

# 4 Specification Magneta Smedegaard twin pumps

## 4.1 Variable Speed Circulator Pumps

### Main applications

Heating, ventilation, air-conditioning, refrigerating and circulation systems

- One-pipe and two-pipe systems
- Underfloor heating systems
- Boiler or primary circuits
- Storage tank circuits
- Solar power systems
- Heat pumps

### Fluids handled

- Heating water to VDI 2035
- Higher viscosity fluids (e.g. water/glycol mixture up to mixing ratio of 1:1)
- Pure, thin-bodied, non-aggressive and non-explosive fluids not containing any mineral oil, solids or long fibres
- Fluids with a viscosity of 10 mm<sup>2</sup>/s max.

### Operating data

#### Operating properties

Characteristic		Value
Flow rate	Q	Screw-ended pumps: up to 13 m <sup>3</sup> /h (3,6 l/s) Flanged pumps: up to 57,6 m <sup>3</sup> /h (16,0 l/s)
Head	H	Screw-ended pumps: up to 12 m Flanged pumps: up to 18 m
Fluid temperature	t	-10 °C tot +110 °C
Ambient temperature	t	0 °C tot +40 °C
Operating pressure	p	Up to 16 bar
Pressure class		PN 6/10/16
Sound pressure level		< 45 dB[A]
Connection		Screwed connection: R 5/4 Flange: DN 32 to DN 65

### Designation:

#### Example Magneta Smedegaard 30-60D

Key to the designation

Code	Description
Magneta Smedegaard	High-efficiency pump
D	Twin pump
30	Nominal diameter of pipe connection
	30 = 5/4
	32 .... 65 = DN 32 to DN 65
60	Head in m x 10 (example 60 = 6 m)

### Design details

#### Design

- High-efficiency, maintenance-free, flanged or screw-ended wet rotor pump (glandless) with high-efficiency electric motor and continuously variable differential pressure control
- Twin pump

#### Drive

- High-efficiency electric motor with continuously variable differential pressure control
- Electronically commutated synchronous motor with permanent magnet rotor
- Integrated motor protection
- 1~230 VAC, 50/60 Hz
- IP44 enclosure
- Thermal class F
- Temperature class TF 110
- Interference emissions EN 61 000-6-3
- Interference immunity EN 61 000-6-2

#### Bearings

- Product-lubricated special plain bearing

#### Connections

- Screw-ended or flanged

#### Operating modes

- Constant-pressure and proportional-pressure control
- Eco Mode with dynamic differential pressure setpoint adjustment
- Open-loop control mode with manual input of one of 10 speed levels



## Automatic functions

- Continuous output adjustment depending on the mode of operation
- 0 – 10 V with external differential pressure setpoint/speed setting
- Dual-pump operation
- Pump changeover after 24 hours runtime of a pump
- Redundancy by automatic start-up of the stand-by pump in the event of a duty pump failure
- Modbus
- Setback operation
- External start/stop
- Deblocking function
- Self-venting function
- Soft start

## Manual functions

- Setting the operating mode
- Setting the differential pressure setpoint
- Setting the speed level
- Locking the control panel

## Signalling and display functions

- General fault message
- Error codes indicated on the display

Additional for pumps 40-120D/-180D, 50-100D/-120D, 65-80D/-120D

- Integrated "in operation" message (volt-free changeover contact)
- Alternating display of flow rate, electrical input power and head

Pumps 30-60D/-100D, 32-80D/-120D, 40-80D/-100D, 50-80D

- Alternating display of flow rate and electrical input power

## Materials

Overview of available materials

Component	Material
Volute casing	Grey cast iron with cathodic electro coating (EN-GJL-200)
Shaft	Stainless steel 1.4034
Impeller	Plastic with glass fibre content (PSUGF30)
Bearing	Ceramics/carbon
Can	Stainless steel 1.4301
Heat insulation	Polypropylene

## Product benefits

- Maximum savings of operating costs by high-efficiency technology combined with speed control
- Future-proof by maximum energy efficiency, exceeding future energy efficiency regulations such as ErP 2015.
- All-in concept saves investment and commissioning costs.
- Simple to set with press & turn dial combined with an integrated display and symbols indicating the operating mode
- High availability by dual pump operation and integrated protective functions
- New Eco Mode enables additional savings of more than 40 % compared with Proportional-pressure Control.

## Certifications

Label	Effective in:	Note
	Europe	EEI < 0,23

## Design

Features and functions

## Functions/features

- Operating modes
- $\Delta p$ -v for variable differential pressure
- $\Delta p$ -c for constant differential pressure
- Eco Mode with dynamic differential pressure setpoint adjustment
- Boost Mode

## Manual functions

- Setting the operating mode
- Setting the differential pressure setpoint
- Setting the speed level

## Automatic functions

- Continuous output adjustment depending on the mode of operation ( $\Delta p$  control)
- Dual-pump operation
- Setback operation
- Deblocking function (start-up at max. torque)
- Soft start

## Interfaces of all-in concept

- Integrated "in operation" message (see signalling and display functions)
- Integrated 0 - 10 V interface for differential pressure/speed setpoint

**Functions/features**

Serial digital Modbus RTU interface for connection to a building management system via RS485 bus system (not for Magneta Smedegaard D 30-60D/-100D, 32-80D/-120D, 40-80D/-100D, 50-80D)

Dual pump management with duty/stand-by operation with two single pumps (automatic changeover in the event of a fault as well as timer-controlled changeover)

Integrated start/stop interface (terminal pair RUN)

Integrated general fault message relay (volt-free changeover contact)

**Signalling and display functions**

Integrated volt-free "in operation" message relay (Magneta Smedegaard 40-120/D-180D, 50-100D/-120D)

Alternating display of flow rate, electrical input power, and head (Magneta Smedegaard 40-120D/180D, 50-100D/120D)

Alternating display of flow rate and electrical input power (Magneta Smedegaard 30-100D, 32-120D)

Operating mode displayed by symbols

Error codes indicated on the display

**Technical data**

## Magneta Smedegaard twin pump selection table

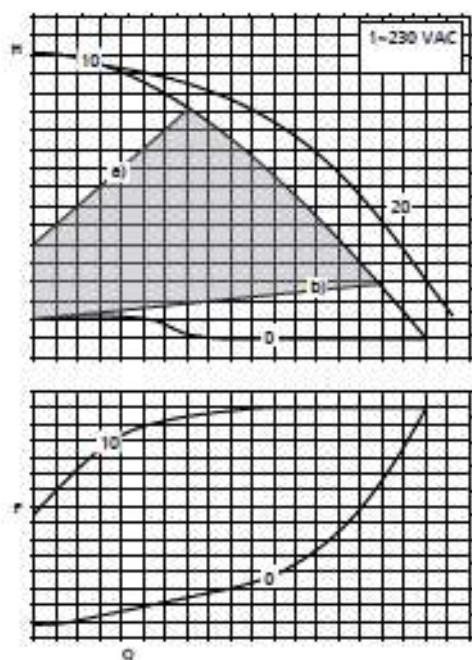
Magneta Smedegaard	R-DN	G	PN	P1 Watt	Motor-protection	Signaling contact	Nom current A1x230V 50/60Hz	art nr	kg
30-60D	R 5/4	2"	10/16	6,8 -150 [540,5]	#	*	0,03 - 1,16 [2,35]	SME06330060400	12,8
32-80D	DN32		6/10	6,8 - 300 [667]	#	*	0,03 - 1,44 [2,9]	SME06332080400	13,5
30-100D	R 5/4	2"	10/16	6,6 - 180 [759]	#	*	0,03 - 1,6 [3,3]	SME06330100400	12,8
32-120D	DN32		6/10/16	11,6 - 350 [713]	#	*	0,05 - 1,5 [3,1]	SME06332120400	19,4
40-80D	DN40		6/10/16	12,8 - 270 [529]	#	*	0,05 - 1,2 [2,3]	SME06440080400	22,8
40-100D	DN40		6/10/16	12,5 - 350 [667]	#	*	0,04 - 1,6 [2,9]	SME06440100400	22,8
40-120D	DN40		6/10/16	54,6 - 850 [1748]	#	*	0,24 - 3,7 [7,6]	SME06440120400	41,6
40-180D	DN40		6/10/16	52,2 - 850 [1679]	#	*	0,23 - 3,7 [7,3]	SME06440180400	41,6
50-80D	DN50		6/10/16	10,1 - 350 [690]	#	*	0,045 - 1,6 [3,2]	SME06550080400	28,6
50-100D	DN50		6/10/16	48,3 - 720 [1745]	#	*	0,21 - 3,7 [7,7]	SME06550100400	54
50-120D	DN50		6/10/16	49,9 - 850 [1794]	#	*	0,22 - 3,7 [7,8]	SME06550120400	54
65-80D	DN65		6/10/16	60,4 - 635 [1380]	#	*	0,26 - 3,0 [6,0]	SME06665080400	62
65-120D	DN65		6/10/16	60 - 800 [1794]	#	*	0,26 - 3,78 [7,8]	SME06665120400	62

# = Integrated motor protection in the terminal box

\* = General fault message; in addition, an operational message can be provided as an option



## Description of the characteristic curve



## Minimum pressure

Minimum pressure  $p_{\min}$  at the pump suction nozzle serves to avoid cavitation noises at an ambient temperature of +40 °C and the indicated fluid temperature of  $t_{\max}$ .

The values are applicable up to 300 m above sea level. For installation at altitudes > 300 m, an allowance of +0.01 bar/100 m must be added.

## Description of the Eco Mode

In Eco Mode, the pump characteristic curve (1) is quadratic. Starting at the discharge head setpoint  $H_S$ , the characteristic curve intersects the discharge head axis at  $H_0 = 1/4 \times H_S$ . By changing the differential pressure setpoint this pump characteristic curve can be adjusted to higher or lower differential pressures or discharge heads. Compared with the Proportional-pressure Control operating mode the Eco Mode can save more than 40% in electrical input power. See below for an example of an Eco Mode characteristic curve.

## Selection example

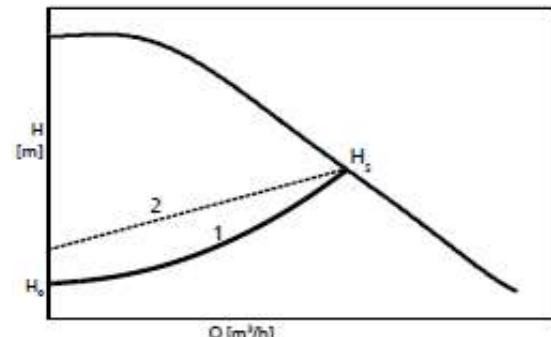
0	Level 0	Minimum characteristic curve
10	Level 10	Maximum characteristic curve
Control range		
a)	Control curve, maximum head	
b)	Control curve, minimum head	
20	Maximum output of both pumps	
info The characteristic curve can be adjusted between a) and b) by turning the control dial.		

Table 7: Fluid temperature specified for the ambient temperature [°C]

	Fluid temperature	Ambient tem-
	(°C)	(°C)
All	110	30
	90	40

Table 8: Minimum inlet pressure  $p_{\min}$  [bar] specified for the fluid temperature [°C]

	Fluid temperature	Pression min-
	(°C)	imum
All	Up to 80	0.5
	81 - 95	1,5



1	Eco Mode characteristic curve
2	Proportional-pressure Control characteristic curve for comparison

## Description of the Modbus interface

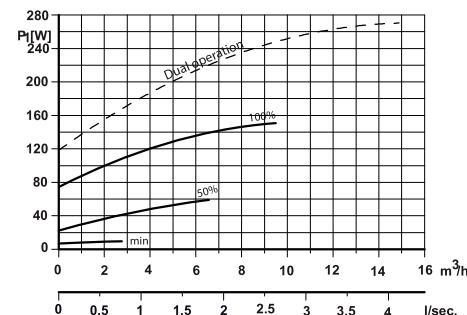
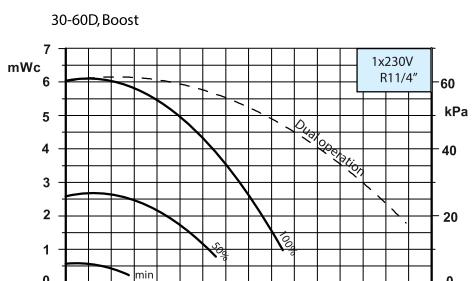
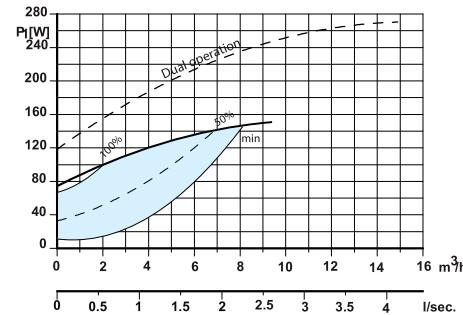
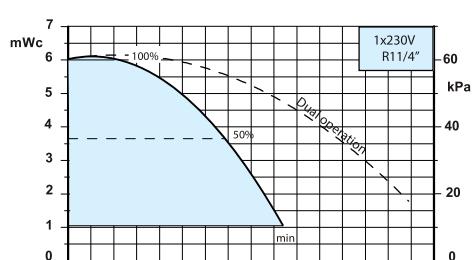
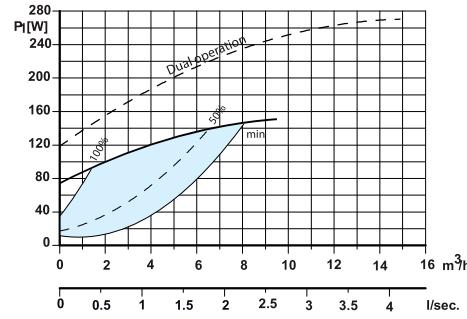
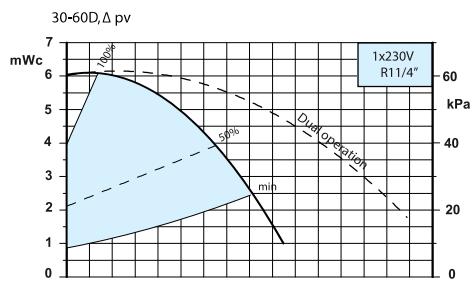
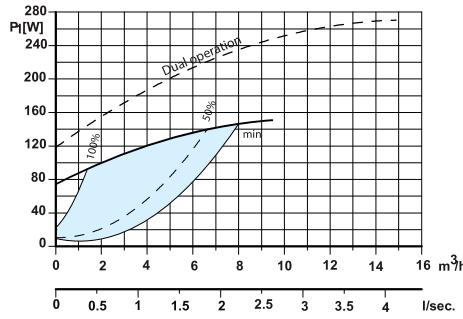
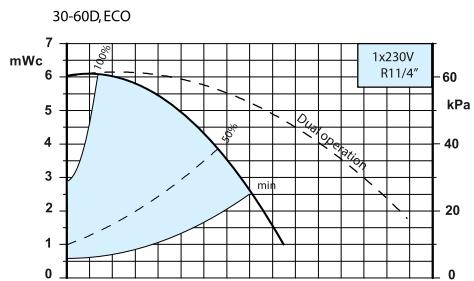
Description see operating manual of the pump.

## 4.2 Magneta Smedegaard 30-60D

$EE \leq 0,23$



30-60D

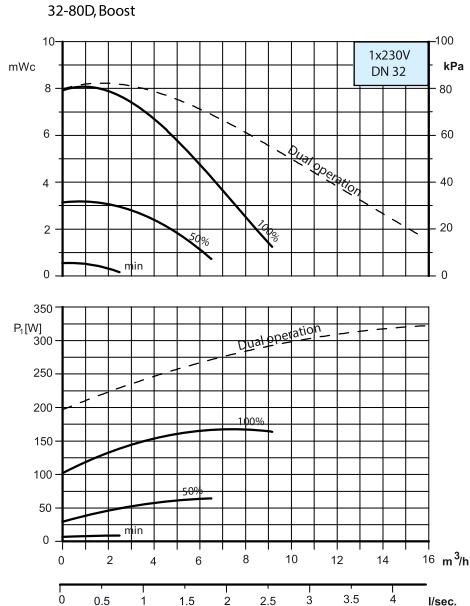
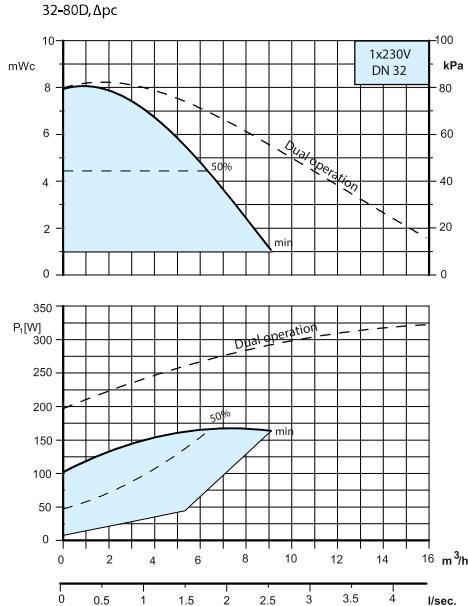
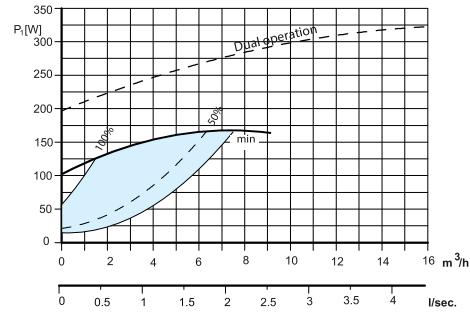
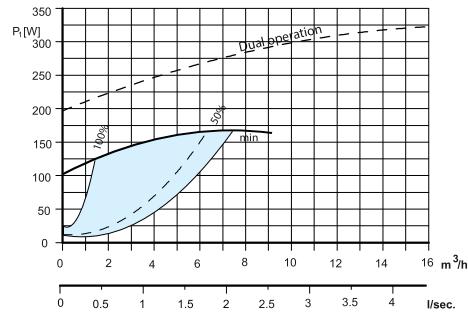
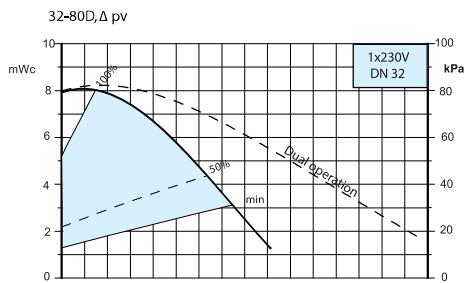
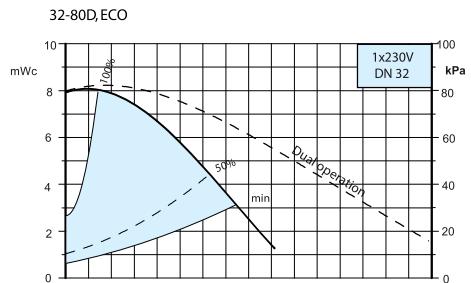


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## 4.3 Magneta Smedegaard 32-80D

**32-80D**

EEI  $\leq 0,23$

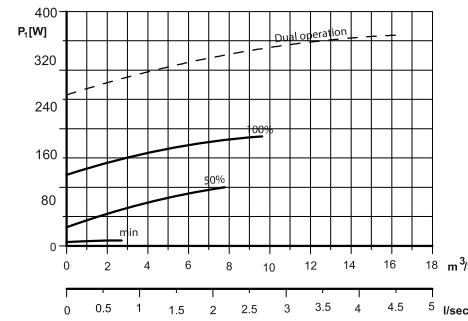
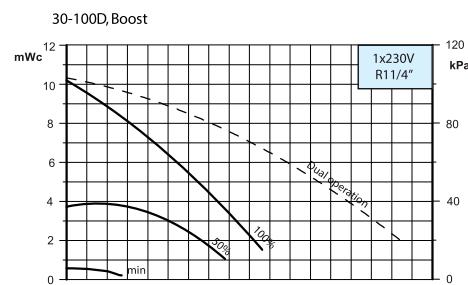
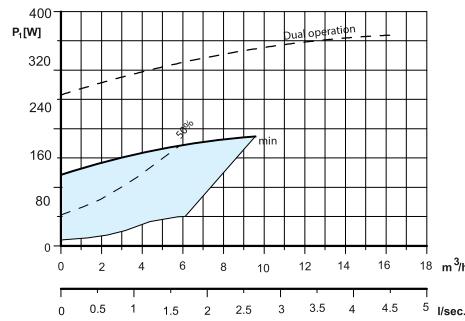
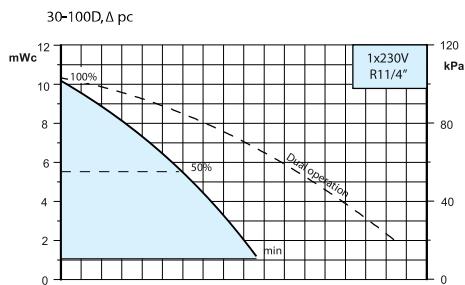
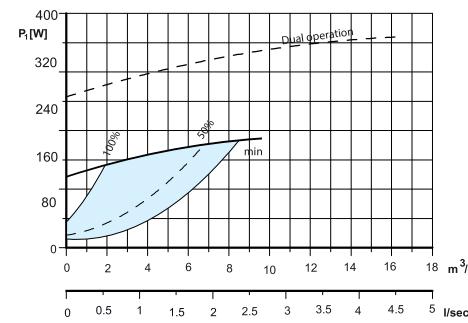
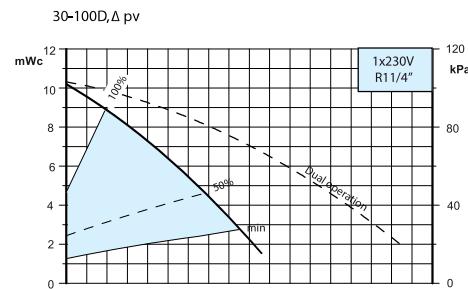
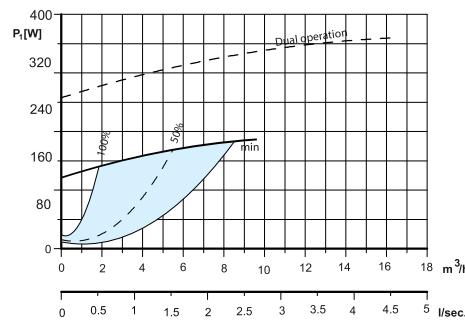
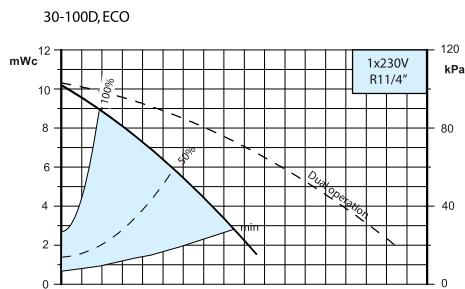


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## 4.4 Magneta Smedegaard 30-100D

**30-100D**

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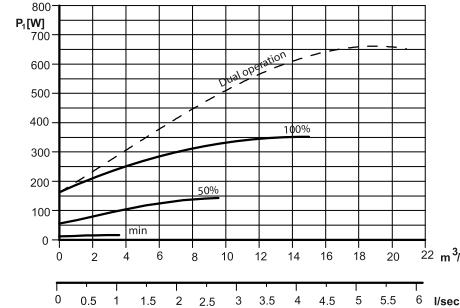
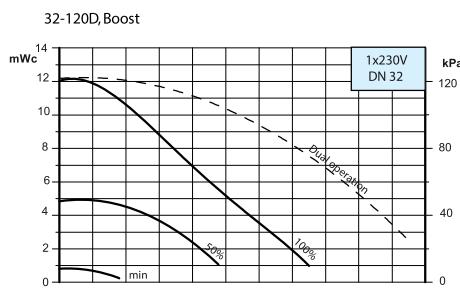
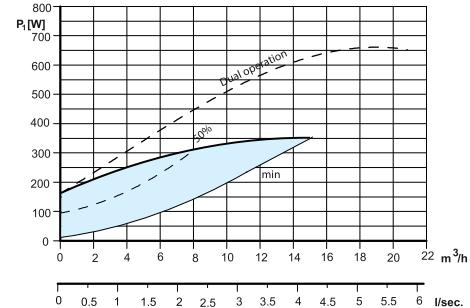
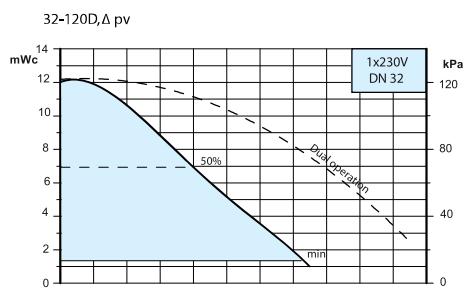
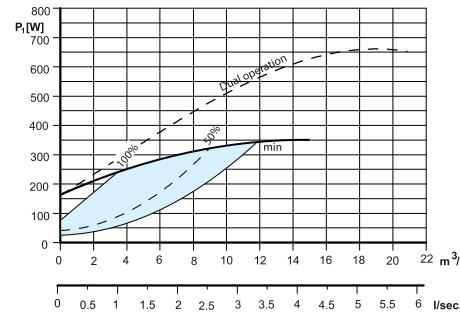
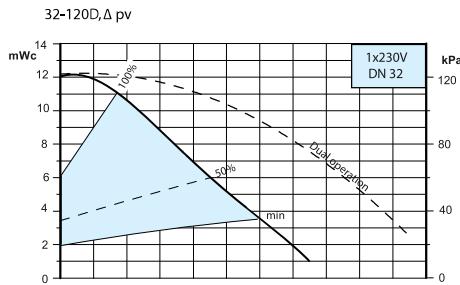
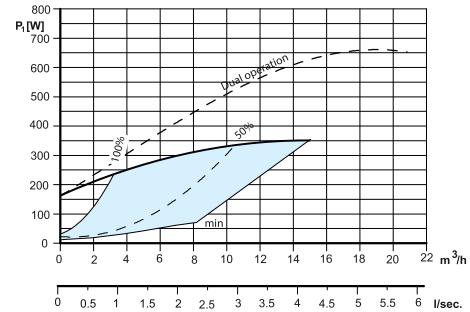
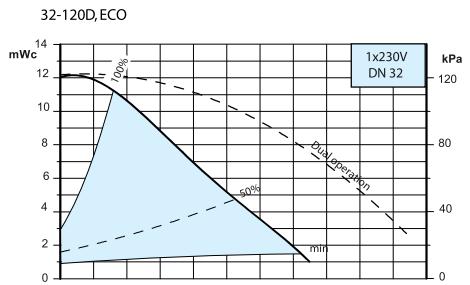


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## 4.5 Magneta Smedegaard 32-120D

32-120D

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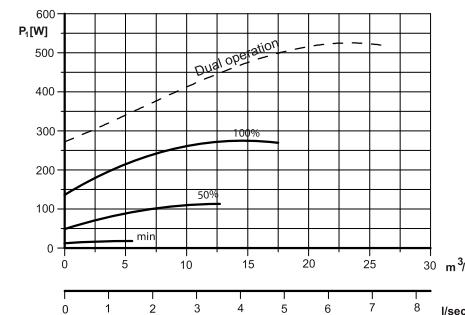
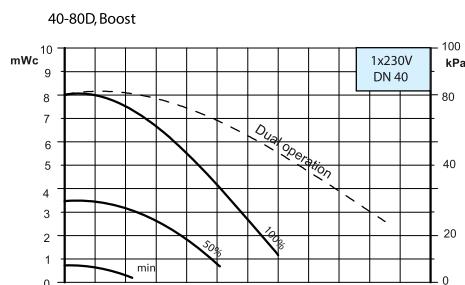
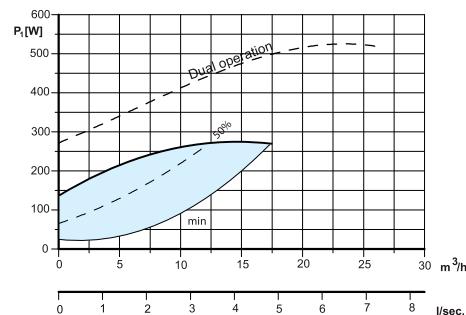
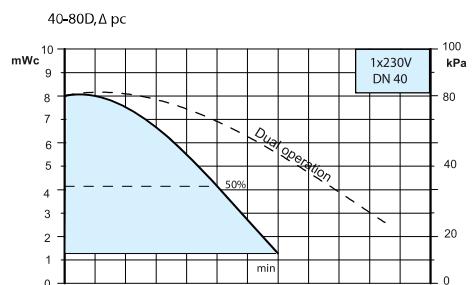
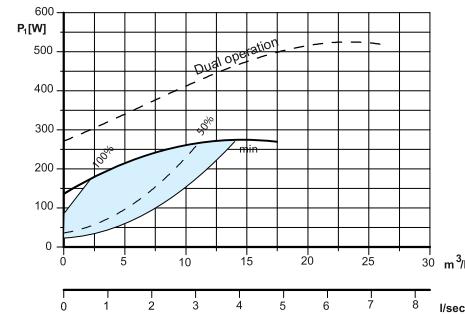
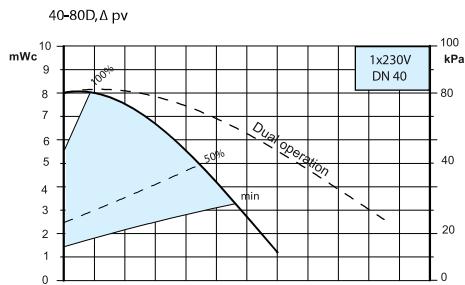
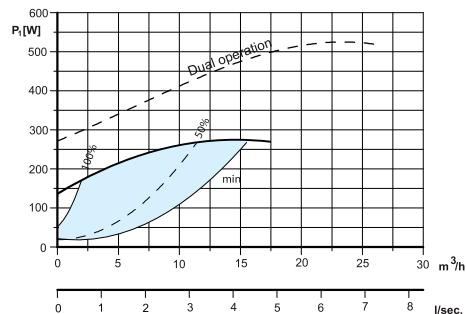
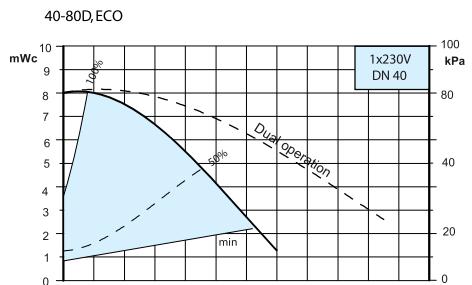


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## 4.6 Magneta Smedegaard 40-80D

**40-80D**

EEI ≤ 0,23

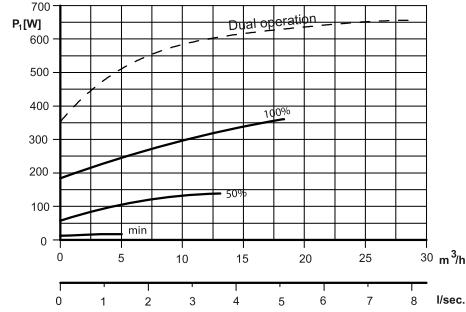
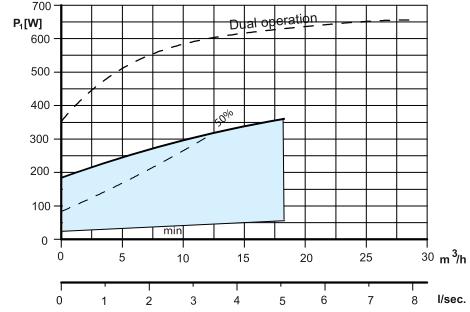
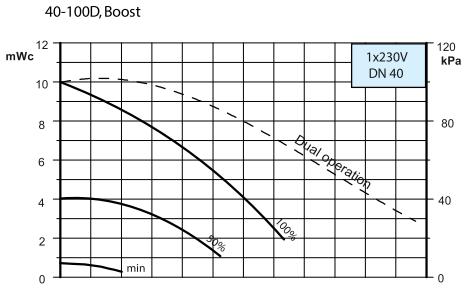
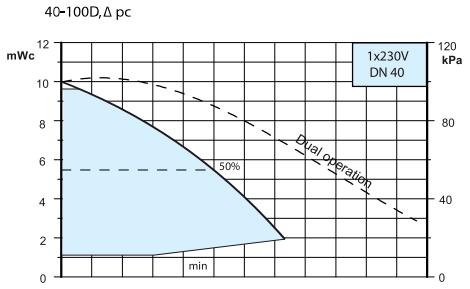
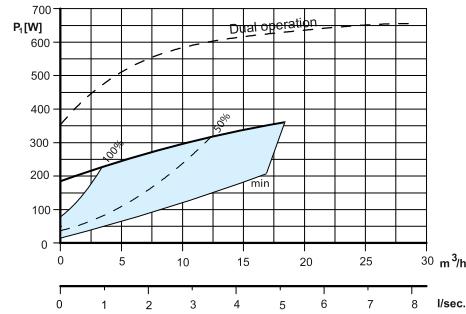
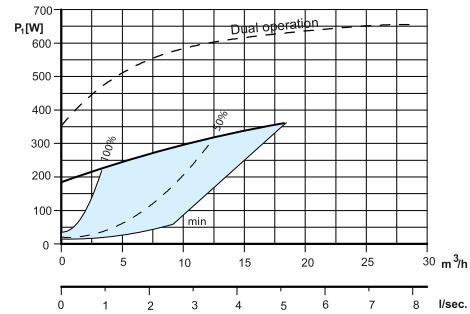
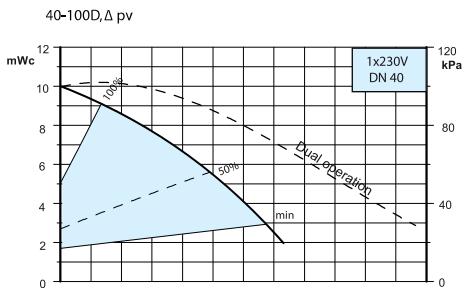
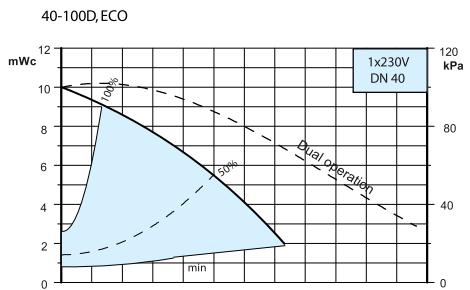


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## 4.7 Magneta Smedegaard 40-100D

**40-100D**

EEI  $\leq 0,23$



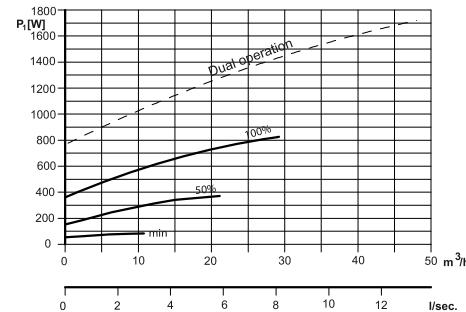
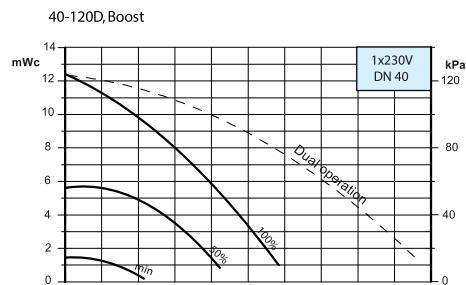
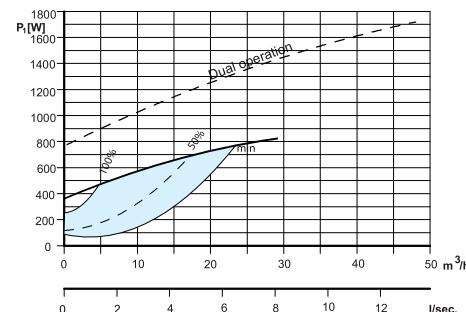
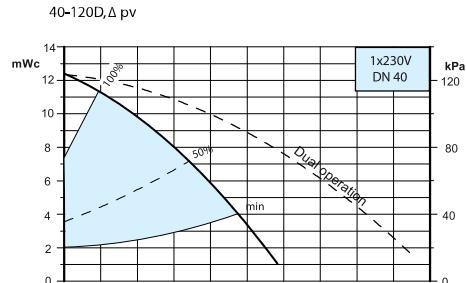
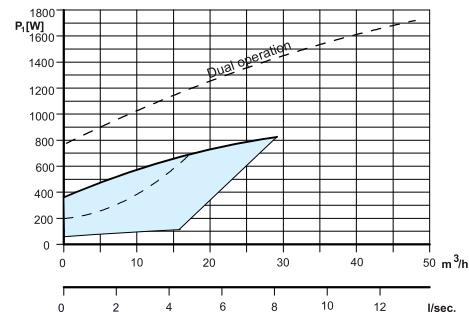
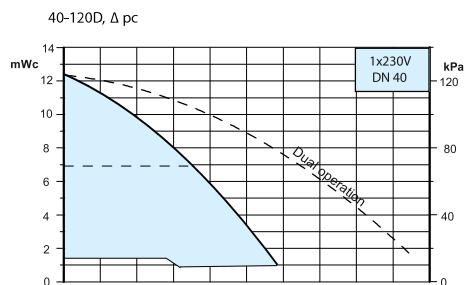
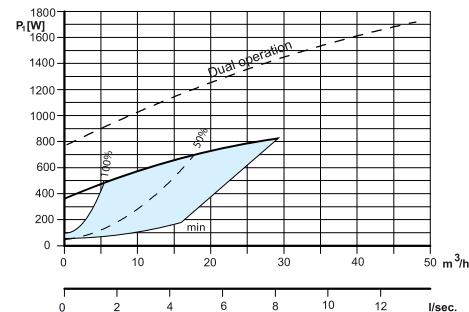
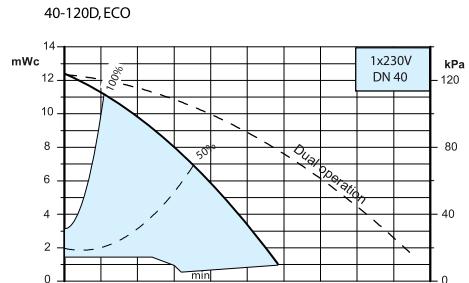
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## 4.8 Magneta Smedegaard 40-120D

EEI ≤ 0,23



40-120D

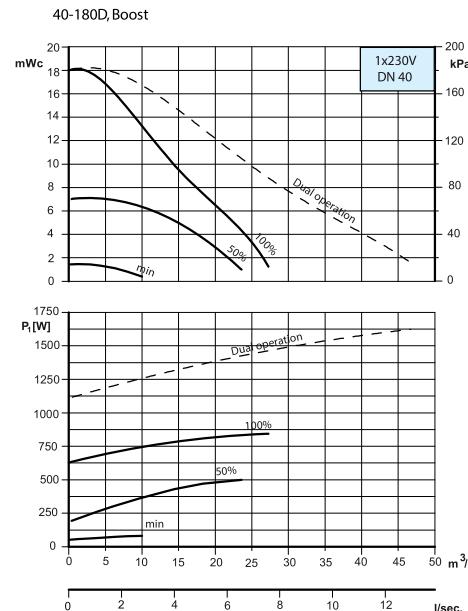
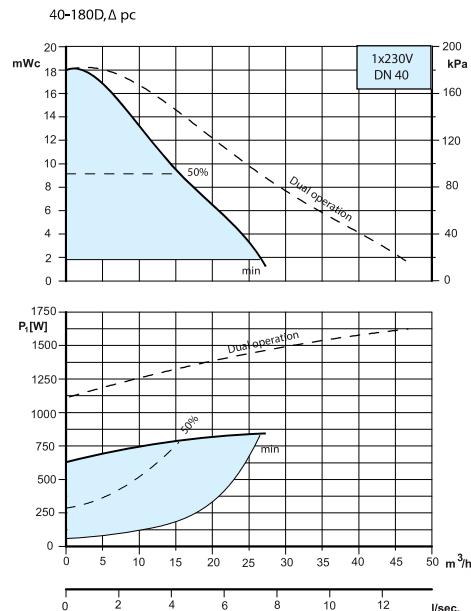
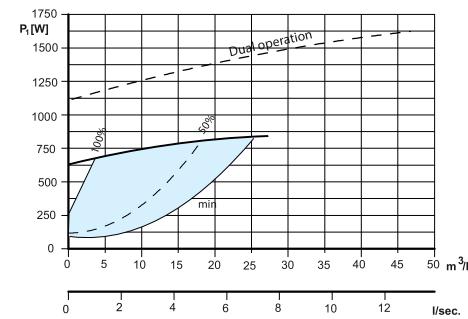
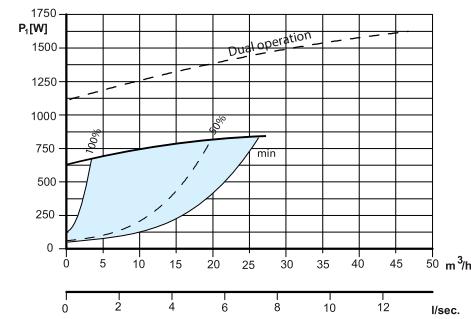
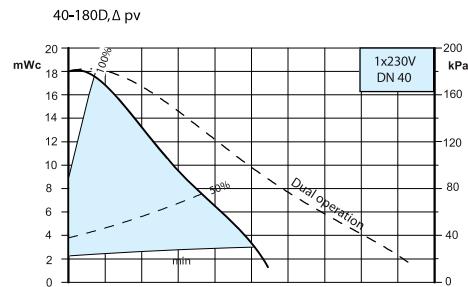
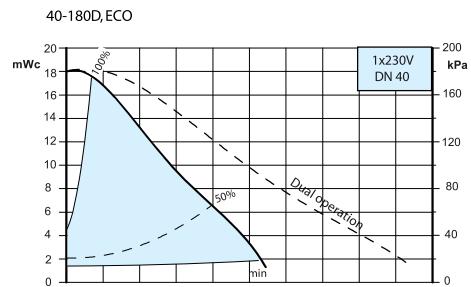


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## 4.9 Magneta Smedegaard 40-180D

**40-180D**

EEI  $\leq 0,23$

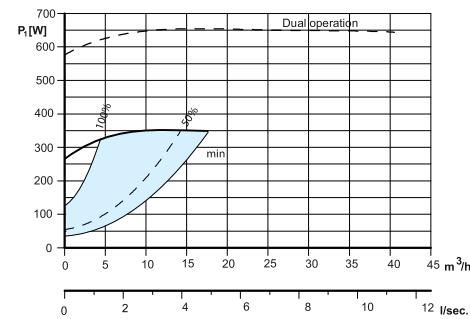
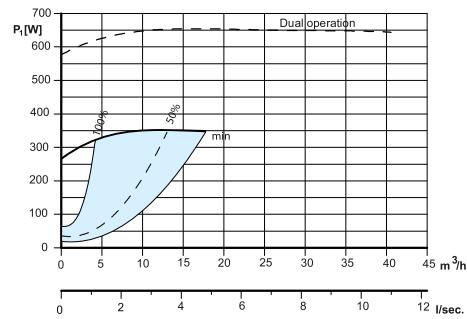
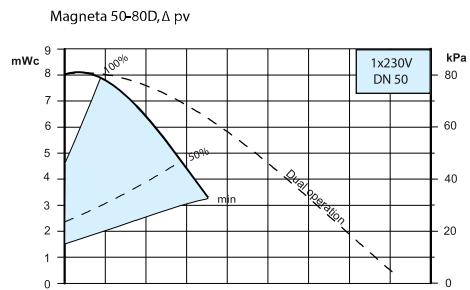
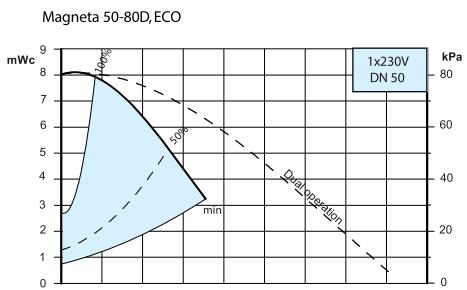


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## 4.10 Magneta Smedegaard 50-80D

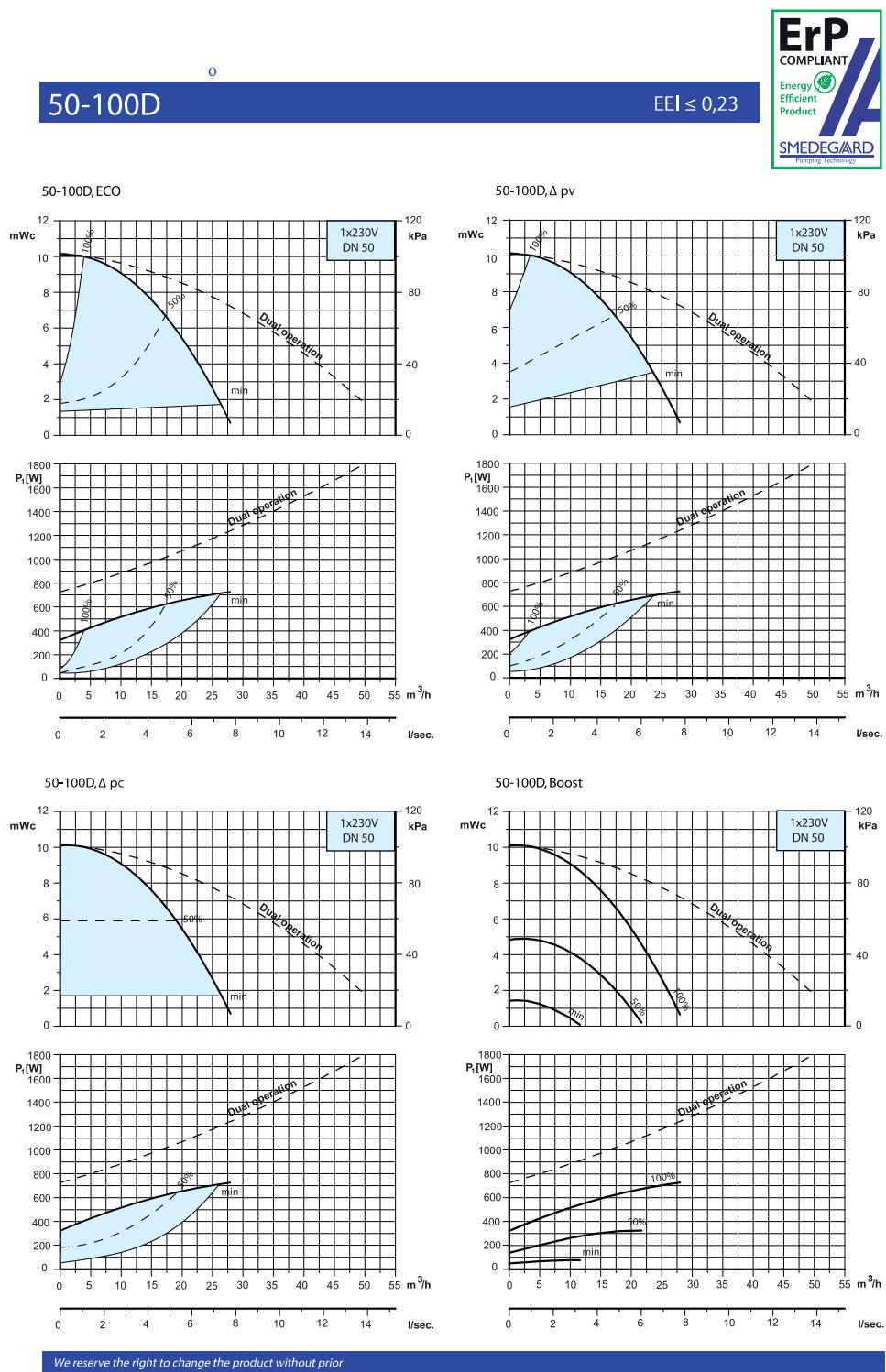
**50-80D**

EEI ≤ 0,23



We reserve the right to change the product without prior notice and take no responsibility for inaccuracies or misprints.

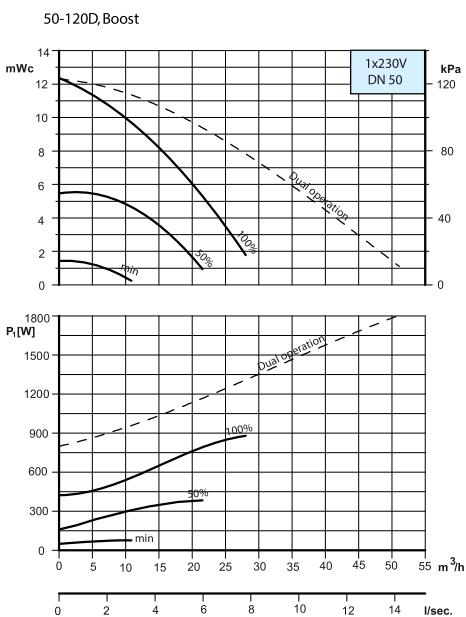
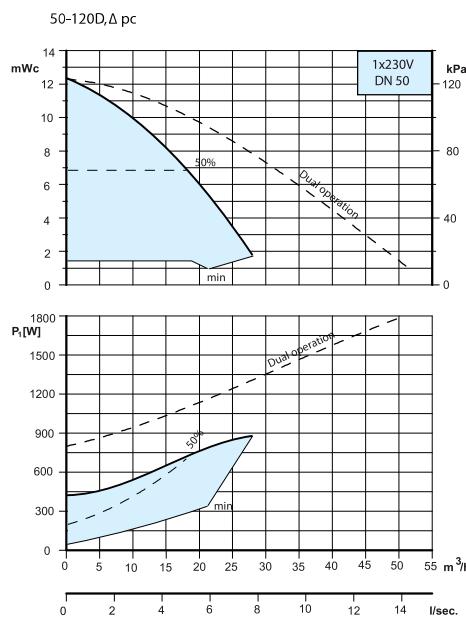
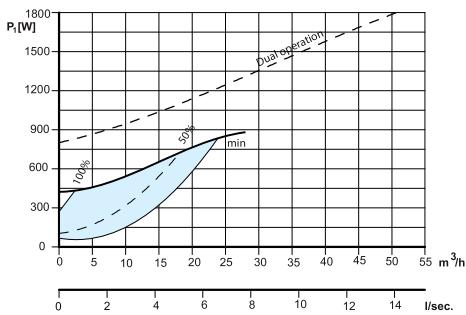
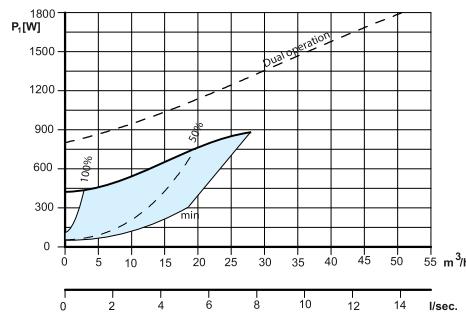
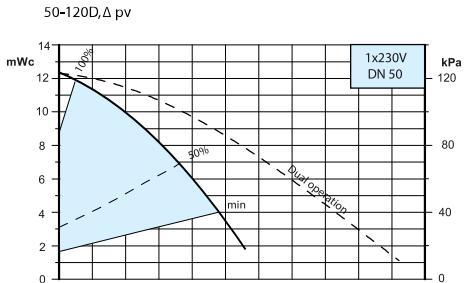
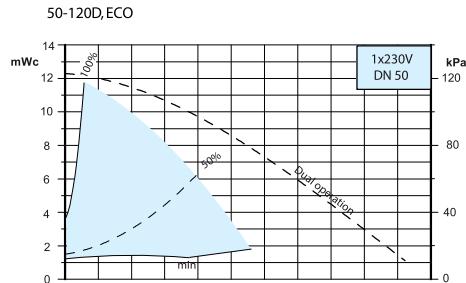
## 4.11 Magneta Smedegaard 50-100D



## 4.12 Magneta Smedegaard 50-120D

50-120D

EEI ≤ 0,23



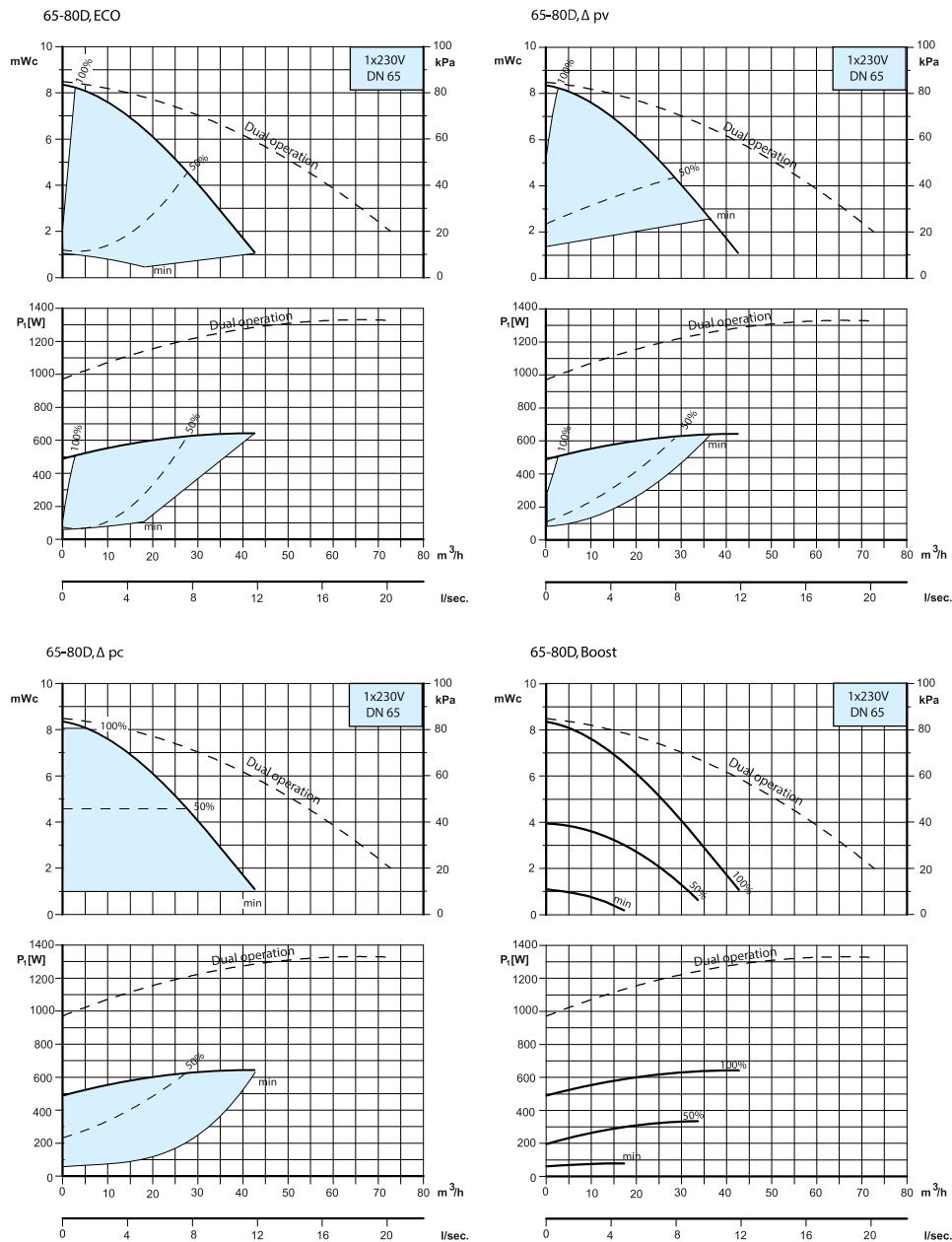
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## 4.13 Magneta Smedegaard 65-80D



**65-80D**

EEI ≤ 0,23

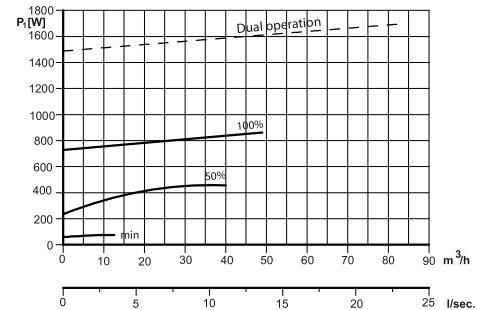
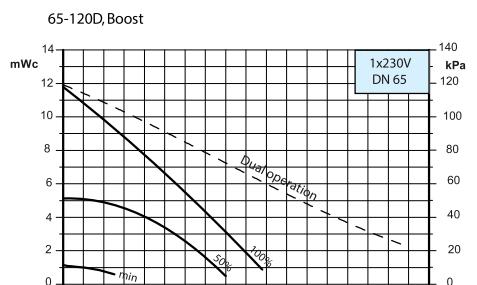
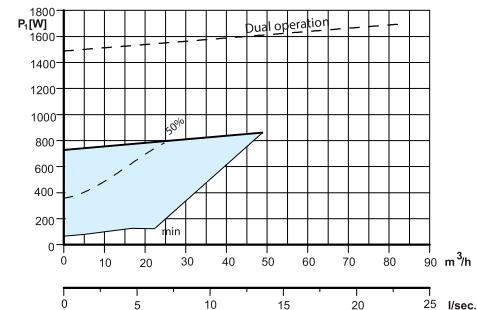
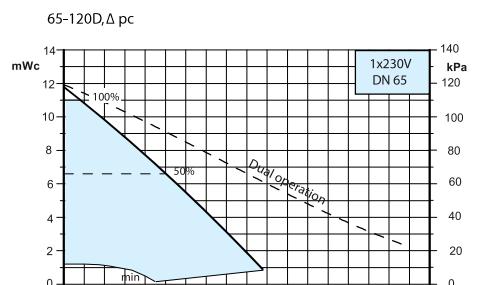
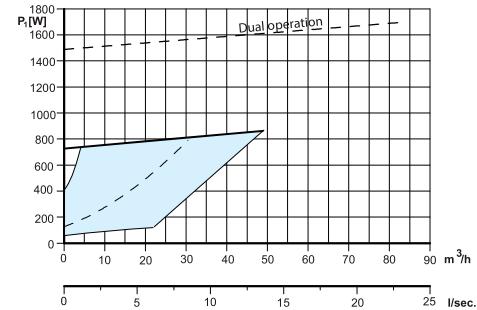
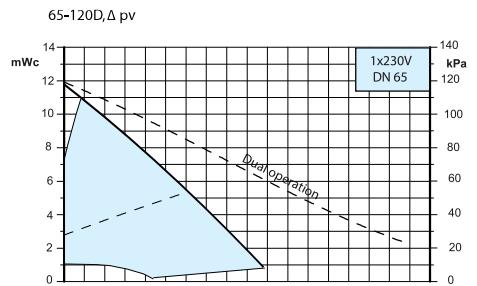
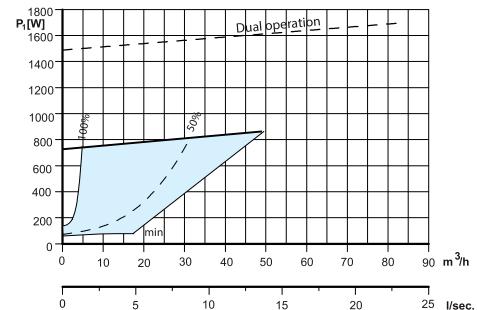
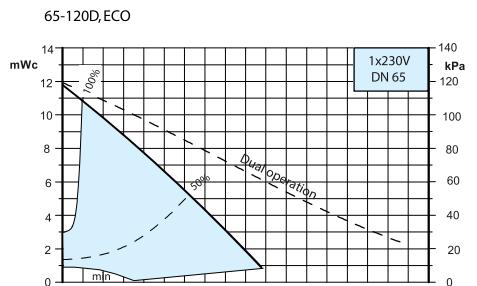


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## 4.14 Magneta Smedegaard 65-120D

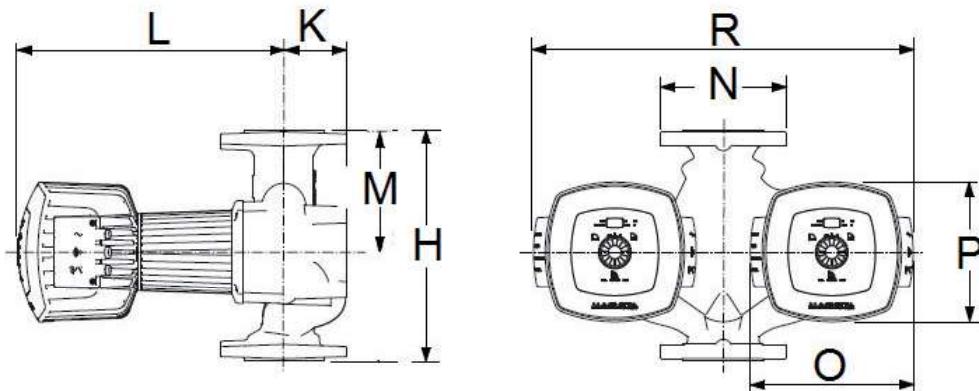
**65-120D**

EEI ≤ 0,23



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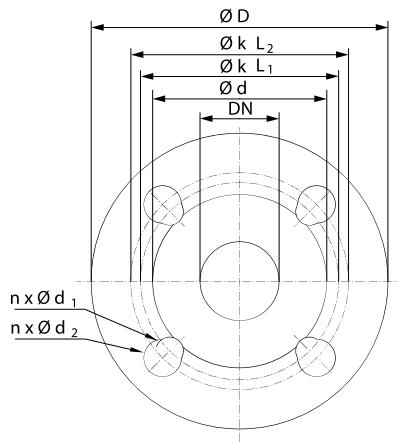
#### 4.15 Dimensions Magneta Smedegaard Twin pump



Dimensions Magneta Smedegaard Twin pump

Magneta Smedegaard	H	K	L	M	N	O	P	R
30-60D	180	51	186	80	5/4" - 2"	156	140	409
32-80D	220	70	186	110	140	160	140	140
32-100D	180	51	186	80	5/4" - 2"	156	140	409
32-120D	220	70	244	110	140	160	140	410
40-80D	220	80	251	120	150	160	140	410
40-100D	220	80	251	120	150	160	140	410
40-120D	250	77	382	100	150	240	206	560
40-180D	250	77	385	100	150	240	206	560
50-100D	280	83	385	140	165	240	206	560
50-120D	280	83	385	140	165	240	206	560
65-80D	340	93	393	180	185	240	206	560
65-120D	340	93	393	180	185	240	206	560

#### 4.16 Flange dimensions



Dimensions [mm]

Bride	$\text{ØD}$	$\text{Ød - PN6}$	$\text{Ød - PN10}$	$\text{PN6 ØkL1}$	$\text{PN10 ØkL2}$	$\text{PN6 n x dL1}$	$\text{PN10 n x dL2}$
DN 32	140	70	78	90	100	4 x $\text{Ø}14$	4 x $\text{Ø}19$
DN 40	150	80	88	100	110	4 x $\text{Ø}14$	4 x $\text{Ø}19$
DN 50	165	90	100	110	125	4 x $\text{Ø}14$	4 x $\text{Ø}19$
DN 65	185	110	122	130	145	4 x $\text{Ø}14$	4 x $\text{Ø}19$