

Company name  
 Person in charge  
 Phone number  
 E-mail address

## 0.4

Centrifugal pump: IR40-160NB

CLOSE-COUPLED END-SUCTION ELECTRIC PUMPS

3000 1/min  
 IR40-160NB

### DESCRIPTION

Close-coupled electric pump with axial suction and pump body with normalized dimensions according to EN733  
 Pumps and motors according to Directive 2009/125/CE (ErP).

### USES

Suitable for recirculation, heating and heat recovery system, water supply facilities, pressurisation groups  
 MEI index according to EU Regulation 547/2012  
 MEI > 0.4

### CONSTRUCTIVE CHARACTERISTICS

Back pull out design: the motor group and the rotating part of the pump, can be removed without having to remove the pump body from the piping of the plant  
 Hydraulics: pump body with dimensions and performances according to EN733 standard (for the sizes covered), dynamically balanced closed impeller and balancing holes for balancing the axial thrust. All stainless steel shaft

### IMPELLER

Impeller material: Cast iron EN-GJL-250  
 Impeller diameter: 163 mm  
 Shaft material: Stainless steel AISI 431 (1.4057)  
 The impeller diameter suggested by the selection software is indicative only and not binding.

### SEALS

Seal type: Mech. seal EN 12756  
 Seals materials: BQ1EGG

### FLANGES

TYPE: UNI EN 1092-2/UNI EN 1092-1/2  
 - Outlet: DN 40  
 - Suction: DN 65  
 Flanges PN: PN16

### PUMP OPTIONS

Design pressure: PN16  
 Coating: Painting cycles C3 Durability medium (Standard)  
 Drinking water certified version: No (Standard)

### MOTOR

Type: SAER MT2 - IE3 - 112-2P-7,5  
 Nominal power: 5.5 kW  
 Voltage / Frequency / N. phases: 400 V / 50 Hz / 3~  
 Poles: 2  
 Motor efficiency: 89.2 %  
 Efficiency class according to IEC 60034-30: IE3  
 Insulation class: F  
 Protection: IP 55  
 Motor origin: SAER Made in Italy  
 Motor suitable for use with VFD for supply voltage up to 500V, for voltage above 500V please contact SAER

### MOTOR OPTIONS

Motor protection: Without (Standard)  
 Additional motor protection: Without (Standard)  
 Additional motor options #1: Without (Standard)  
 Additional motor options #2: Without (Standard)  
 Additional motor options #3: Without (Standard)

### COATING

Two-component epoxy coating suitable for contact with drinking water.  
 Coating: Painting cycles C3 Durability medium (Standard)

### REQUESTED DATA

Q=35 m³/h  
 H=30 m

### CHARACTERISTIC DATA AT 3000 1/min

Q=35.06 m³/h - Qmax=50 m³/h  
 H=30.1 m  
 Power requested at the duty point P2=4.1 kW  
 Max power requested along the curve P2max=4.614 kW  
 Temperature of the pumped liquid: from -15°C up to +120°C  
 Maximum working pressure (maximum pressure allowable considering the sum of the maximum pressure in suction and of the head at shut off):  
 PN10 (on request PN16)  
 Max environment temperature: 40°C (for higher temperature, please, verify).

### INSTALLATION AND OPERATION CHARACTERISTICS

The pumps series IR and IR4P can be positioned with horizontal axis, inclined or vertical as well but always with motor upward (vertical installation with motor upward allowed up to frame size 160 included.  
 Contact SAER technical assistance for further information). The working features of this technical data sheet, the catalog and the plate are intended for continuous service and clean water (specific weight = 1000 kg/m3, kinematic viscosity = 1 mm²/s, temperature = 20°C )

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ACCESSORIES ON REQUEST  
Kit counterflanges

PERFORMANCE TOLERANCES  
Pumps: UNI EN ISO 9906: 2012- Grade 3B, other levels on request.  
Motors: IEC 60034-1

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## Summary

### Pump

IR40-160NB			
Required flow	m³/h 35	Inlet/Outlet	UNI EN 1092 Standard
Required head	m 30	Flange standard	UNI EN 1092-2/UNI EN 1092-1/2
Flow	m³/h 35.1	Pressure rating	PN10/16
Head	m 30.1	Nominal pipe size	DN65/DN40
Impeller size	ø 163		

### Materials

IR-7		
Shaft	Stainless steel AISI 431 (1.4057)	Standard
Impeller	Cast iron EN-GJL-250	Standard
Pump body	Ductile Cast iron EN-GJS-500	
Seal disc	Ductile Cast iron EN-GJS-500	
Gasket	Aramid fiber	Standard

Mechanical seal  
BQ1EGG

### Additional pump options

Design pressure	PN16
Coating	Painting cycles C3 Durability medium (Standard)
Drinking water certified version	No (Standard)

### Motor

Frame size	112
Rated power	kW 5.5
Frequency	Hz 50
Electric voltage	V 400 V Standard
Efficiency Class IEC 60034-30	IE3

### Additional motor options

Motor protection	Without (Standard)
Additional motor protection	Without (Standard)
Additional motor options #1	Without (Standard)
Additional motor options #2	Without (Standard)
Additional motor options #3	Without (Standard)

Notes:

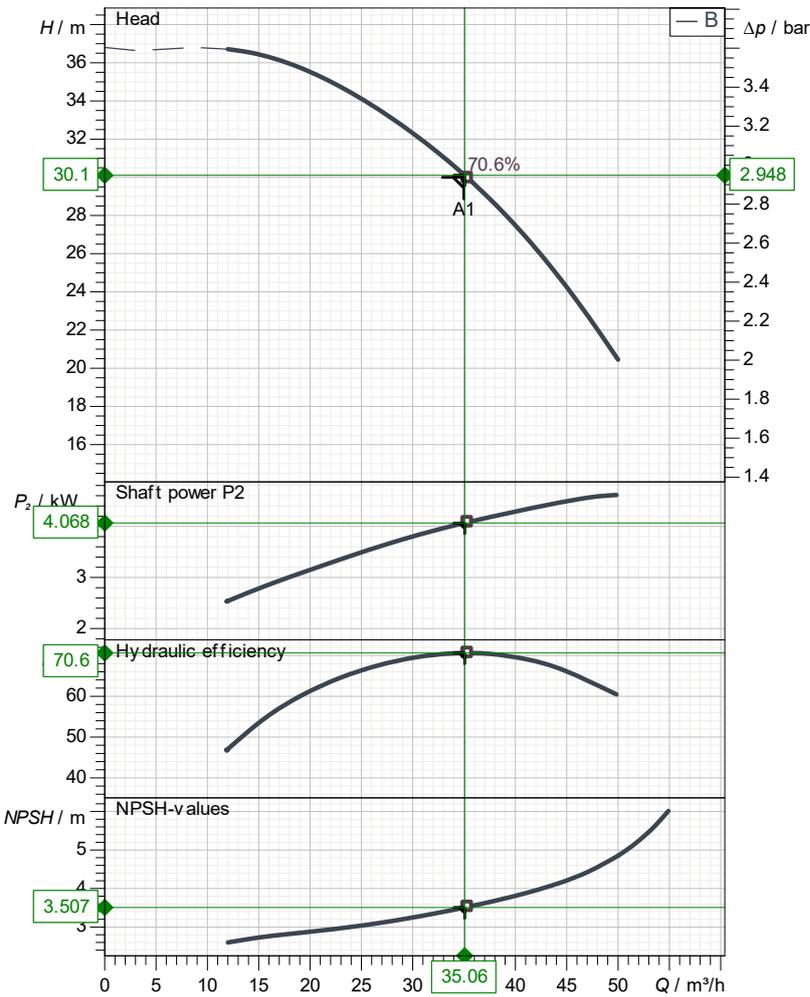
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### Operating data specification



UNI EN ISO 9906:2012 grade 3B

Nominal flow	m³/h	35
Nominal head	m	30
Static head	m	0
NPSH - value of plant	m	
Inlet pressure	bar	0
Fluid	Water	
Operating temperature t A	°C	95
Density at t A	kg/m³	998.2
Kin. viscosity at t A	mm²/s	1.001

### Pump

Pump name	IR40-160NB		
Size	65/40/160	Weight	55
Design			0.4
Speed	1/min 3000	No of stages	1
Impeller type			
Flow	Nominal	m³/h	35.1
	Max	m³/h	50
	Min	m³/h	12
Head	Nominal	m	30.1
	Max	m	36.7
	Min	m	20.5
Head H(Q=0)		m	36.8
NPSH 3%		m	3.51
Max working pressure		bar	3.6
Shaft power		kW	4.07
Efficiency		%	70.6
Max absorbed power		kW	4.6133

### Materials

Shaft	Stainless steel AISI 431 (1.4057)
Impeller	Cast iron EN-GJL-250
Pump body	Ductile Cast iron EN-GJS-500
Seal disc	Ductile Cast iron EN-GJS-500
Gasket	Aramid fiber

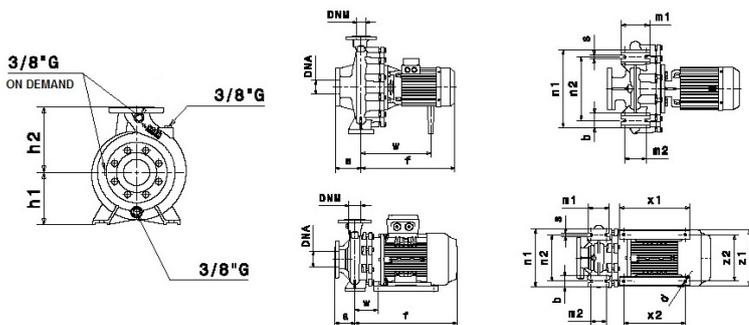
Mech. seal EN 12756	
Seal face	Carbon impregnated with resin
Seat	Silicon carbide
Rubber elements	Rubber EPDM
Spring and metal bellows	Stainless steel AISI 316 (1.4401)

### Motor

Manufacturer / Type	SAER 112-2P-7,5
Frame size	112
Rated power	kW 5.5
Rated current	A 10.4 A
Service factor current	SF 1 -
Speed	1/min 2928
Electric voltage	V 400 V Hz 50 3~
Efficiency 4/4	89.2%
Starting mode	Unknown
Degree of protection	IP 55
Insulation class	F

### Dimensions

a	80	n1	240	C	88	C	122
b	50	n2	190	D	150	D	185
f	450	s	14	DN	40	DN	65
h1	132	w	304	K	110	K	145
h2	160			n°	4 x 18 m	n°	4 x 18 mm
m1	100						
m2	70						



Remarks:

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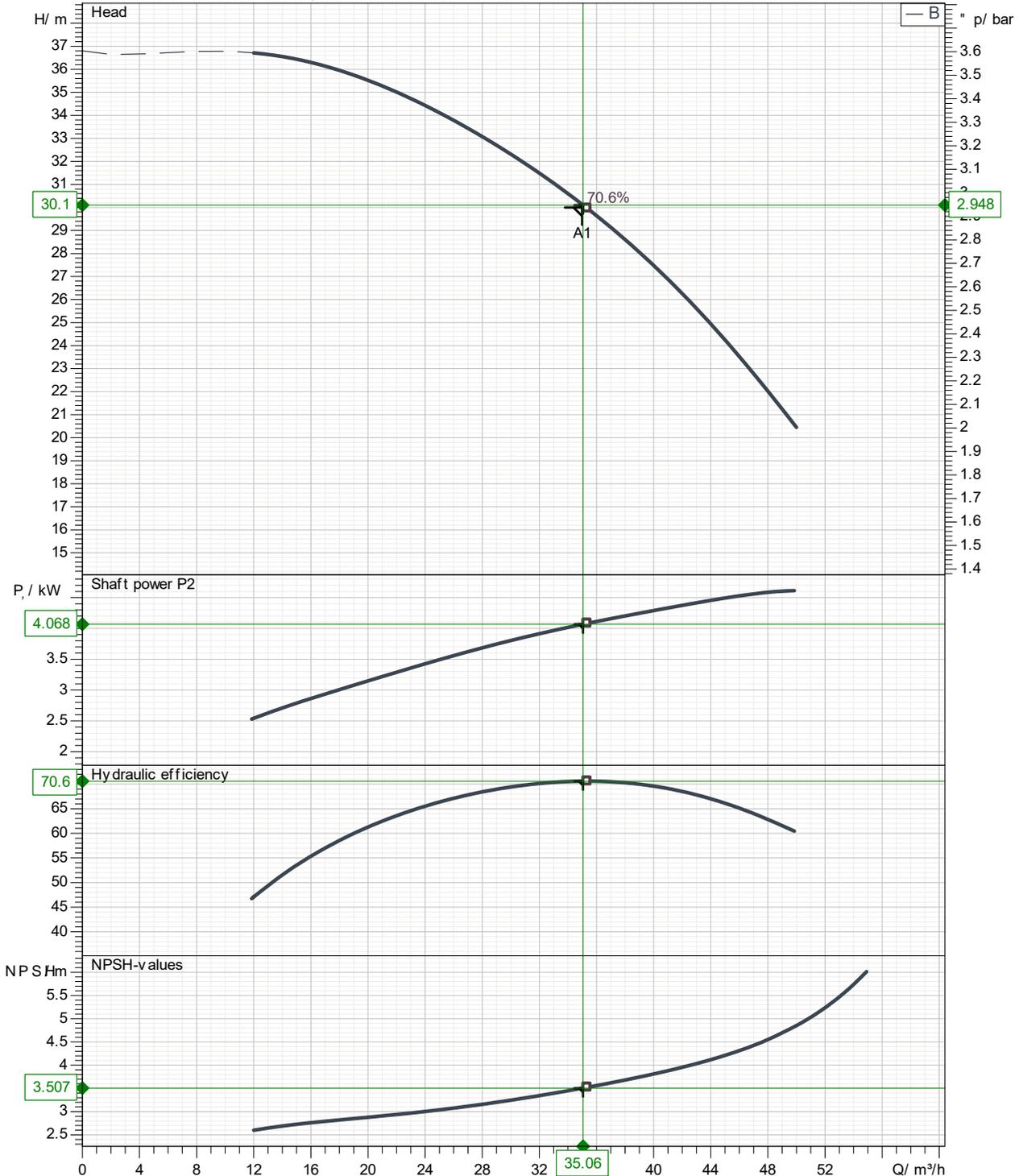
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### Operating data specification

Operating area	Flow	Head	Impeller type
Operating data specification	35 m <sup>3</sup> /h	30 m	Impeller construction
Pump data	35.1 m <sup>3</sup> /h	30.1 m	Sense of rotation
			Closed
			Clockwise from the drive end
			Outlet width
			DN40
			Speed
			1/min 3000
			Frequency
			Hz 50 Hz

Performance data based to: Water; 20°C; 998.2kg/m<sup>3</sup>; 1.001mm<sup>2</sup>/s

UNI EN ISO 9906:2012 grade 3B



Pump dimensions

Connections

Suction side	Discharge port
DN65	DN40
PN10/16	PN10/16

Dimensions in mm	
a	80
b	50
f	450
h1	132
h2	160
m1	100
m2	70
n1	240
n2	190
s	14
w	304

Dimensional warning, weight and picture are not binding. Saer reserves the right to make changes without prior notice.

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## Operating data specification

Operating data specification		Data	Unit
Model		MT2-112ML 5,5kW / 7,5HP	
Frame		112ML	
Mounting		Close coupled	
Rated power	Pn	5.5	kW
Rated voltage		400	V
Rated frequency		50	Hz
Rated speed	n	2930	
Service factor		1	
Rated current	In	10.4	A
Service factor current	Isf	-	A
Nominal motor torque	Tn	17.938	Nm
Thermal class / Temperature rise		F / B	
Starting current	Is/In	9.8	
Locked rotor torque	Tl/Tn	4.1	
Max torque	Tm/Tn	6.3	
Efficiency Class IEC 60034-30		IE3 = Premium Efficiency	
Efficiency	$\eta$	50%                      75%                      100%	
		88.1                      89.4                      89.2	
Power factor	cos $\phi$	0.86	
Sound pressure level LpA - 1 m		74	dBA
Type of duty		S1	
Cooling		IC411	
Degree of protection		IP 55	
Ambient temperature		40	°C
Max installation site elevation		1000	
Moment of inertia	J	0.00779	kg m <sup>2</sup>
Bearing design		Radial ball bearing with permanent grease	
Bearing type		DE: 6206-2Z / NDE: 6206-2Z	
Sense of rotation		CW / CCW	
Terminal box position		At top	
Cable entry (Number x hole type)		2 x n.1M20x1,5 + n.1 M25x1,5	
Weight		39	kg

Power loss/Rated power at different speed-torque operating points

25%-25%	25%-100%	50%-25%	50%-50%	50%-100%	90%-50%	90%-100%	
2.4	13.9	3.1	5.1	12.4	7.4	14.8	%

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