

Fire Fighter (FI FI) System Pumps

# ENM SERIES

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## TECHNICAL MANUAL



October/2010

# ENM Fire Fighting Centrifugal Pumps

## General Information



### Fields of Application

- Fifi system pumps at fire boat
- Fire fighting pumps at ships
- Large fire extinguishing systems.

### Pumped Liquids

Thin, clean, non-aggressive and non-explosive liquids free from large solid particles or fibres.

### Design

- Horizontal type, single stage, single entry, horizontal volute type pumps with a horizontal suction flange and the discharge flange on the top.
- ENM pump impellers are of double incline type. The impellers are dynamically balanced to the base. The axial thrust is compensated by rear back wear rings and balance holes.
- Pump and engine are separate components, connected to each other via a coupling and mounted on a common base plate.
- There are 4 type of ENM pumps which are ENM 250-550, ENM 300-550, ENM 350-550, ENM 400- 550.
- The construction is compact thanks to the short distance between the bend-resistant shaft and bearing and the volute. This feature allows it to be used in space-restricted (eg. Marine Fire Brigade).

### Bearings

Two types of bearings are used in ENM design which are ball bearing and sleeve bearing. The ball bearing is mounted to the motor side and the sleeve bearing is mounted other side.

### Pump Shaft

The standard shaft seal arrangement is soft gland packing rings lubricated and cooled by the pump water. According to customer requirement mechanical seal is an option.

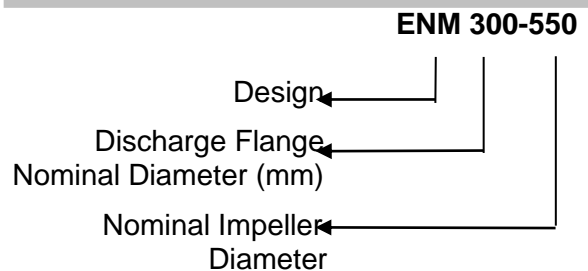
### Shaft Seal

The standard shaft seal arrangement is soft gland packing rings lubricated and cooled by the pump water. According to customer requirement mechanical seal is an option.

### Technical Data

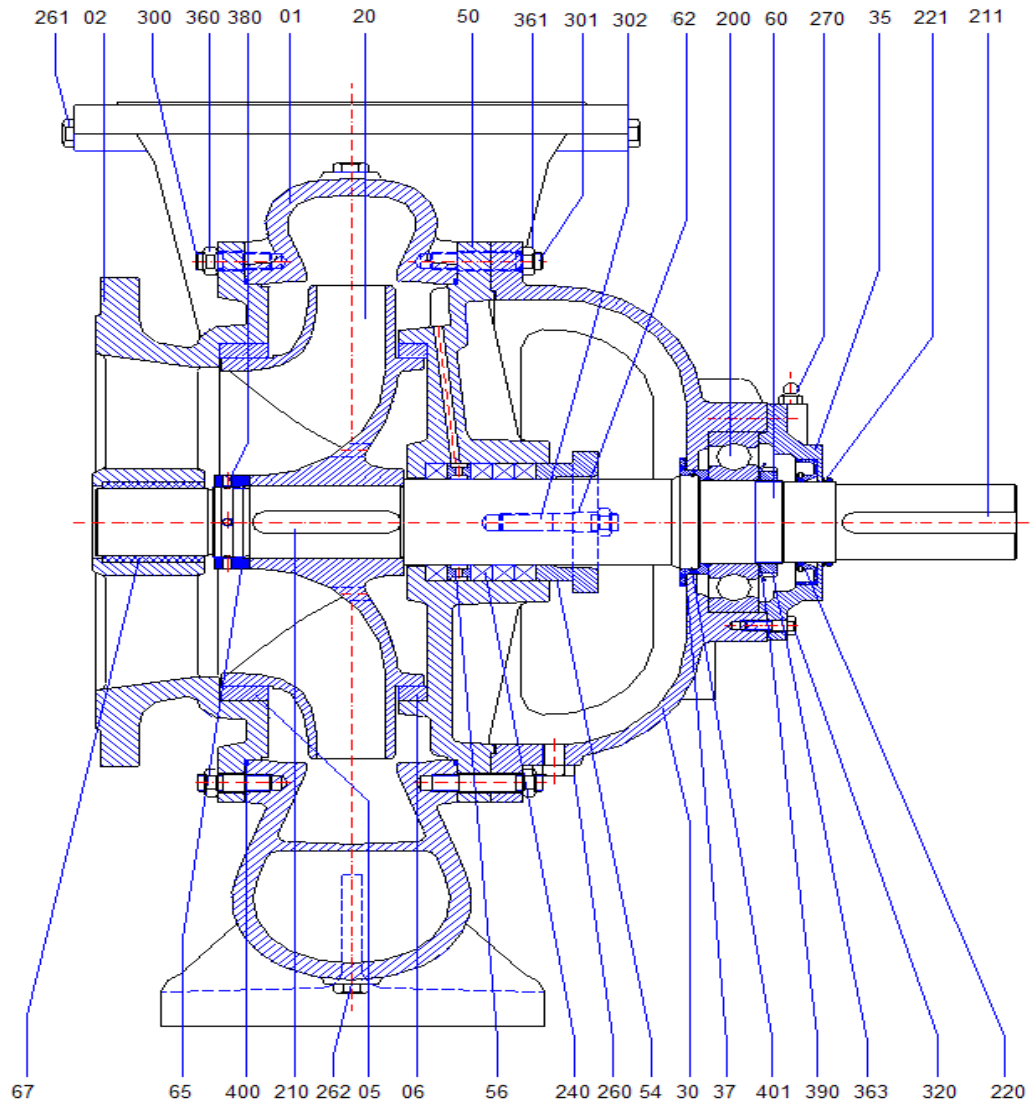
- Suction Nozzle..... : DN 300 ...DN 500
- Discharge Nozzle..... : DN 250....DN 400
- Operating Pressure..... : 10 Bar
- Speed Range..... : 1500 – 1800 RPM
- Capacity Range..... : 400 – 4000 m<sup>3</sup> / h
- Head Range..... : 60 - 150 m

### Identification Code



# ENM Fire Fighting Centrifugal Pumps

## Cross-Sectional View of End Suction Centrifugal Pump



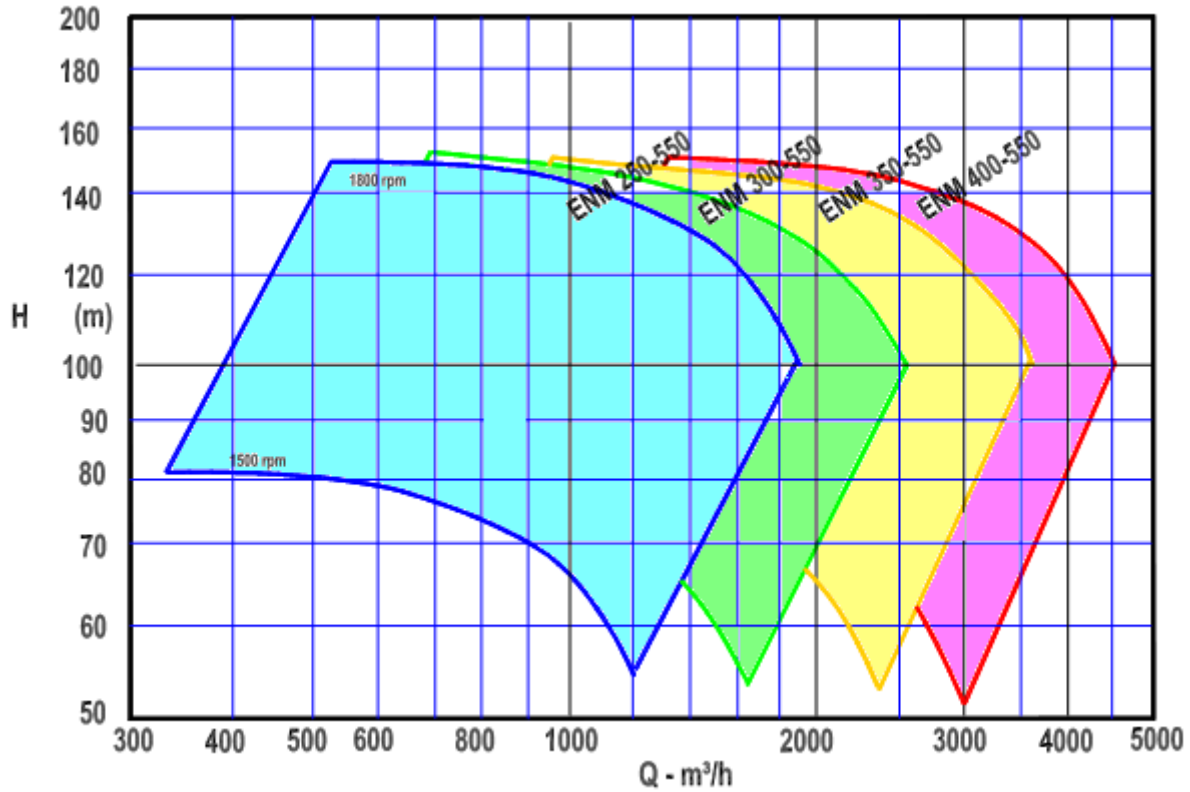
PART NO	PART NAME	PART NO	PART NAME
401	O-RING	211	COUPLING KEY
400	O-RING	210	IMPELLER KEY
390	SAFETY RING	200	BALL BEARING
380	SET-SCREW	67	SLIDING BEARING SLEEVE
363	BALL BEARING NUT	65	IMPELLER NUT
362	GLAND NUT	60	SHAFT
360	NUT	56	LANTERN RING
320	HEX BOLT	54	GLAND
302	GLAND STUD	50	STUFFING BOX
301	PUMP CASING STUD	37	WATER DISC
300	SUCTION FLANGE STUD	35	BEARING COVER
270	PLUG (FOR GREASE)	30	BEARING HOUSE
262	PLUG	06	IMP.WEAR RING (BACK)
261	PLUG	05	IMP.WEAR RING (FRONT)
260	PLUG	20	IMPELLER
240	SOFT PACKING	02	SUCTION FLANGE
221	V RING	01	PUMP CASING
220	OIL SEAL		

# ENM Fire Fighting Centrifugal Pumps

Technical Data



## Performance Range



## Material Options

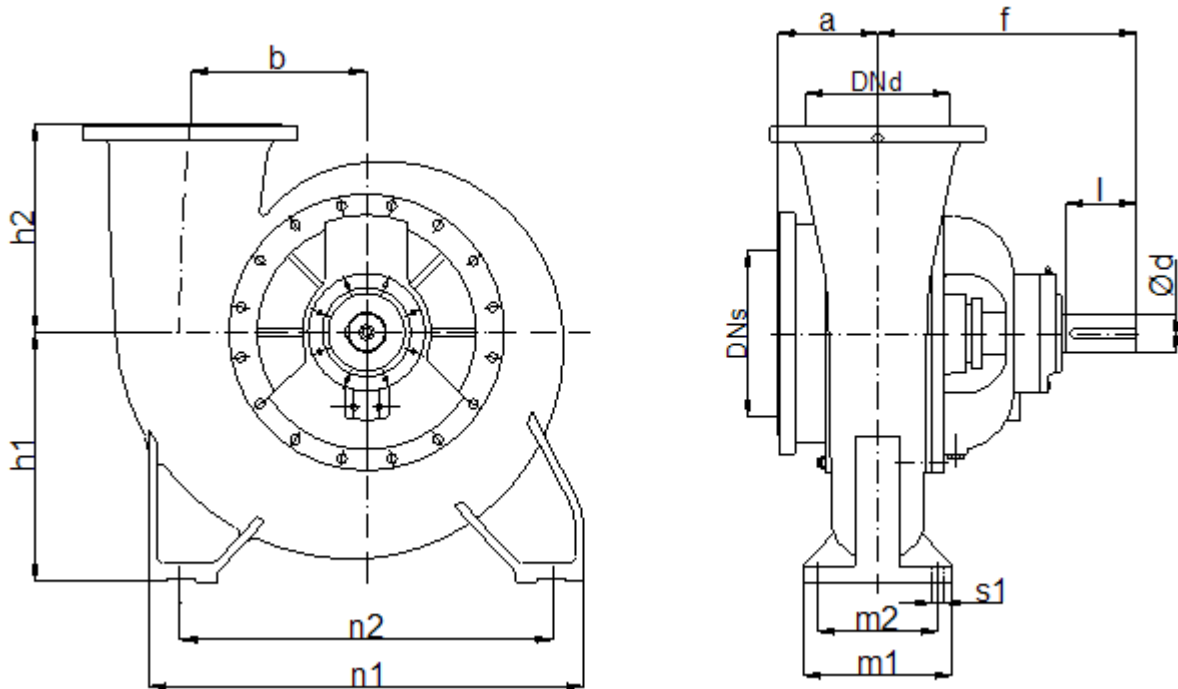
Components	Material. No						
		0.6025	0.7040	2.1050.01	1.4021	1.4301	1.4401
Pump Casing		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impeller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wearing Ring*				<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Shaft					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Material Equivalent

Description	DIN 17007	EN-DIN	ASTM
Cast Iron	0.6025	GJL-250 (GG25)	A 48 Class 40-B
Nodular Cast Iron	0.7040	GJS-400-15 (GGG40)	A 536 Gr.60-40-18
Cast Bronze	2.1050.01	G-Cu Sn 10	B 584 C 90700
Chrome Steel	1.4021	X20 Cr 13	A 276 Type 420
Chrome Nickel Steel	1.4301	X5 Cr Ni 18.9	A 276 Type 304
Chrome Nickel Molybdenum Steel	1.4401	X5 Cr Ni Mo 18.10	A 276 Type 316

# ENM Fire Fighting Centrifugal Pumps

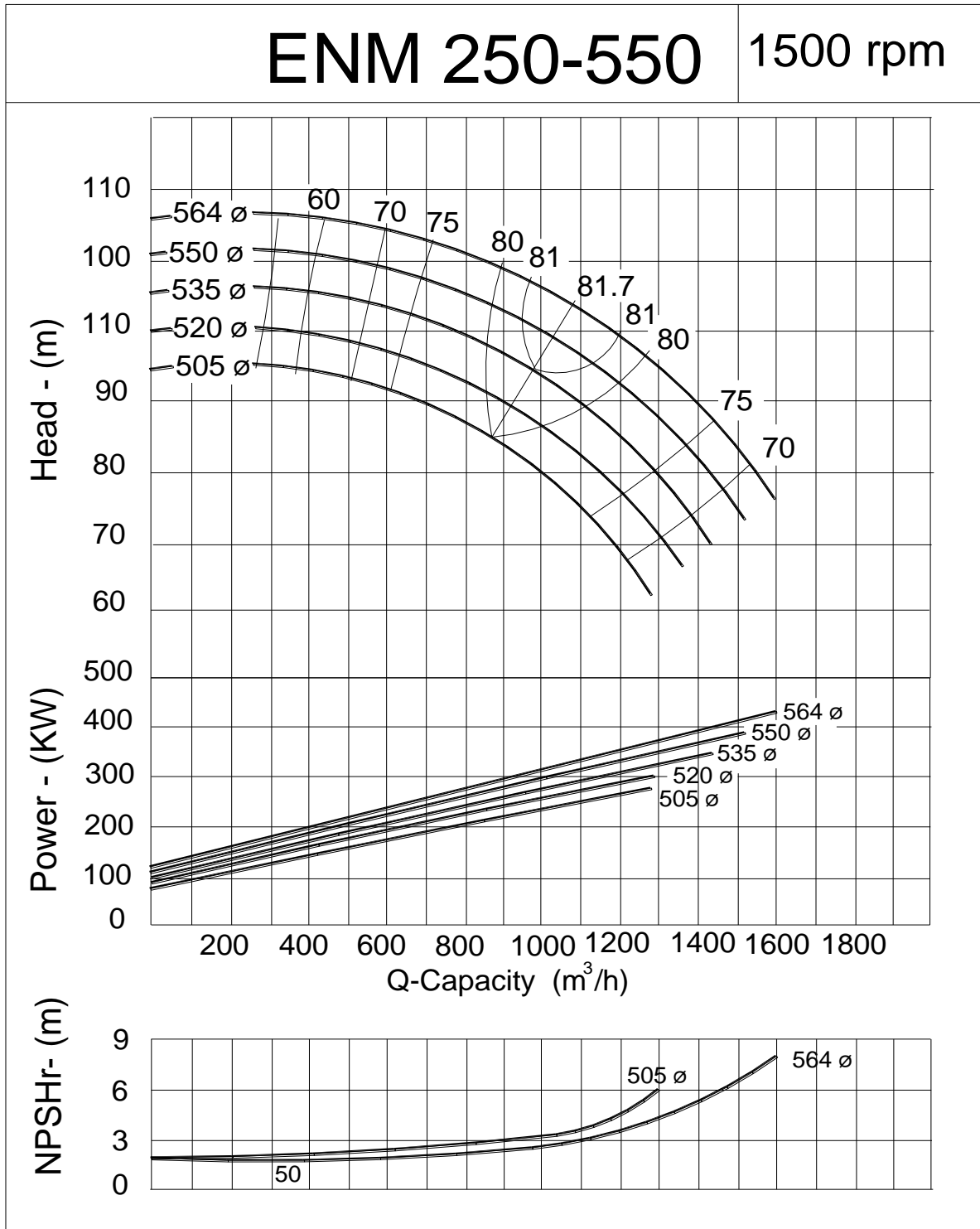
## Pump Dimensions



No	PUMP Size	Nozles (PN16)		Lenght		Height		Pump Feet			Fixing Details			Shaft End	
		DN Suc.	DN Del.	a	f	h1	h2	b	m1	m2	n1	n2	s1	d	l
1	ENM 250-550	300	250	230	544	500	425	400	300	240	800	650	30	75	140
2	ENM 300-550	350	300	230	544	550	500	400	300	240	800	650	30	75	140
3	ENM 350-550	400	350	240	625	600	500	425	360	290	1050	900	30	90	170
4	ENM 400-550	500	400	280	640	600	550	400	360	290	1050	900	30	90	170

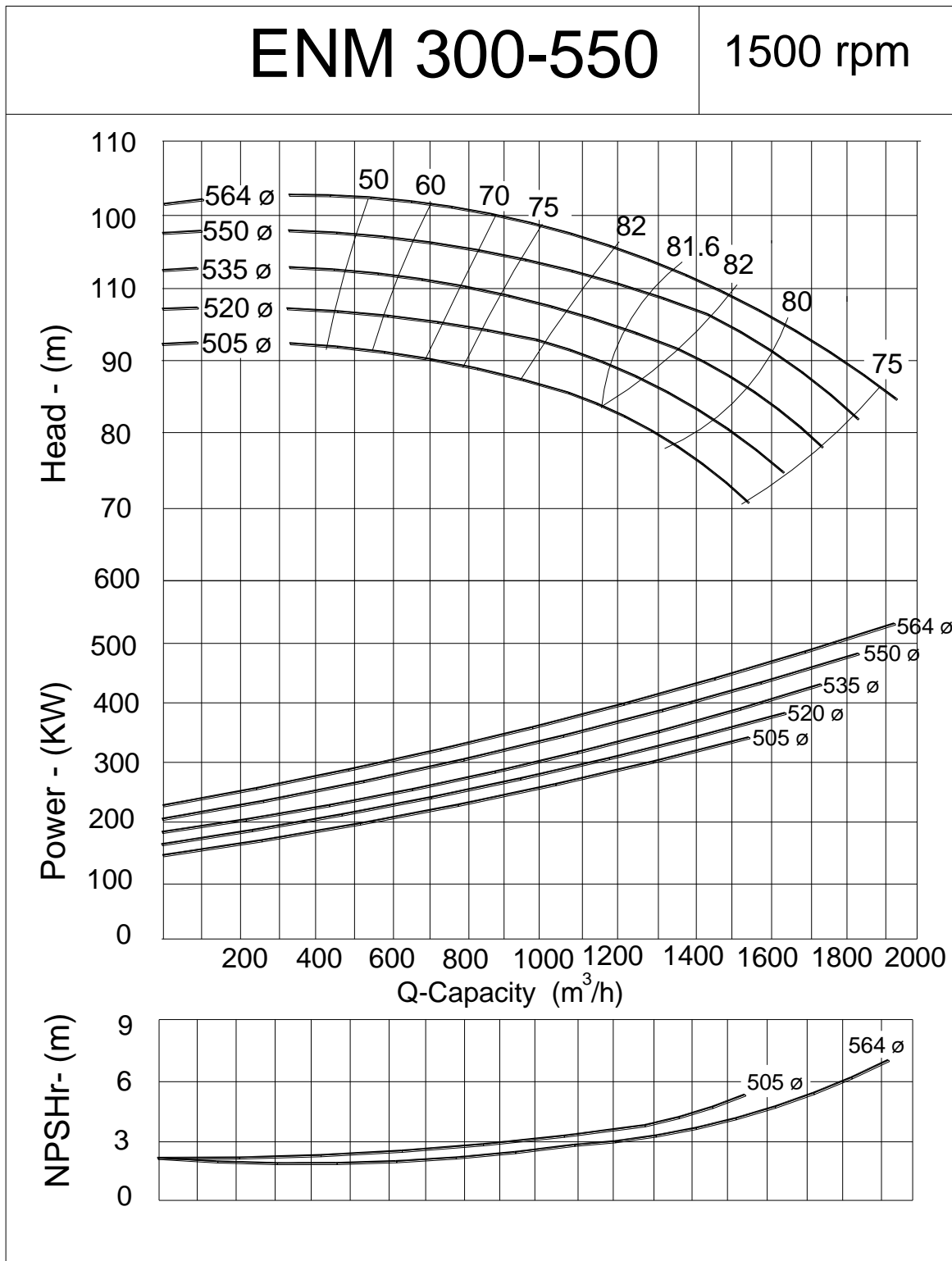
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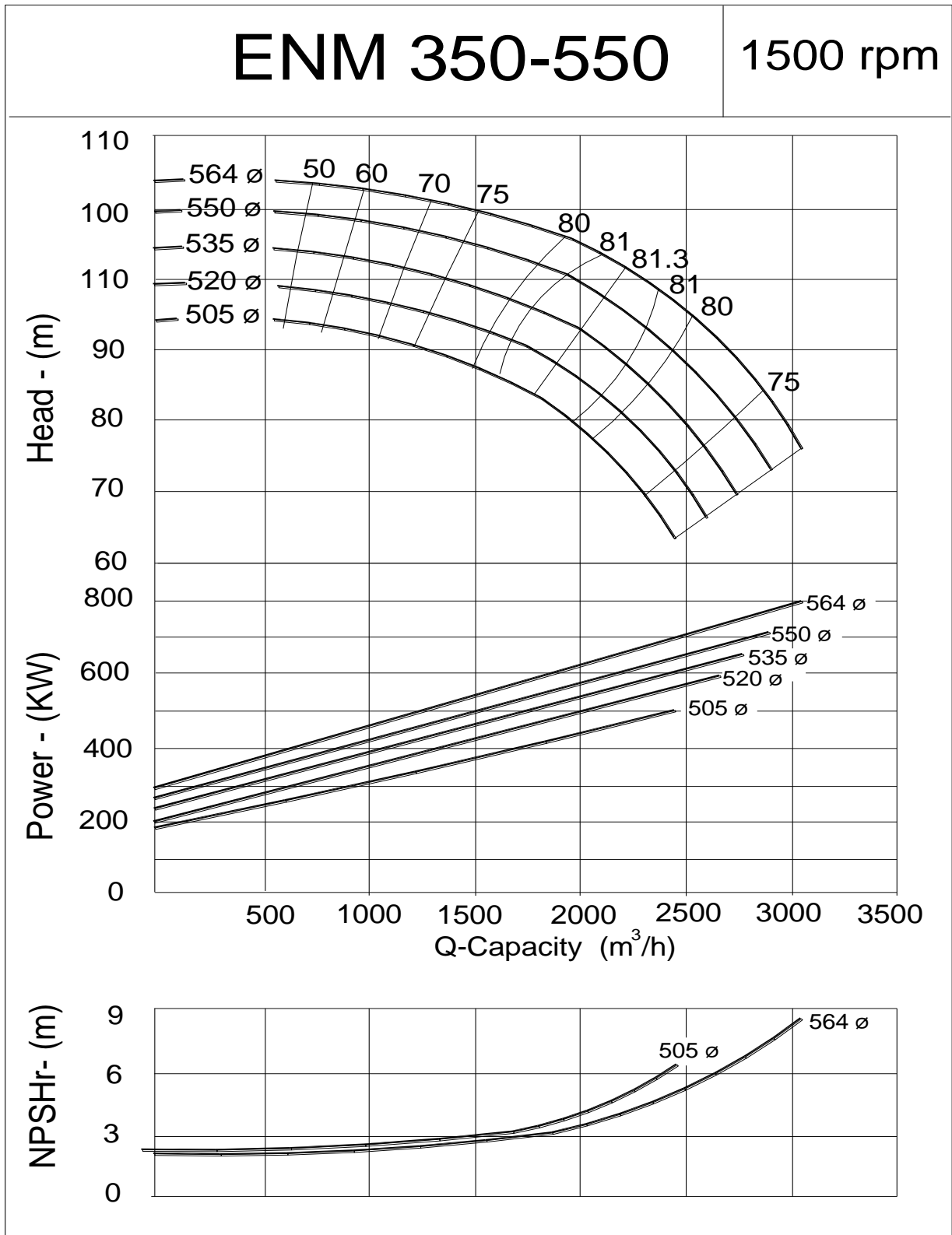
Performance Curves 1500 rpm



# ENM Fire Fighting Centrifugal Pumps

Performance Curves 1500 rpm

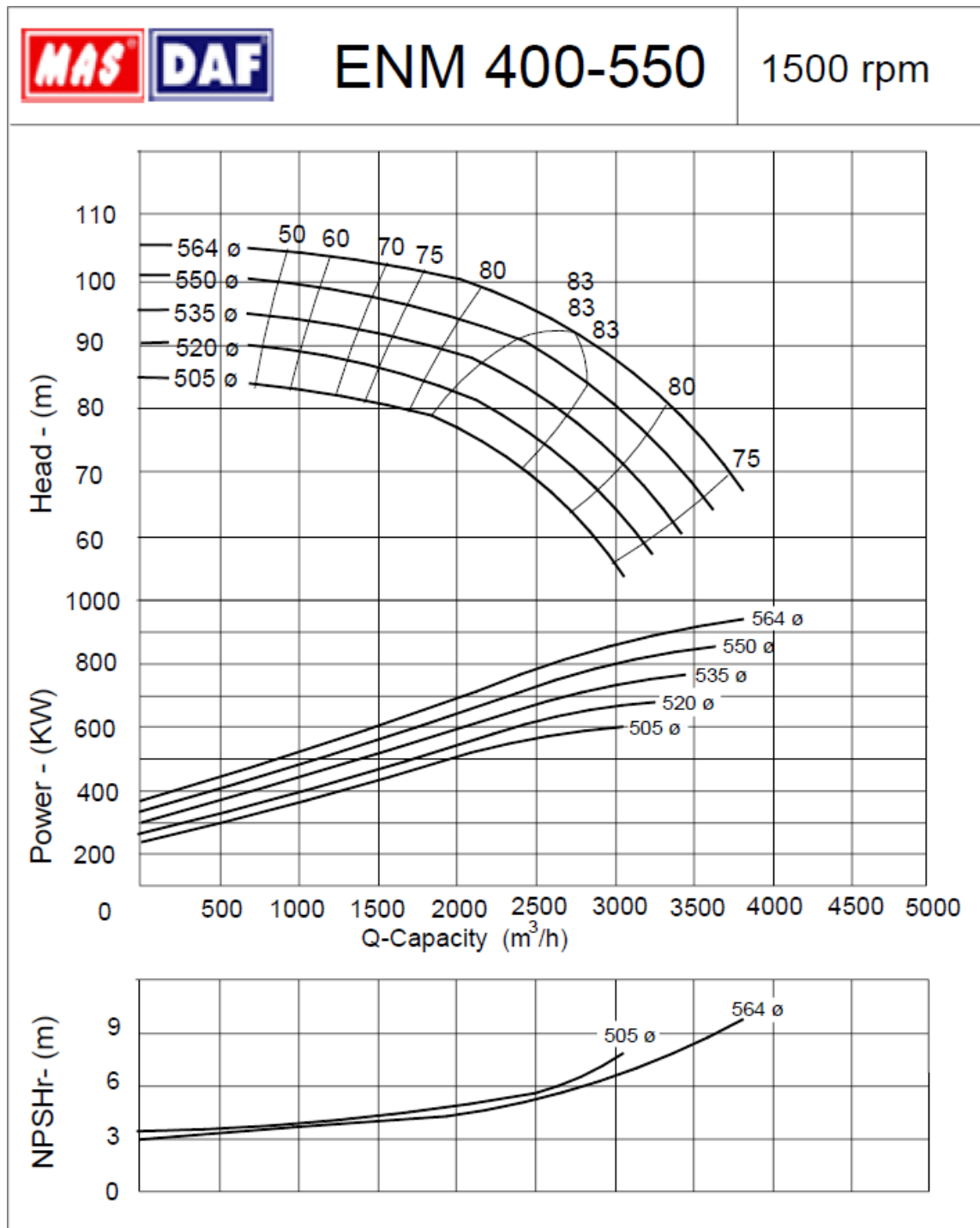






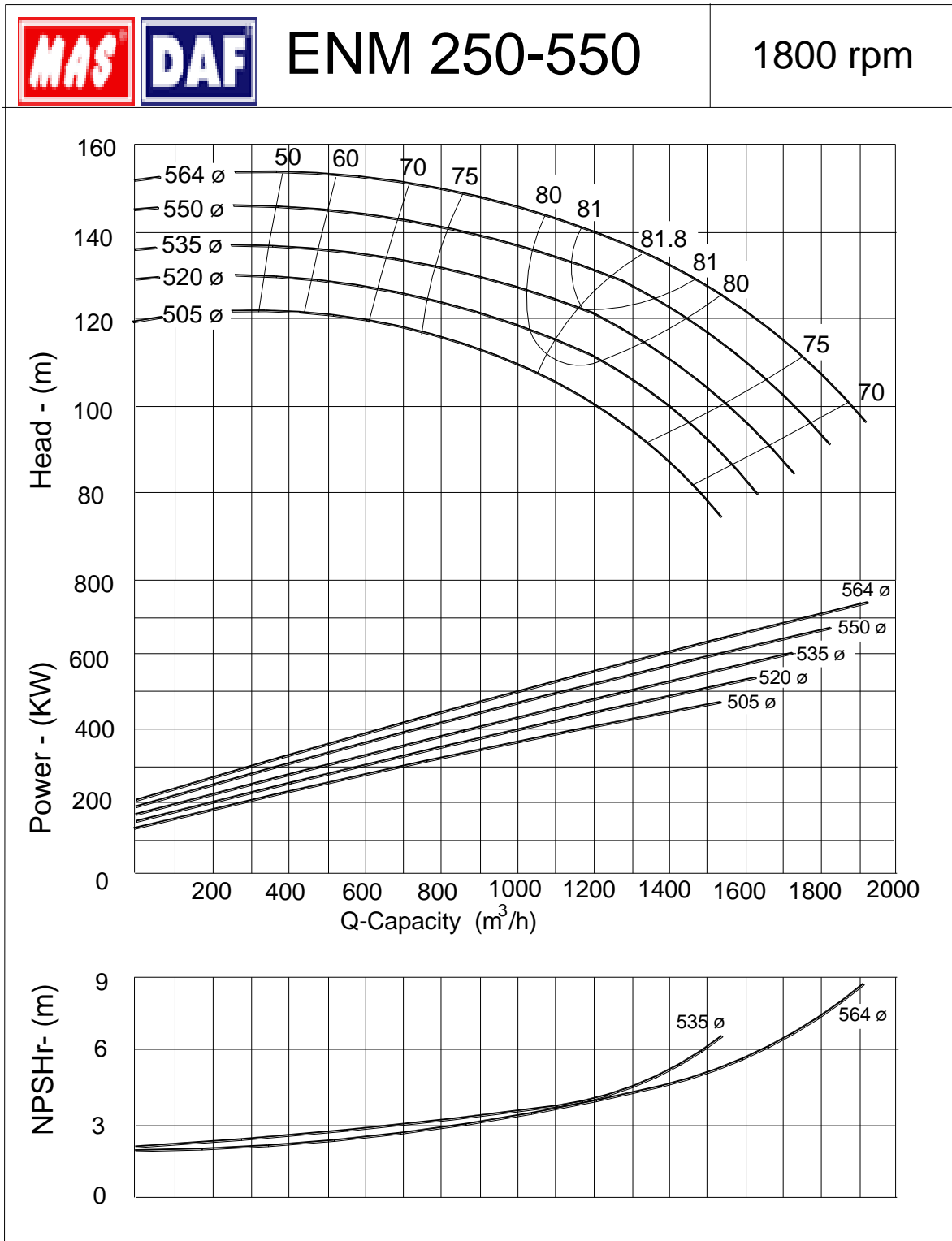
# ENM Fire Fighting Centrifugal Pumps

Performance Curves 1500 rpm



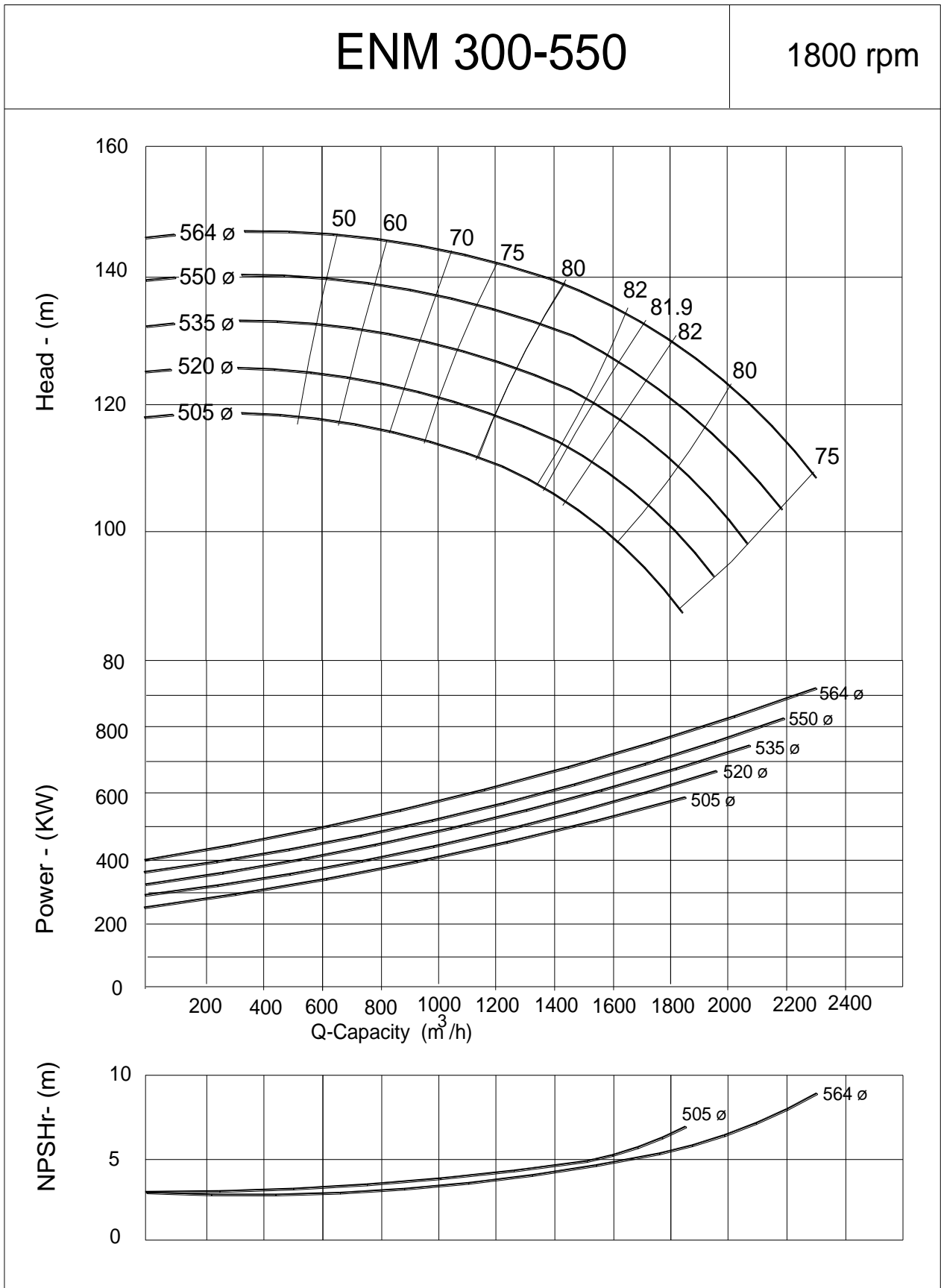
# ENM Fire Fighting Centrifugal Pumps

Performance Curves 1800 rpm



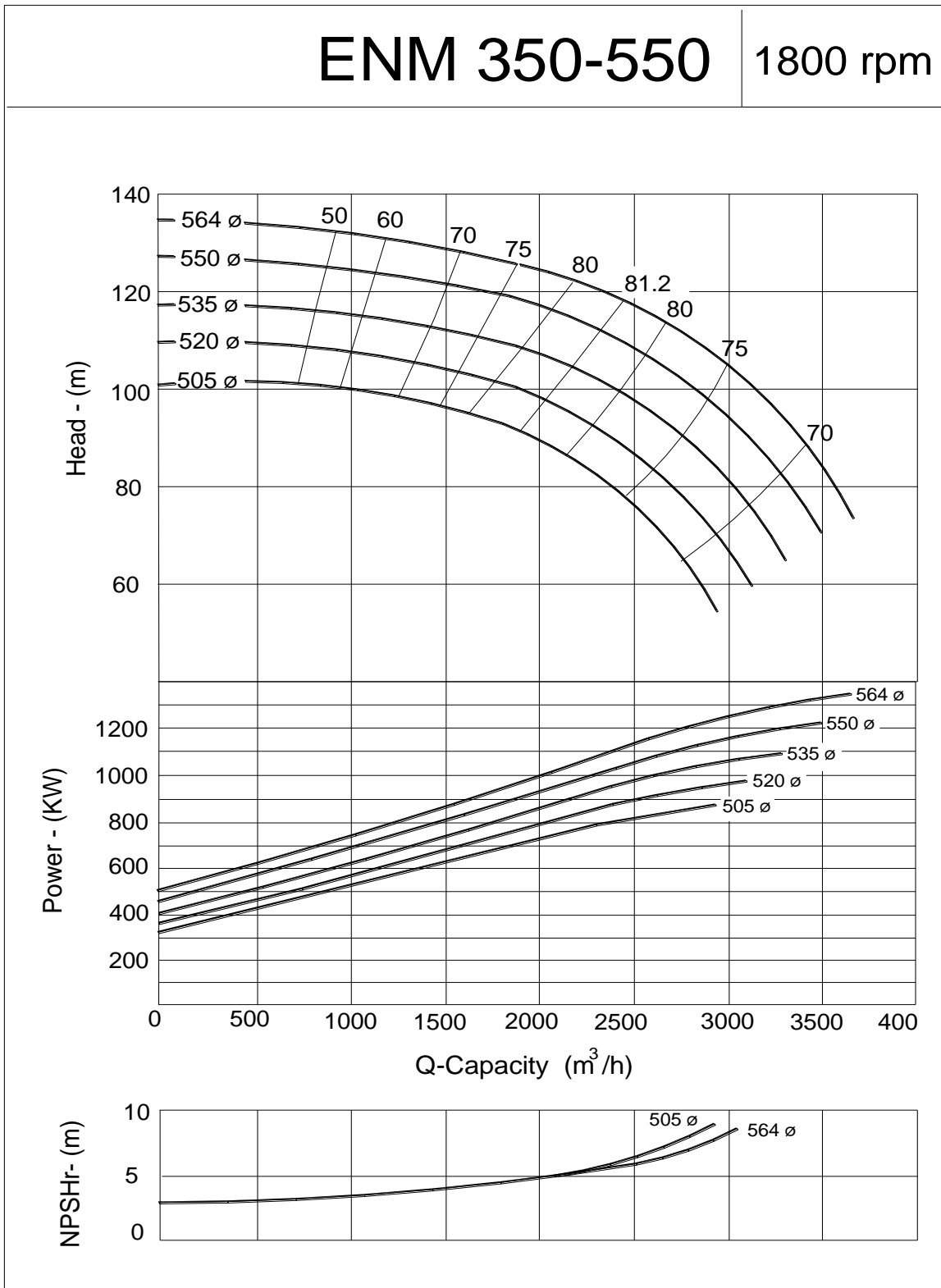
# ENM Fire Fighting Centrifugal Pumps

Performance Curves 1800 rpm



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Performance Curves 1800 rpm



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Performance Curves 1800 rpm

