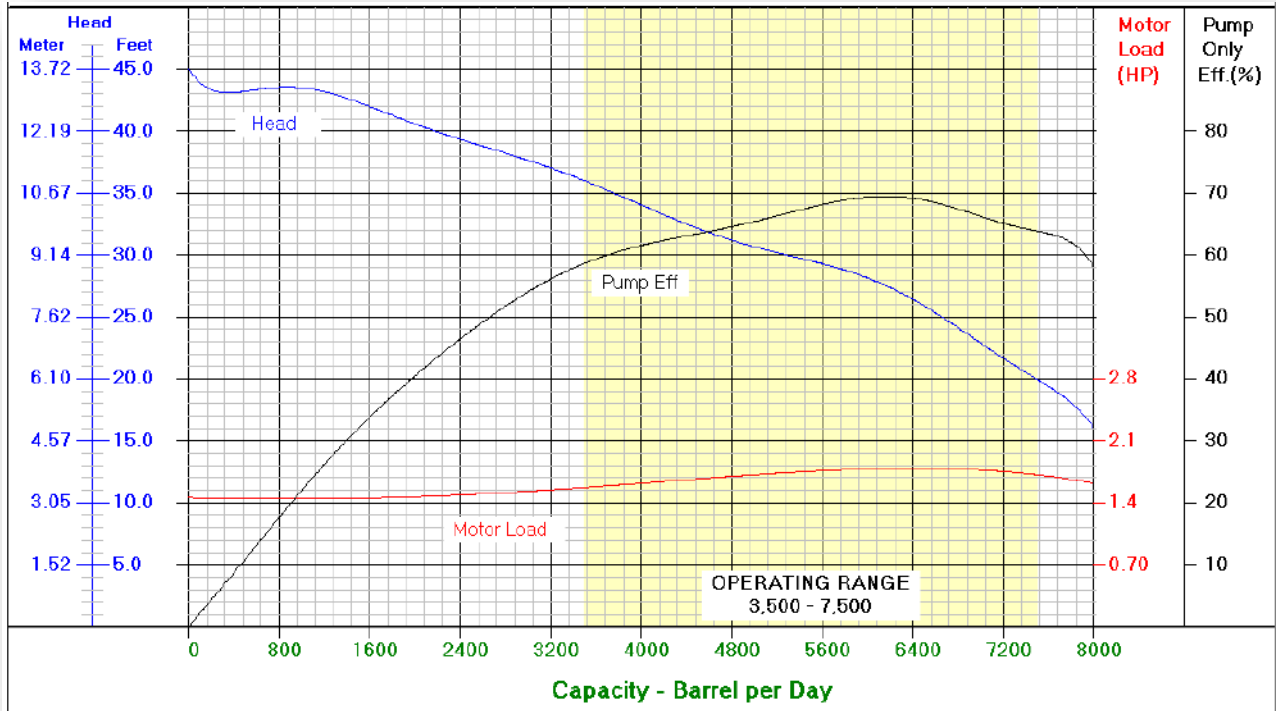
**MMU – ESP**

**MG-5600 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

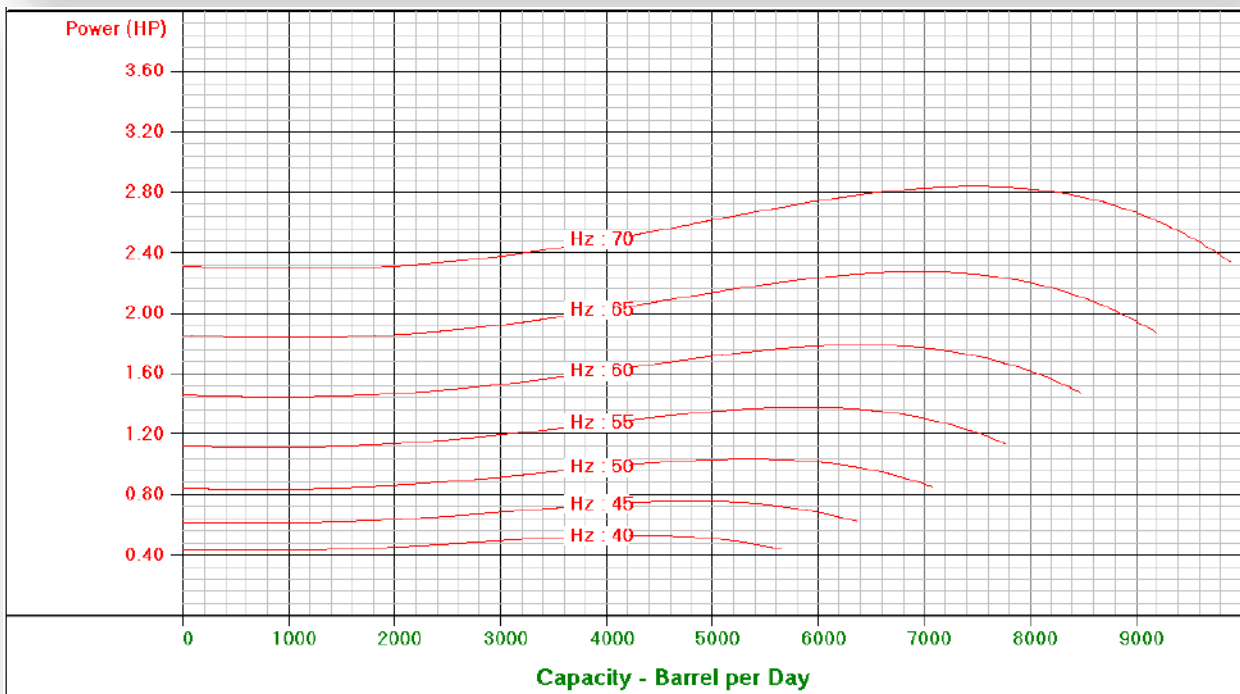
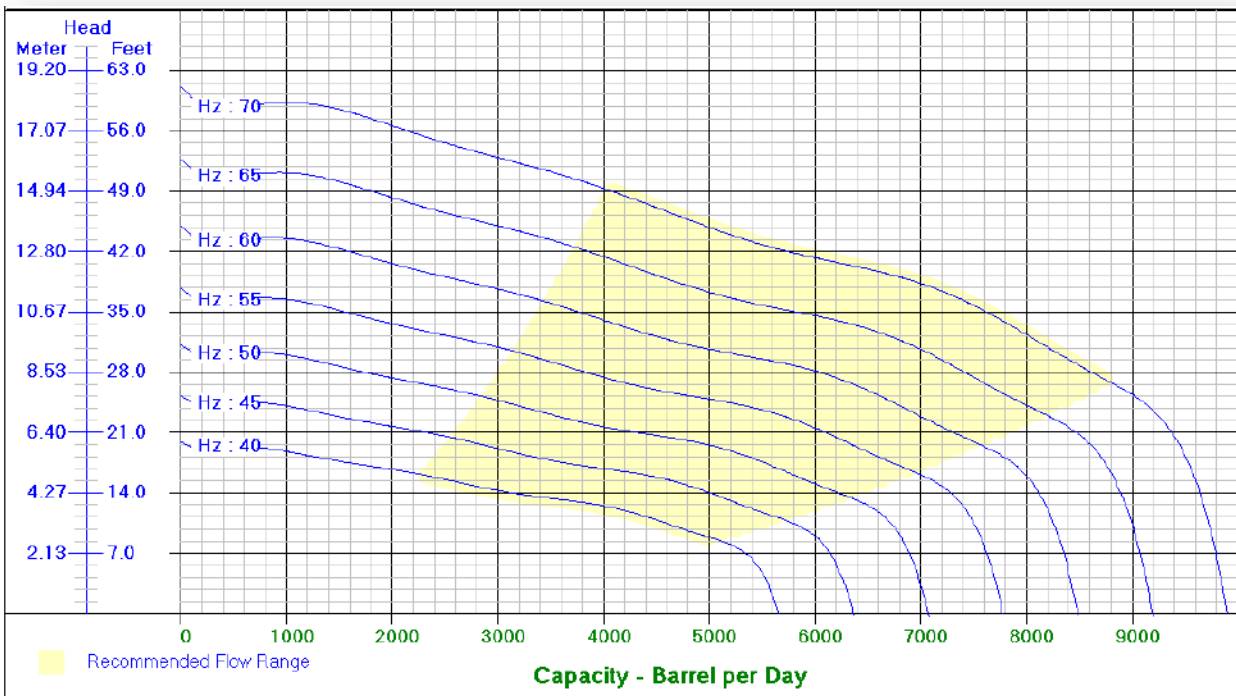
Optimum operating range	3500 – 7500 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.130 in.		High strength	600hp
Shaft diameter	1.000 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-5600 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

**MG7000 / 540 Series Pumps**  
Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP70005403	3			10	2.1	35
MP70005408	8			20	3.5	66
MP700054013	13			30	4.9	96
MP700054017	17			40	6.3	123
MP700054022	22			50	7.7	154
MP700054027	27	TBA	27	60	9.1	185
MP700054031	31	TBA	31	70	10.5	212
MP700054036	36	TBA	36	80	11.9	243
MP700054041	41	TBA	41	90	13.3	273
MP700054045	45	TBA	45	100	14.7	300
MP700054050	50	TBA	50	110	16.1	331
MP700054054	54	TBA	54	120	17.5	358
MP700054059	59	TBA	59	130	18.9	389
MP700054064	64	TBA	64	140	20.4	419
MP700054068	68	TBA	68	150	21.8	446

All pumps are in center tandem(CT)constructionBFL(bottomfloaterpump)useasupperpump.  
Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.  
Maximum O.D. of pump =5.13inches  
To compute shipping length, add shipping cap (0.23 feet/cap) to componentlength.

# Submersible Pump 540 Series

MG7000 / 540 Series Pumps  
Minimum Casing size 7 inches

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
72	160	2							
77	170	1	1						
81	180	1		1					
86	190	1			1				
90	200	1				1			
95	210	1					1		
100	220	1						1	
104	230	1							1
109	240		1						1
113	250			1					1
118	260				1				1
122	270					1			1
127	280						1		1
132	290							1	1
136	300								2
140	310	2							1
146	320		2					1	
150	330		2						1 BFL
154	340			2				1 BFL	
158	350			2					1 BFL
164	360				2			1 BFL	

Section type defaults to FL unless otherwise noted.

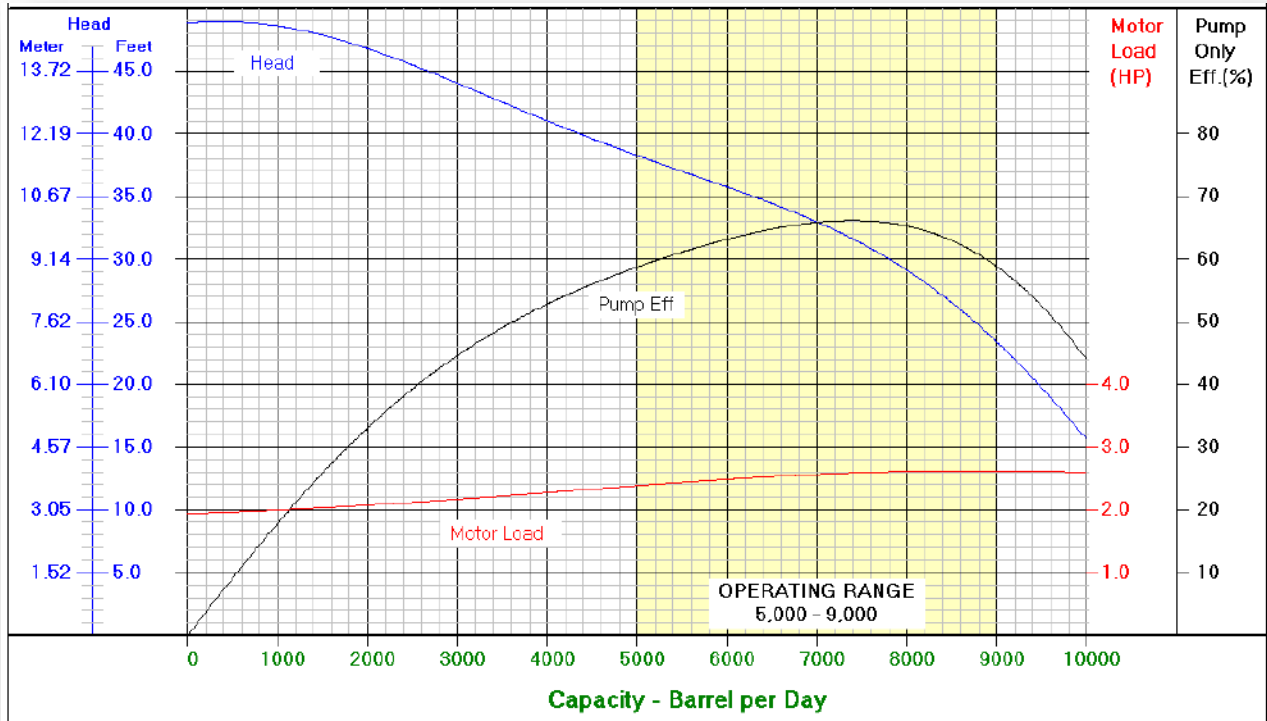
# MMU – ESP

# MG-7000 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

Optimum operating range	5000 – 9000 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.130 in.	Housing burst-pressure limit	High strength	600hp
Shaft diameter	1.000 in.		Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi

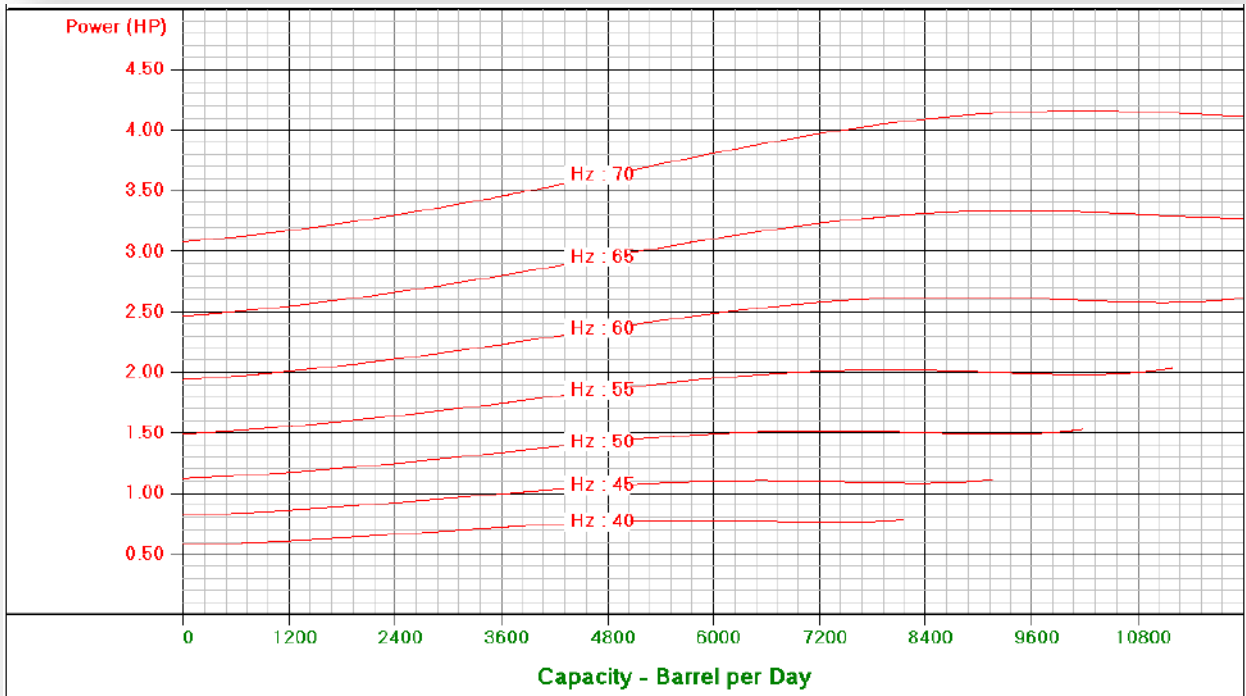
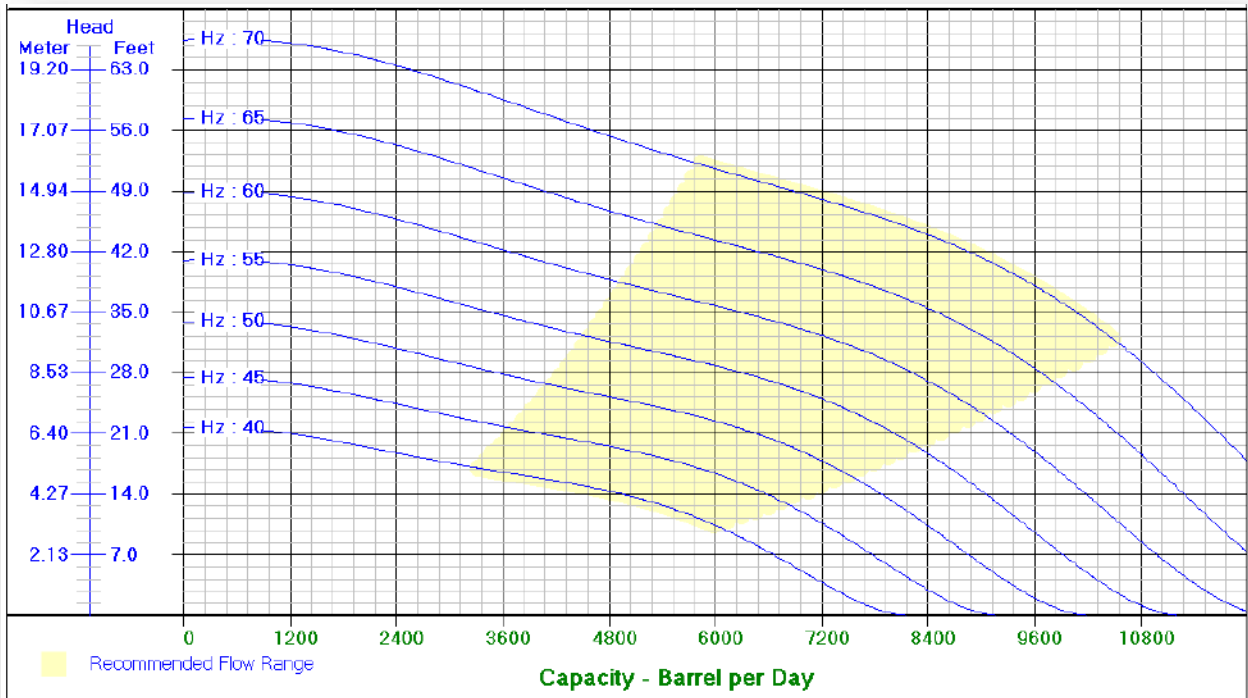


This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.



## MG-7000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 540 Series

### MG10000 / 540 Series Pumps

Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP100005402	2			10	2.1	35
MP100005406	6			20	3.5	66
MP1000054010	10			30	4.9	96
MP1000054014	14			40	6.3	123
MP1000054018	18			50	7.7	154
MP1000054022	22	TBA	22	60	9.1	185
MP1000054026	26	TBA	26	70	10.5	212
MP1000054030	30	TBA	30	80	11.9	243
MP1000054034	34	TBA	34	90	13.3	273
MP1000054038	38	TBA	38	100	14.7	300
MP1000054042	42	TBA	42	110	16.1	331
MP1000054046	46	TBA	46	120	17.5	358
MP1000054050	50	TBA	50	130	18.9	389
MP1000054054	54	TBA	54	140	20.4	419
MP1000054058	58	TBA	58	150	21.8	446

All pumps are in center tandem(CT)constructionBFL(bottomfloaterpump)useasupperpump.

Standardfeatures:carbonsteelhead,baseandhousing.MonelK500shaft.

Maximum O.D. of pump =5.13inches

To compute shipping length, add shipping cap (0.23 feet/cap) to componentlength

# Submersible Pump 540 Series

**MG10000 / 540 Series Pump**  
**Minimum Casing size 7 inches**

**Tandem Combinations Chart**

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
60	160	2							
64	170	1	1						
68	180	1		1					
72	190	1			1				
76	200	1				1			
80	210	1					1		
84	220	1						1	
88	230	1							1
92	240		1						1
96	250			1					1
100	260				1				1
104	270					1			1
108	280						1		1
112	290							1	1
116	300								1 BFL+1
118	310	2							1 BFL
122	320		2					1 BFL	
126	330		2						1 BFL

Section type defaults to FL unless otherwise noted.

# Submersible Pump 540 Series

MG10000 / 540 Series Pump  
Minimum Casing size 7 inches

## Tandem Combinations Chart

Stages	Housing No.	Tandem Combinations (Housing No.)							
		80	90	100	110	120	130	140	150
130	340			2				1 BFL	
134	350			2					1 BFL
138	360				2			1 BFL	
142	370				2				1 BFL
146	380					2		1 BFL	
150	390					2			1 BFL
154	400						2	1 BFL	
158	410						2		1 BFL
162	420					1			1 BFL+1
166	430							2	1 BFL
170	440							1	1 BFL+1
174	450								2 BFL+1

Section type defaults to FL unless otherwise noted.

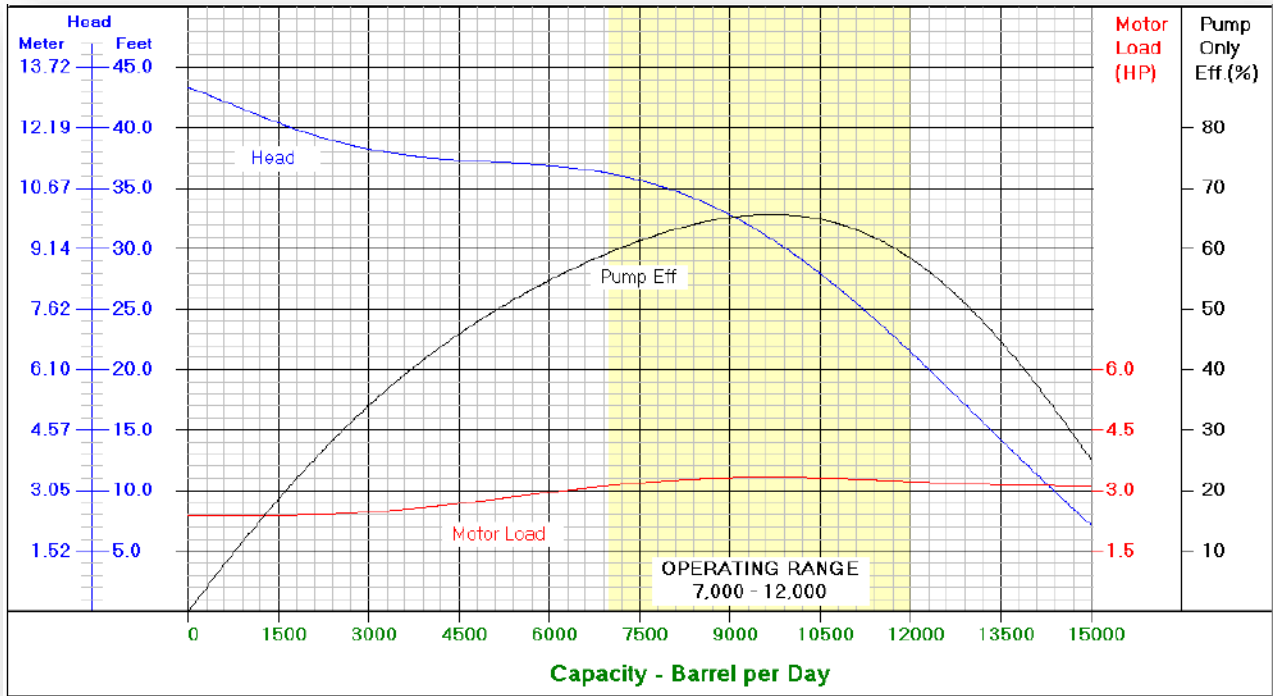
**MMU – ESP**

**MG-10000 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

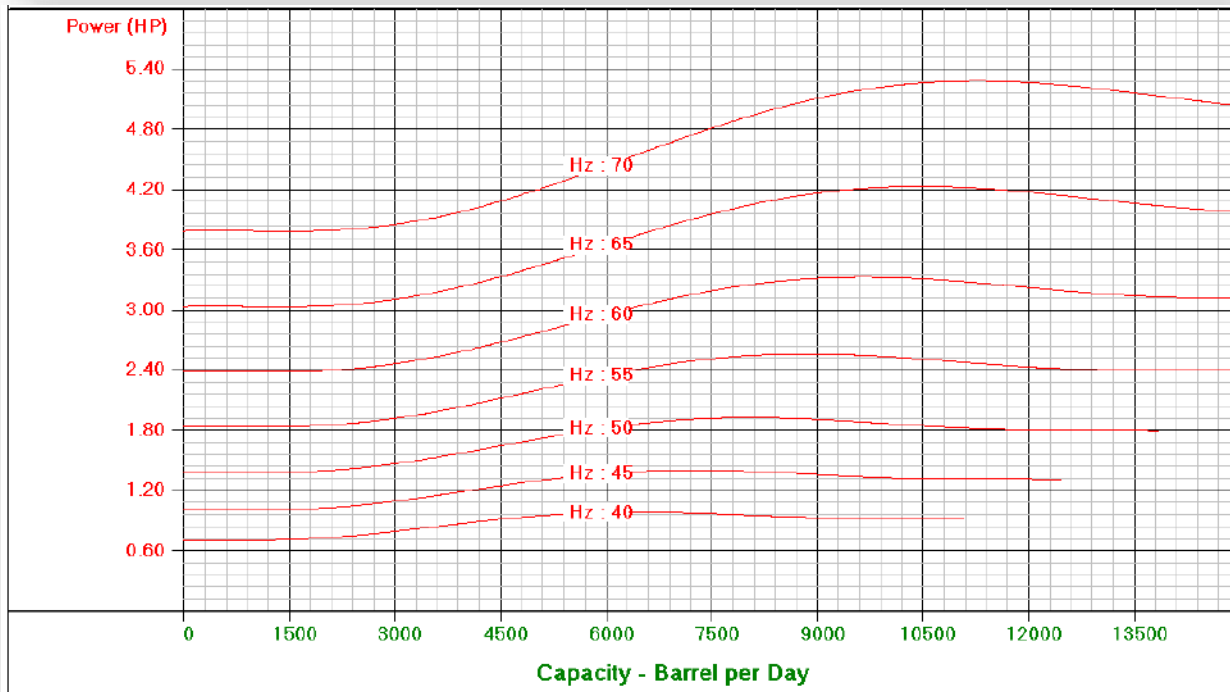
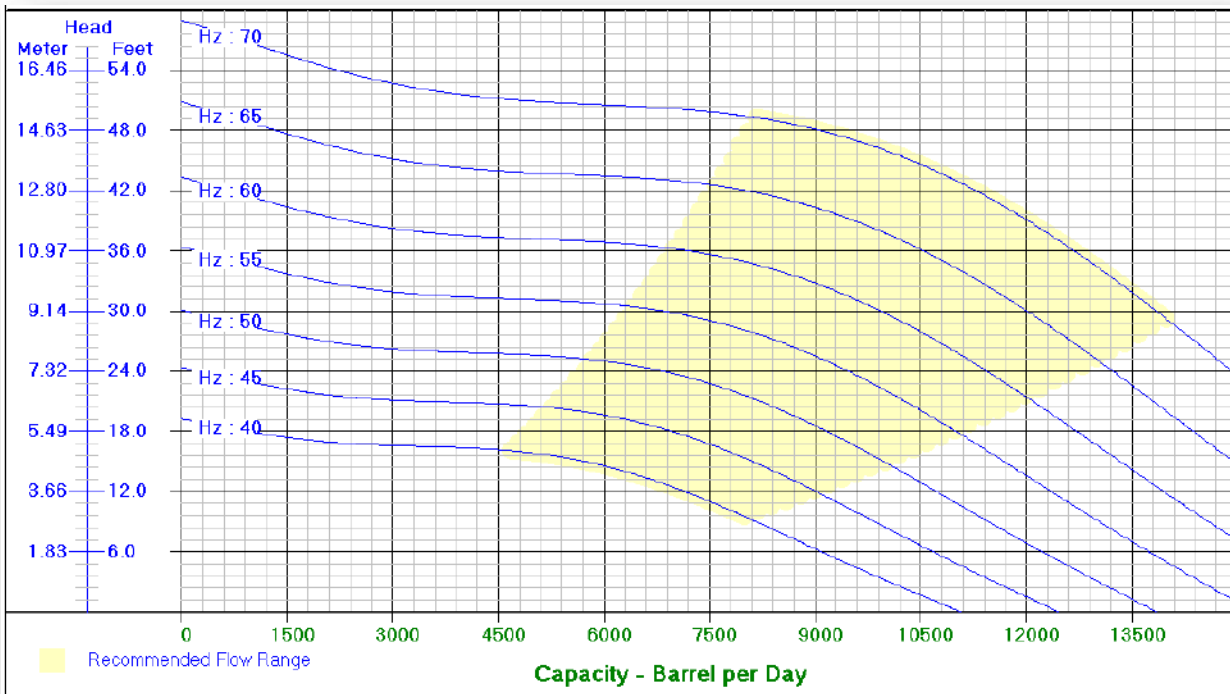
Optimum operating range	7000 – 12000 B/D	Shaft brake-power limit	Standard	637hp
Nominal housing diameter	5.130 in.		High strength	1019hp
Shaft diameter	1.187 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	1.108in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MG-10000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg.



## Submersible Pump 562 Series

562 Series Pumps  
**MH10000 / 562 Series Pumps**  
Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP100005623	3			10	2.1	113
MP100005627	7			20	3.5	170
MP1000056211	11			30	4.9	229
MP1000056215	15			40	6.3	279
MP1000056220	20			50	7.7	356
MP1000056224	24			60	9.1	414
MP1000056228	28			70	10.5	473
MP1000056232	32			80	11.9	532
MP1000056237	37			90	13.3	599
MP1000056241	41			100	14.7	658
MP1000056245	45			110	16.1	716
MP1000056249	49			120	17.5	775
MP1000056254	54			130	18.9	834
MP1000056258	58			140	20.4	892
MP1000056262	62			150	21.8	950

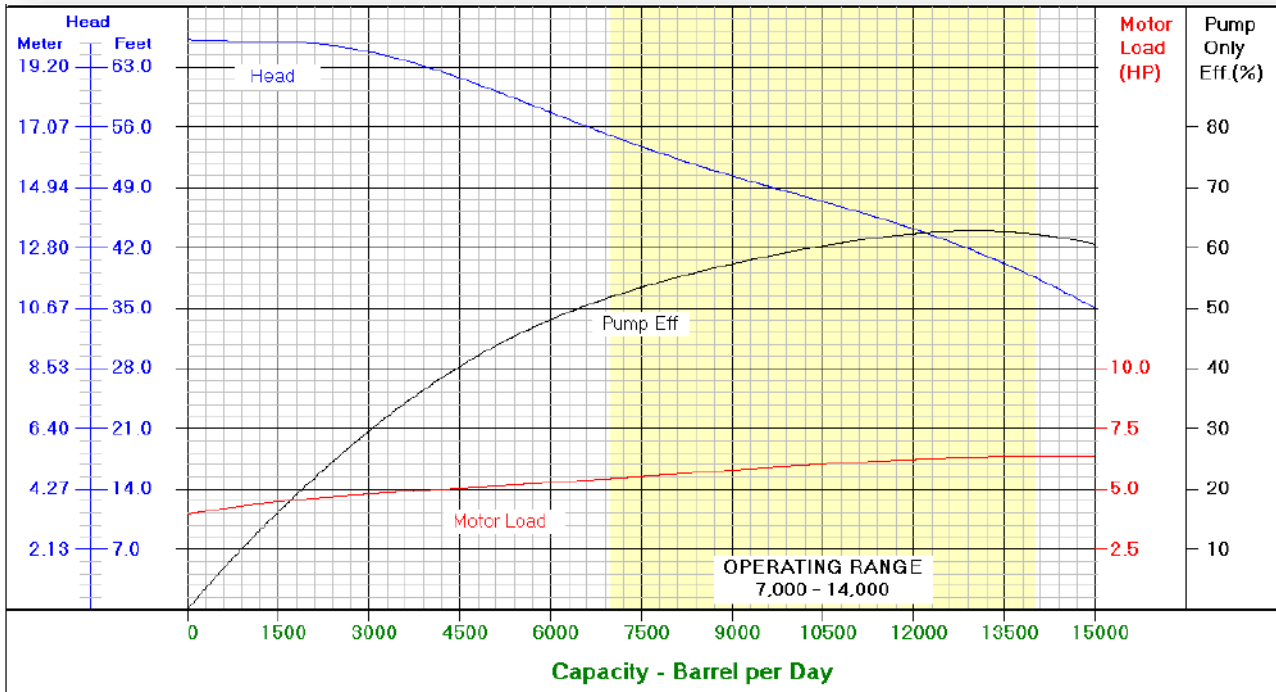
# MMU – ESP

# MH-10000 Pump Performance Curve

60 Hz, 3,500 rpm

Curve computed for one stage in fluid of 1.00 sg

Optimum operating range	7000 – 14000 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.620 in.		High strength	600hp
Shaft diameter	1.000 in.	Housing burst-pressure limit	Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi

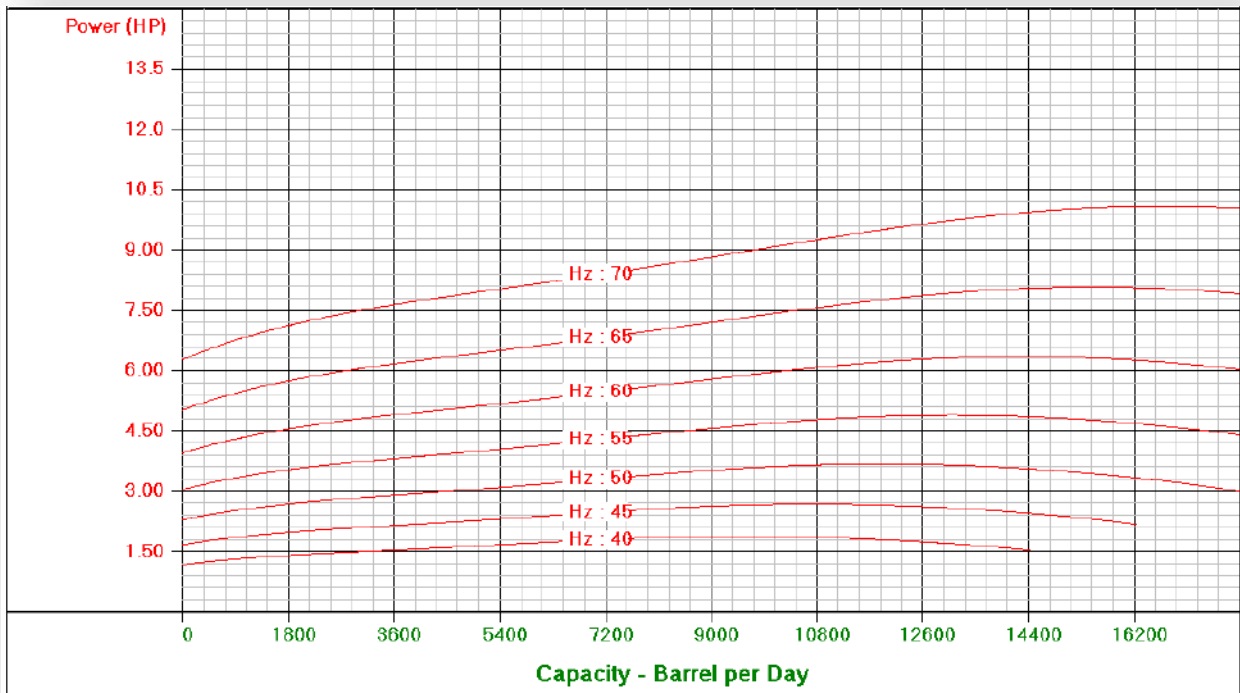
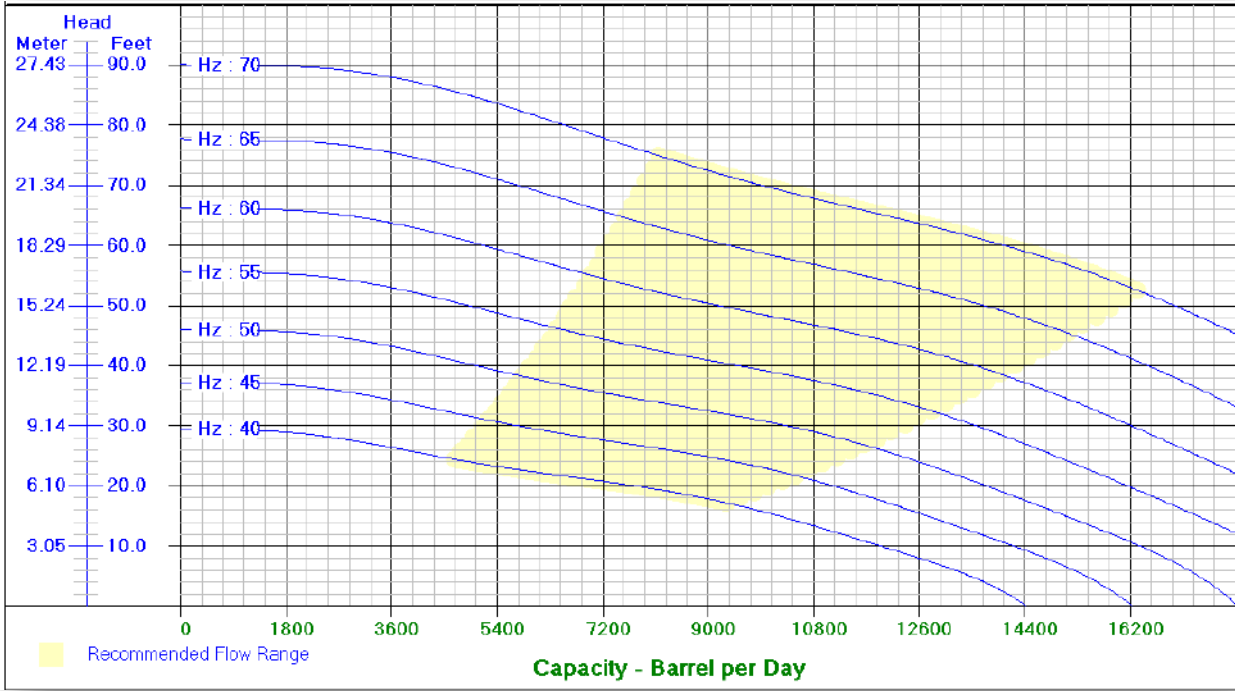


This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.



# MH-10000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 562 Series

### MH13000 / 562 Series Pumps

Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP130005623	3			10	2.1	113
MP130005627	7			20	3.5	170
MP1300056211	11			30	4.9	229
MP1300056215	15			40	6.3	279
MP1300056220	20			50	7.7	356
MP1300056224	24			60	9.1	414
MP1300056228	28			70	10.5	473
MP1300056232	32			80	11.9	532
MP1300056237	37			90	13.3	599
MP1300056241	41			100	14.7	658
MP1300056245	45			110	16.1	716
MP1300056249	49			120	17.5	775
MP1300056254	54			130	18.9	834
MP1300056258	58			140	20.4	892
MP1300056262	62			150	21.8	950

All pumps are in center tandem (CT) construction BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.  
Maximum O.D. of pump = 5.63inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

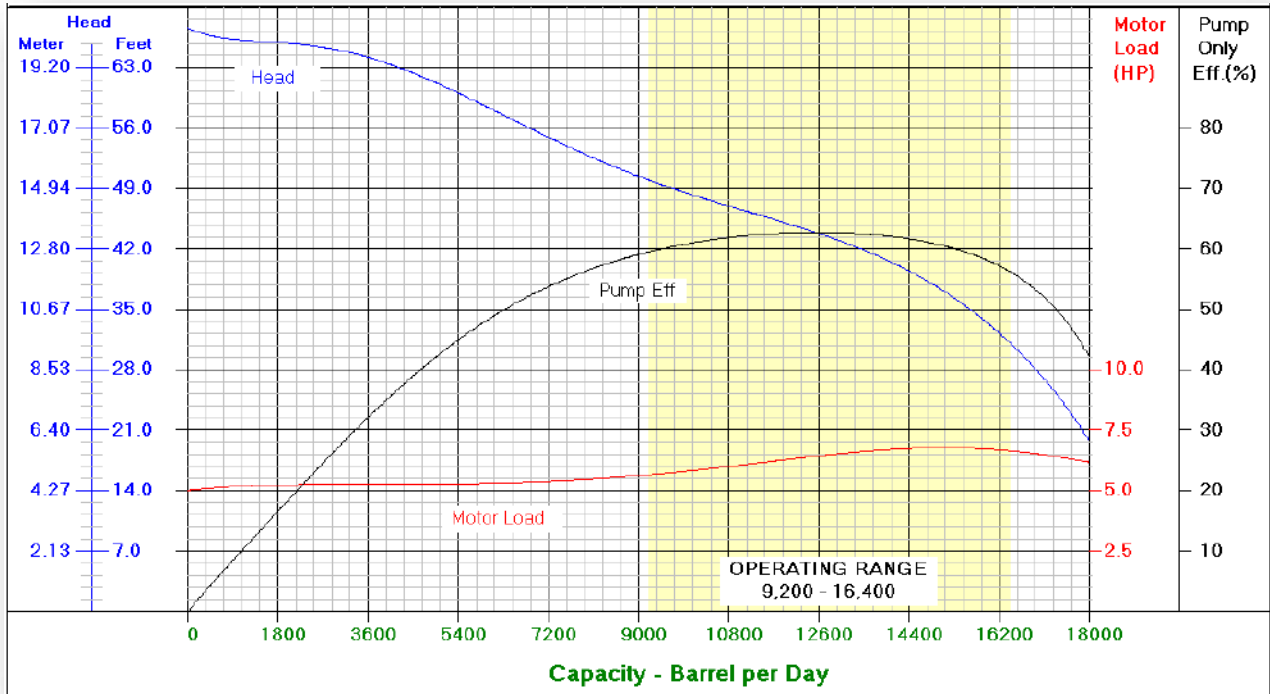
**MMU – ESP**

**MH-13000 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

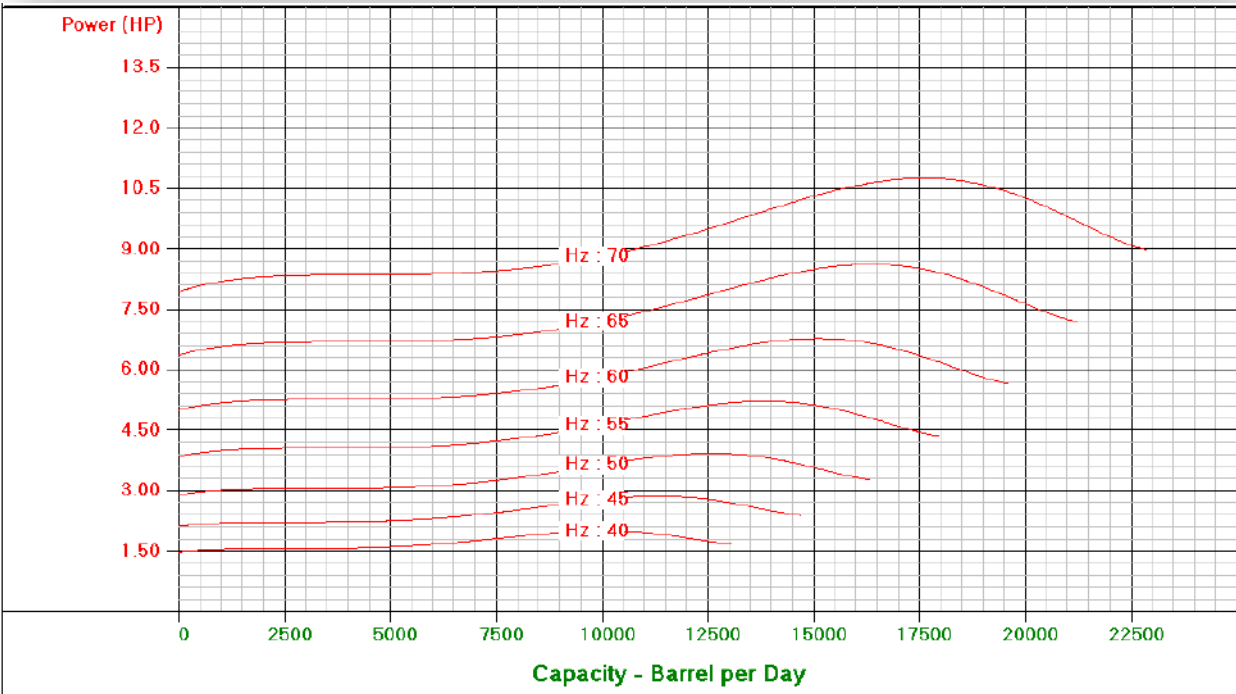
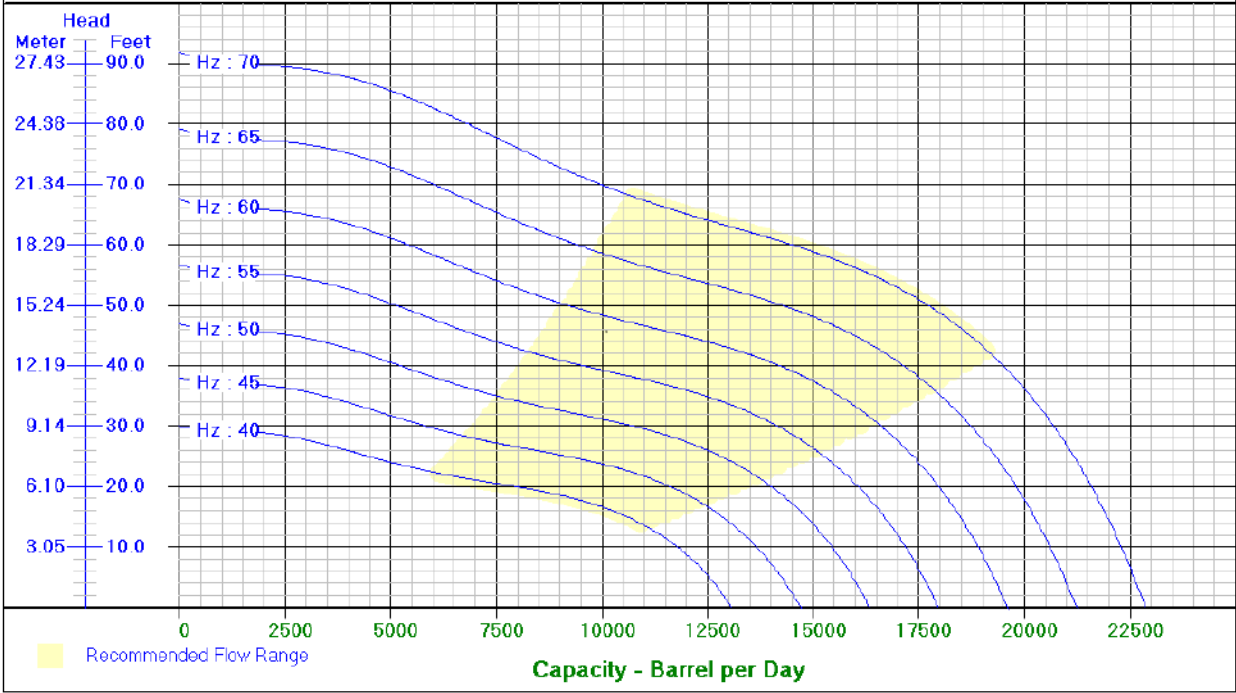
Optimum operating range	9200 – 16400 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.620 in.	Housing burst-pressure limit	High strength	600hp
Shaft diameter	1.000 in.		Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing

# MH-13000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 562 Series

### MH15000 / 562 Series Pumps

Minimum Casing size 7inches

**Maximum bottom hole temperature = 300°F**

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP150005623	3			10	2.1	113
MP150005627	7			20	3.5	170
MP1500056211	11			30	4.9	229
MP1500056215	15			40	6.3	279
MP1500056220	20			50	7.7	356
MP1500056224	24			60	9.1	414
MP1500056228	28			70	10.5	473
MP1500056232	32			80	11.9	532
MP1500056237	37			90	13.3	599
MP1500056241	41			100	14.7	658
MP1500056245	45			110	16.1	716
MP1500056249	49			120	17.5	775
MP1500056254	54			130	18.9	834
MP1500056258	58			140	20.4	892
MP1500056262	62			150	21.8	950

All pumps are in center tandem (CT) construction  
BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.  
Maximum O.D. of pump = 5.63inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.

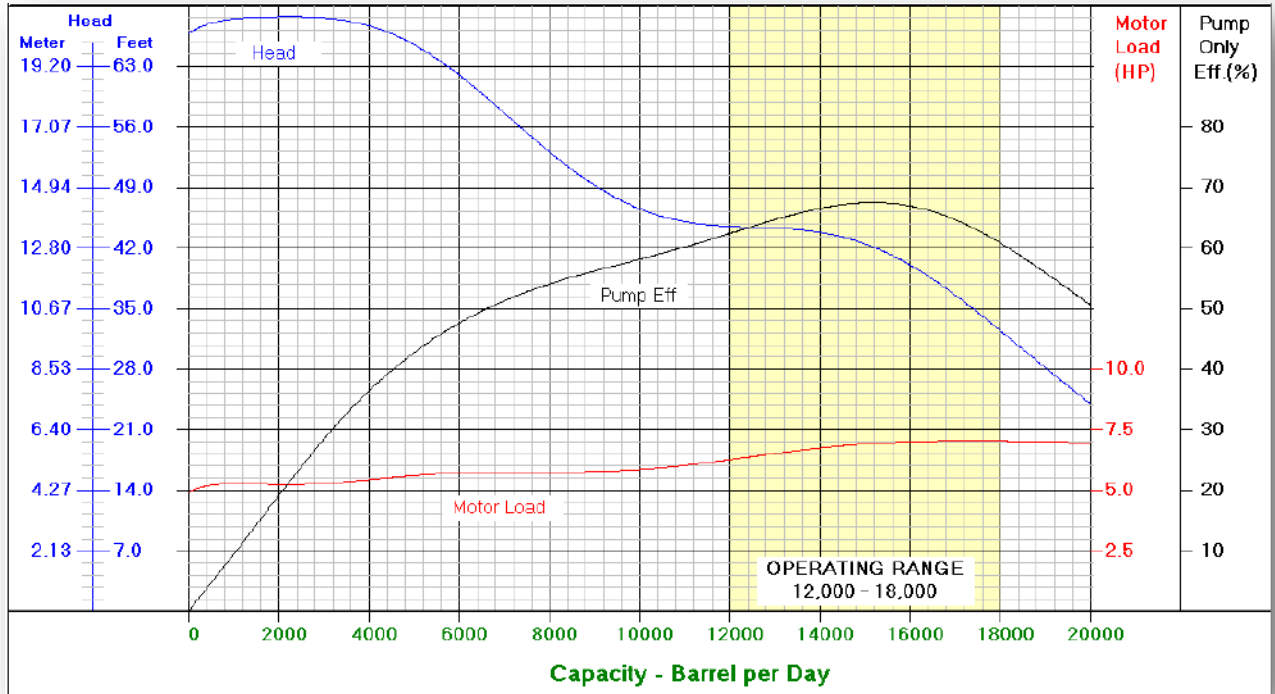
**MMU – ESP**

**MH-15000 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

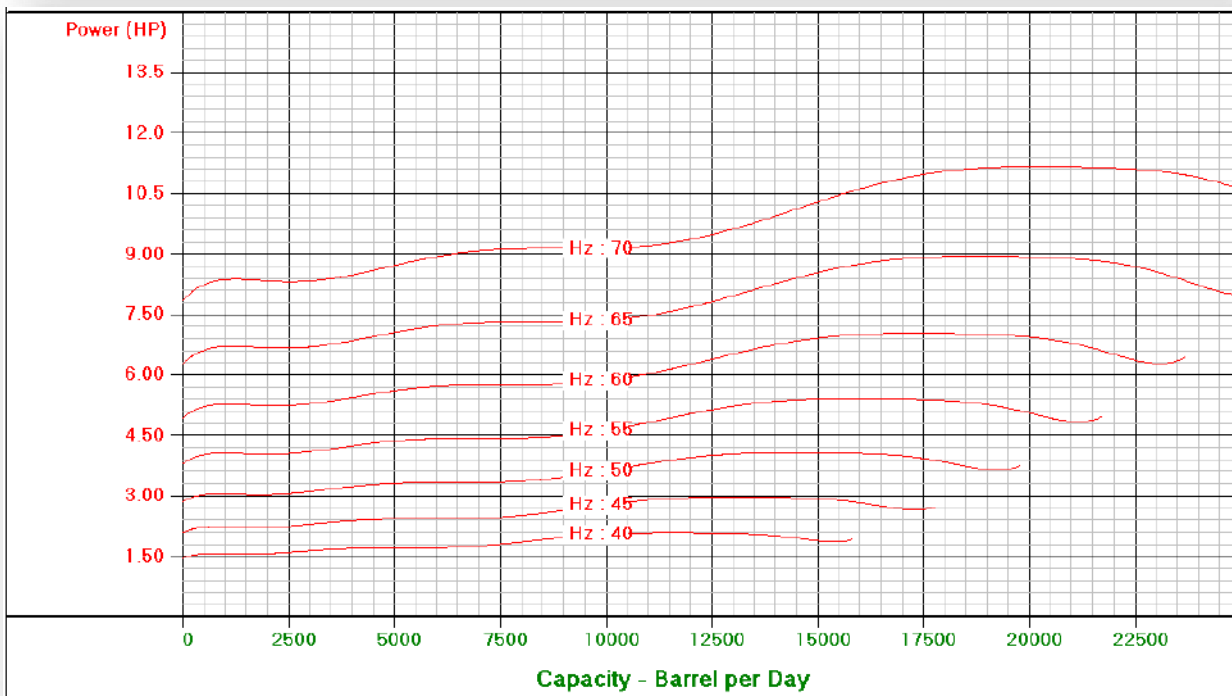
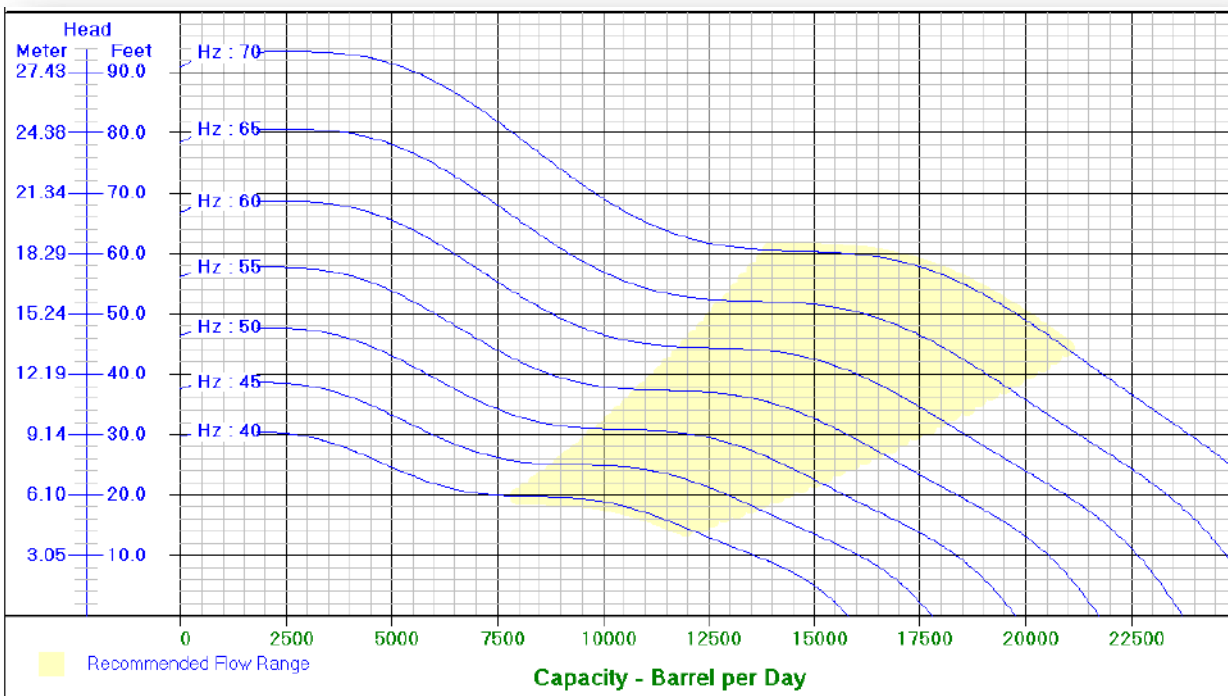
Optimum operating range	12000 – 18000 B/D	Shaft brake-power limit	Standard	375hp
Nominal housing diameter	5.620 in.	Housing burst-pressure limit	High strength	600hp
Shaft diameter	1.000 in.		Standard	5,000 psi
Shaft cross-sectional area	0.785in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing

# MH-15000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Pump 562 Series

### MH21000 / 562 Series Pumps

Minimum Casing size 7inches

Maximum bottom hole temperature = 300°F

FL		BFL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages	Part Number	Stages			
MP210005622	2			10	2.1	113
MP210005626	6			20	3.5	170
MP210005629	9			30	4.9	229
MP2100056212	12			40	6.3	279
MP2100056215	15			50	7.7	356
MP2100056218	18			60	9.1	414
MP2100056222	22			70	10.5	473
MP2100056225	25			80	11.9	532
MP2100056228	28			90	13.3	599
MP2100056231	31			100	14.7	658
MP2100056234	34			110	16.1	716
MP2100056238	38			120	17.5	775
MP2100056241	41			130	18.9	834
MP2100056244	44			140	20.4	892
MP2100056247	47			150	21.8	950

All pumps are in center tandem (CT) construction  
 BFL (bottom floater pump) use as upper pump.

Standard features: carbon steel head, base and housing. Monel K500 shaft.  
 Maximum O.D. of pump = 5.63inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length.



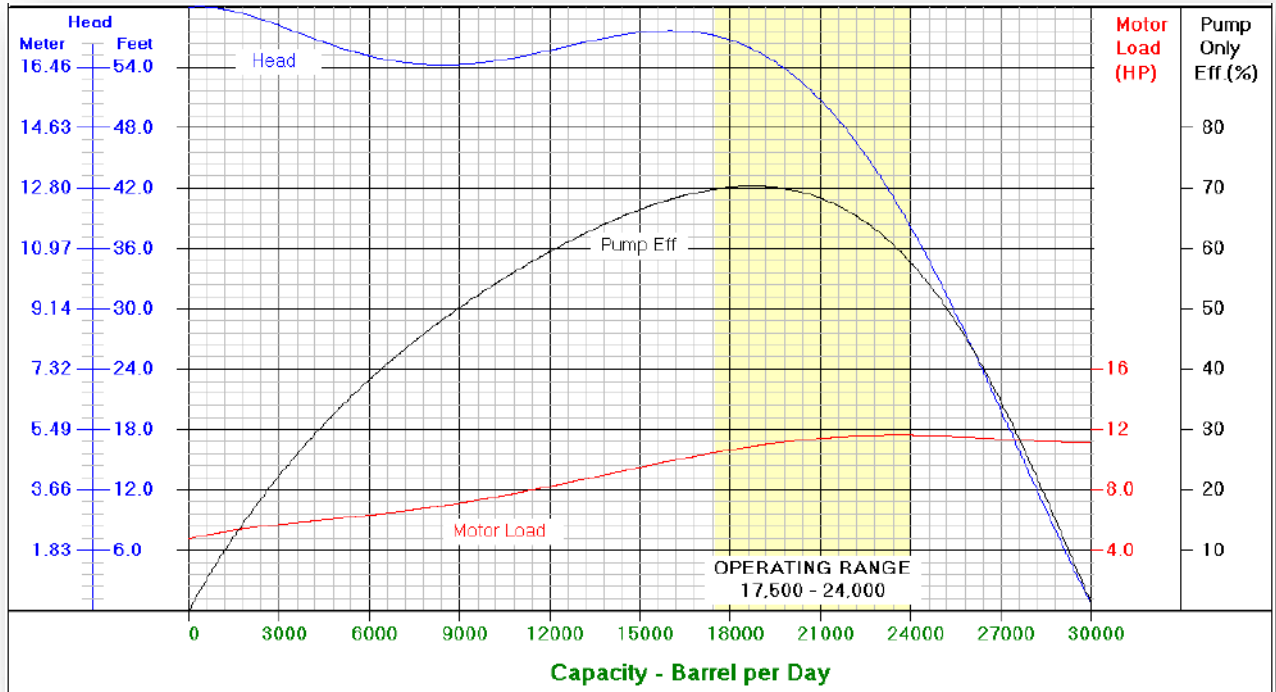
**MMU – ESP**

**MH-21000 Pump Performance Curve**

**60 Hz, 3,500 rpm**

Curve computed for one stage in fluid of 1.00 sg

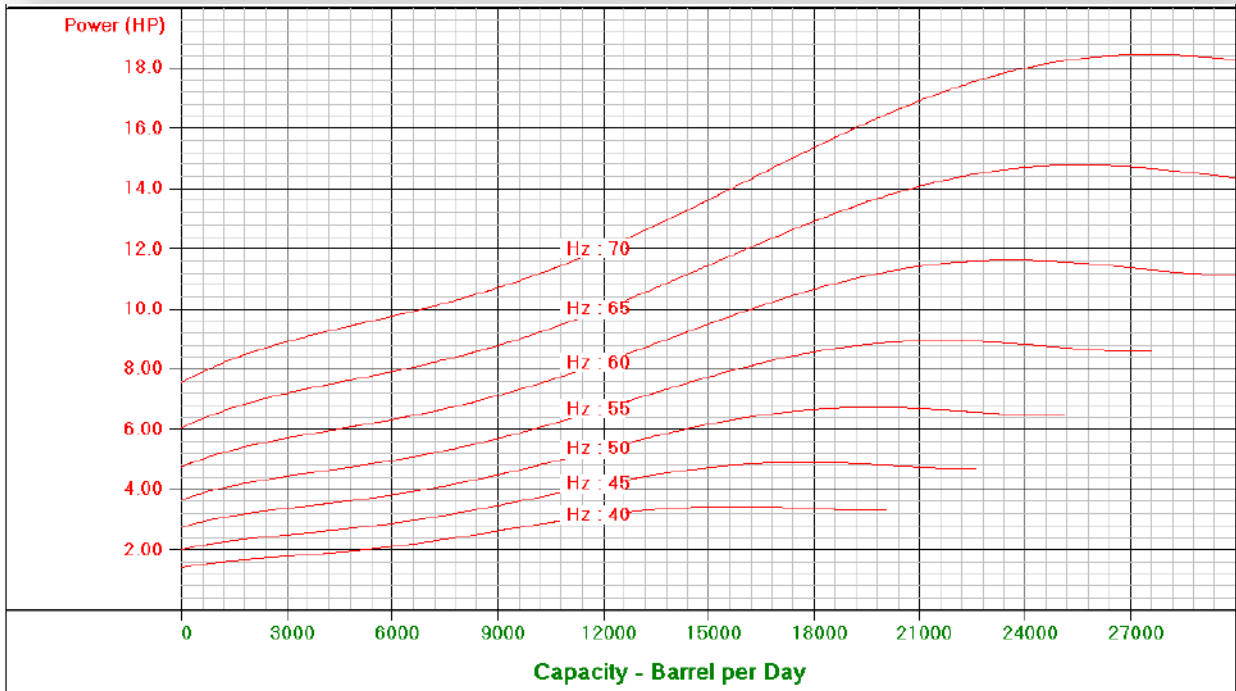
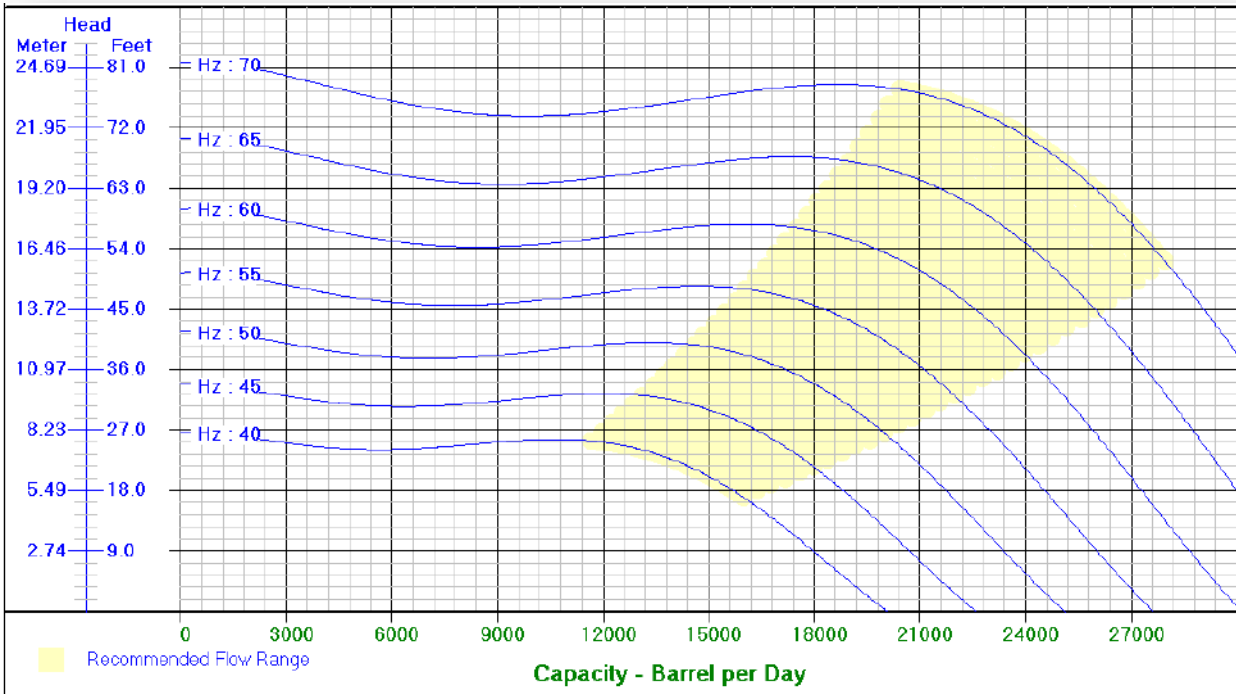
Optimum operating range	12000 – 18000 B/D	Shaft brake-power limit	Standard	637hp
Nominal housing diameter	5.620 in.	Housing burst-pressure limit	High strength	1000hp
Shaft diameter	1.188 in.		Standard	5,000 psi
Shaft cross-sectional area	1.108in <sup>2</sup> .		Buttress	6,000 psi
Min. casing size	7.000 in.		Welded	6,000 psi



This engineering performance curve represents nominal performance based on actual multistage testing and certification. All pumps supplied by Maju Mandiri Utama will be tested and certified to perform within the acceptable limits for Head, Power, and Efficiency as defined in the API Recommended Practice (11S2) for Electric Submersible Pump Testing.

# MH-21000 Pump Performance Variable Speed Curve

Curve computed for one stage in fluid of 1.00 sg



## Submersible Motor

456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI104ST	10	435	15	8.5	363	15	ST	5.1	240
M456TI104UT							UT	4.4	200
M456TI145ST	15	435	23	12.5	363	23	ST	6.3	288
M456TI145UT							UT	5.6	248
M456TI156ST	15	655	16	12.5	546	16	ST	6.3	288
M456TI156UT							UT	5.6	248
M456TI204ST	20	450	28.5	16.5	375	28.5	ST	7.5	345
M456TI204UT							UT	6.8	305
M456TI207ST	20	750	17	16.5	625	17	ST	7.5	345
M456TI20UT							UT	6.8	305
M456TI254ST	25	410	39	21	342	39	ST	8.7	402
M456TI254UT							UT	8	362
M456TI256ST	25	690	22	21	575	22	ST	8.7	402
M456TI256UT							UT	8	362
M456TI304ST	30	425	44.5	25	355	44.5	ST	9.9	482
M456TI304UT							UT	9.2	422
M456TI307ST	30	750	25.5	25	625	25.5	ST	9.9	482
M456TI307UT							UT	9.2	422

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = Single, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor, Order With PI in Part Number

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI301ST	30	1260	15	25	1050	15	ST	9.9	482
M456TI301UT							UT	9.2	422
M456TI353ST	35	385	57	29.5	321	57	ST	11.1	520
M456TI353UT							UT	10.4	480
M456TI356ST	35	675	33	29.5	563	33	ST	11.1	520
M456TI335UT							UT	10.4	480
M456TI357ST	35	785	28	29.5	654	28	ST	11.1	520
M456TI357UT							UT	10.4	480
M456TI404ST	40	430	59	33.5	359	59	ST	12.3	578
M456TI404UT							UT	11.6	537
M456TI407ST	40	770	33	33.5	642	33	ST	12.3	578
M456TI404UT							UT	11.6	537
M456TI408ST	40	880	29	33.5	733	29	ST	12.3	578
M456TI408UT							UT	11.6	537
M456TI401ST	40	1340	19	33.5	1116	19	ST	12.3	578
M456TI401UT							UT	11.6	537

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI506ST	50	675	47	41.5	562	47	ST	14.7	695
M456TI506UT							UT	14	655
M456TI508ST	50	815	39	41.5	679	39	ST	14.7	695
M456TI508UT							UT	14	655
M456TI509ST	50	955	33	41.5	796	33	ST	14.7	695
M456TI509UT							UT	14	655
M456TI501ST	50	1390	23	41.5	1158	23	ST	14.7	695
M456TI501UT							UT	14	655
M456TI606ST	60	640	59	50	533	59	ST	17.5	701
M456TI606UT							UT	16.4	661
M456TI607ST	60	745	52	50	621	52	ST	17.5	701
M456TI607UT							UT	16.4	661
M456TI608ST	60	810	47	50	675	47	ST	17.5	701
M456TI4608UT							UT	16.4	661
M456TI609ST	60	970	39	50	808	39	ST	17.5	701
M456TI609UT							UT	16.4	661
M456TI401ST	60	1330	29	50	1108	29	ST	17.5	701
M456TI401UT							UT	16.4	661
M456TI705ST	70	540	82.5	58.5	450	82.5	ST	19.4	886
M456TI705UT							UT	18.7	846
M456TI705CT							CT	18.9	846
M456TI705LT							LT	19.6	846

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI707ST	70	750	60	58.5	625	60	ST	19.4	886
M456TI707UT							UT	18.7	846
M456TI707CT							CT	18.9	846
M456TI707LT							LT	19.6	846
M456TI709ST	70	945	47	58.5	788	47	ST	19.4	886
M456TI709UT							UT	18.7	846
M456TI709CT							CT	18.9	846
M456TI709LT							LT	19.6	846
M456TI701ST	70	1135	39	58.5	945	39	ST	19.4	886
M456TI701UT							UT	18.7	846
M456TI701CT							CT	18.9	846
M456TI701LT							LT	19.6	846
M456TI806ST	80	635	80	66.5	529	80	ST	21.8	886
M456TI806UT							UT	21.1	846
M456TI606CT							CT	21.3	846
M456TI806LT							LT	22	846

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI808ST	80	860	60	66.5	717	60	ST	21.8	995
M456TI808UT							UT	21.1	951
M456TI808CT							CT	21.3	951
M456TI808LT							LT	22	951
M456TI801ST	80	1085	46	66.5	904	46	ST	21.8	995
M456TI801UT							UT	21.1	951
M456TI801CT							CT	21.3	951
M456TI801LT							LT	22	951
M456TI803ST	80	1310	39	66.5	1091	39	ST	21.8	995
M456TI803UT							UT	21.1	951
M456TI803CT							CT	21.3	951
M456TI803LT							LT	22	951
M456TI907ST	90	710	81	75	591	81	ST	24.2	1116
M456TI907UT							UT	23.5	1076
M456TI907CT							CT	23.7	1076
M456TI907LT							LT	24.4	1076
M456TI909ST	90	960	59	75	800	59	ST	24.2	1116
M456TI909UT							UT	23.5	1076
M456TI909CT							CT	23.7	1076
M456TI909LT							LT	24.4	1076

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI901ST	90	1135	50	75	945	50	ST	24.2	1116
M456TI901UT							UT	23.5	1076
M456TI901CT							CT	23.7	1076
M456TI901LT							LT	24.4	1076
M456TI9012ST	90	1220	46	75	1017	46	ST	24.2	1116
M456TI9012UT							UT	23.5	1076
M456TI9012CT							CT	23.7	1076
M456TI9012LT							LT	24.4	1076
M456TI9014ST	90	1460	39	75	1216	39	ST	24.2	1116
M456TI9014UT							UT	23.5	1076
M456TI9014CT							CT	24.4	1076
M456TI9019ST	90	1960	29	75	1635	29	ST	24.2	1116
M456TI9019UT							UT	23.5	1076
M456TI1007ST	100	790	80	83.5	658	80	ST	26.6	1236
M456TI1007UT							UT	25.9	1196
M456TI1007CT							CT	26.1	1196
M456TI1007LT							LT	26.8	1196
M456TI1009ST	100	920	70	83.5	767	70	ST	26.6	1236
M456TI1009UT							UT	25.9	1196
M456TI1009CT							CT	26.1	1196
M456TI1009LT							LT	26.8	1196

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.



## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456TI1007ST	100	1075	59	83.5	895	59	ST	26.6	1236
M456TI1007UT							UT	25.9	1196
M456TI1007CT							CT	26.1	1196
M456TI1007LT							LT	26.8	1196
M456TI1005ST	100	1355	46	83.5	1129	46	ST	26.6	1236
M456TI1005UT							UT	25.9	1196
M456TI1005CT							CT	26.1	1196
M456TI1005LT							LT	26.8	1196
M456TI1002ST	100	2205	28.5	83.5	1837	28.5	ST	26.6	1236
M456TI1002UT							UT	25.9	1196
M456TI1001ST	110	1190	60	91.5	991	60	ST	29	1376
M456TI1001UT							UT	28.3	1336
M456TI101CT							CT	28.5	1336
M456TI1001LT							LT	29.1	1336
M456TI1008ST	120	2380	30	91.5	1982	30	ST	29	1376
M456TI1008ST							ST	31.4	1501
M456TI1009UT							UT	30.7	1461
M456TI1009CT							CT	30.9	1461
M456TI1009LT							LT	31.5	1461

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 456 Series Motor

Minimum Casing size 5 ½ inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M456T11201ST	120	1125	70	100	937	70	ST	31.4	1501
M456T11201UT							UT	30.7	1461
M456T11201CT							CT	31.5	1461
M456T11202ST	120	1295	59	100	1079	59	ST	31.4	1501
M456T11202UT							UT	30.7	1461
M456T11202CT							CT	31.5	1461
M456T11204ST	120	2245	35	100	1870	35	ST	31.4	1501
M456T11204UT							UT	30.7	1461

Standard feature: Carbon Steel Head, Base and Housing. O.D. = 4.56 inches (max) ST = SMGle, UT = Upper Tandem, CT = Center Tandem, LT= Lower Tandem Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.76. For Plug In Type Motor Order With PI in Part Number.

Tape In Type Motor Lead Extension (MLE). Stainless Steel Armour, Lead Sheath, 450 Deg F, AWG#6

Part Number	Length 9 (Feet)	Weight (Lbs.)
MLE45617SS	17	
MLE45623SS	23	
MLE45655SS	55	
MLE45670SS	70	
MLE45690SS	90	

Tape In Type Motor Lead Extension (MLE). Monel, Lead Sheath, 450 Deg F, AWG#6

Part Number	Length 9 (Feet)	Weight (Lbs.)
MLE45617MNL	17	
MLE45623MNL	23	
MLE45655MNL	55	
MLE45670MNL	70	
MLE45690MNL	90	

Plug In Type Motor Lead Extension (MLE). Stainless Steel Armour, Lead Sheath, 450 Deg F, AWG#6

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE45617SS	17	
MLE45623SS	23	
MLE45655SS	55	
MLE45670SS	70	
MLE45690SS	90	

Plug In Type Motor Lead Extension (MLE). Monel, Lead Sheath, 450 Deg F, AWG#6

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE45617MNL	17	
MLE45623MNL	23	
MLE45655MNL	55	
MLE45670MNL	70	
MLE45690MNL	90	

Universal Base for Motor 456Series Type 78

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
UNB45678	1	23

## Submersible Motor

540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI2044ST	20	440	29	16.5	367	29	ST	6	300
M54TI2044UT							UT	4.8	260
M54TI2075ST	20	755	17	16.5	629	17	ST	6	300
M54TI2075UT							UT	4.8	260
M54TI3043ST	30	435	45	25	362	45	ST	7.3	390
M54TI3043UT							UT	6.2	350
M54TI3071ST	30	710	28	25	591	28	ST	7.3	390
M54TI3071UT							UT	6.2	350
M54TI3012ST	30	1215	16	25	1013	16	ST	7.3	390
M54TI3012UT							UT	6.2	350
M54TI4043ST	40	435	60	33.5	362	60	ST	8.7	483
M54TI4043UT							UT	7.6	443
M54TI24066ST	40	660	40	33.5	550	40	ST	8.7	483
M54TI4066UT							UT	7.6	443
M54TI4073ST	40	730	36	33.5	608	36	ST	8.7	483
M54TI4073UT							UT	7.6	443
M54TI4088ST	40	880	30	33.5	733	30	ST	8.7	483
M54TI4088UT							UT	7.6	443

Standard feature: Carbon steel head, base and housing Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7 Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F, Tape-in type.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI4013ST	40	1325	20	33.5	1104	20	ST	8.7	483
M54TI4013UT							UT	7.6	443
M54TI5045ST	50	450	72	41.5	375	72	ST	10	576
M54TI45045UT							UT	8.9	535
M54TI5072ST	50	725	45	41.5	604	45	ST	10.1	576
M54TI5072UT							UT	8.9	535
M54TI5090ST	50	905	34	41.5	754	34	ST	10.1	576
M54TI5090UT							UT	8.9	535
M54TI5013ST	50	1375	22	41.5	1146	22	ST	10.1	576
M54TI5013UT							UT	8.9	535
M54TI6042ST	60	425	91	50	354	91	ST	11.5	679
M54TI6042UT							UT	10.3	639
M54TI6064ST	60	645	60	50	538	60	ST	11.5	679
M54TI6064UT							UT	10.3	639
M54TI6087ST	60	870	45	50	725	45	ST	11.5	679
M54TI6087UT							UT	10.3	639

Standard feature: Carbon steel head, base and housing Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7 Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F, Tape-in type.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI6097ST	60	970	40	50	808	40	ST	14.1	679
M54TI6097UT							UT	10.3	639
M54TI60132ST	60	1320	30	50	1100	30	ST	11.5	679
M54TI60132UT							UT	10.3	639
M54TI7075ST	70	755	60	58.5	629	60	ST	12.8	771
M54TI7075UT							UT	11.7	731
M54TI7010ST	70	1015	45	58.5	845	45	ST	12.8	771
M54TI7010UT							UT	11.7	731
M54TI8086ST	80	865	60	66.5	721	60	ST	14.2	863
M54TI8086UT							UT	13	823
M54TI8011ST	80	1160	45	66.5	966	45	ST	14.2	863
M54TI8011UT							UT	13	823
M54TI10071ST	100	710	89	83.5	591	89	ST	16.9	1048
M54TI10071UT							UT	15.8	1008
M54TI10083ST	100	835	76	83.5	696	76	ST	16.9	1048
M54TI10083UT							UT	15.8	1008
M54TI10010ST	100	1070	60	83.5	891	60	ST	16.9	1048
M54TI10010UT							UT	15.8	1008
M54TI10021ST	100	2170	29	83.5	1808	29	ST	16.9	1048
M54TI10021UT							UT	15.8	1008

Standard feature: Carbon steel head, base and housing Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7 Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F, Tape-in type.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI12085ST	120	855	88	100	712	88	ST	19.7	1233
M54TI12085UT							UT	18.5	1195
M54TI12085CT							CT	18.8	1195
M54TI12085LT							LT	20	1195
M54TI12010ST	120	1030	73	100	858	73	ST	19.7	1233
M54TI12010UT							UT	18.5	1195
M54TI12010CT							CT	18.8	1195
M54TI12010LT							LT	20	1195
M54TI12012ST	120	1295	59	100	1079	59	ST	19.7	1233
M54TI12012UT							UT	18.5	1195
M54TI12012CT							CT	18.8	1195
M54TI12012LT							LT	20	1195
M54TI12021ST	120	2165	33	100	1803	33	ST	19.7	1233
M54TI12021UT							UT	18.5	1195
M54TI13092ST	130	925	88	108	770	88	ST	21	1327
M54TI13092UT							UT	19.9	1288
M54TI13092CT							CT	20.2	1288
M54TI13092LT							LT	21.3	1288

Standard feature: Carbon steel head, base and housing Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7 Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.

## Submersible Motor

### 540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F, Tape-in type.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI13011ST	130	1125	67	108	938	67	ST	21	1327
M54TI13011UT							UT	19.9	1288
M54TI13011CT							CT	20.2	1288
M54TI13011LT							LT	21.3	1288
M54TI15010ST	150	1075	87	125	895	87	ST	23.6	1515
M54TI15010UT							UT	22.6	1473
M54TI15010CT							CT	22.9	1473
M54TI15010LT							LT	24.1	1473
M54TI15021ST	150	2105	44	125	1755	44	ST	23.8	1515
M54TI15021UT							UT	22.6	1473
M54TI16082ST	160	825	122	133	687	122	ST	25.2	1621
M54TI16082UT							UT	24	1581
M54TI16082CT							CT	24.3	1581
M54TI16082LT							LT	25.4	1581
M54TI16011ST	160	1115	88.5	133	929	88.5	ST	25.2	1621
M54TI16011UT							UT	24	1581
M54TI16011CT							CT	24.3	1581
M54TI16011LT							LT	25.4	1581
M54TI16021ST	160	2185	46	133	1820	46	ST	25.2	1621
M54TI16021UT							UT	24	1581

Standard feature: Carbon steel head, base and housing

Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7, Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.



## Submersible Motor

### 540 Series Motor

Minimum Casing size 6 5/8 inches

Maximum bottom hole temperature = 300° F, Tape-in type.

Part Number	60 Hz			50 Hz			Type	Length (Feet)	Weight (Lbs.)
	HP	Volts	Amps	HP	Volts	Amps			
M54TI18094ST	180	945	120	150	787	120	ST	27.9	1834
M54TI18094UT							UT	26.8	1794
M54TI18094CT							CT	27	1794
M54TI18094LT							LT	28.2	1794
M54TI18012ST	180	1275	89	150	1062	89	ST	27.9	1834
M54TI18012UT							UT	26.8	1794
M54TI18012CT							CT	27	1794
M54TI18012LT							LT	28.2	1794
M54TI18019ST	180	1945	59	150	1620	59	ST	27.9	1834
M54TI18019UT							UT	26.8	1794
M54TI20011ST	200	1100	115	167	917	115	ST	30.6	2019
M54TI20011UT							UT	29.5	1979
M54TI20011CT							CT	29.7	1979
M54TI20011LT							LT	30.9	1979
M54TI20021ST	200	2140	54	167	1783	54	ST	30.6	2019
M54TI20021UT							UT	29.5	1979
M54TI22511ST	225	1135	127	187	945	127	ST	30.6	2019
M54TI22511UT							UT	29.5	1979
M54TI22511CT							CT	29.7	1979
M54TI22511LT							LT	30.9	1979
M54TI22522ST	225	2235	84	187	1862	64	ST	30.6	2019
M54TI22522UT							UT	29.5	1979

Standard feature: Carbon steel head, base and housing

Power Factor (COS  $\phi$ ) = 0.82, Efficiency ( $\eta$ ) = 0.7, Maximum motor O.D. = 5.44 inches. For Plug In Type Motor Order With PI in Part Number.

Tape In Type Motor Lead Extension (MLE). Stainless Steel Armour, Lead Sheath, 450 Deg F, AWG#4

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE54017SS	17	
MLE54023SS	23	
MLE54055SS	55	
MLE54070SS	70	
MLE54090SS	90	

Tape In Type Motor Lead Extension (MLE). Monel, Lead Sheath, 450 Deg F, AWG#4

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE54017MNL	17	
MLE54023MNL	23	
MLE54055MNL	55	
MLE54070MNL	70	
MLE54090MNL	90	

Plug In Type Motor Lead Extension (MLE). Stainless Steel Armour, Lead Sheath, 450 Deg F, AWG#4

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE54017SS	17	
MLE54023SS	23	
MLE54055SS	55	
MLE54070SS	70	
MLE54090SS	90	

Plug In Type Motor Lead Extension (MLE). Monel, Lead Sheath, 450 Deg F, AWG#4

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
MLE54017MNL	17	
MLE54023MNL	23	
MLE54055MNL	55	
MLE54070MNL	70	
MLE54090MNL	90	

Submersible Motor  
Universal Base Motor 540 Series Model 78 Type

<b>Part Number</b>	<b>Length 9 (Feet)</b>	<b>Weight (Lbs.)</b>
UNBM54078	1	33

## Submersible Protector

400 / 456 / 540 Series Protector

For 456 Series Motor

Part Number	Description	Length (Ft)	Weight (Lbs)	O.D. (in)	Shaft O.D. (in)	Well Temp (° F)	Shaft (BHP)* Maximum		Maximum Thrust (Lbs.)	
							60 Hz	50 Hz	60 Hz	50 Hz
MPRT40066L	4.00 Series - 66L	5.3	115	3.75	0.875	300	240	200	850	1015
MPRT45666L	4.56 Series- 66L	5.3	124	3.87	0.875	300	240	200	850	1015
MPRT456DB	4.56 Series- DB	5.6	129	3.87	0.875	300	240	200	850	1015
MPRT456MDL	4.56 Series- BPBSL	6.3	135	3.87	0.875	300	240	200	850	1015

For 540 Series Motor

Part Number	Description	Length (Ft)	Weight (Lbs)	O.D. (in)	Shaft O.D. (in)	Well Temp (° F)	Shaft (BHP)* Maximum		Maximum Thrust (Lbs.)	
							60 Hz	50 Hz	60 Hz	50 Hz
MPRT540DB	5.40 Series - DB	5.8	190	5.13	1.187	300	600	500	1500	1800
MPRT540MD	5.40 Series - BPBSL	6.3	256	5.13	1.187	300	600	500	1500	1800
MPRT54066	5.40 Series - 66L	4.1	177	5.13	1.187	300	600	500	1500	1800

Legend: M= Modular, D = Double, L = Labyrinth, B = Bag. BHP = Brake Horse Power Standard Feature: carbon steel head, base, and housing, Monel Shaft K500

## AGH (Advanced Gas Handler)

Description	AGH 200-1000	AGH 600-2100	G2-25	G25-81	S71-101	H1101-251
Outside diameter, in. [mm]	4.00 [101.60]	4.00 [101.60]	5.13 [130.30]	5.13 [130.30]	5.38 [136.65]	5.62 [142.75]
Length, ft [m]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	6.3 [1.92]	5.7 [1.74]
Weight, lbm [kg]	135 [61.3]	135 [61.3]	272 [123.5]	272 [123.5]	284 [128.8]	229 [103.9]
Power consumption with 1-sg fluid (hp at 60 Hz)	0.43	0.43	1.38	1.38	6.2	7.5
Shaft size, in. [mm]	0.687 [17.45]	0.870 [22.10]	1.000 [25.40]	1.000 [25.40]	1.187 [25.40]	1.187 [29.97]
Shaft power rating (hp at 60 Hz)	200	410	600	600	600	637
Bearing systems	TC	TC	TC	TC	TC	TC
Liquid flow rate, B/D at 60 Hz	50 to 1000	400 to 2100	200 to 2500	2500 to 8,100	7,100 to 10,100	10,100 to 25,100

## ESP Casing Shroud

No	Description
1	ESP Casing Shroud For 7 Inch Casing, Max OD 5-3/4 Inch, Max OD ESP Motor 4.56 Inch
2	ESP Casing Shroud For 9-5/8 Inch Casing, Max OD 7-1/4 Inch, Max OD ESP Motor 5.40 Inch

### **Variable Speed Drive (Order By Description)**

<b>No</b>	<b>Description</b>
1	Variable Speed Drive NEMA3R, Free Standing 45 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
2	Variable Speed Drive NEMA3R, Free Standing 55 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
3	Variable Speed Drive NEMA3R, Free Standing 75 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
4	Variable Speed Drive NEMA3R, Free Standing 90 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
5	Variable Speed Drive NEMA3R, Free Standing 110 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
6	Variable Speed Drive NEMA3R, Free Standing 132 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
7	Variable Speed Drive NEMA3R, Free Standing 160 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
8	Variable Speed Drive NEMA3R, Free Standing 250 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
9	Variable Speed Drive NEMA3R, Free Standing 280 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
10	Variable Speed Drive NEMA3R, Free Standing 315 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
11	Variable Speed Drive NEMA3R, Free Standing 400 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
12	Variable Speed Drive NEMA3R, Free Standing 450 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
13	Variable Speed Drive NEMA3R, Free Standing 500 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output
14	Variable Speed Drive NEMA3R, Free Standing 630 kW, 380-480 Volt, 50/60 Hz Input, 0 - 70 Hz output

### **ESP Switchboard (Order By Description)**

<b>No</b>	<b>Description</b>
1	ESP Switchboard, NEMA3R, Free Standing, 150 HP
2	ESP Switchboard, NEMA3R, Free Standing, 200 HP
3	ESP Switchboard, NEMA3R, Free Standing, 400 HP
4	ESP Switchboard, NEMA3R, Free Standing, 700 HP

### **ESP Junction Box**

<b>No</b>	<b>Description</b>
1	Junction Box, NEMA3R, Free Standing 200 Ampere, 6000 Volt, 3 Phase
2	Junction Box, NEMA3R, Free Standing 200 Ampere, 7200 Volt, 3 Phase

## INSTALLATION TOOLS

No	Part No	Description
1	J1216ASD	Combination Wrench 1/2"
2	J1213ASD	Combination Wrench 9/16"
3	J1220ASD	Combination Wrench 5/8"
4	J1236ASD	Combination Wrench 1-1/8"
5	KW 01-1656	Allern Wrench / Macit Wrench Set 3/61" 7/32" 1/4" 5/16" 3/8" ( LARGE )
6	J4983	Allern Wrench / Macit Wrench Set 0.050" 1/16" 5/64" 3/32" 7/64" 1/8" 9/64" 5/32" 3/16" ( MEDIUM )
7	J4992	Allern Wrench / Macit Wrench ( SMALL )
8	J710	Adjustable Wrench 10"
9	J712	Adjustable Wrench 12"
10	J88004	Screw Driver 1/4" x 4"
11	J88006	Screw Driver 1/4" x 6"
12	J88008	Screw Driver 3/8" x 8"
13	J88328	Philip Screw Driver 2PT X 8"
14	J88348	Philip Screw Driver 4PT X 8"
15	J880022	Stubby Screw Driver 1/4" x 1"
16	J88322	Stubby Philip Screw Driver 1/4" x 1"
17	17150A	Test Pen
18	HT-PU-10A	Pencil Magnet
19	J1308PD	Ball Peen Hammer 8 Oz
20	J31368	Medium Rubber Hammer
21	THD3824	Thread Tap 3/8" - 24 NF
22	THD51624	Thread Tap 5/16" - 24 NF
23	THD71620	Thread Tap 7/16" - 20 NF
24	J18535	Electrician Knife
25	22-172B	File Bastard Flat 10"
26	22-098B	File Bastard Round 8"
27	15-265	Hack Saw Frame 12"
28	2C-176	Hack Saw Blade 12", 18 Tooth
29	J86A	Steel Chisel 3/4" x 6"
30	J263SG	Channel Lock Pliers
31	J181	Electrician or Lineman Pliers 1000 Volt
32	J183	Cutting Pliers
33	KW-02516	Measuring Tape 5 Meter x 16 Feet
34	KW 01-1406	Measuring Tape 30 Meter x 100 Feet
35	J810	Pipe Wrench 10"
36	J818HD	Pipe Wrench 18"
37	J46320	Allern Wrench Short Arm 8mm
38	J46120	Allern Wrench Short Arm 5/16"
39	J498308	Allern Wrench 9PC Folding 5/64" - 1/4"
40	J6016C	Torque Wrench : 1/2" Drive, 30 - 150 Ft/Lbs
41	KW 01-2118	Aviation Tin Snip ( Cable Band-it Cutter Pliers )
42	33-895216	Stretcher Acme 3/4"
43	33-893096	Sealler Acme 3/4"
44	LONS1123	Long Noise
45	WRSOC34	3/4" Socket Wrench
46	ARHAL716	7/16" Allen Wrench
47	WRHC34	3/4" Combination Wrench
48	WRHT6	6" Adjustable Wrench
49	PLPDRV112	Philips Driver
50	CLMPPLR12	Clamps Plier
51	CTT2311	Cutting Pliers
52	J9969	Tool Box

**STANDARD SPLICING TOOLS**

No	Part No	Description
1	SLD50022	Electric Soldering, 500 Watt, 220 V 50 Hz
2	CMPLNC	Nico Press Crimping Tool
3	SPLCTBL1	Splicing Table

**STANDARD SPECIAL TOOLS**

No	Part No	Description
1	58-1116SPL	Spline Wrench : 5/8" x 11/16"
2	78-1SPL	Spline Wrench : 7/8" x 1"
3	1316-138SP	Spline Wrench : 1-3/16" x 1-3/8"
4	33-7541	Clamp : Motor, 540 Series, Shoulder + Chain
5	33-50774	Clamp : Pump, 540 Series Friction + Chain
6	CLP0400	Clamp : Pump, 400 Series Friction + Chain
7	T43950	Rill Power Cable Flat / Round for Rig
8	STTBL	Assemble Table
9	CANOL	Oil Can : ( 5 Gal.G.I )
10	PPOLEE1	Pump : Oil Filling, Complete With Hose, Alemite Adapter And Fitting
11	TLPCK123	Tooling for Adaptor Pack Off
12	CBLSTDSP	Cable ESP Stand Spooler (MMU)

**STANDARD INSTRUMENTS**

No	Part No	Description
1	KW 06-299	Analog Multimeter ( VAC, VDC, Ohm )
2	87-V	Digital Multimeter True Rms, c/w Holster, Test Lead & C25 Case
3	3128-10	Analog Clamp On Meter
4	2037	Digital Clamp On Meter
5	3452	Megger 5000 Volt
6	BBG	Bag ( for Case Instruments )

**STANDARD SPLICING TOOLS**

No	Part No	Description
1	PNUBDR20	Pnumatic Banders, Sealer & Cutting Machine
2	HS50NPL	50 Meter Flexible Hose 3/4" C/W Nepple
3	RGLAAS	Air Regulator Assembly Box
4	TSNCCT	Manual Steel Tensioning & Cutting Tools



<b>Installation Materials Order By Description</b>
<b>Description</b>
Capscrew: Monel, Hex Head, 5/16 in-24UNF X 1-1/4 in
Capscrew: Monel, Socket Head, 3/8 in-24UNF X 1-1/2 in
Capscrew: Monel, Socket Head, 7/16 in-20UNF X 1-1/2 in
Capscrew: Monel, Socket Head, 1/2 in-20UNF X 1-7/8 in
Capscrew: Monel, Socket Head, 9/16 in-18UNF X 1-7/8 in
Capscrew: Steel, Hex Head, 5/16 in-24UNF X 1-1/4 in
Capscrew: Steel, Socket Head, 3/8 in- 24UNF X 1-1/2 in
Capscrew: Steel, Socket Head, 7/16 in-20UNF X 1-1/2 in
Capscrew: Steel, Socket Head, 1/2 in-20UNF X 1-7/8 in
Capscrew: Steel, Socket Head, 9/16 in-18UNF X 1-7/8 in
Capscrew: Steel, Socket Head, 5/8 in-18UNF X 2-1/4 in
Cleaner: CRC
Drain And Fill Valve: Monel
Drain And Fill Valve: Steel
GDE For 4KV Flat Cable 8FT LG, GALV (Cable Guard)
Gasket: Break-Off Plug
Gasket: Lead, Drain And Fill Valve Lead 1/16
Gasket: Lead, D&F Plug, 0.062 Thick
Grease, Lubricant: Dow Corning #4, 5.3 oz Tube
Lockwasher: Monel, 5/16 in
Lockwasher: Monel, 3/8 in
Lockwasher: Monel, 7/16 in
Lockwasher: Monel, 1/2 in
Lockwasher: Monel, 9/16 in
Lockwasher: Monel, 5/8 in
Lockwasher: Steel, 5/16 in
Lockwasher: Steel, 3/8 in
Lockwasher: Steel, 7/16 in
Lockwasher: Steel, 1/2 in
Lockwasher: Steel, 9/16 in
Lockwasher: Steel, 5/8 in
Submersible Oil No:5 Can
Submersible Oil No:5 Drum
Submersible Oil No:7 Can
Submersible Oil No:7 Drum
Shim: 1/200 in To Fit .62 in, .68 in, .87 in Shafts
Shim: 1/200 in To Fit 1.00 in, 1.187 in Shafts
Shim: 1/200 in To Fit 1.37 in, 1.50 in Shafts
Shim: 1/64 in To Fit .62 in, .68 in, .87 in Shafts
Shim: 1/64 in To Fit 1.00 in, 1.187 in Shafts
Shim: 1/64 in To Fit 1.37 in, 1.50 in Shafts
Shim: 1/32 in To Fit 0.62 in, 0.68 in, 0.87 in Shafts
Shim: 1/32 in To Fit 1.00 in, 1.187 in Shafts
Shim: 1/32 in To Fit 1.37 in, 1.50 in Shafts
Shim: 1/16 in To Fit 0.62 in, 0.68 in, 0.87 in Shafts
Shim: 1/16 in To Fit 1.00 in, 1.187 " Shafts
Shim: 1/16 in To Fit 1.37 in, 1.50 in Shafts
Shipping Gasket: 400 Series Motor Head
Shipping Gasket: 450 Series Pump
Shipping Gasket: 456 Series Motor Head
Shipping Gasket: 456 Series Pothole Flange, Plug In Type
Shipping Gasket: 540 Series Motor Head
Shipping Gasket: 540 Series Pump
Shipping Gasket: 540/562 Series Pothole Flange, Plug In Type

Description
Tape: 1 in Teflon
Tape: Cotton, .005 in X 75 in X 36 Yd
Tape: Hi Modulus Tape 1" x 18 YD
Tape: Hi Temperature Tape 1" x 18 YD
Tape: Fiberglass Adhesive Tape 1" x 18 YD
Tape: Fiberglass Corrina Tape 1" x 18 YD
Tape: Teflon Tape 1" x 18 YD
Armour 3 FT GLV
Vent Plug: Steel, Standard, 0.375 in-24UNF X .44 in
Vent Plug: Monel, Standard, 0.375 in-24UNF X .44 in
Vent Plug: Monel, Long
Vent Plug: Monel, Short
Profile Filler HSN / Viton 3 FT LG
Cable Bands 22" LG x 3/4", SS
Cable Bands 32" LG x 3/4", SS
Cable Shoe / Skun 50-10R
Cable Shoe / Skun 90-10R
O-Ring 0-024 Viton
O-Ring 0-024 Avlas
O-Ring 0-028 Viton
O-Rong 0-028 Avlas
O-Ring 2-152 Viton
O-Ring 2-152 Avlas
O-Ring 0-062 Viton
O-Ring 0-062 Avlas
O-Ring 2-237 Viton
O-Ring 2-237 Avlas
O-Ring 2-228 Viton
O-Ring 2-228 Avlas

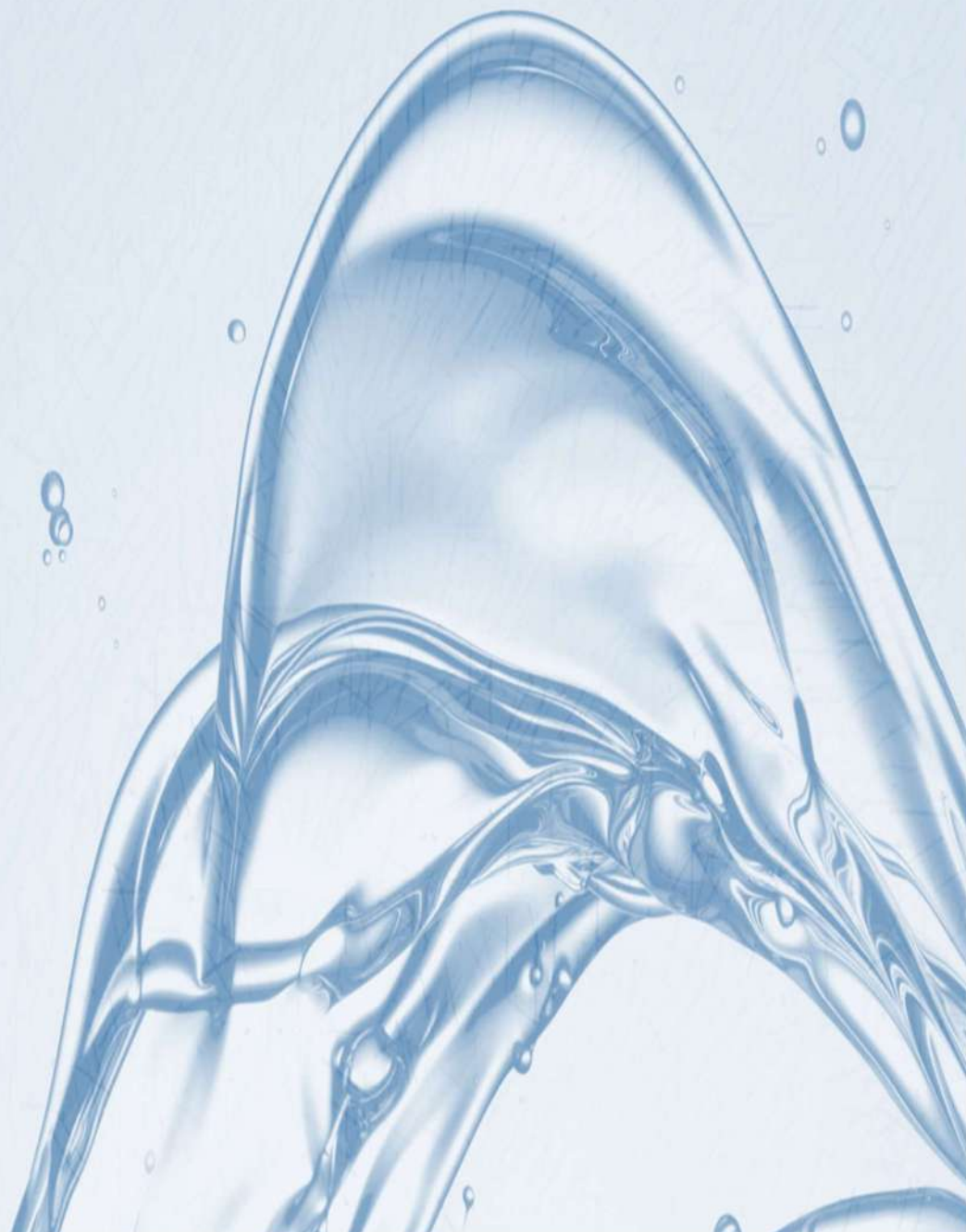
## General Conversions

Acre Feet	=	7758	Barrels	Inches	=	0.0254	Meters
Acres	=	0.4047	Hectares	Inches Mercury (60°F)	=	1.1308	Feet Water (60°F)
Acres	=	43560	Square Feet	Kilograms	=	35.2739	Ounces
Atmospheres	=	1.00323	Kilograms per Square cm	Kilograms	=	2.20462	Pounds (AVDP)
Atmospheres	=	14.696	Pounds per Square Inch	Kilograms	=	9.8	N
Barrels	=	5.614	Cubic Feet	Kilograms	=	0.001102	Short Tons
Barrels	=	0.158987	Cubic Meters	Kilograms Per Cubic Meter	=	0.0624	Pounds per Cubic Foot
Barrels	=	42	Gallons	Kilograms Per Square Centimeters	=	14.223	Pounds per Square Inch
BPD/PSI	=	0.0231	M3 pd/kPA	Kilometers	=	3280.8	Feet
Barrels Per Day	=	0.15898	Kilolitres per Day	Kilometers	=	0.6214	Miles (Statute)
Barrels Per Day	=	0.15625	Metric Tons per Day	Kilowatts	=	1.3405	Horsepower
Bars	=	14.503	Pounds per Square Inch	lb	=	0.454	Kilograms
Centimeters	=	0.032808	Feet	lb./Ft.	=	1.486	Kilograms per Meter
Centimeters	=	0.3937	Inches	Liters Per Hour	=	0.0044	Gallons per Minute
Centimeters	=	0.010936	Yards	Liters	=	0.2642	Gallons
Cubic Centimeters	=	0.06102	Cubic Inches	Liters	=	0.03531	Cubic Feet
Cubic Centimeters	=	0.03381	Fluid Ounces	Liters	=	61.025	Cubic Inches
Cubic Feet	=	0.02832	Cubic Meters	Liters Per Second	=	2.1189	Cubic Feet per Minute
Cubic Feet	=	7.481	Gallons	Liters Per Second	=	15.8507	Gallons per Minute
Cubic Feet	=	28.316	Liters	Meters	=	3.2808	Feet
Cubic Feet per Minute	=	0.4719	Liters per Second	Meters	=	39.37	Inches
Cubic Feet per Minute	=	0.028317	Cubic Meters per Minute	Meters	=	1.0936	Yards
Cubic Inches	=	16.387	Cubic Centimeters	Miles(statue)	=	1.6093	Kilometers
Cubic Inches	=	0.01639	Liters	Milimeters	=	0.03937	Inches
Cubic Meters	=	6.2897	Barrels	Pounds (AVDP)	=	0.4536	Kilograms
Cubic Meters	=	35.3146	Cubic Feet	Pounds Per Square Inch	=	70.069	Grams per Square cm
Cubic Meters	=	1.30795	Cubic Yards	Pounds Per Square Inch	=	0.07031	Kilograms per Square cm
Cubic Meters	=	264.172	Gallons	PSI	=	6.895	Kilopascals (kPa)
Cubic Meters Per Hour	=	4.4028	Gallons per Minute	SCF/BBL	=	0.1772	M3/M3
Feet	=	30.48	Centimeters	Square Centimeters	=	0.155	Square Inches
Feet	=	0.3048	Meters	Square Feet	=	0.0929	Square Meters
Gallons	=	0.02381	Barrels	Square Inches	=	6.4516	Square Centimeters
Gallons	=	0.003785	Cubic Meters	Square Inches	=	645.16	Square Milimeters
Gallons	=	231	Cubic Inches	Square Kilometers	=	0.3861	Square Miles
Gallons	=	3.785	Liters	Square Meters	=	10.7639	Square Feet
Gallons Per Minute	=	34.286	Barrels Per Day	Square Meters	=	1.1959	Square Yards
Gallons Per Minute	=	227.1198	Liters per Hour	Square Miles	=	640	Acres
Gallons Per Minute	=	0.06309	Liters per Second	Square Milimeters	=	0.00155	Square Inches
Gallons (IMP)	=	1.201	Gallons	Square Yards	=	0.8361	Square Meters
Gallons Water (60°F)	=	8.337	Pounds (AVDP)	Tons (Short)	=	907.184	Kilograms
Grams	=	0.0353	Ounces	Tons (Short)	=	0.907184	Tons (Metric)
Grams Per Cubic Centimeter	=	0.0361	Pounds per Cubic Inch	Tons(Metric)	=	2204.622	Pounds (AVDP)
Grams Per Square Centimeter	=	0.01422	Pounds per Square Inch	Tons(Metric)	=	1.1023	Tons (Short)
Horsepower	=	0.7457	Kilowatts	Watts	=	0.001314	Horsepower
Horsepower	=	745.7	Watts	Yards	=	91.44	Centimeters
Horsepower	=	550	Foot Pounds per Second	Yards	=	0.9144	Meters



# PT. MAJU MANDIRI UTAMA

## *SHALLOW SUBMERSIBLE PUMP CATALOG*



**Product Line**

SSP - Shallow Submersible Pump

# SHALLOW SUBMERSIBLE PUMP

## APPLICATION

- Oil wells with high water cut
- Shallow well max 500 Meters /1600 FT, maximum flowline pressure 150 psi
- Well fluid temperature max 93 Deg. C
- Minimum well casing 5.5 inch or larger

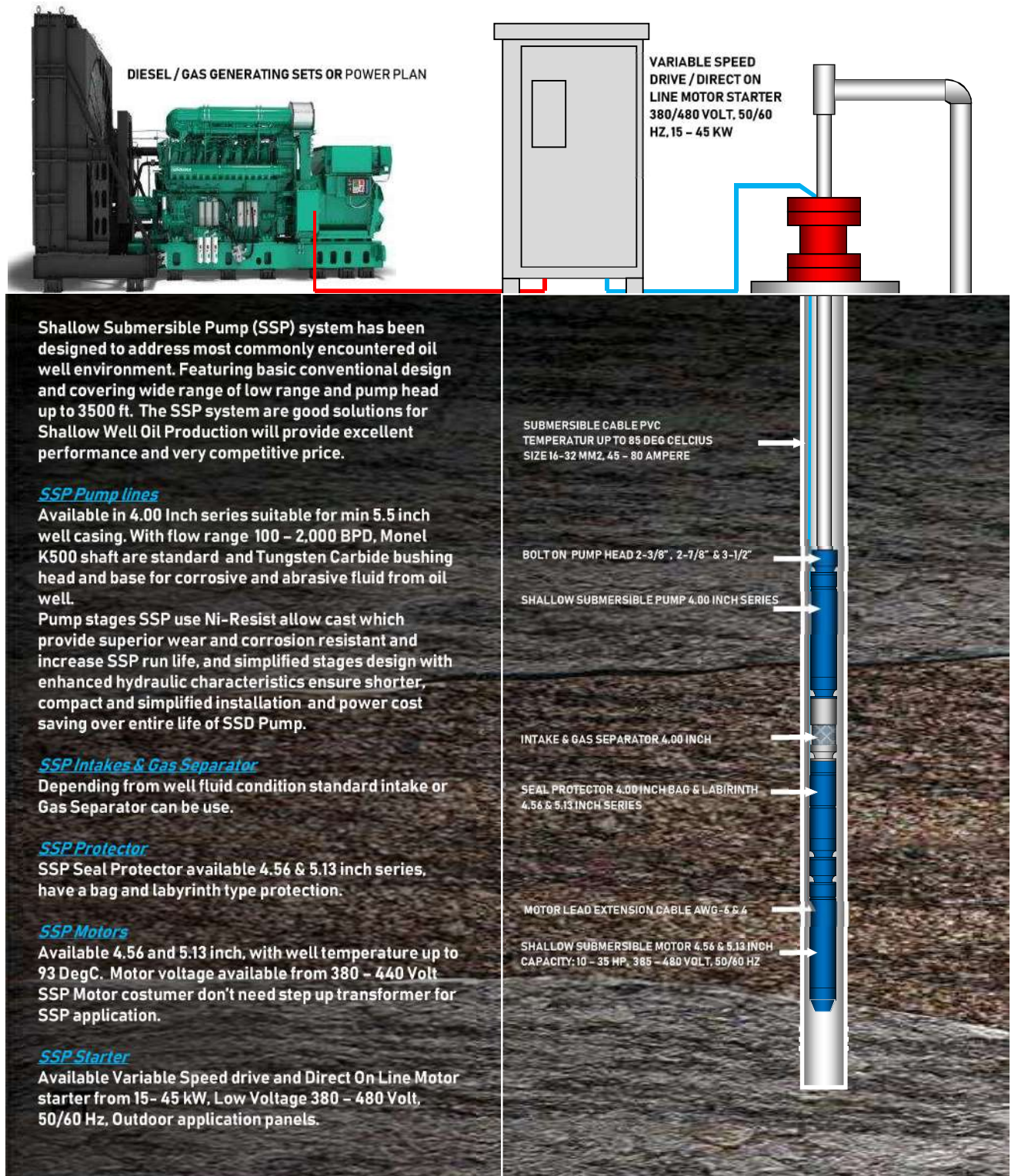
## ADVANTAGE

- Most commonly operating at oil well condition
- Low voltage motor 380 – 440 Volt directly from Variable Speed Drive or Direct On line Motor Starter
- 4.00 Inch Series Pump & 4.56 Inch Series from 8.5 to 35 HP for well casing 5.5 inch
- Pump head up to 3300 FT for 100 – 500 BBLS and 1600 FT for 1300 – 2000 BBLS
- Reduce operating cost

## FEATURES

- Ni-resist cast pump stages for increase durability and corrosion resistant
- Available Mixed Flow stages for MD950 and MD1750 Series Pump for gas handling up to 7 % free gas
- Tungsten carbide pump radial bearing that provide excellent shaft stability
- Bolt On Pump Head with standard tubing size 2-3/8", 2-7/8" and 3-1/2", EUE
- Low cost PVC submersible cable 45 – 80 amperes, 380 – 750 Volt max, fluid temperature max 85 Deg.C

# SHALLOW SUBMERSIBLE PUMP TYPICAL APPLICATION



## SPEIFICATION:

All SPP line series production system are manufactured at an SIO 9001-certified facilities in accordance with stringent MMU quality requirements and tested as API recommended practice.

### SSP - Shallow Submersible Pump System General Specification

#### Pump

Series	4.00 Inch Series
Outside diameter (inch)	4.00
Flow range, BBL @ 60 Hz	100 - 2000 BPD
Housing Pressure, psi	5000 psi
Construction	Floater
Housing Material	Carbon Steel
Stage Material	Ni-resist alloy
Shaft Material	Monel K-500

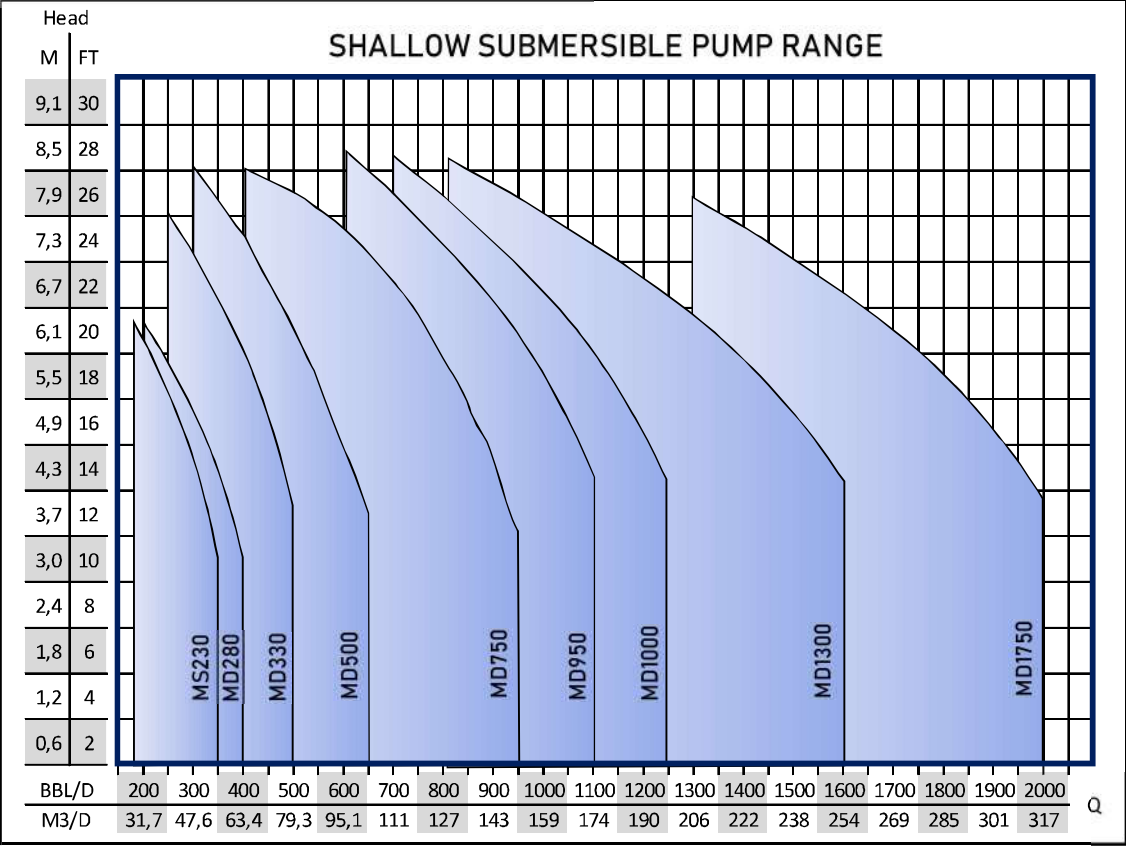
#### Motor

Series	4.56 Inch Series	5.13 Inch Series
Outside diameter, Inch	4.56 Inch	5.13 Inch
Max Well temperature Deg.C	93 Deg. C	93. Deg C
Power Range at 50 Hz, HP	8,5 - 28	16,5 - 41
Power Range at 60 Hz. HP	10 - 40	20 - 50
Lead Extension Connection	Tape in / Plug in	Tape in / Plug in
Housing material	Carbon steel	Carbon steel

#### Seal Protector

Series	4.56 Inch Series	5.13 Inch Series
Outside Diameter	4.56 Inch	5.13 Inch
Construction	Modular	Modular
Type	Labyrinth, Bag	Labyrinth, Bag
Elastomer Type	Viton	Viton
Housing Material	Carbon Steel	Carbon Steel
Shaft Material	Monel K500	Monel K500

# General Specification





**MS-230**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP23040018	18	# - 10	2.1	44
SP23040037	37	# - 20	3.5	73
SP23040057	57	# - 30	4.9	106
SP23040076	76	# - 40	6.3	134
SP23040096	96	# - 50	7.8	165
SP230400115	115	# - 60	9.2	196
SP230400134	134	# - 70	10.6	225
SP230400154	154	# - 80	12.0	258
SP230400173	173	# - 90	13.4	287
SP230400193	193	# - 100	14.8	317

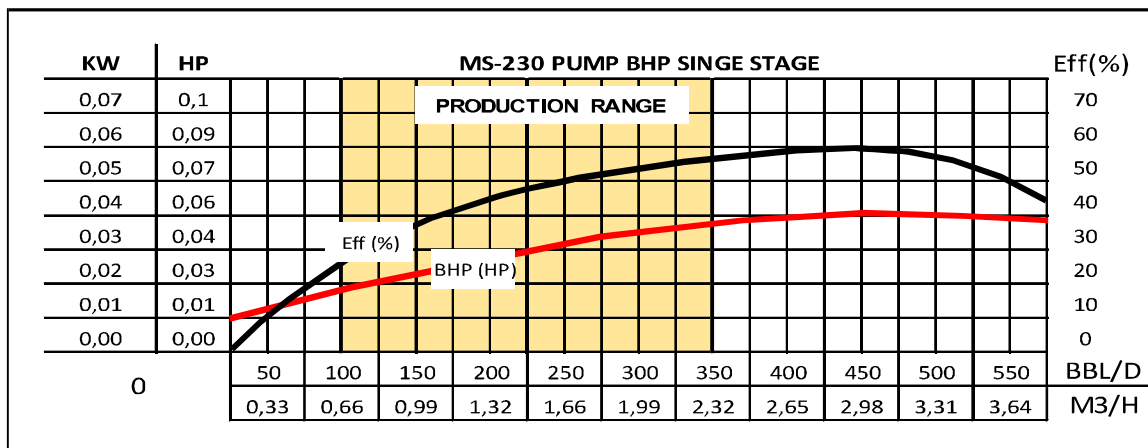
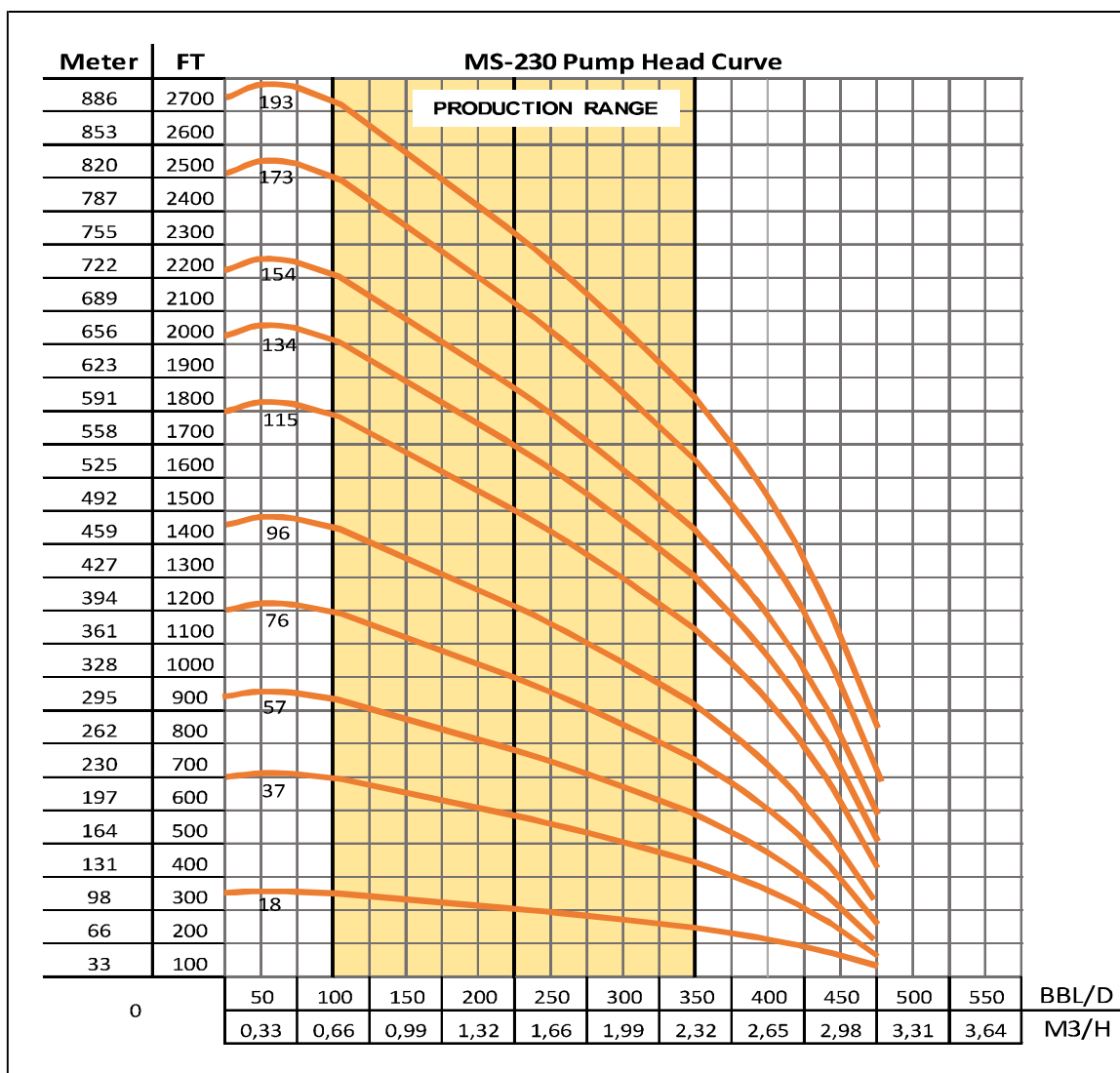
All pumps are in Single Pump Construction

Standard features: carbon steel head, base and housing.

Monel K500 shaft. Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data**  
**Pump Model MS230**  
**Performance Curves @ 50 Hz 2917 RPM**



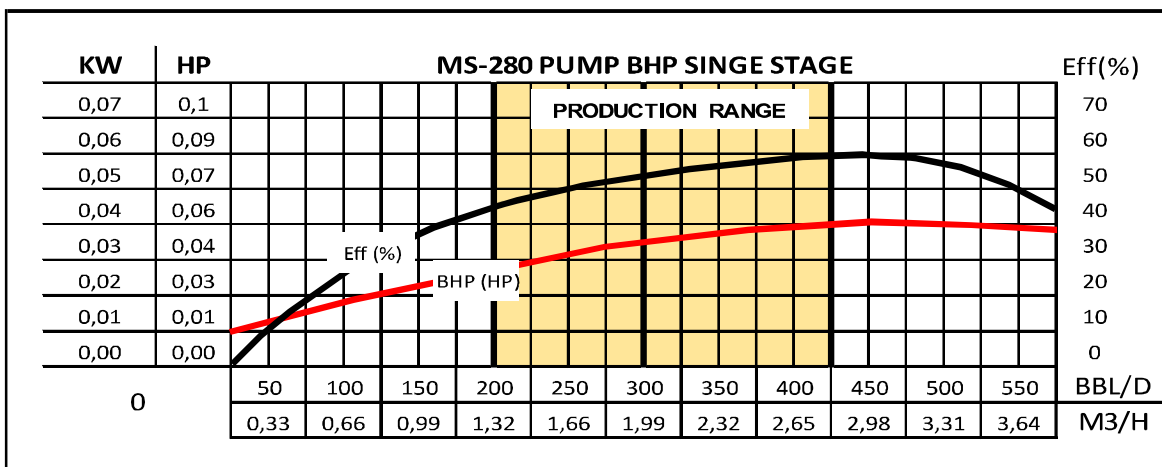
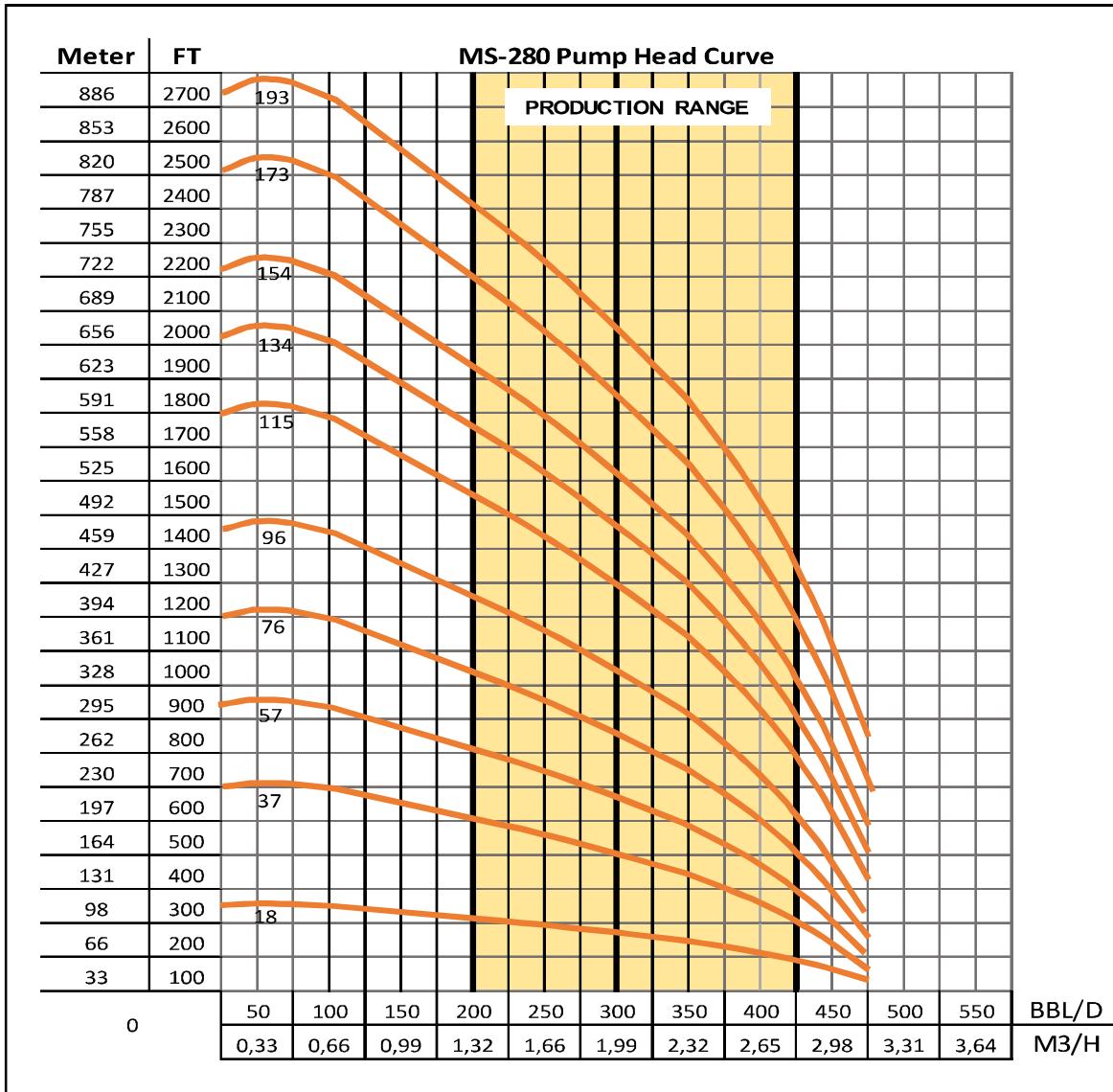
**MS-280 / 400 Series Pumps**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP28040018	18	# - 10	2.1	44
SP28040037	37	# - 20	3.5	73
SP28040057	57	# - 30	4.9	106
SP28040076	76	# - 40	6.3	134
SP28040096	96	# - 50	7.8	165
SP280400115	115	# - 60	9.2	196
SP280400134	134	# - 70	10.6	225
SP280400154	154	# - 80	12.0	258
SP280400173	173	# - 90	13.4	287
SP280400193	193	# - 100	14.8	317

All pumps are in Single Pump Construction  
 Standard features: carbon steel head, base and housing.  
 Monel K500 shaft. Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data  
 Pump Model MS-280  
 Performance Curves @ 50 Hz 2917 RPM**



**MS-330**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celsius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP33040016	16	# - 10	2.1	44
SP33040034	34	# - 20	3.5	73
SP33040052	52	# - 30	4.9	106
SP33040070	70	# - 40	6.3	134
SP33040089	89	# - 50	7.8	165
SP330400107	107	# - 60	9.2	196
SP330400125	125	# - 70	10.6	225
SP330400143	143	# - 80	12.0	258

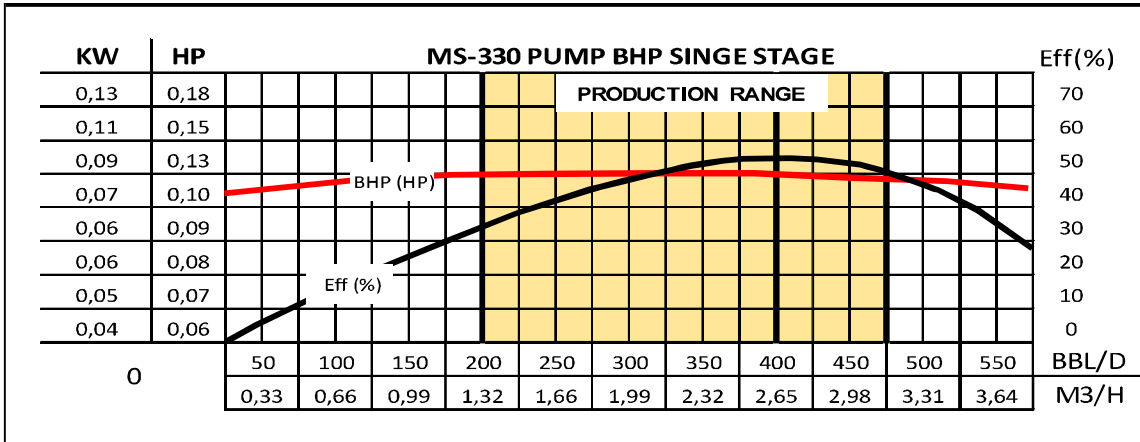
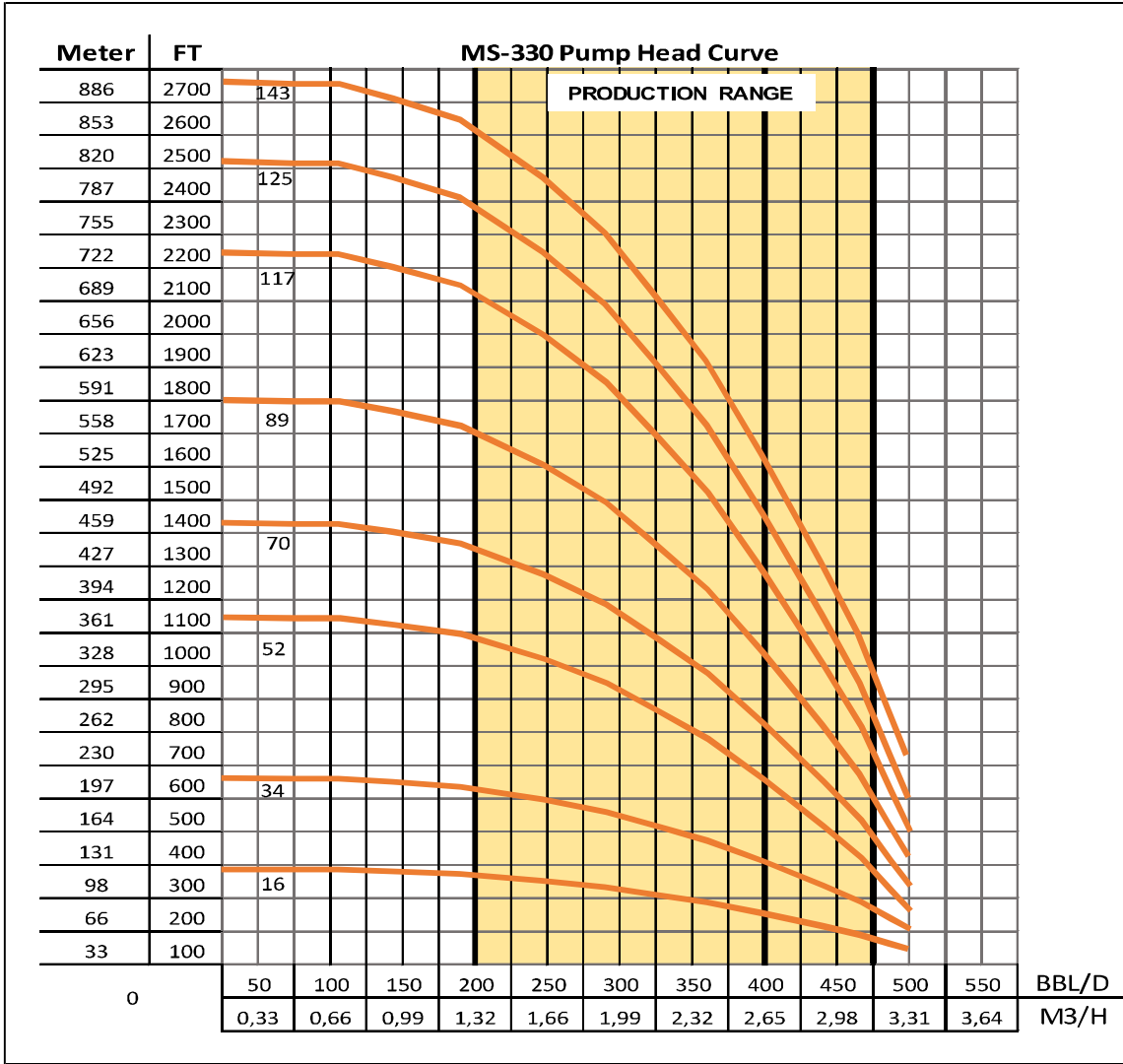
All pumps are in Single Pump Construction

Standard features: carbon steel head, base and housing.

Monel K500 shaft. Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data  
 Pump Model MS-330  
 Performance Curves @ 50 Hz 2917 RPM**



**MS-500**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP50040016	16	# - 10	2.1	44
SP50040034	34	# - 20	3.5	73
SP50040052	52	# - 30	4.9	106
SP50040070	70	# - 40	6.3	134
SP50040089	89	# - 50	7.8	165
SP500400107	107	# - 60	9.2	196
SP500400125	125	# - 70	10.6	225
SP500400142	142	# - 80	12.0	258

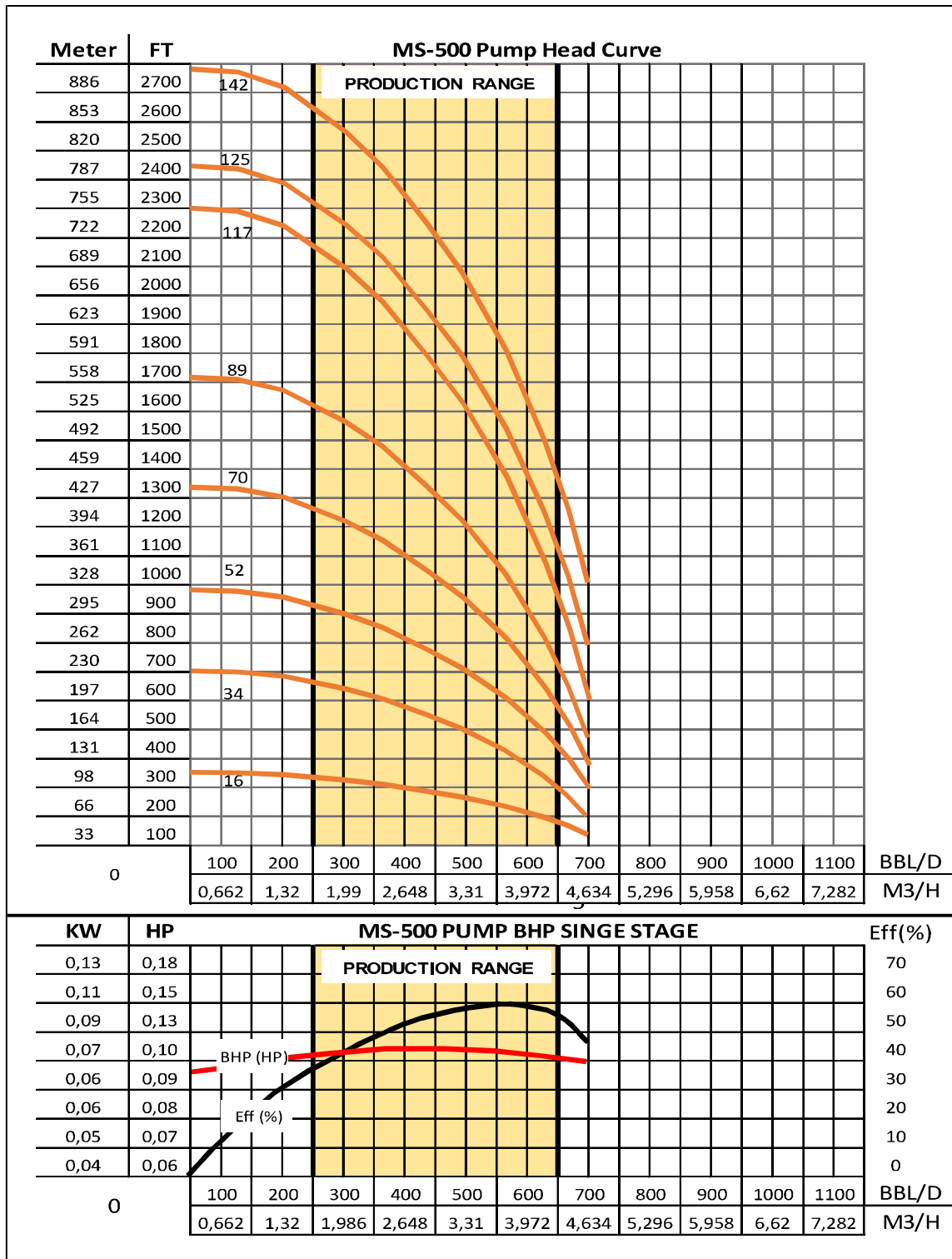
All pumps are in Single Pump Construction

Standard features: carbon steel head, base and housing.

Monel K500 shaft. Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data**  
**Pump Model MS-500**  
**Performance Curves @ 50 Hz 2917 RPM**





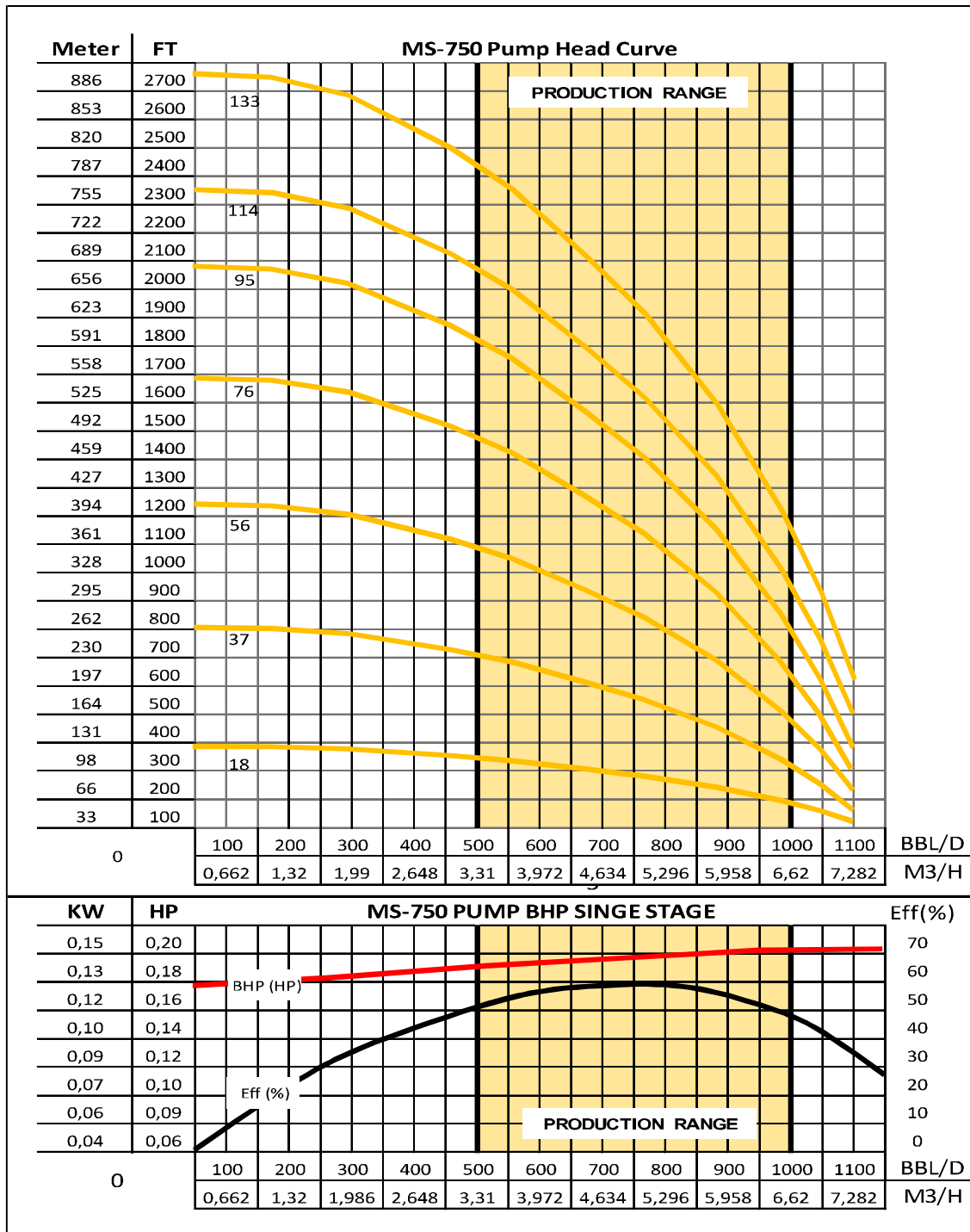
**MS-750**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP50040018	18	# - 10	2.1	44
SP50040037	37	# - 20	3.5	73
SP50040056	56	# - 30	4.9	106
SP50040076	76	# - 40	6.3	134
SP50040095	95	# - 50	7.8	165
SP500400114	114	# - 60	9.2	196
SP500400133	133	# - 70	10.6	225

All pumps are in Single Pump Construction  
 Standard features: carbon steel head, base and housing.  
 Monel K500 shaft. Maximum O.D. of pump = 4.00 inches  
 To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data  
 Pump Model MS-750  
 Performance Curves @ 50 Hz 2917 RPM**



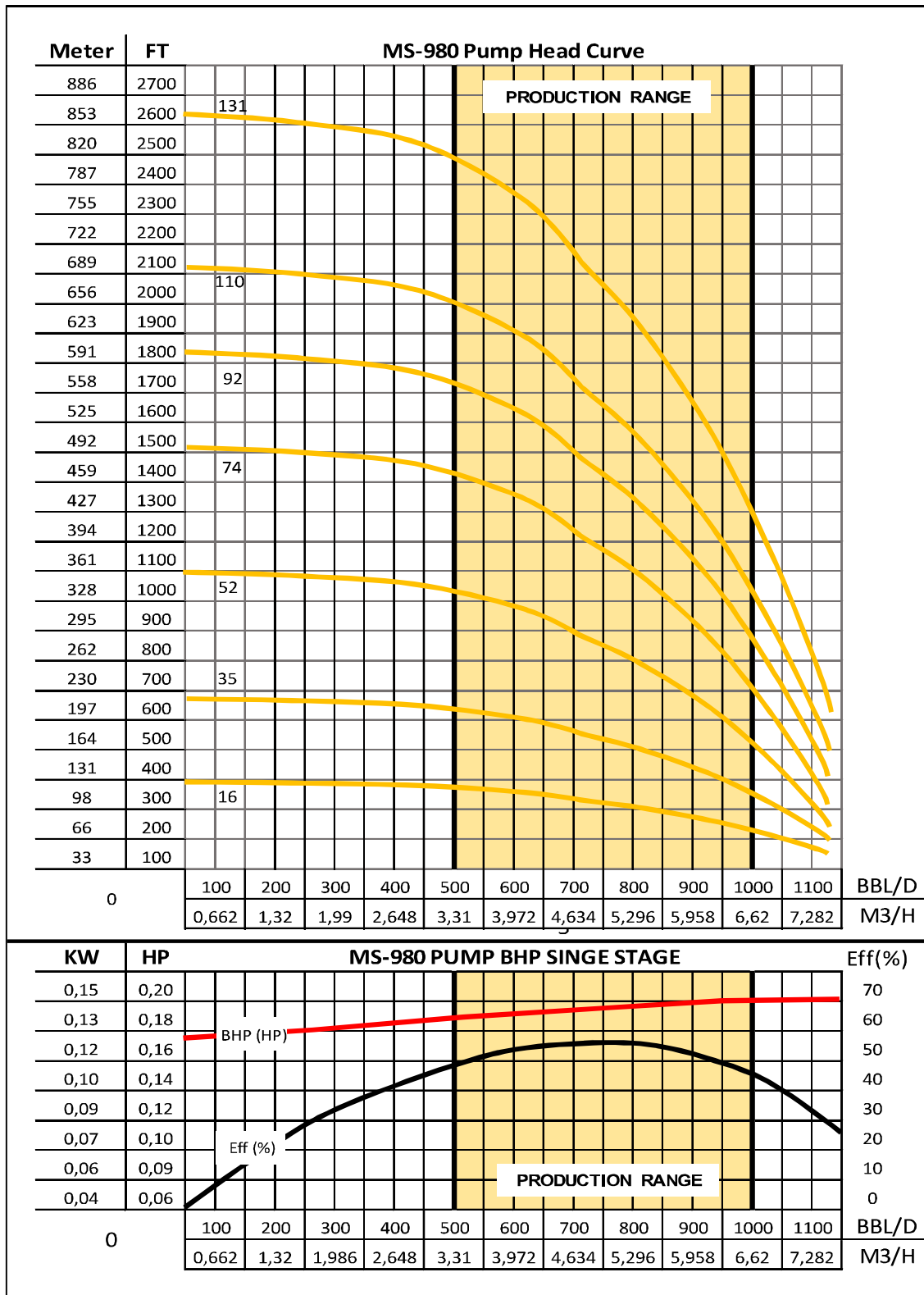
**MS-980**  
**Type Mixed Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP98040018	16	# - 10	2.1	44
SP98040034	34	# - 20	3.5	73
SP98040052	52	# - 30	4.9	106
SP98040074	74	# - 40	6.3	134
SP98040092	92	# - 50	7.8	165
SP980400110	110	# - 60	9.2	196
SP980400131	131	# - 70	10.6	225

All pumps are in Single Pump Construction  
Standard features: carbon steel head, base and housing.  
Monel K500 shaft. Maximum O.D. of pump = 4.00 inches  
To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data**  
**Pump Model MS-980**  
**Performance Curves @ 50 Hz 2917 RPM**



**MS-1300**  
**Type Radial Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP130040017	17	# - 10	2.1	44
SP130040036	36	# - 20	3.5	73
SP130040054	54	# - 30	4.9	106
SP130040073	73	# - 40	6.3	134
SP130040092	92	# - 50	7.8	165
SP1300400110	110	# - 60	9.2	196
SP1300400129	129	# - 70	10.6	225
SP1300400147	147	# - 80	12.0	258

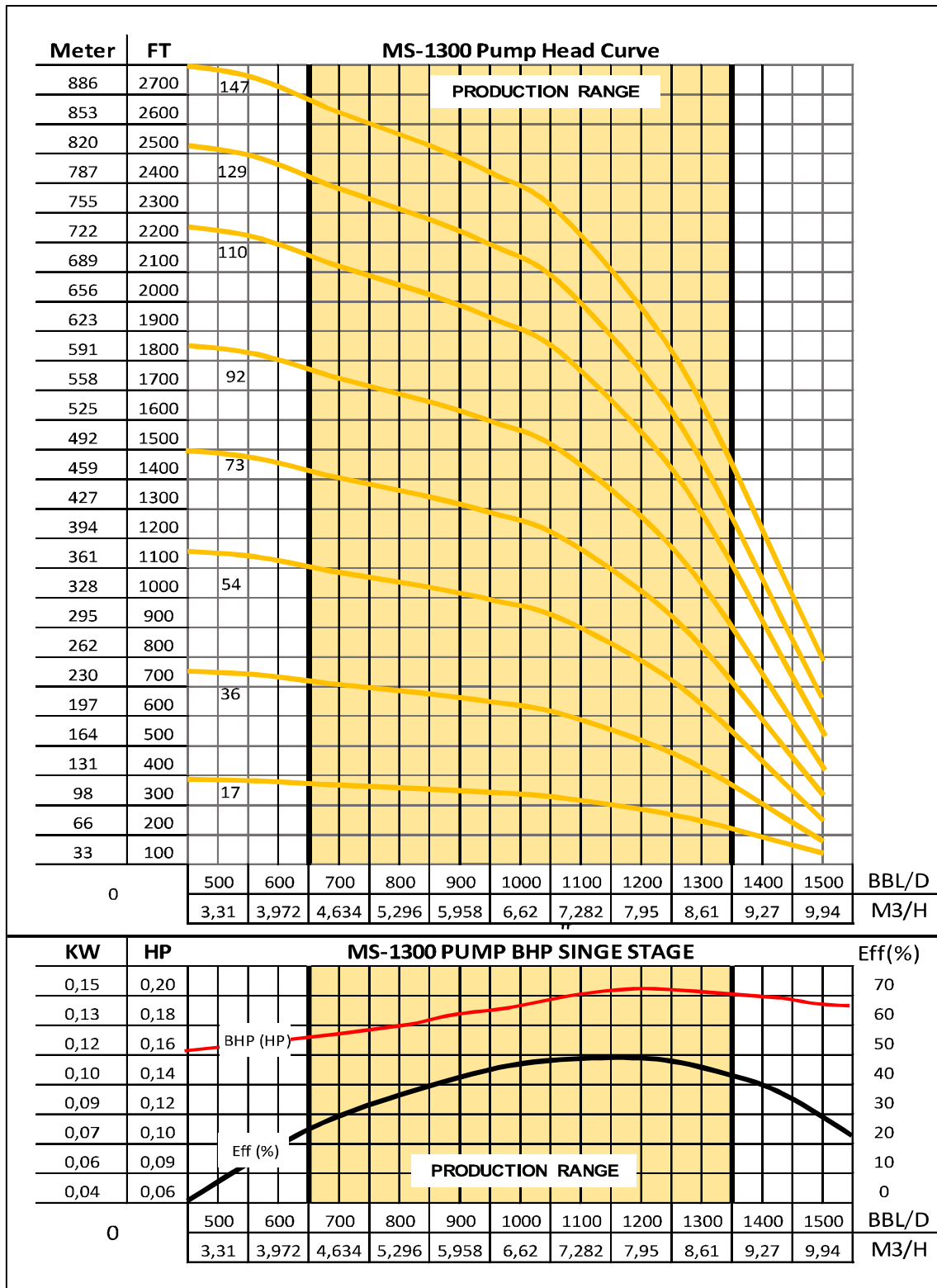
All pumps are in Single Pump Construction

Standard features: carbon steel head, base and housing.

Monel K500 shaft. Maximum O.D. of pump = 4.00 inches

To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data**  
**Pump Model MS-1300**  
**Performance Curves @ 50 Hz 2917 RPM**



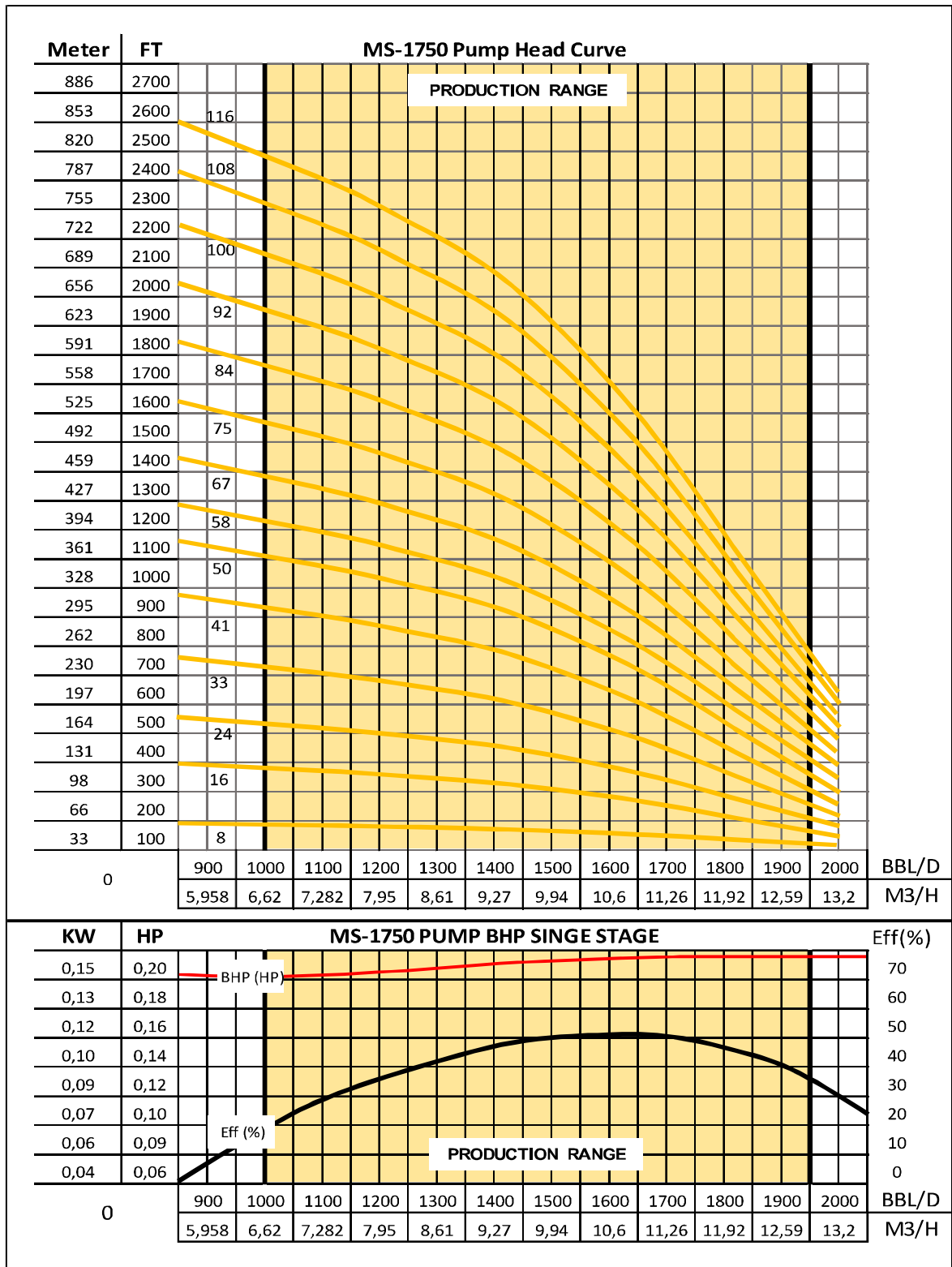
**MS-1750**  
**Type Mixed Flow Pump**  
**Minimum casing size 5½ inches**  
**Pump BHP Maximum 35 HP**

Maximum bottom hole temperature = 90 Deg. Celcius

FL		Housing No.	Length (Ft)	Weight (Lbs)
Part Number	Stages			
SP175040088	8	# - 10	2.1	44
SP175040016	16	# - 20	3.5	73
SP175040024	24	# - 30	4.9	106
SP175040033	33	# - 40	6.3	134
SP175040041	41	# - 50	7.8	165
SP175040050	50	# - 60	9.2	196
SP175040058	58	# - 70	10.6	225
SP175040067	67	# - 80	12.0	258
SP175040075	75	# - 90	13.4	287
SP175040084	84	# - 100	14.8	317
SP175040092	92	# - 110	16.2	348
SP1750400100	100	# - 120	17.6	377
SP1750400108	108	# - 130	19.0	500
SP1750400116	116	# - 140	20.4	538

All pumps are in Single Pump Construction  
Standard features: carbon steel head, base and housing.  
Monel K500 shaft. Maximum O.D. of pump = 4.00 inches  
To compute shipping length, add shipping cap (0.23 feet/cap) to component length

**Performance Curve and Technical Data**  
**Pump Model MS-1750**  
**Performance Curves @ 50 Hz 2917 RPM**





## SSP INTAKES

### Shallow Submersible Pump Intake

Part Number	Description	Length (FT / Meter)	Weight (kg)
INK400STD	4.00 Inch Standard Intake Carbon Steel	1 (0.3)	12.7
INK400SS	4.00 Inch Stainless Steel Intake	1 (0.3)	12.9
INK400 ARS	4.00 Inch Abrasive Resistant Intake	1 (0.3)	12.7
INK400GS	4.00 Inch Gas Separator	3.2 (1)	65.8
INK513STD	5.13 Inch Standard Intake Carbon Steel	1.2 (0.4)	22.7
INK513SS	5.13 Inch Stainless Steel Intake	1.2 (0.4)	22.8
INK513 ARS	5.13 Inch Abrasive Resistant Intake	1.2 (0.4)	22.7
INK513GS	5.13 Inch Gas Separator	3.2 (1)	70.4

## SSP SEAL PROTECTOR

### Shallow Submersible Pump Seal Protector

Part Number	Description	Length (FT / Meter)	Weight (kg)
SPR400LSL	4.00 Inch Seal Protector Labyrinth	5.9 (1.8)	68.6
SPR400BSL	4.00 Inch Seal Protector Bag	5.9 (1.8)	70.8
SPR513LSL	5.13 Inch Seal Protector Labyrinth	6.5 (2)	125.3
SPR513BSL	5.13 Inch Seal Protector Bag	6.5 (2)	129.4

## SSP MOTOR

All SSP motors are designed for reliable operation in the environments common to oil well applications. The motors are two-pole, three phase squirrel-cage induction type, and hand wound. They are filled with a highly refined mineral oil to provide dielectric strength, lubrication for bearings, and thermal conductivity.

The motor thrust bearing carries the load of the rotors. Heat generated by the motor is transferred to the well fluid as it flows by the motor housing. Corrosion protection is provided with flame spray coatings or ferritic steel construction. High-temperature, high-load thrust bearings. To reduce power costs, all motors feature proprietary winding configurations to optimize electrical performance and improve efficiency. Shallow Well Submersible Motor Series Type 4.56 Suitable for 5.5 Inch Well Casing Type 5.13 Suitable for 7 Inch Well Casing.

### Benefits

- Optimized performance with advanced stator and rotor designs
- improved power rating and cost efficiency
- 380 – 450 Volt @ 60 Hz 321 – 375 Volt @ 50 Hz

### Features

- Involute spline higher horsepower loads
- High-load thrust bearings for AR & Compression pump type (optional)
- Expanded oil reservoir for extra cooling capacity
- Cable pig tail at base motor for optional downhole sensor
- Plug in type motor lead connection (optional)

## SSP MOTOR TYPE

Part Number	Operating 60 Hz			Operating 50 Hz			Type	Length (Ft)	Weight (lbs)
	HP	Volt	Amps	HP	Volt	Amps			
MSP45610	10	435	15	8.5	363	15	4.56	5.1	240
MSP45615	15	435	23	12.5	363	23	4.56	6.3	288
MSP45620	20	450	28.5	16.5	375	28.5	4.56	7.5	345
MSP45625	25	410	39	21	342	39	4.56	8.7	401
MSP45630	30	425	44.5	25	355	44.5	4.56	9.9	482
MSP45635	35	385	57	29.5	321	57	4.56	11.1	520
MSP45640	40	430	59	33.5	359	59	4.56	12.3	578
MSP51320	20	440	29	16.5	367	29	5.13	6	300
MSP51330	30	435	45	25	362	45	5.13	7.3	390
MSP51340	40	435	60	33.5	362	60	5.13	8.7	438
MSP51350	50	450	72	41.5	375	72	5.13	10	576

## SSP POWER CABLE

SSP Power cable is designed primarily for water wells or oil wells with low oil cut and low BHP. The jacket is made from a proprietary HDPE compound with improved flexibility and toughness. Polypropylene copolymer gives damage and chemical resistance to the insulation. The maximum conductor temperature is 85 °C based on the options selected. The conductors are made of alloy-coated copper to protect against corrosion and improve long-term electrical properties of the insulation.

### Applications

- Electrical power cable for submersible pumping systems
- Conductors rated for well temperatures to 85°C

### Benefits

- Uses alloy-coated conductors for corrosion protection
- Contains proprietary polypropylene copolymer for damage and chemical resistance

### Features

- Proprietary high-density polyethylene (HDPE) compound jacket
- Flat & Round Power Cable
- Max 80 Ampere

## SSP MOTOR LEAD EXTENSION CABLE

SSP motor lead extension (MLE) designs provide the optimal combination of installation clearance and downhole performance. The primary insulation of polyimide is used to significantly reduce cable dimensions. The same proprietary materials used in SSP power cables are employed in the MLE designs as secondary insulations and jackets to maximize system reliability.

### Components

Conductor components are made from fully annealed, high-conductivity copper conductors. Primary insulation is made of dual layers of polyimide tape. Secondary insulation is a proprietary EPDM compound. Lead and fluorocarbon tape barriers prevent failures from chemical attack and gas decompression. Proprietary nitrile rubber compound with exceptional physical properties and oil resistance is used in the KEOTB jacket design. Galvanized steel and Stainless-Steel Armor are standard

### Applications

- Electrical power cable for submersible pumping systems
- Conductors rated for well temperatures maximum to 200 deg. Celsius

### Benefits

- Contains ethylene propylene diene methylene (EPDM) insulation compounds for optimal combination of electrical, physical, and chemical properties
- Includes barrier to prevent failures from chemical attack and gas decompression

### Features

- Fully annealed, high-conductivity copper components
- Lead and fluorocarbon tape barriers
- Proprietary nitrile rubber jacket compound in the KEOTB
- Standard galvanized steel and Stainless-Steel armour
- Tape in & Plug In type

## MOTOR LEAD EXTENSION

### MLE 456 Series

Part Number	Description	Long (FT)	Weight kg
MLC45630TP	MLE 456 Tape-In Type GLV	30	11
MLC45640TP		40	15
MLC45655TP		55	20
MLC45630PL	MLE 456 Plug-In Type GLV	30	11
MLC45640PL		40	15
MLC45655PL		55	20
MLC45630TPSS	MLE 456 Tape-In Type Stainless Steel	30	11
MLC45640TPSS		40	15
MLC45655TPSS		55	20
MLC45630PLSS	MLE 456 Plug-In Type Stainless Steel	30	11
MLC45640PLSS		40	15
MLC45655PLSS		55	20

### MLE 513 Series

Part Number	Description	Long (FT)	Weight kg
MLC51330TP	MLE 513 Tape-In Type GLV	30	14
MLC51340TP		40	19
MLC51355TP		55	27
MLC51330PL	MLE 513 Plug-In Type GLV	30	11
MLC51340PL		40	15
MLC51355PL		55	20
MLC51330TPSS	MLE 513 Tape-In Type Stainless Steel	30	11
MLC51340TPSS		40	15
MLC51355TPSS		55	20
MLC45630PLSS	MLE 513 Plug-In Type Stainless Steel	30	11
MLC45640PLSS		40	15
MLC45655PLSS		55	20

## VARIABLE SPEED DRIVE

**MAJU MANDIRI UTAMA** Variable Speed Drive (VSD) with 6-pulse input, filtered PWM output, NEMA3R /4 enclosure is designed for controlling and protecting of electric submersible pumping units for crude oil production equipped with electric submersible inductive motors (ESM), offers enhanced motors performance, reliability and system integration options for Shallow Submersible Pump (SSP's) / Electric submersible pumps (ESP's).

The VSD design provides possibility for replacement of all basic modules, functional units and circuit boards in the field. All couplings and connections between units and circuit boards are detachable and demountable; there is no need to perform soldering when replacing any failed unit inside the VSD.

- Completely sealed enclosure compatible for desert and tropical environments, also available in stainless steel for off shore applications;
- Smooth Shallow Submersible Pump (SSP's) or Electric Submersible Pump (ESP) start, full control and protection during operation;
- Real-time process monitoring, analysis and control;
- «Flying start» mode allows starting the SSP & ESP while it is back spinning decreasing downtime;
- Various «Rocking start» modes unlock the SSP / ESP in case of mechanical jam saving time and money on round trip operations;
- Maintaining process parameters (pressure, level, pump, vibration), output current and motor speed;
- «Soft Start with Synchronization» algorithm holding output frequency for a present time upon the start prior to its further increase;
- Motor current optimization through automatic adjustment of output voltage to frequency ratio at any given frequency;
- Periodic operation between two present frequencies, maintains oil level needed for the ESP to keep running, while keeping the oil flowing compared to on-off periodic modes where the oil could drain back if the check valve fails.

### Features

- Operability at high ambient temperatures and direct sunlight.
- Protection from sand and dust storms, fog, pollutants in the air. For offshore installations, protection from accumulation of wetted salt and salt spray.
- Protection from wind.
- Resistant to corrosive environments.
- Protected to prevent corrosion due to galvanic action.
- Communication protocol serial Modbus RTU or optional Modbus/IP.
- Provide the following additional information: cabinet temperature, cabinet high temperature shutdown, frequency signal (analog output), output voltage.
- Continuous operation at 100% of nameplate power rating, and 120% nameplate power rating for 1minute.
- Continuous operation at nameplate power rating: Voltage level: -5% or+15%.
- Continuous operation but at reduced output power/torque: Voltage level: -5% to-10%.
- Continuous operation for up to 200 ms, at reduced power/torque: Voltage level: -10% to-55%.

- Adhesives not used to control, restrict or prevent movement and not used to maintain a seal.
- Space heater installed within the enclosure for the purposes of eliminating condensation within the controller.
- Provide mechanical interlocks to prevent: the compartment door housing the disconnecter from being opened if the operating handle of the isolation device is in the closed position, the operating handle from being closed if the compartment door is in the open position.
- Barriers to separating personnel from energized components.
- For opening and closure of door used a 3-point latching mechanism operated by a handle.
- SCADA System (optional)

## SSP Variable Speed Drive

Part Number	Capacity (kw)	Enclosure Type	Voltage Rating	Ampere Rating	HP Rating
VS3R15	15	NEMA-3R	380-480	27	20
VS3R25	25	NEMA-3R	380-480	45	33
VS3R35	35	NEMA-3R	380-480	63	46
VS3R45	45	NEMA-3R	380-480	80	60
VS3R55	55	NEMA-3R	380-480	98	73

Part Number	Capacity (kw)	Enclosure Type	Voltage Rating	Ampere Rating	HP Rating
VS4R15	15	NEMA-4R	380-480	27	20
VS4R25	25	NEMA-4R	380-480	45	33
VS4R35	35	NEMA-4R	380-480	63	46
VS4R45	45	NEMA-4R	380-480	80	60
VS4R55	55	NEMA-4R	380-480	98	73

## SSP Motor Starter Direct On-Line

**MAJU MANDIRI UTAMA** Shallow Submersible Pump Direct On-Line Motor Starter (D.O.L) provides custom design and manufacturing of SSP D.O.L to customer specifications. Whether the requirement is onshore or offshore, desert or jungle remote or urban, **MAJU MANDIRI UTAMA** SSP D.O.L can design a switchboard to fill most any need. Components for downhole sensing, data logging, SCADA or special needs can all be incorporated into a **MAJU MANDIRI UTAMA** Direct On-Line D.O.L custom design. Special paint, hardware and stainless-steel enclosures can all be provided. Motor control can be accomplished by a **MAJU MANDIRI UTAMA** Direct On-Line D.O.L device or the controller of the customer's choice. **MAJU MANDIRI UTAMA** Direct On-Line D.O.L leads the way in custom SSP D.O.L designs.

A SSP D.O.L is a combination motor starter, overload/underload, protective device and recording instrument. This electrical combination is available either with electromechanical components or a solid-state control centre.

The D.O.L provide a manual breaker switch, magnetically operated motor controller, magnetic-oil dashpot, over current relays, and undercurrent relay for pump off and gas-lock protection. An automatic time delay relay is used to restart the pump after a predetermined shutdown time. A recording ammeter with mechanical clock records running time, down time and amount of current being used during operation.

The solid-state controlled switchboard provides a greater level of protective functions plus selected operating parameters and status indicators.

A thorough working knowledge of the D.O.L equipment is necessary to obtain the best service and the maximum protection for the SSP Unit.

## SSP Direct On-Line Motor Starter

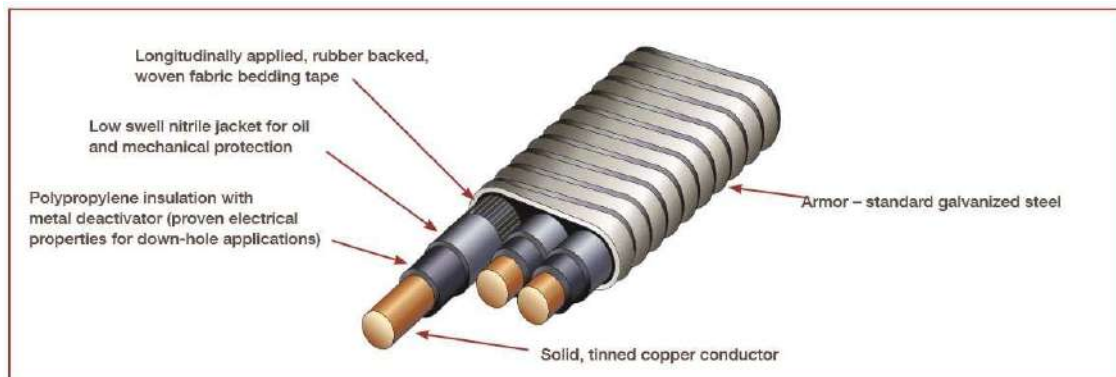
Part Number	Capacity (kw)	Enclosure Type	Voltage Rating	Ampere Rating	HP Rating
DL3R15	15	NEMA-3R	380-480	27	20
DL3R25	25	NEMA-3R	380-480	45	33
DL3R35	35	NEMA-3R	380-480	63	46
DL3R45	45	NEMA-3R	380-480	80	60
DL3R55	55	NEMA-3R	380-480	98	73

Part Number	Capacity (kw)	Enclosure Type	Voltage Rating	Ampere Rating	HP Rating
DL4R15	15	NEMA-4R	380-480	27	20
DL4R25	25	NEMA-4R	380-480	45	33
DL4R35	35	NEMA-4R	380-480	63	46
DL4R45	45	NEMA-4R	380-480	80	60
DL4R55	55	NEMA-4R	380-480	98	73



## SHALLOW SUBMERSIBLE POWER CABLE

TYPE QYPN3-3×16/90, AWG#5, 10 – 50 HP, 60 Ampere Maximum Current, 90 Deg Celsius /194 Deg Fahrenheit



### **CABLE CONSTRUCTION:**

Conductor AWG	: 16mm <sup>2</sup> /5#
Construction	: Tinned copper, OD : 4.62 <sup>+0.15</sup> <sub>-0.05</sub> mm
Insulation Polypropylene	: Nominal thickness 1.90mm
Min. Thickness	: ≥1.71mm
Nominal OD	: 8.42±0.15mm
Inner jacket, Nitrile	: Nominal thickness : 1.3mm
Min. Thickness	: ≥1.04mm
Nominal OD	: 11.02±0.20mm
Oil-proof layer Polyester/ fiber tape wrapping rate	: 50%
Armour, Galvanized armour	: Thickness 0.50 <sup>+0.03</sup> <sub>-0.05</sub> mm
Wrapping rate	: ≥40%
Cable dimension	
Thickness × Width	: ≤ (14.5 × 38.0) mm

### **CABLE PERFORMANCE:**

Rated voltage	: 3kV AC
At 15.6°C, the Insulation resistance:	: ≥3769MΩ·km
Rated temperature	: 90°C /205 F
DC resistance unbalance	: ≤2%
Length tolerance	: ≤±0.5%
At 15.6°C, applied DC27kV, the DC leakage	: ≤0.27μA/(kV·km)
At 25°Cm Conductor DC resistance:	: ≤1.17Ω/km
DC27kV/5min	: Without break down
Max. Bending OD	: ≥290mm
Nominal weight	: 1.30kg/m

## AMPACITY CHART

