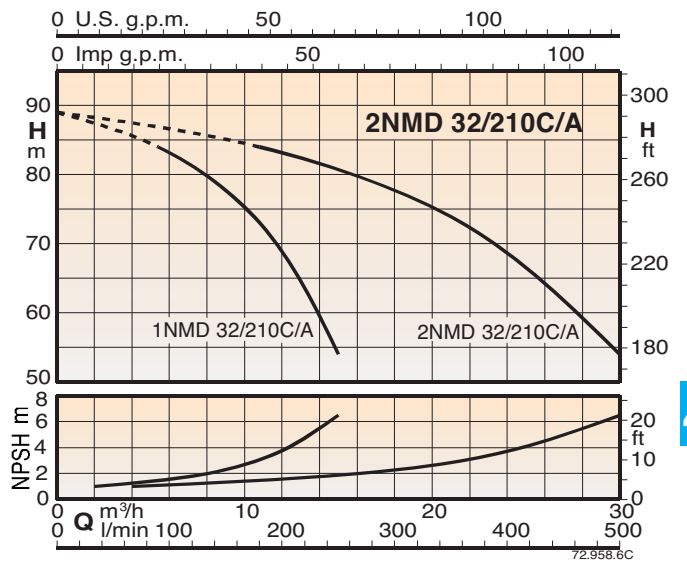
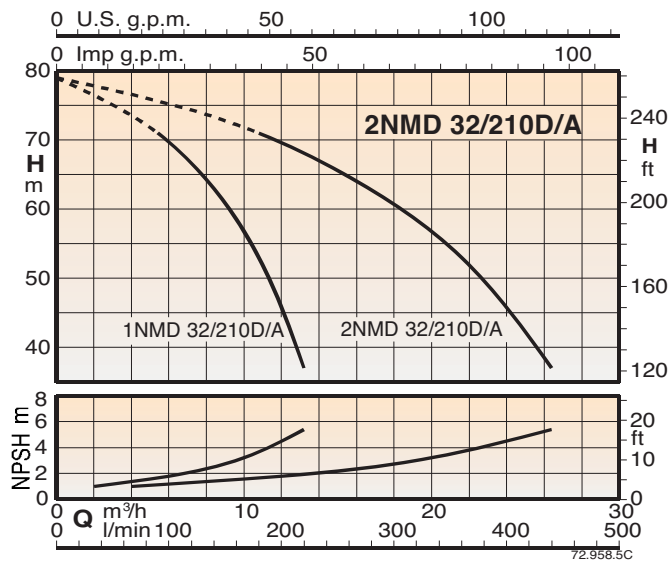
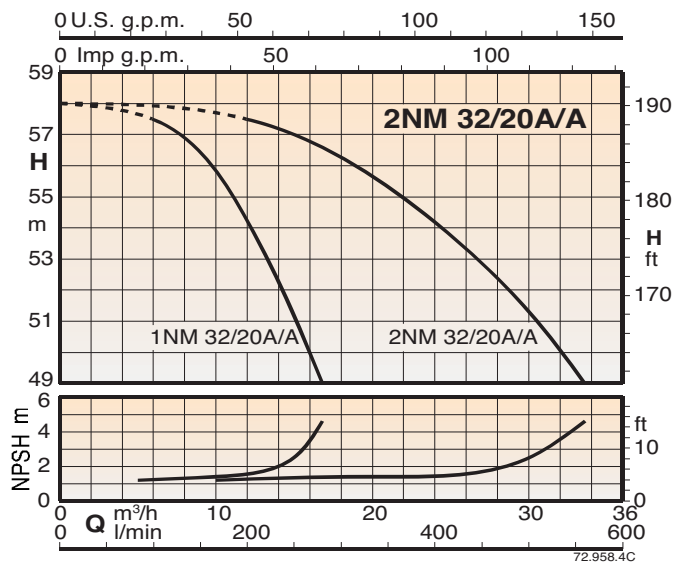
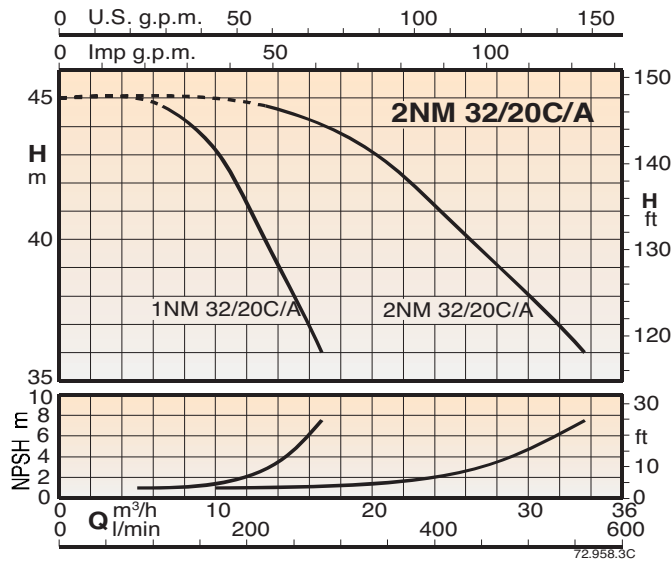
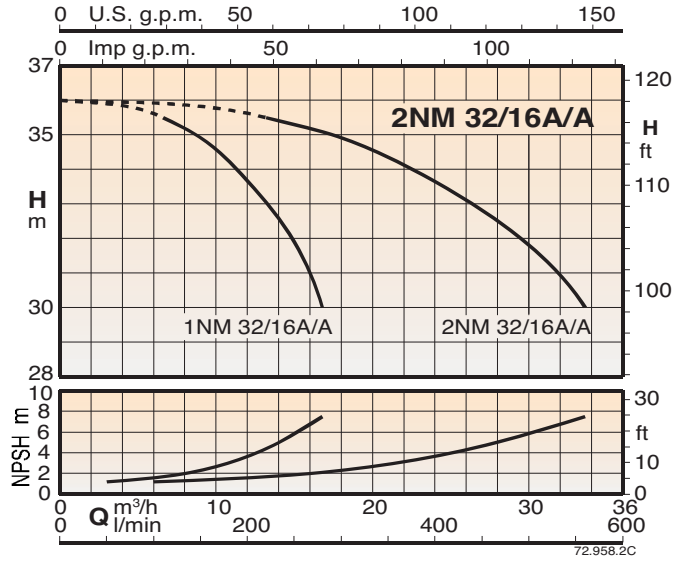
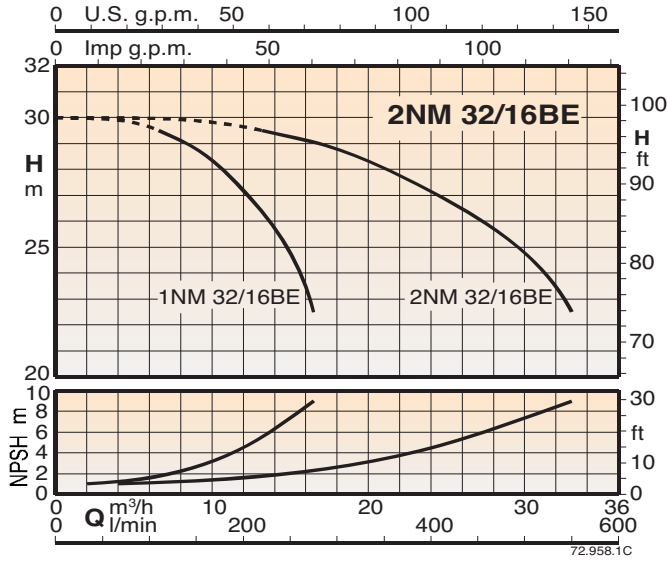
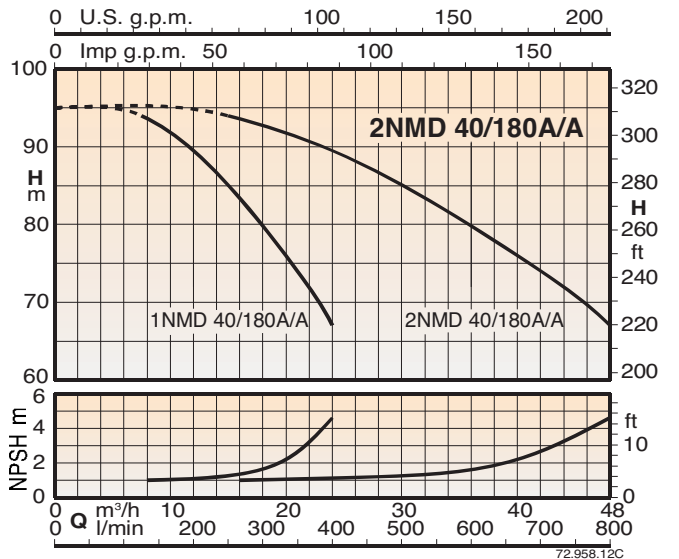
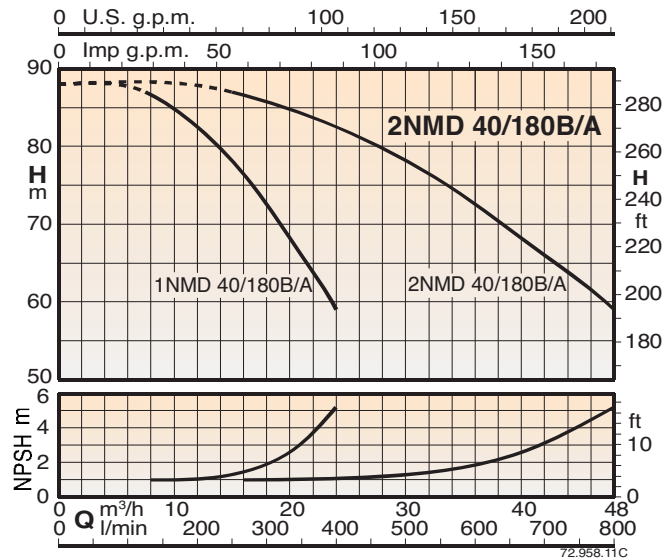
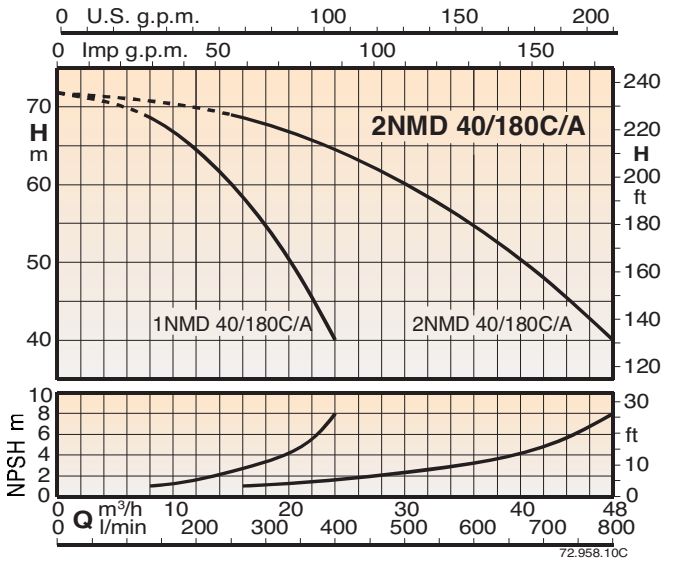
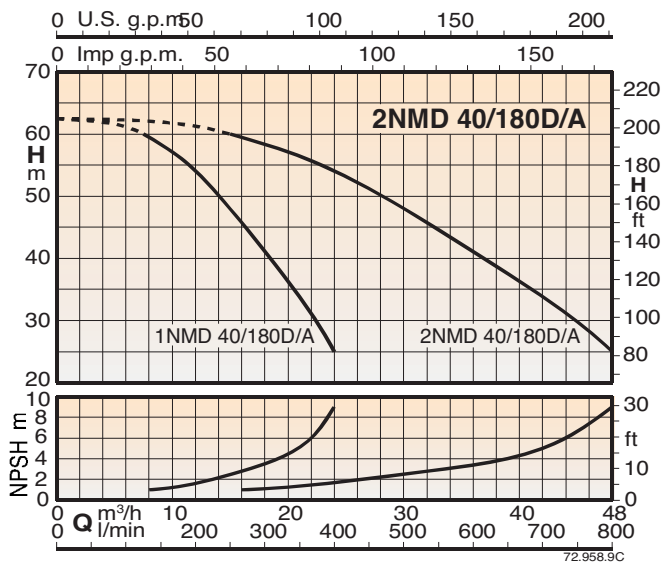
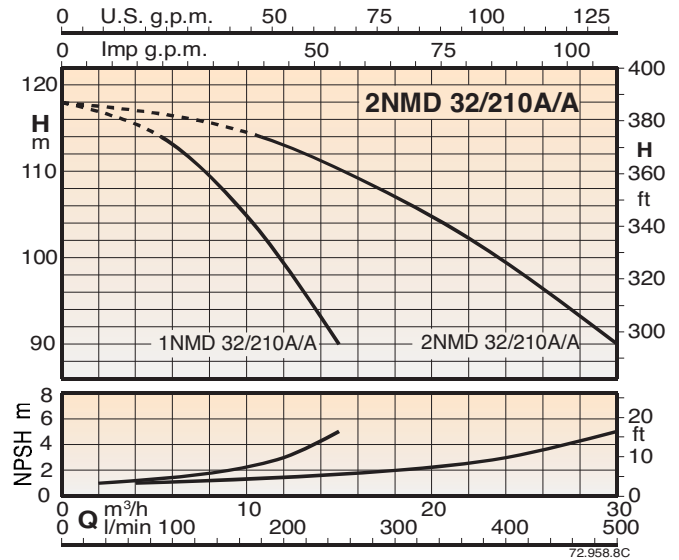
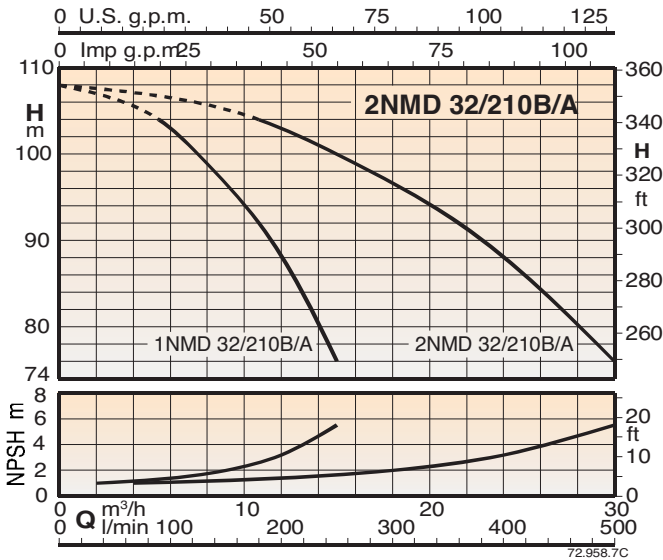


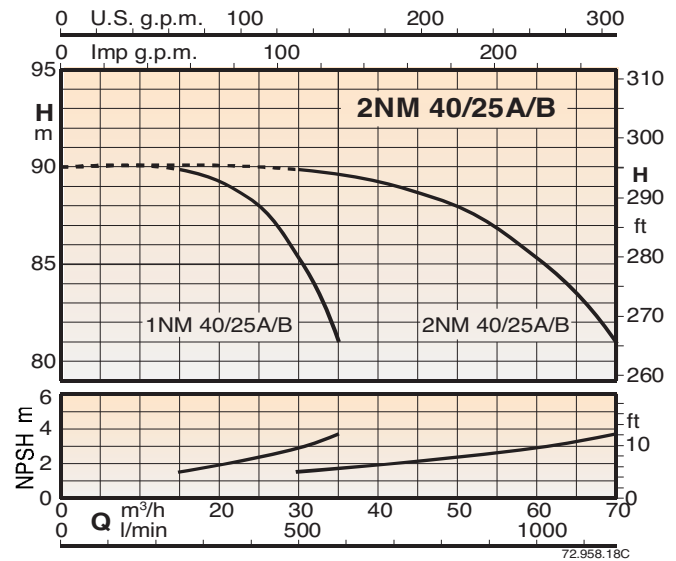
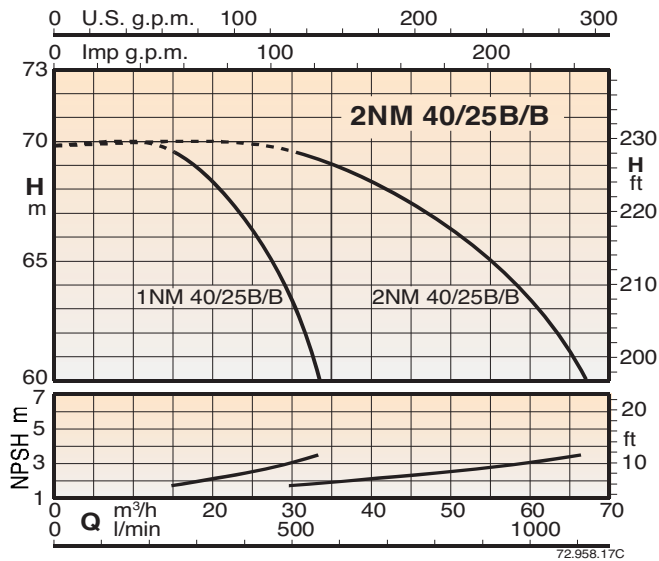
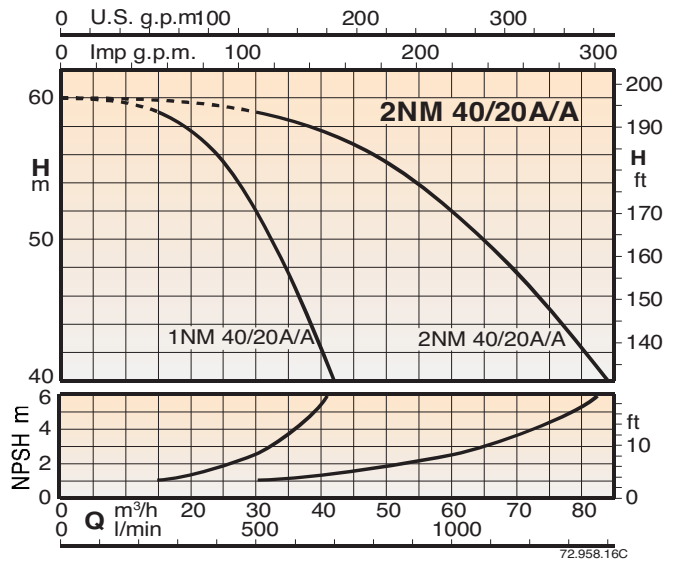
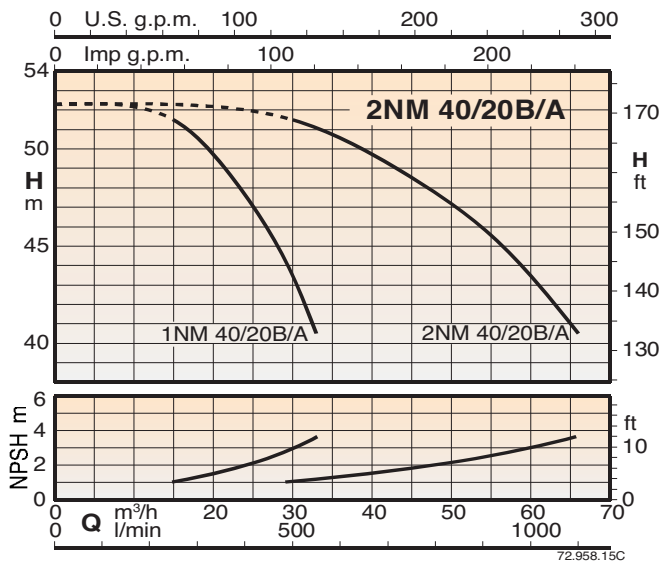
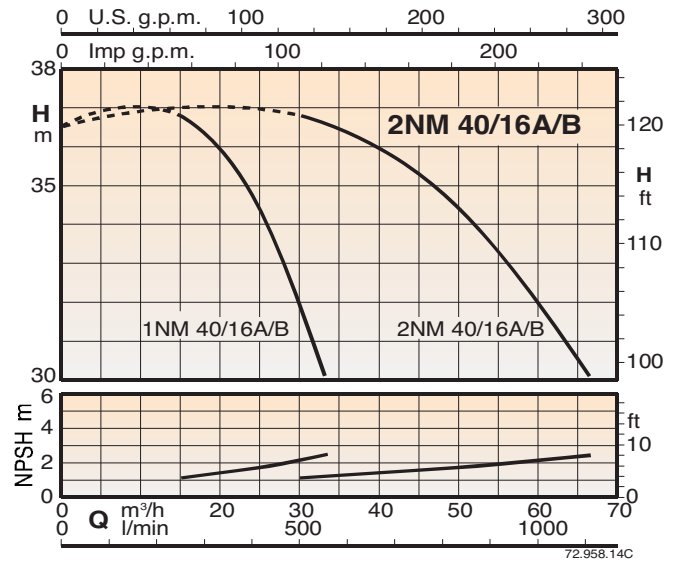
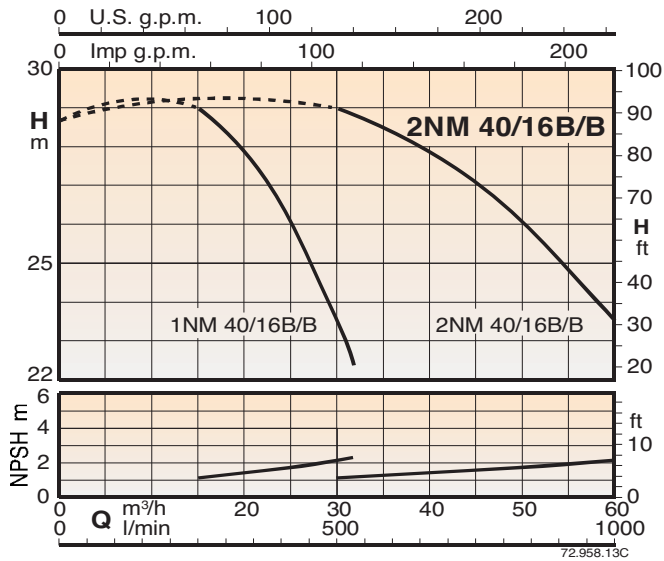
## Coverage chart



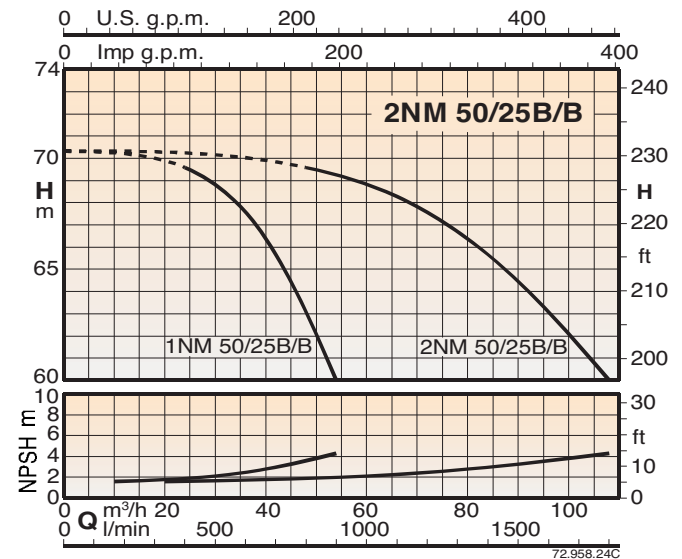
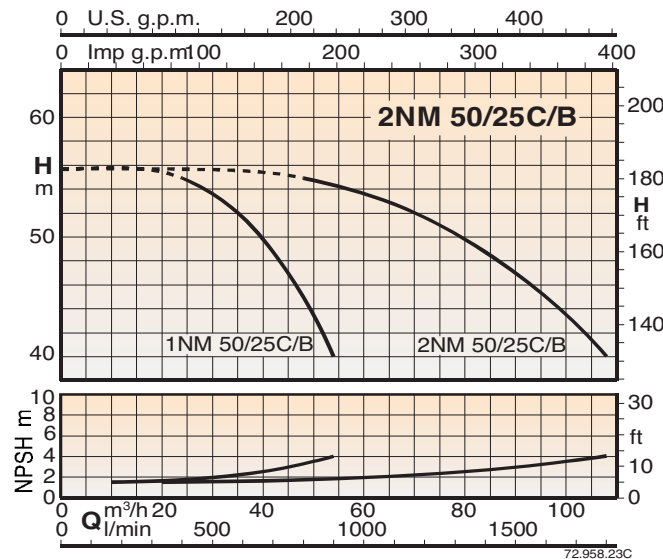
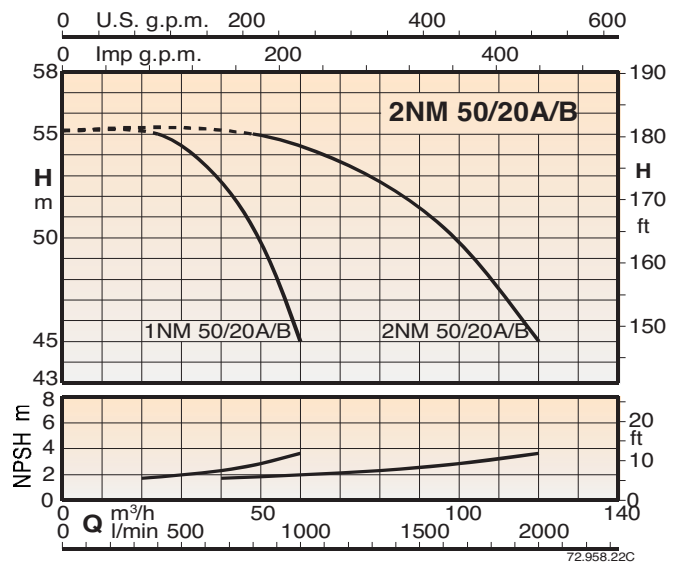
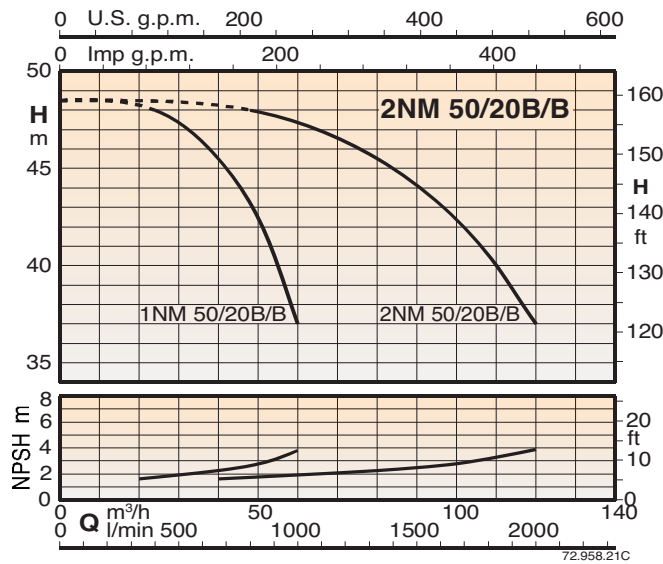
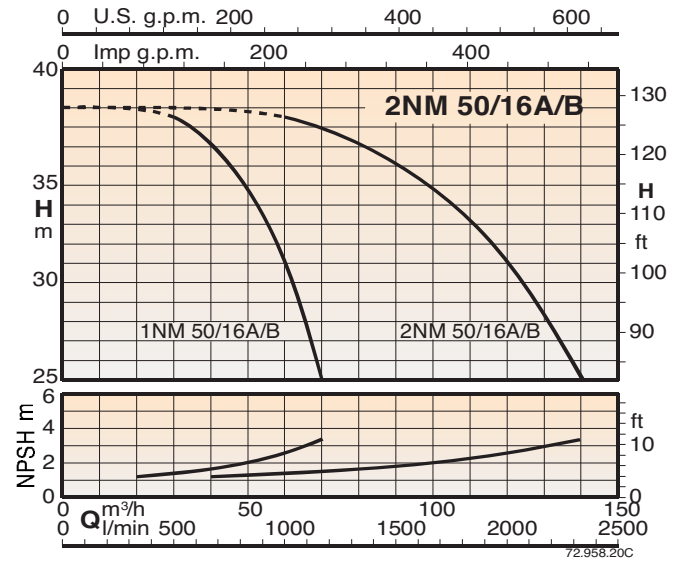
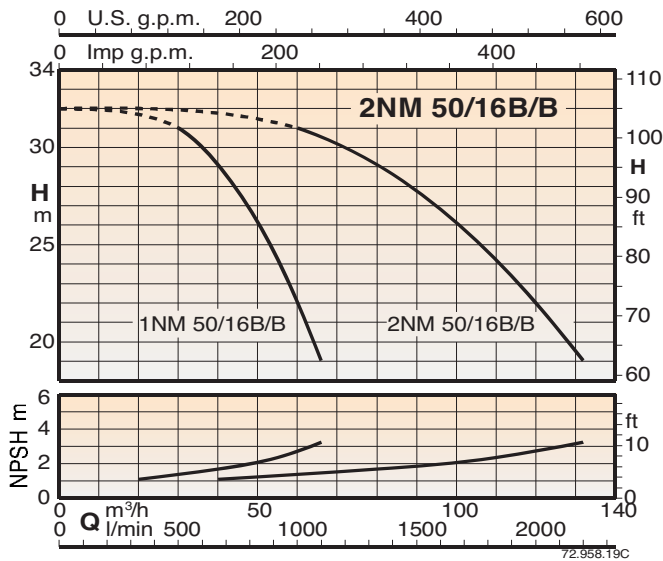
## Coverage chart



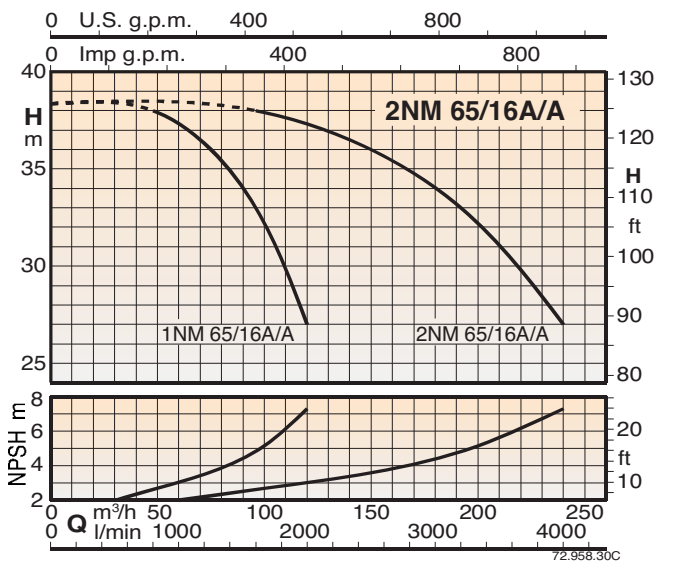
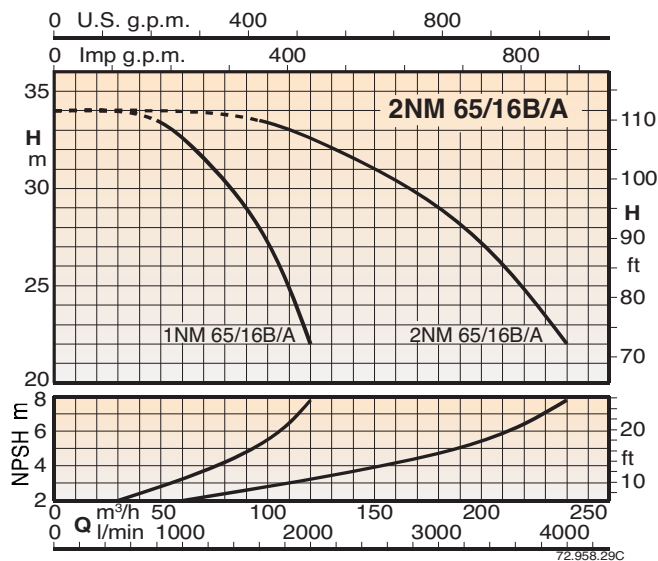
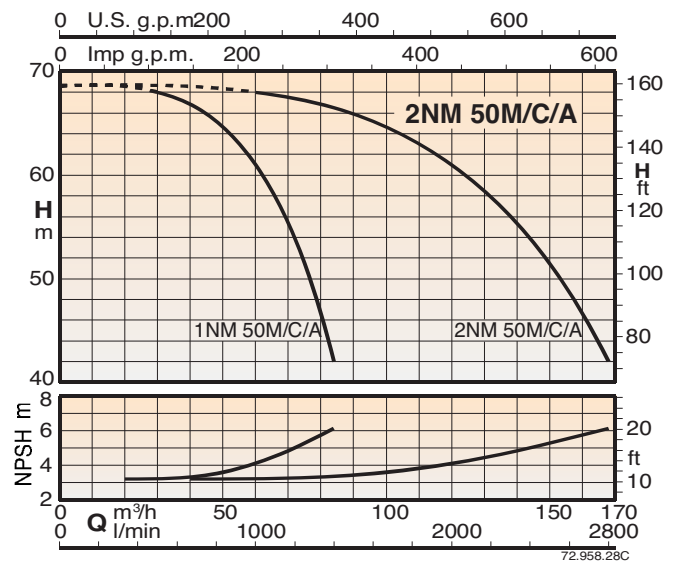
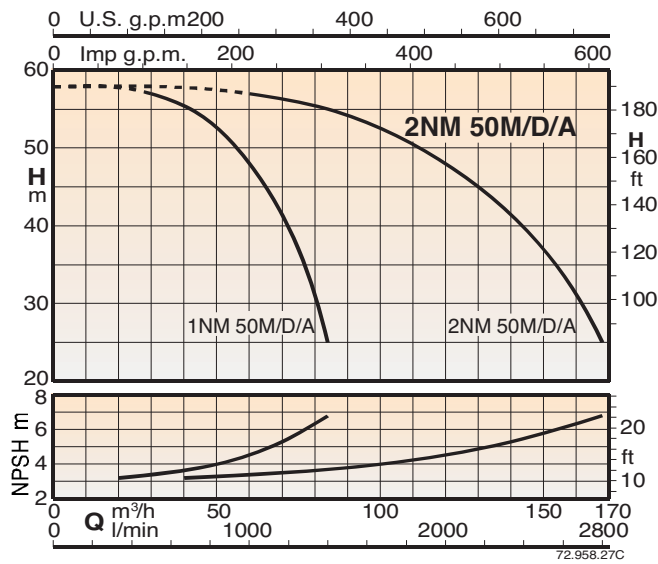
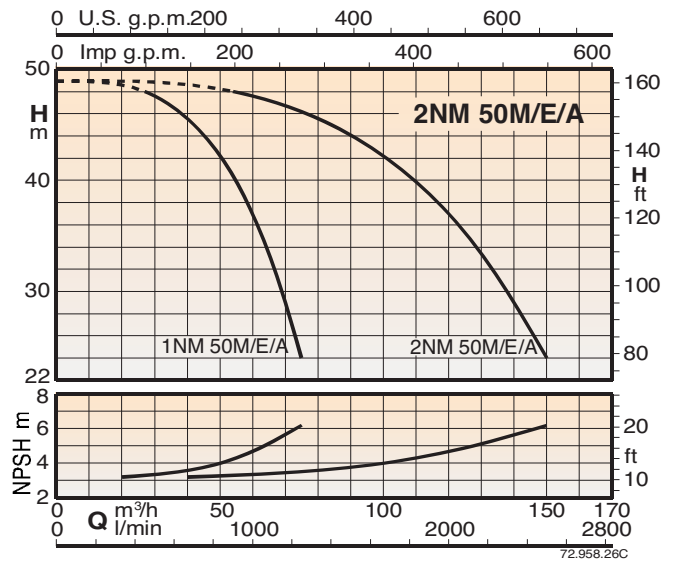
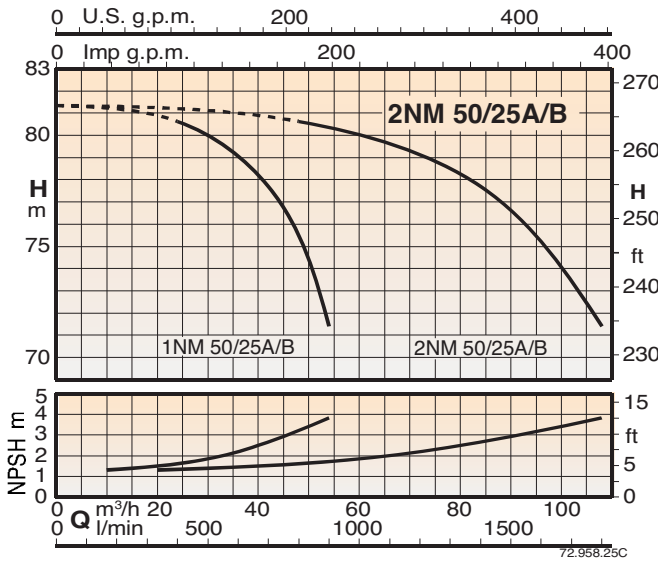
Coverage chart



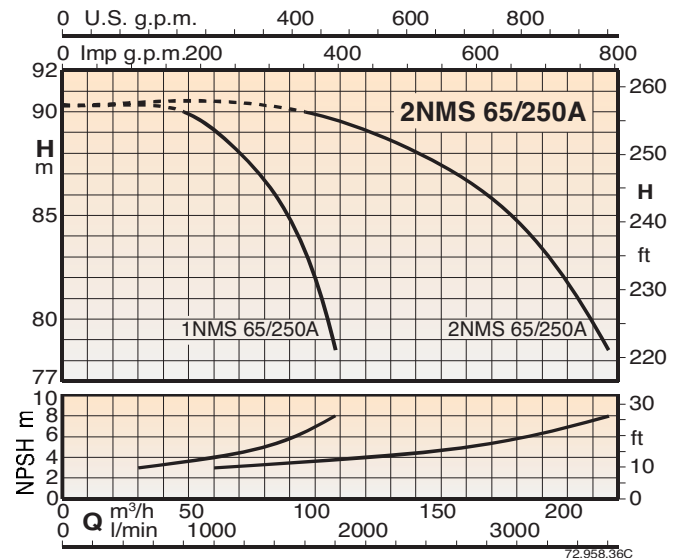
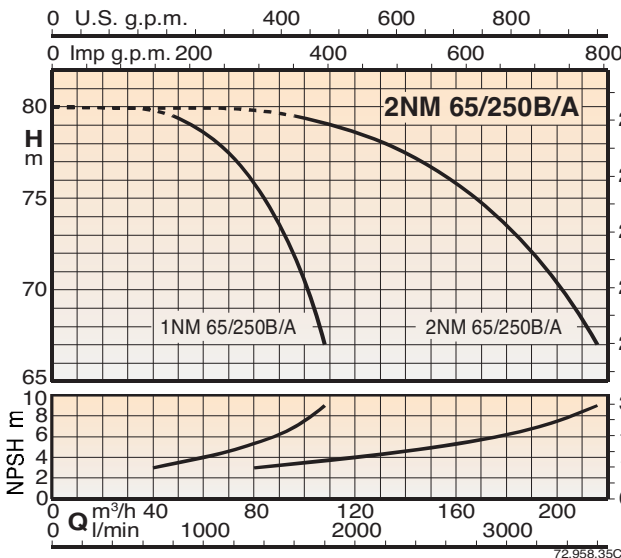
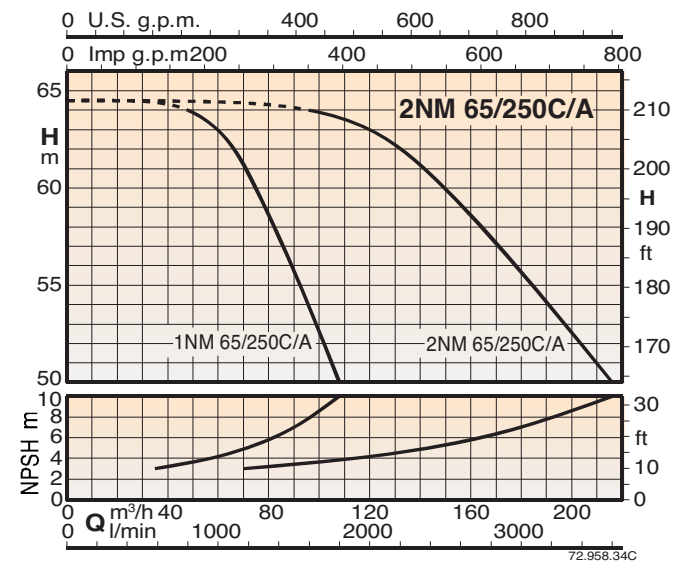
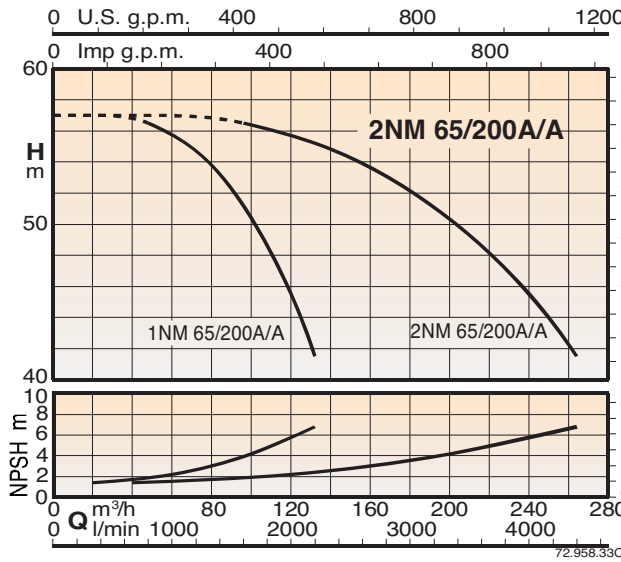
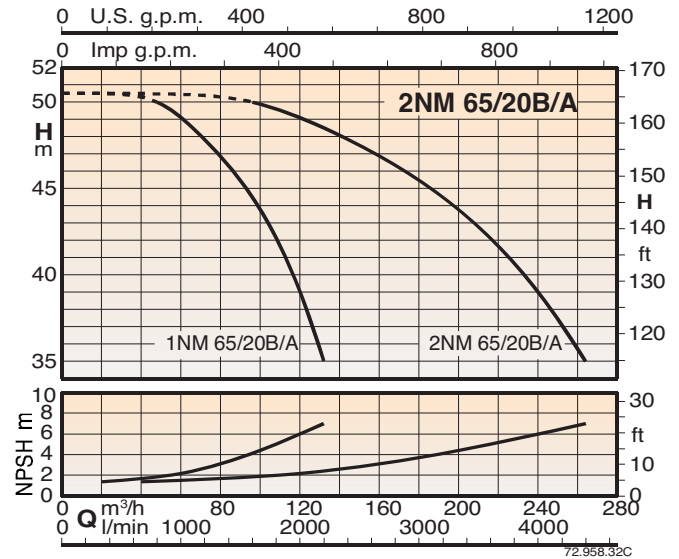
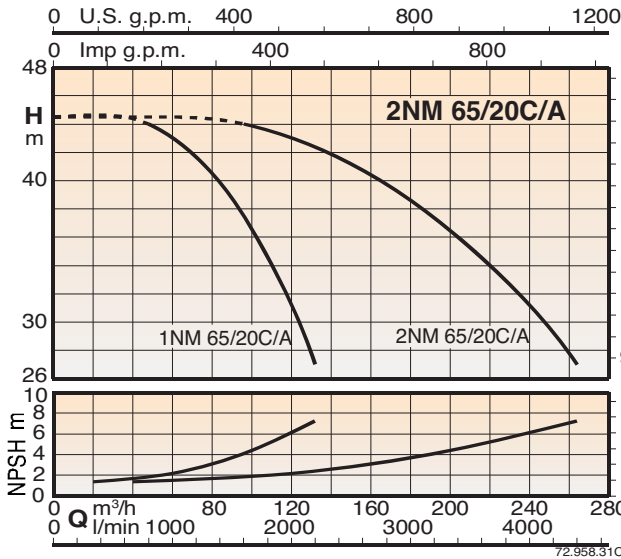
Coverage chart



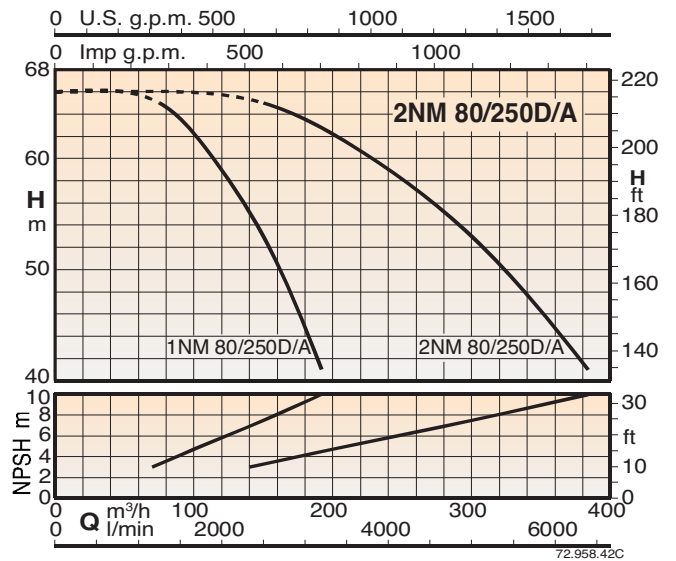
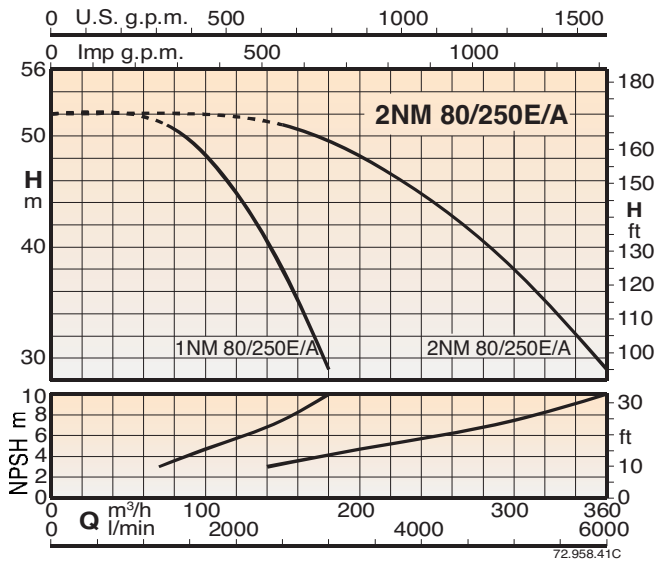
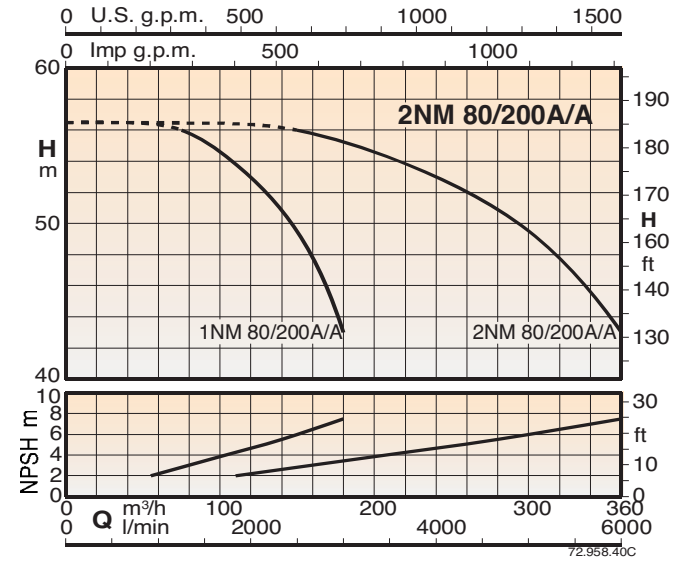
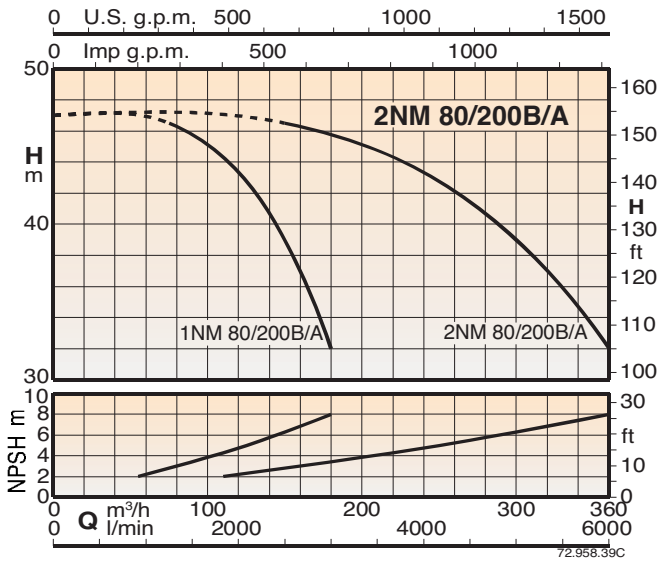
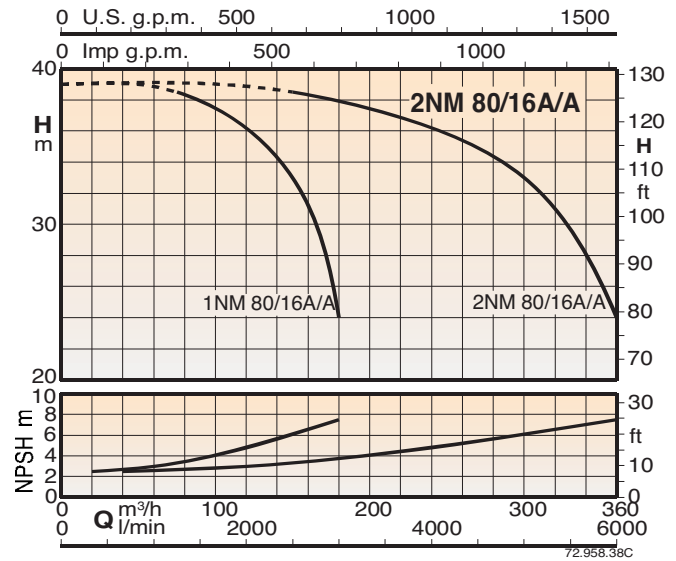
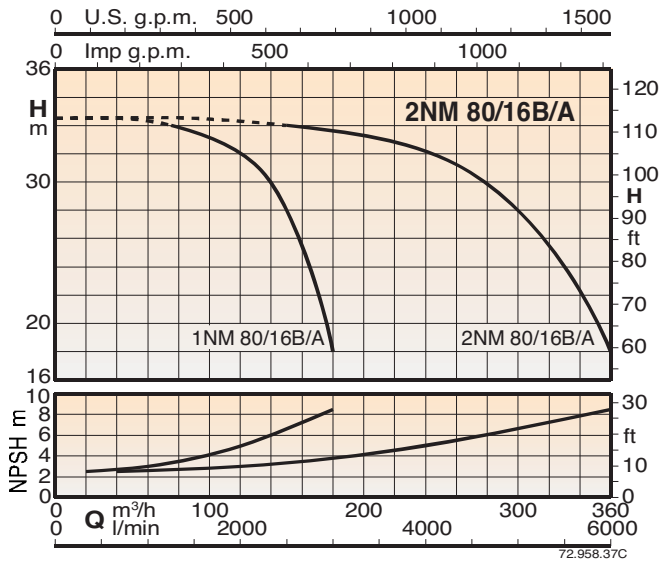
Coverage chart



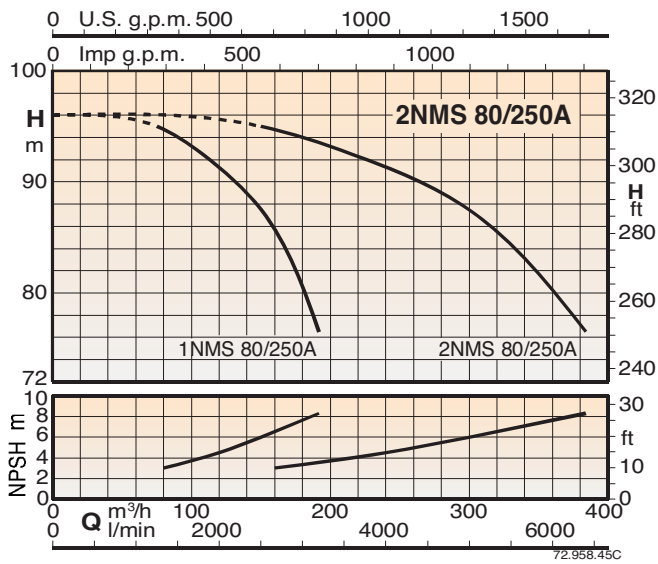
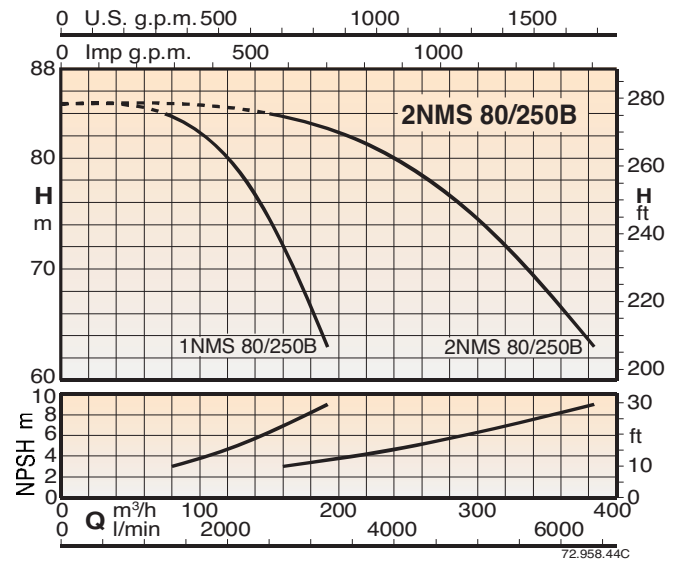
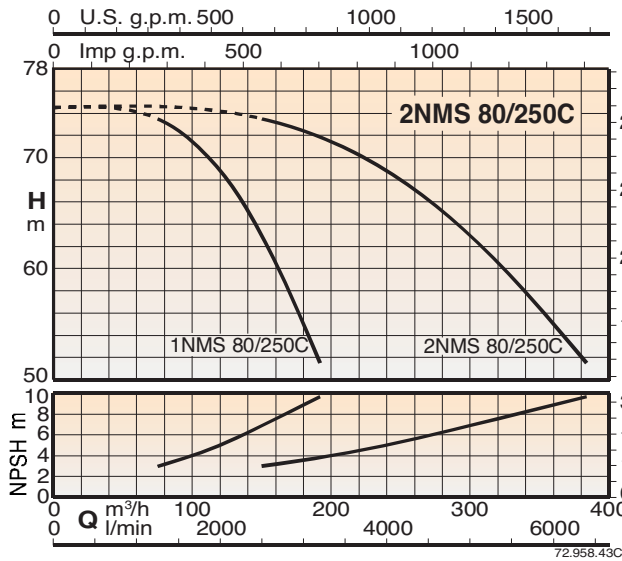
Coverage chart



Coverage chart



Coverage chart







## Construction

Automatic pressure boosting plant consisting of three centrifugal pumps complete with ball, non return valve on the suction side and ball valves on the discharge side.

Suction and delivery manifolds are in steel.

### Electrical control boards:

- with microprocessor for fixed speed pump units (see page 422). Motor starting is D.O.L. up to 5,5 kW and Y/Δ for power rating 7,5 up to 55 kW.
- with frequency converter for variable speed pump units (see page 423).

The unit includes one pressure gauge and three adjustable differential pressure switches or pressure transducer (for sets with frequency converter).

## Operation

### BS 3F Fixed speed pump

Depending on the reduction of the pressure in the system, the pressure switches determine the starting up of the pumps in sequence and the microprocessor alternates the starts.

### BS1V2F Pumps at variable speed with one frequency converter

According to the water consumption, one or more pumps start, one at variable speed and the others at fixed speed, to grant the water quantity required at the set pressure.

### BS3V Pumps at variable speed with three frequency converter

Depending on water consumption, one or more pumps are activated, all at variable speed, in order to guarantee the quantity of water required at the set pressure.

## Applications

To supply water in civil and industrial buildings.

As pressure boosting pump to increase water pressure when needed (follow local rules).

## Motors

2-pole induction motors, 50 Hz,  $n = 2900$  rpm, suitable for operation with frequency converter.

- Three-phase 230/400V  $\pm 10\%$  up to 3 kW;  
400/690V  $\pm 10\%$  from 4 to 55 kW.

Insulation class F.

Protection IP 54.

Constructed in accordance with: IEC 60034.

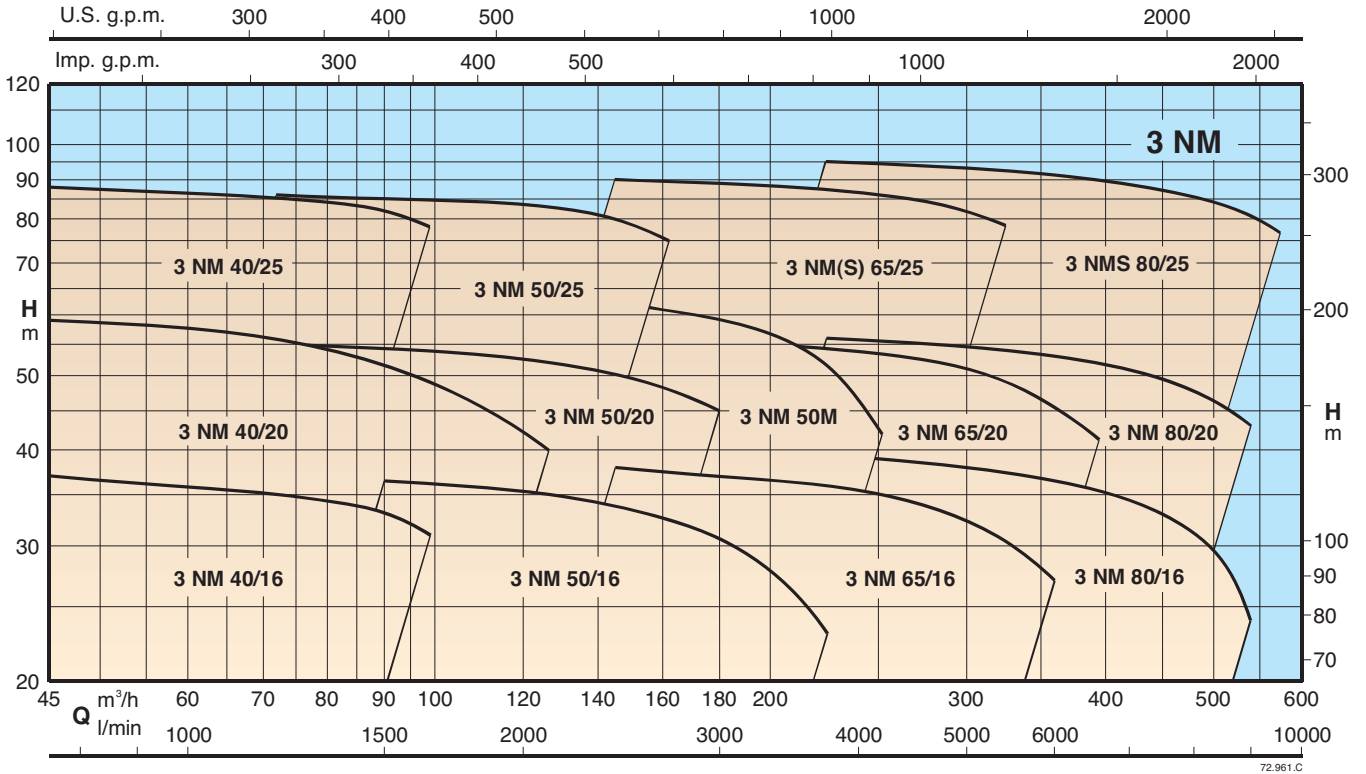
Other voltages and frequencies on request.

## Vessels

When installing the unit, connect in the delivery section to an air cushion vessel.

The recommended sized are shown in the following page.

### Coverage chart



## Performance

### BS3F

Mains: 400V 3~ Motor: 400V 3~	Motor		Q max* l/min	Total head m	Pres. switch bar	Pres. switch bar	Pres. switch bar	Vessel litre
	kW	HP						
BS3F 3NM 40/16B/B	3+3+3	4+4+4	2100	29	2,0÷2,6	1,6÷2,2	1,2÷1,8	2000
BS3F 3NM 40/16A/B	4+4+4	5,5+5,5+5,5	2400	37	2,7÷3,4	2,3÷3,0	1,9÷2,6	3000
BS3F 3NM 40/20B/A	5,5+5,5+5,5	7,5+7,5+7,5	1890	50	3,9÷4,7	3,5÷4,3	3,1÷3,9	3000
BS3F 3NM 40/20A/A	7,5+7,5+7,5	10+10+10	2100	57,5	4,4÷5,4	4,0÷5,0	3,6÷4,6	3000
BS3F 3NM 40/25B/B	11+11+11	15+15+15	2100	69,5	5,6÷6,6	5,2÷6,2	4,8÷5,8	5000
BS3F 3NM 40/25A/B	15+15+15	20+20+20	2100	90	7,9÷8,7	7,5÷8,3	7,1÷7,9	5000
BS3F 3NM 50/16B/B	5,5+5,5+5,5	7,5+7,5+7,5	4050	31	1,9÷2,7	1,5÷2,3	1,1÷1,9	3000
BS3F 3NM 50/16A/B	7,5+7,5+7,5	10+10+10	4050	38,5	2,7÷3,5	2,3÷3,1	1,9÷2,7	4000
BS3F 3NM 50/20B/B	9,2+9,2+9,2	12,5+12,5+12,5	3900	48	3,5÷4,5	3,0÷4,0	2,5÷3,5	5000
BS3F 3NM 50/20A/B	11+11+11	15+15+15	3900	55	4,2÷5,2	3,7÷4,7	3,2÷4,2	5000
BS3F 3NM 50/25C/B	11+11+11	15+15+15	3450	55	4,1÷5,1	3,6÷4,6	3,1÷4,1	5000
BS3F 3NM 50/25B/B	15+15+15	20+20+20	3450	69	5,6÷6,6	5,1÷6,1	4,6÷5,6	5000
BS3F 3NM 50/25A/B	18,5+18,5+18,5	25+25+25	3450	80,5	6,7÷7,7	6,3÷7,3	5,9÷6,9	5000
BS3F 3NM 50M/E/A	11+11+11	15+15+15	3500	48	3,4÷4,4	3,0÷4,0	2,6÷3,6	5000
BS3F 3NM 50M/D/A	15+15+15	20+20+20	3800	57	4,3÷5,3	3,9÷4,9	3,5÷4,5	5000
BS3F 3NM 50M/C/A	18,5+18,5+18,5	25+25+25	4200	68	5,5÷6,5	4,9÷5,9	4,3÷5,3	5000
BS3F 3NM 65/16B/A	11+11+11	15+15+15	6000	33,5	2,0÷3,0	1,8÷2,8	1,6÷2,6	5000
BS3F 3NM 65/16A/A	15+15+15	20+20+20	6000	38	2,5÷3,5	2,3÷3,3	2,1÷3,1	5000
BS3F 3NM 65/20C/A	15+15+15	20+20+20	6600	44	3,0÷4,0	2,7÷3,7	2,4÷3,4	5000
BS3F 3NM 65/20B/A	18,5+18,5+18,5	25+25+25	6600	50	3,6÷4,6	3,3÷4,3	3,0÷4,0	5000
BS3F 3NM 65/200A/A	22+22+22	30+30+30	6600	56,5	4,2÷5,2	3,9÷4,9	3,6÷4,6	5000
BS3F 3NM 65/250C/A	22+22+22	30+30+30	5400	64	5,0÷6,0	4,7÷5,7	4,4÷5,4	5000
BS3F 3NM 65/250B/A	30+30+30	40+40+40	5400	79,5	6,6÷7,6	6,3÷7,3	6,0÷7,0	5000
BS3F 3NMS 65/250A	37+37+37	50+50+50	5400	90	7,7÷8,7	7,4÷8,4	7,1÷8,1	5000
BS3F 3NM 80/16B/A	15+15+15	20+20+20	9000	34	2,5÷3,5	2,2÷3,2	1,9÷2,9	5000
BS3F 3NM 80/16A/A	18,5+18,5+18,5	25+25+25	9000	38,5	2,0÷3,0	1,8÷2,8	1,6÷2,6	5000
BS3F 3NM 80/200B/A	22+22+22	30+30+30	9000	46,5	3,3÷4,3	3,1÷4,1	2,9÷3,9	5000
BS3F 3NM 80/200A/A	30+30+30	40+40+40	9000	56	4,3÷5,3	4,1÷5,1	3,9÷4,9	5000
BS3F 3NM 80/250E/A	22+22+22	30+30+30	9000	51	3,8÷4,8	3,4÷4,4	3,0÷4,0	5000
BS3F 3NM 80/250D/A	30+30+30	40+40+40	9600	65	5,0÷6,0	4,5÷5,5	4,0÷5,0	5000
BS3F 3NMS 80/250C	37+37+37	50+50+50	9600	73,5	6,0÷7,0	5,5÷6,5	5,0÷6,0	5000
BS3F 3NMS 80/250B	45+45+45	60+60+60	9600	84	7,0÷8,0	6,5÷7,5	6,0÷7,0	5000
BS3F 3NMS 80/250A	55+55+55	75+75+75	9600	95	8,0÷9,0	7,6÷8,6	7,2÷8,2	5000

Maximum pumps flow at minimum set pressure of 3<sup>rd</sup> pressure switch.

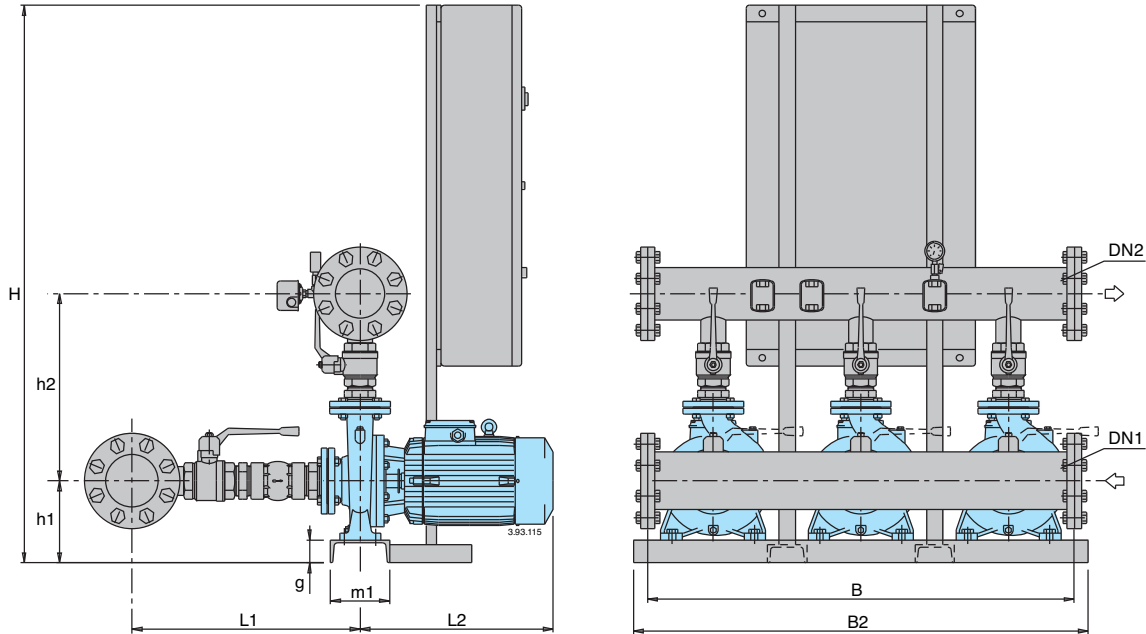
### BS1V2F

Mains: 400V 3~ Motor: 400V 3~	Motor		Vessel Membrane litre
	kW	HP	
BS1V2F 3NM 40/16B/B	3 x3	4 x3	24
BS1V2F 3NM 40/16A/B	4 x3	5,5 x3	24
BS1V2F 3NM 40/20B/A	5,5 x3	7,5 x3	24
BS1V2F 3NM 40/20A/A	7,5 x3	10 x3	24
BS1V2F 3NM 40/25B/B	11 x3	15 x3	24
BS1V2F 3NM 40/25A/B	15 x3	20 x3	24
BS1V2F 3NM 50/16B/B	5,5 x3	7,5 x3	24
BS1V2F 3NM 50/16A/B	7,5 x3	10 x3	24
BS1V2F 3NM 50/20B/B	9,2 x3	12,5 x3	24
BS1V2F 3NM 50/20A/B	11 x3	15 x3	24
BS1V2F 3NM 50/25C/B	11 x3	15 x3	24
BS1V2F 3NM 50/25B/B	15 x3	20 x3	24
BS1V2F 3NM 50/25A/B	18,5 x3	25 x3	24
BS1V2F 3NM 50M/E/A	11 x3	15 x3	24
BS1V2F 3NM 50M/D/A	15 x3	20 x3	24
BS1V2F 3NM 50M/C/A	18,5 x3	25 x3	24
BS1V2F 3NM 65/16B/A	11 x3	15 x3	24
BS1V2F 3NM 65/16A/A	15 x3	20 x3	24
BS1V2F 3NM 65/20C/A	15 x3	20 x3	24
BS1V2F 3NM 65/20B/A	18,5 x3	25 x3	24
BS1V2F 3NM 65/200A/A	22 x3	30 x3	24
BS1V2F 3NM 65/250C/A	22 x3	30 x3	24
BS1V2F 3NM 65/250B	30 x3	40 x3	24
BS1V2F 3NMS 65/250A/A	37 x3	50 x3	24
BS1V2F 3NM 80/16B/A	15 x3	20 x3	24
BS1V2F 3NM 80/16A/A	18,5 x3	25 x3	24
BS1V2F 3NM 80/200B/A	22 x3	30 x3	24
BS1V2F 3NM 80/200A/A	30 x3	40 x3	24
BS1V2F 3NM 80/250E/A	22 x3	30 x3	24
BS1V2F 3NM 80/250D/A	30 x3	40 x3	24
BS1V2F 3NMS 80/250C	37 x3	50 x3	24
BS1V2F 3NMS 80/250B	45 x3	60 x3	24
BS1V2F 3NMS 80/250A	55 x3	75 x3	24

### BS3V

Mains: 400V 3~ Motor: 400V 3~	Motor		Vessel Membrane litre
	kW	HP	
BS3V 3NM 40/16B/B	3 x3	4 x3	24
BS3V 3NM 40/16A/B	4 x3	5,5 x3	24
BS3V 3NM 40/20B/A	5,5 x3	7,5 x3	24
BS3V 3NM 40/20A/A	7,5 x3	10 x3	24
BS3V 3NM 40/25B/A	11 x3	15 x3	24
BS3V 3NM 40/25A/B	15 x3	20 x3	24
BS3V 3NM 50/16B/B	5,5 x3	7,5 x3	24
BS3V 3NM 50/16A/B	7,5 x3	10 x3	24
BS3V 3NM 50/20B/B	9,2 x3	12,5 x3	24
BS3V 3NM 50/20A/B	11 x3	15 x3	24
BS3V 3NM 50/25C/B	11 x3	15 x3	24
BS3V 3NM 50/25B/B	15 x3	20 x3	24
BS3V 3NM 50/25A/B	18,5 x3	25 x3	24
BS3V 3NM 50M/E/A	11 x3	15 x3	24
BS3V 3NM 50M/D/A	15 x3	20 x3	24
BS3V 3NM 50M/C/A	18,5 x3	25 x3	24
BS3V 3NM 65/16B/A	11 x3	15 x3	24
BS3V 3NM 65/16A/A	15 x3	20 x3	24
BS3V 3NM 65/20C/A	15 x3	20 x3	24
BS3V 3NM 65/20B/A	18,5 x3	25 x3	24
BS3V 3NM 65/200A/A	22 x3	30 x3	24
BS3V 3NM 65/250C/A	22 x3	30 x3	24
BS3V 3NM 65/250B/A	30 x3	40 x3	24
BS3V 3NMS 65/250A	37 x3	50 x3	24
BS3V 3NM 80/16B/A	15 x3	20 x3	24
BS3V 3NM 80/16A/A	18,5 x3	25 x3	24
BS3V 3NM 80/200B/A	22 x3	30 x3	24
BS3V 3NM 80/200A/A	30 x3	40 x3	24
BS3V 3NM 80/250E/A	22 x3	30 x3	24
BS3V 3NM 80/250D/A	30 x3	40 x3	24
BS3V 3NMS 80/250C	37 x3	50 x3	24
BS3V 3NMS 80/250B	45 x3	60 x3	24
BS3V 3NMS 80/250A	55 x3	75 x3	24

### Dimensions

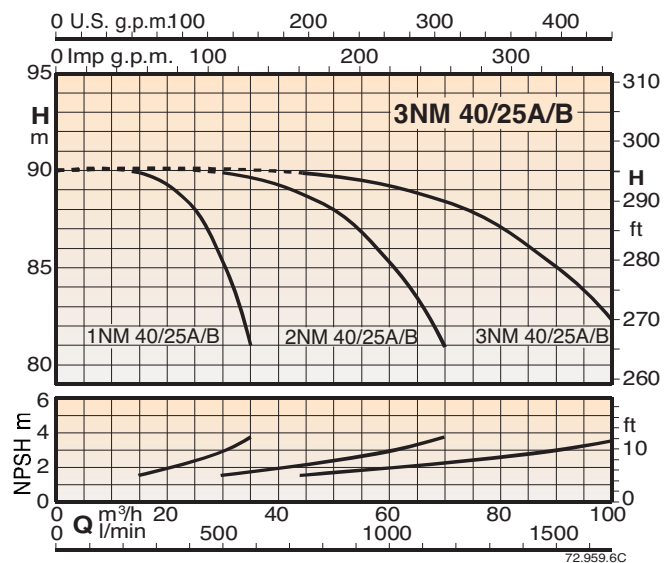
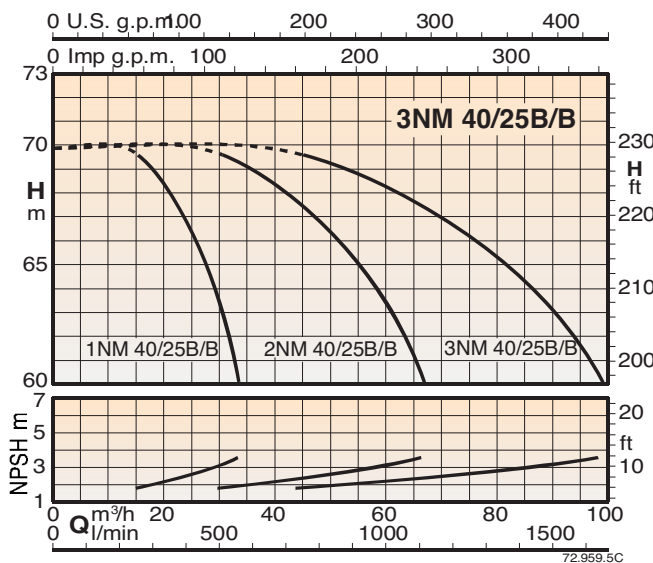
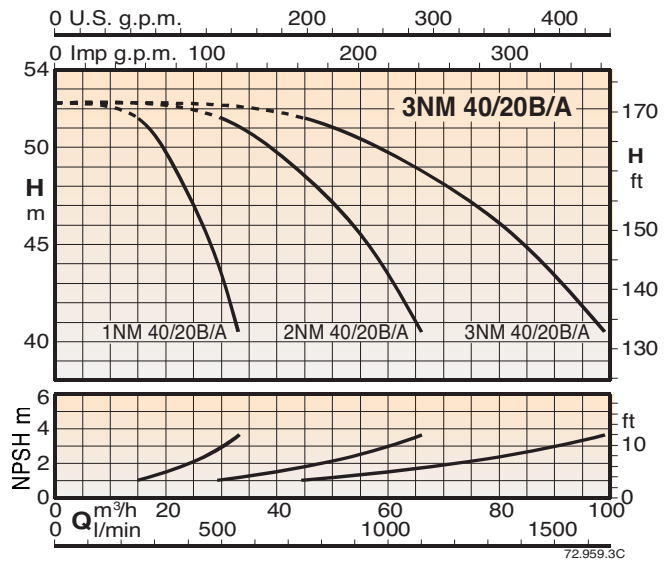
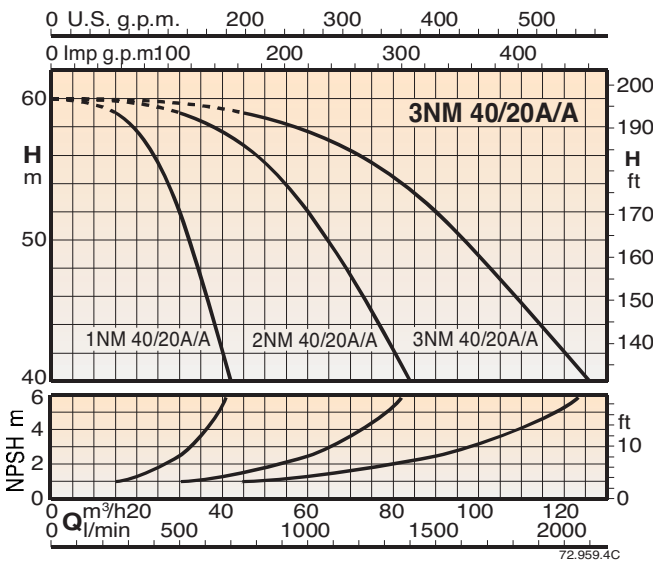
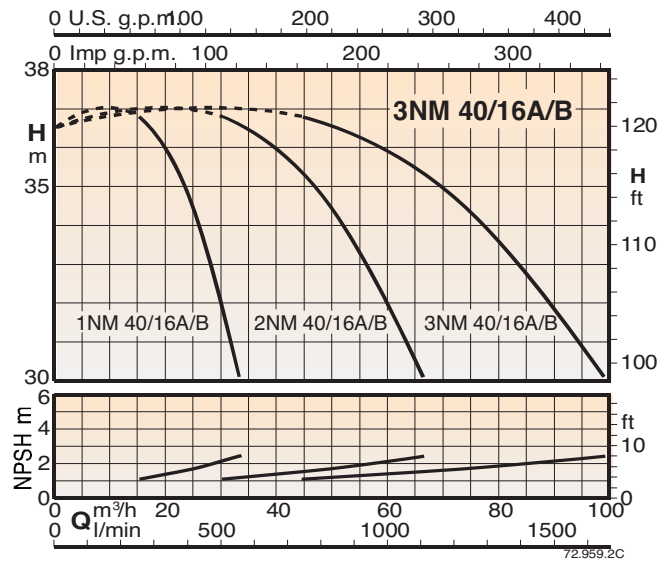
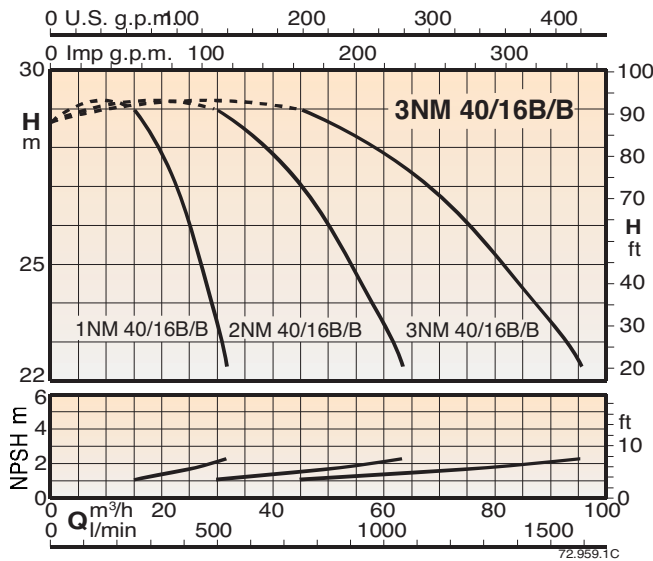


TYPE	DN1	DN2	mm								
			H	h1	h2	L2	L1	B	B2	m1	g
BS.. 3NM 40/16B/B BS.. 3NM 40/16A/B	125	100	1055	187	390	395	583	1200	1350	120	55
BS.. 3NM 40/20B/A BS.. 3NM 40/20A/A	125	100	1355	215	410	425	603	1200	1350	120	55
BS.. 3NM 40/25B/B BS.. 3NM 40/25A/B	125	100	1560	240	450	540 615	603	1400	1550	140	60
BS.. 3NM 50/16B/B BS.. 3NM 50/16A/B	150	125	1355	215	448	425	613	1200	1350	120	55
BS.. 3NM 50/20B/B BS.. 3NM 50/20A/B	150	125	1555	215	468	540	613	1200	1350	120	55
BS.. 3NM 50/25C/B BS.. 3NM 50/25B/B BS.. 3NM 50/25A/B	150	125	1560 1760	240	493	545 620 620	613	1400	1550	140	60
BS.. 3NM 50M/E/A BS.. 3NM 50M/D/A BS.. 3NM 50M/C/A	200	150	1585 1585 1785	217	508	600 650 675	855	1400	1450	240	85
BS.. 3NM 65/16B/A BS.. 3NM 65/16A/A	250	200	1560	220	555	540 615	750	1500	1550	140	60
BS.. 3NM 65/20C/A BS.. 3NM 65/20B/A BS.. 3NM 65/200A/A	250	200	1560 1760 1800	240 240 260	580	615 615 720	750	1500	1550	140 140 300	60 60 100
BS.. 3NM 65/250C BS.. 3NM 65/250B BS.. 3NMS 65/250A	250	200	1800 1800 1810	260 260 310	605	720 720 907	750	1800	1900	300 300 400	100 100 110
BS.. 3NM 80/16B/A BS.. 3NM 80/16A/A	300 <sup>(1)</sup>	250	1560 1760	240	645	620	725	1500	1550	140	60
BS.. 3NM 80/200B/A BS.. 3NM 80/200A/A	300 <sup>(1)</sup>	250	1800	260	670	720	725	1500	1550	300	100
BS.. 3NM 80/250E/A BS.. 3NM 80/250D/A BS.. 3NMS 80/250C BS.. 3NMS 80/250B BS.. 3NMS 80/250A	300 <sup>(1)</sup>	250	1800 1800 1810 1800* 1800*	260 260 310 310 310	700	720 720 932 1005 1073	725	1800	1900	300 300 400 400 400	100 100 110 110 110

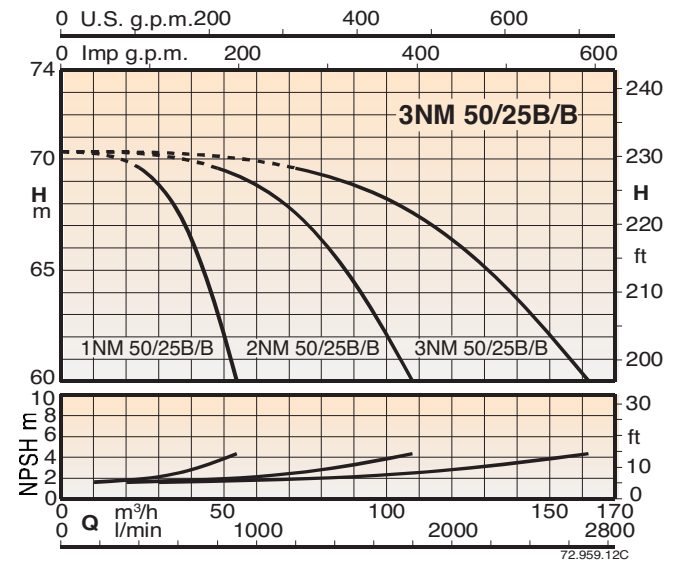
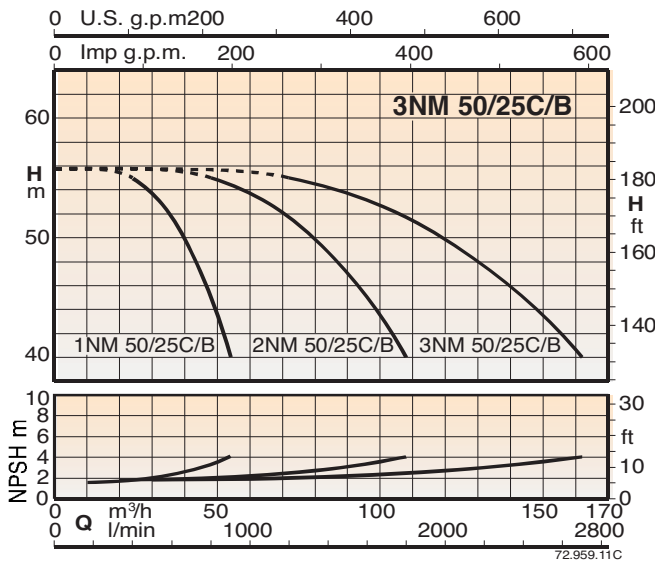
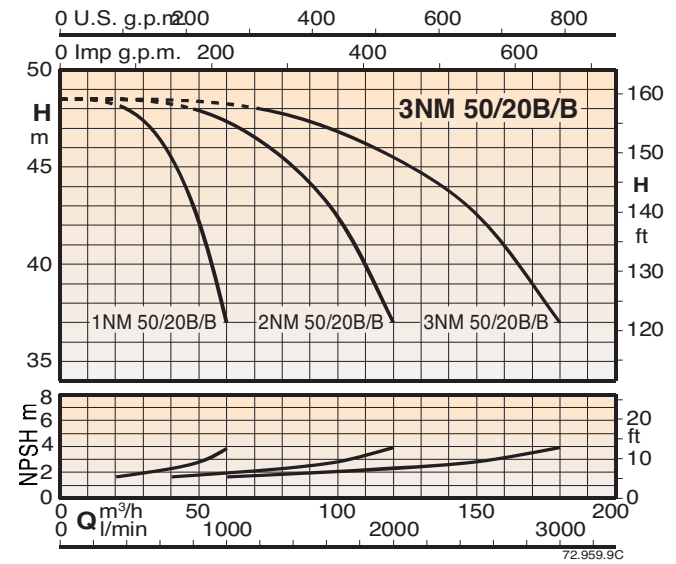
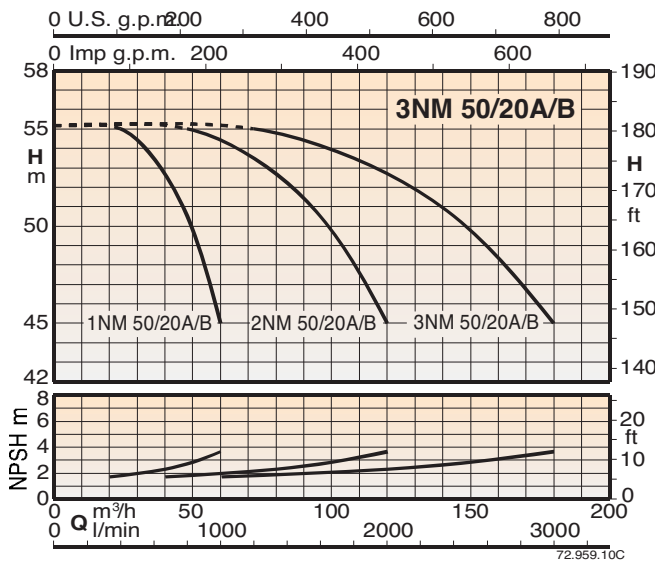
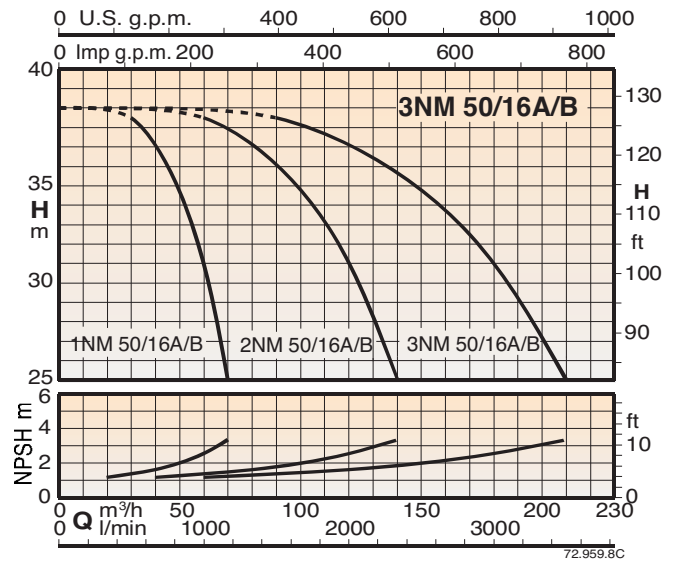
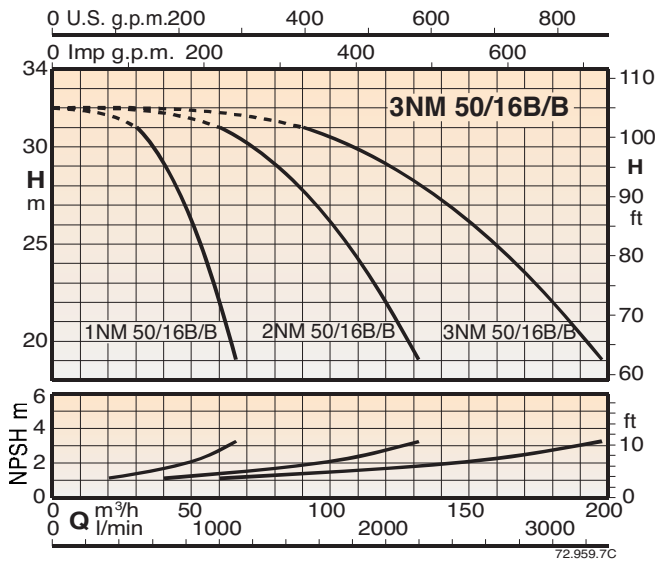
<sup>(1)</sup> Only on request

\* Cabinet version

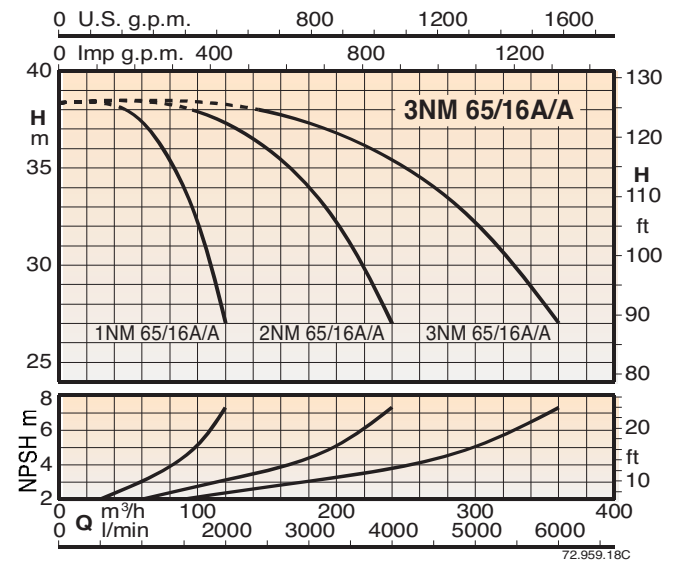
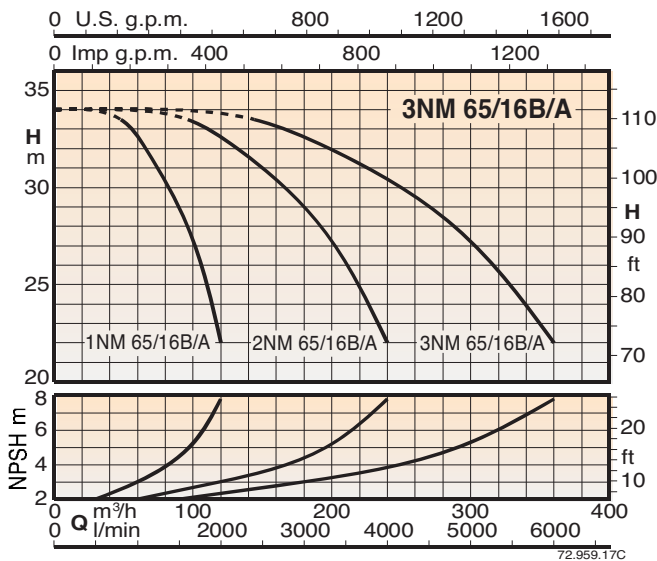
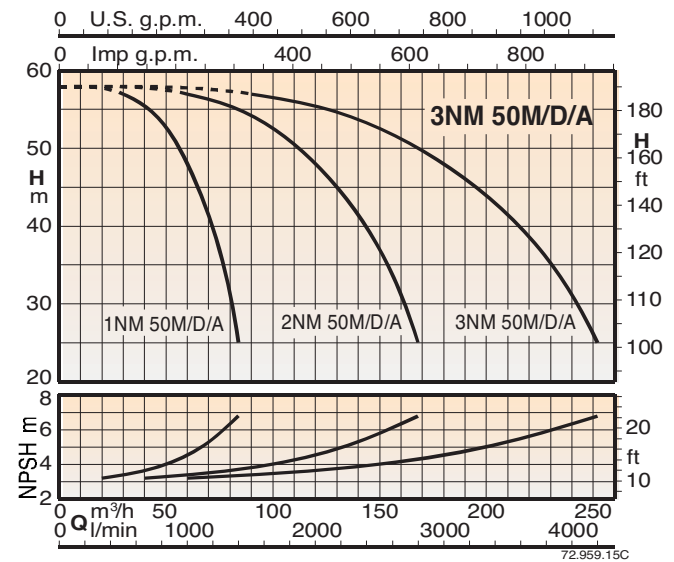
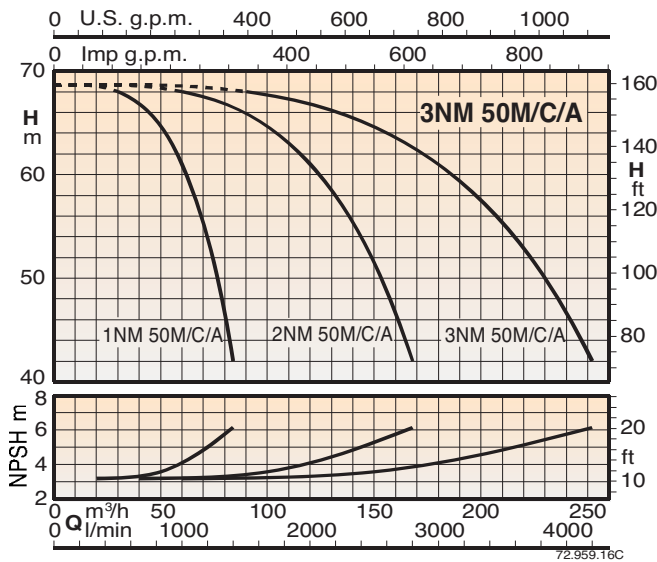
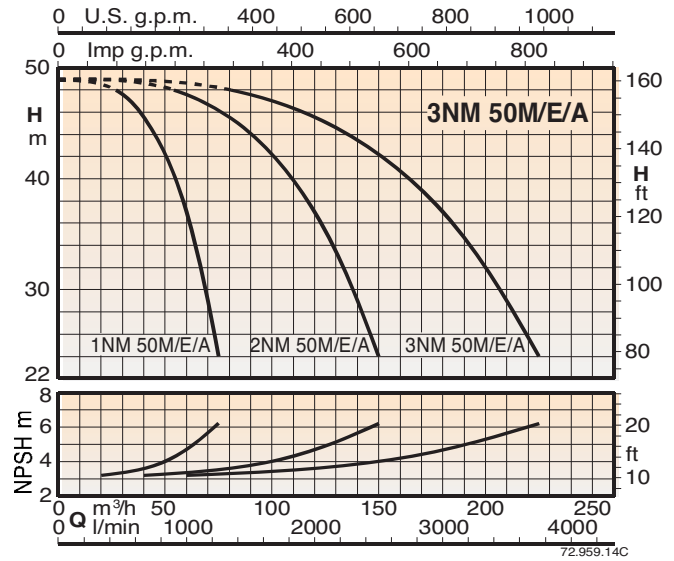
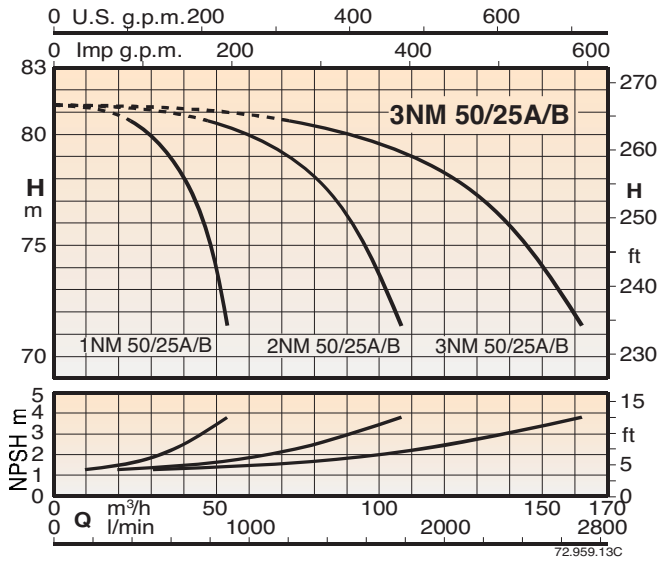
## Coverage chart



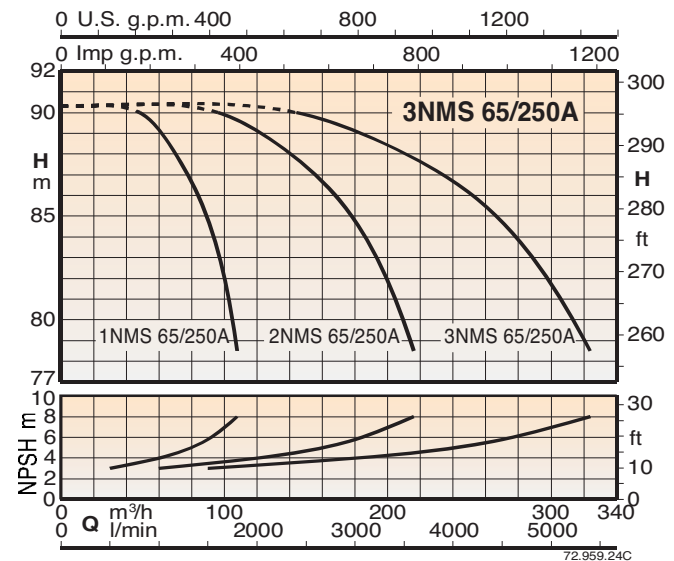
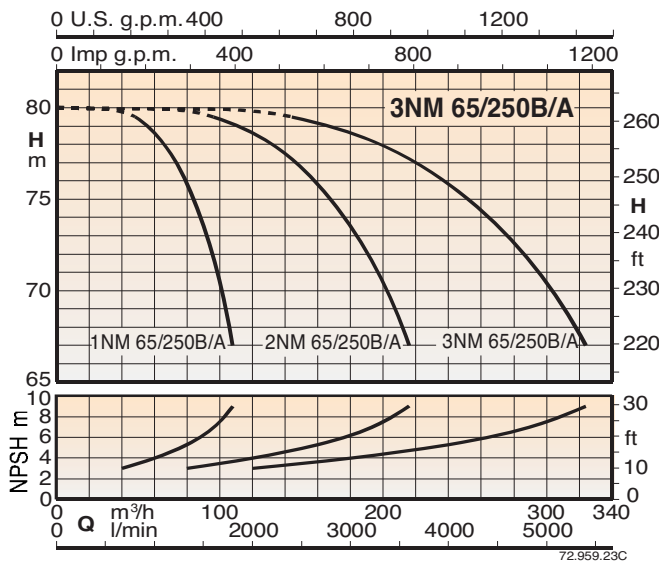
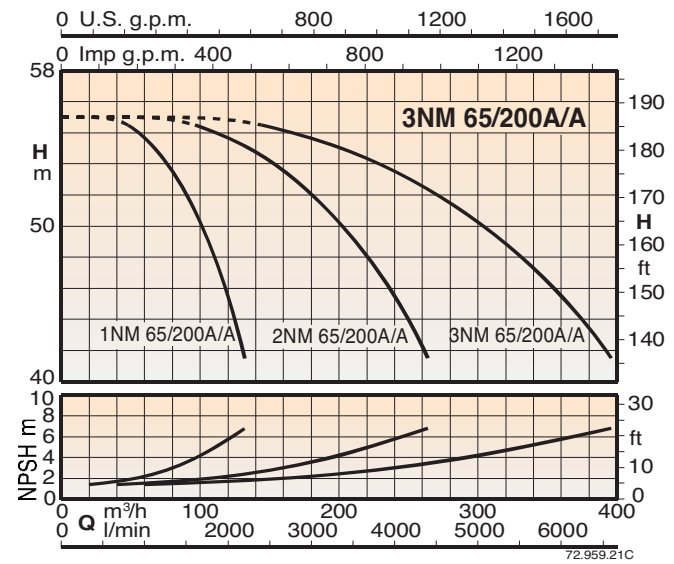
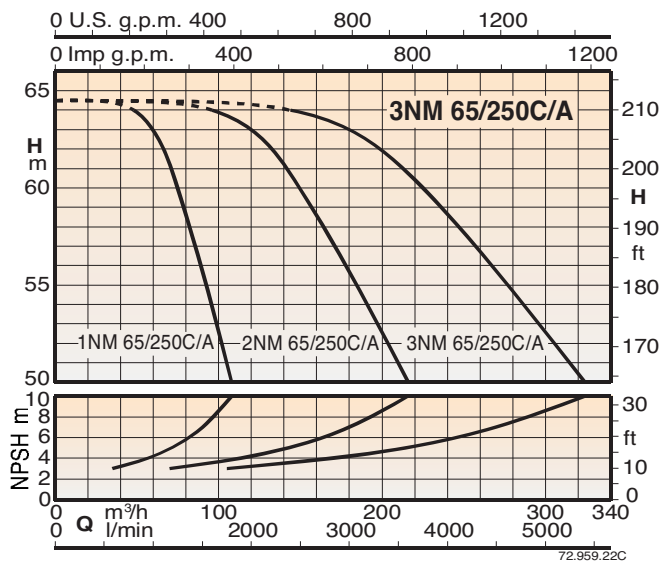
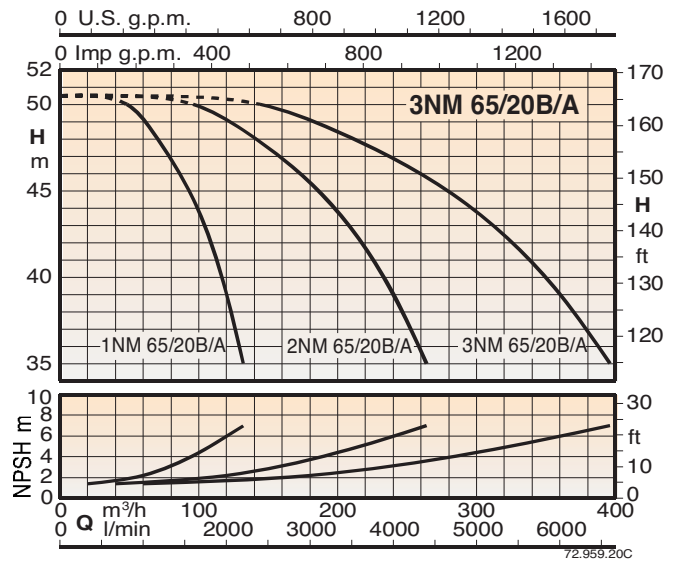
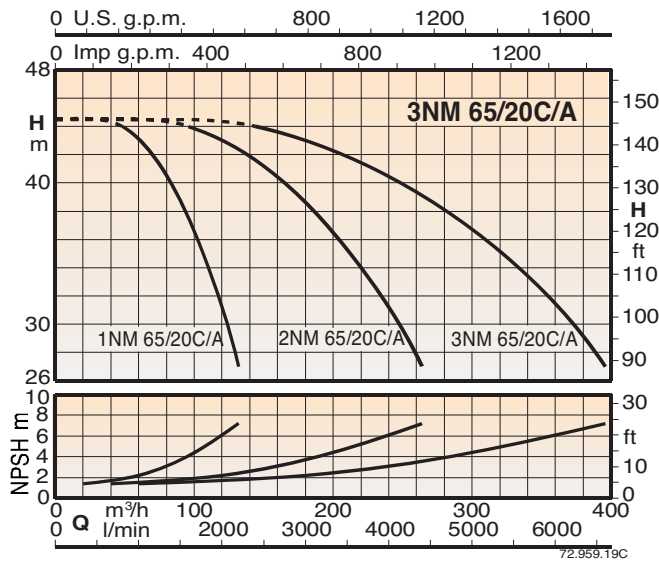
## Coverage chart



Coverage chart

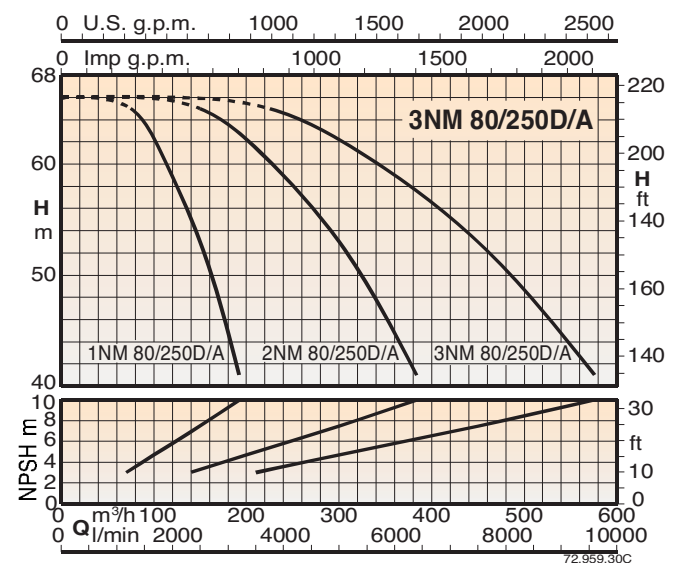
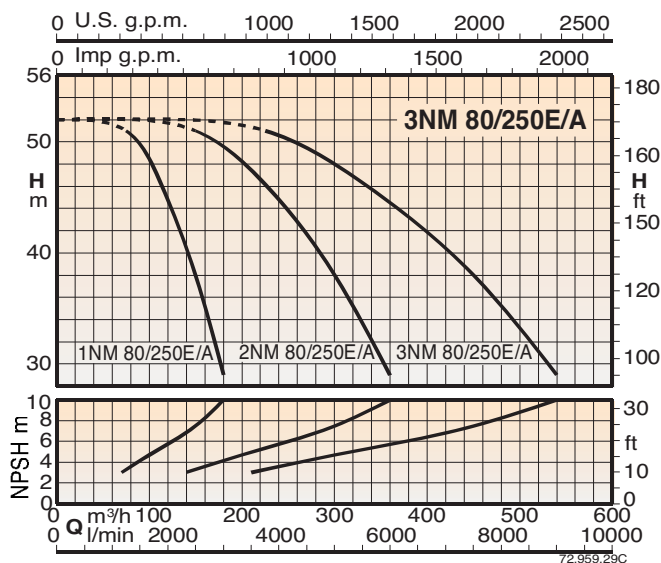
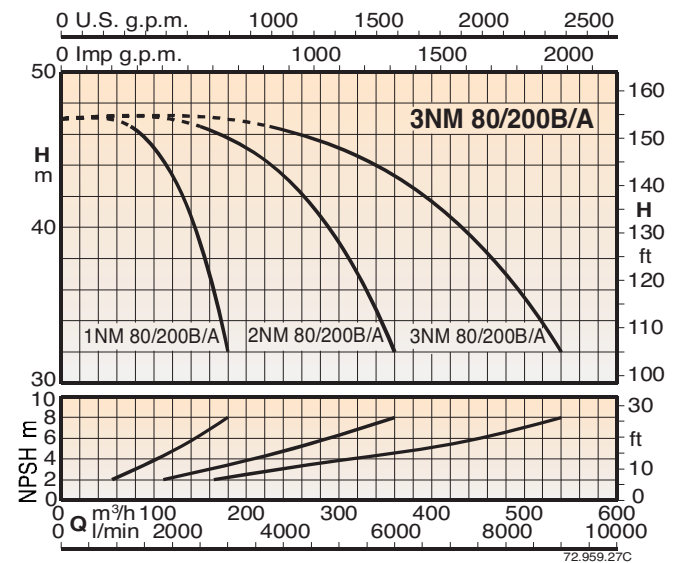
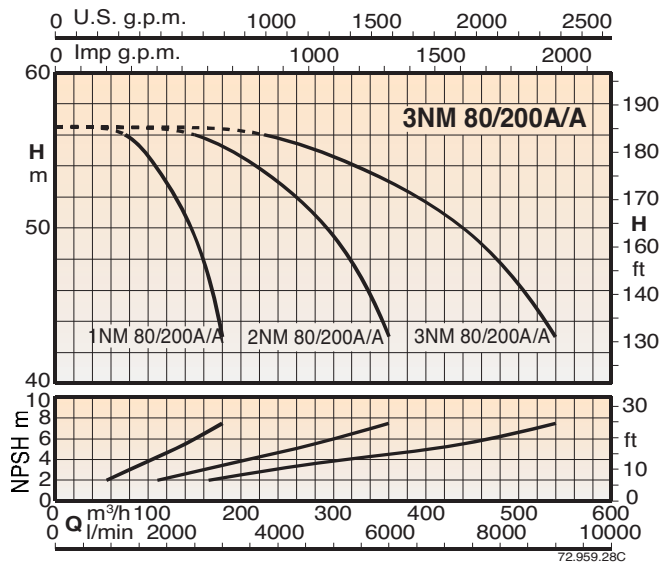
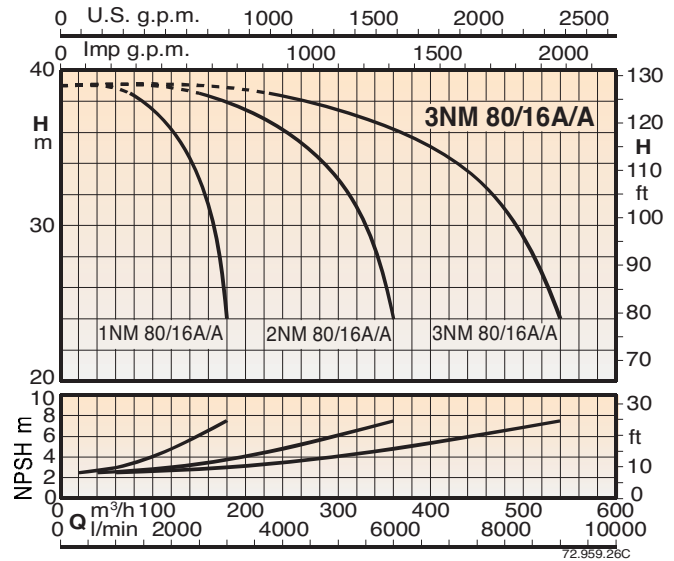
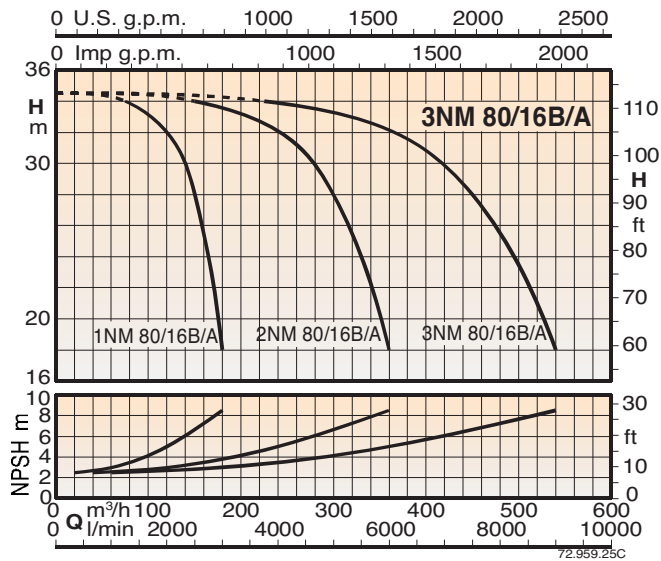


## Coverage chart

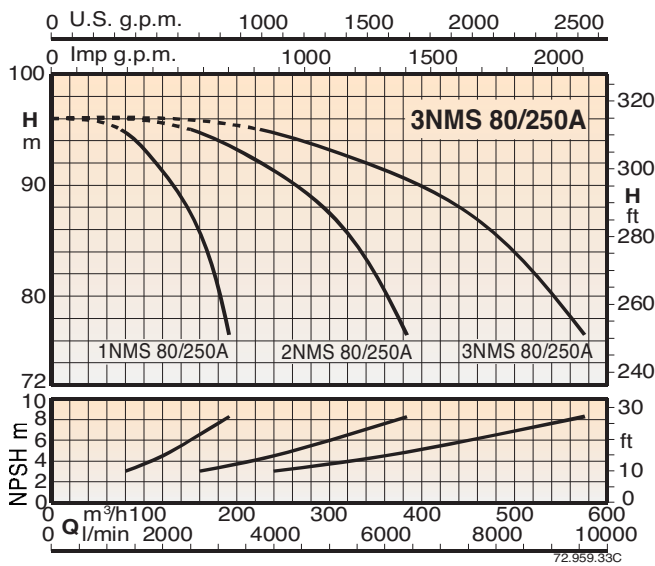
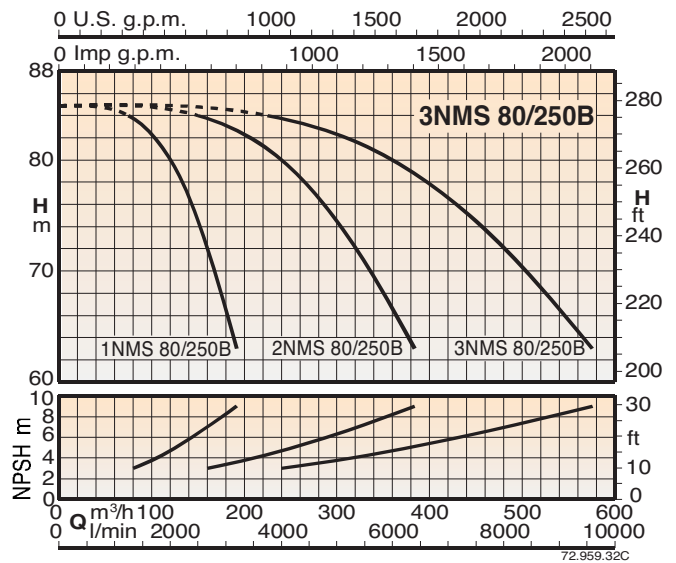
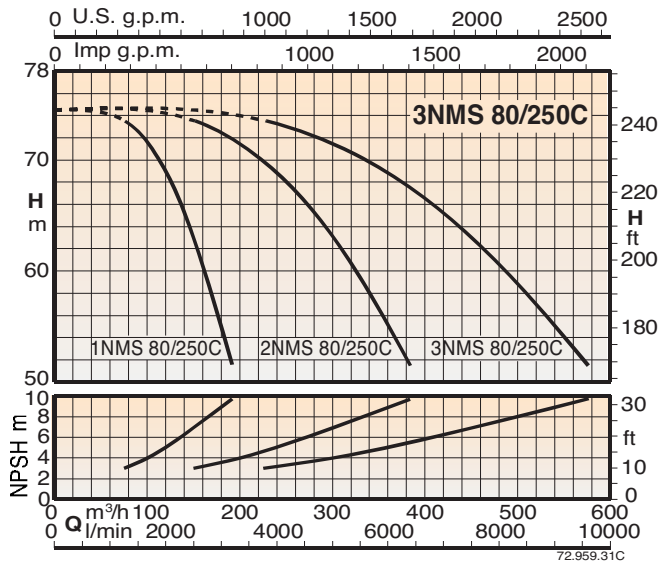




## Coverage chart



### Coverage chart



09/2012

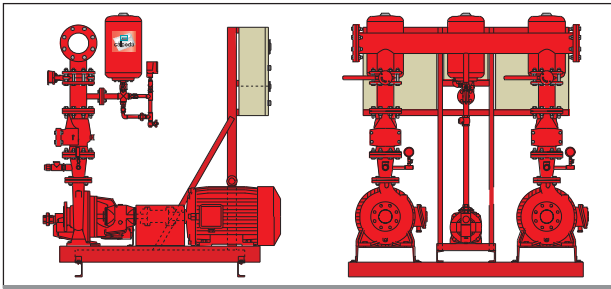
# AUE, AUD, AUED

UNI-EN 12845 fire-fighting systems



 **calpeda**<sup>®</sup>

48



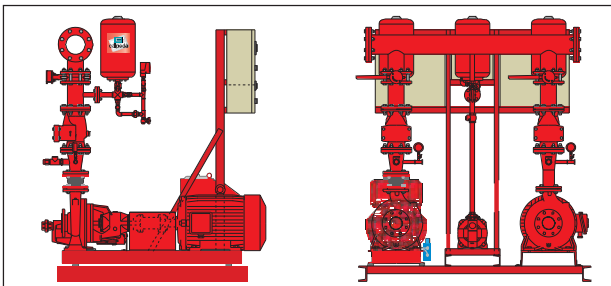
## **AUE 11**

UNI-EN 12845 units with 1 N series electric main pump

pag. 524

## **AUE 21**

UNI-EN 12845 units with 2 N series electric main pumps



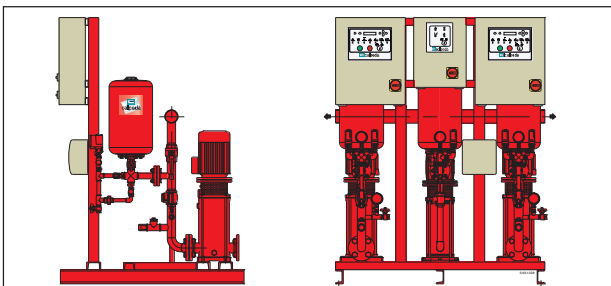
## **AUD 11**

UNI-EN 12845 units with 1 N series main pump (diesel motor)

pag. 529

## **AUED 21**

UNI-EN 12845 units with 2 N series main pumps  
(electric and diesel motors)



## **AUE 11**

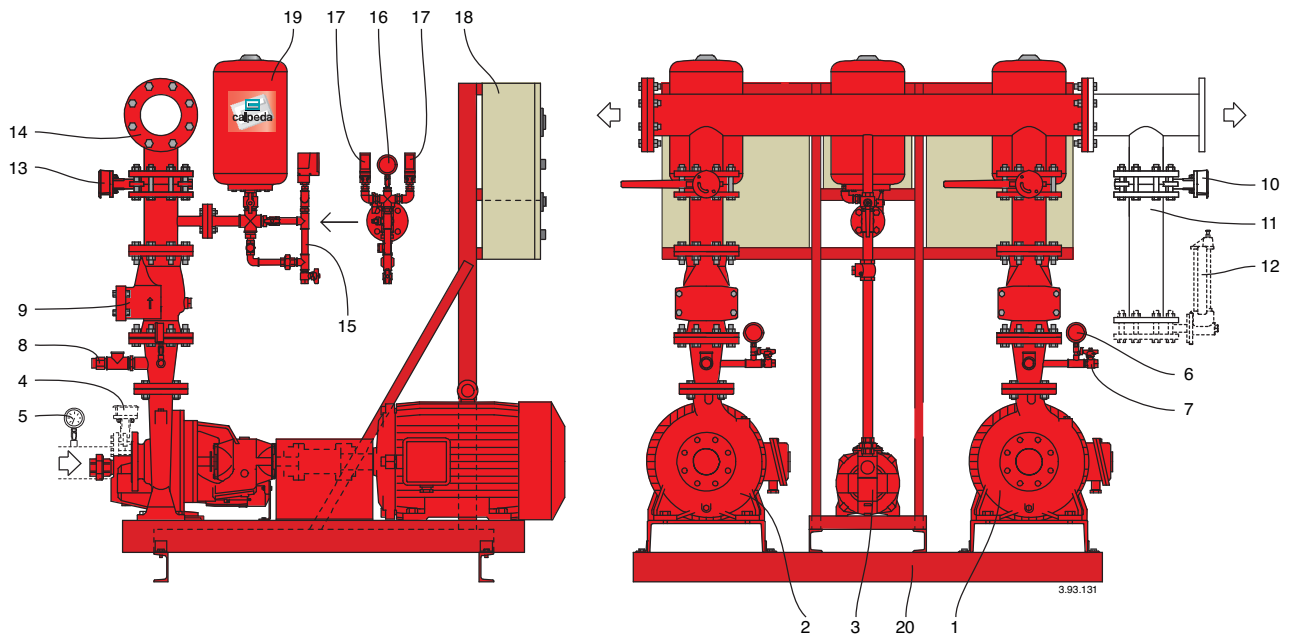
UNI-EN 12845 units with 1 MXV series multi-stage vertical electric main pump

pag. 534

## **AUE 21**

UNI-EN 12845 units with 2 MXV series multi-stage vertical electric main pumps

### Construction



- 1) Main pump
- 2) Main pump
- 3) Jockey pump
- 4) Butterfly valve in suction section (on request only for installation with positive head)
- 5) Vacuometer
- 6) Pressure gauge in delivery section
- 7) Ball valve for draining
- 8) Adjusted diaphragm
- 9) Non-return valve (accessible)
- 10) Butterfly valve for capacity-check system (on request)
- 11) Manifold for flow meter (on request)
- 12) Flow meter (on request)
- 13) Butterfly valve or ball valve in delivery section
- 14) Delivery manifold
- 15) Test circuit (manual) (one for each pump)
- 16) Pressure gauge
- 17) Starting pressure switches of main pumps  
Starting pressure switch to stop jockey pump
- 18) Electric boxes (one for each pump)
- 19) Diaphragm tanks
- 20) Steel base for all pumps

All the butterfly valves or ball valve are locked in the normal position by means of a lock and key.  
On request: anti-vibration couplings in both the suction and delivery sections.



# Control panels

UNI-EN 12845 fire-fighting systems



## Control panels

**QTPAN 1,1-1,5-5,5 kW**  
Jockey pumps control panel



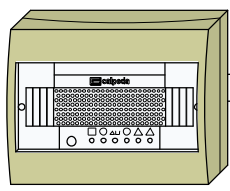
**QTPAN 1D 2,2+5,5 kW**  
Main pump control panel  
(D.O.L. starting)

**QTPAN 1ST 9,2+45 kW**  
Main pump control panel  
(Y/Δ starting)

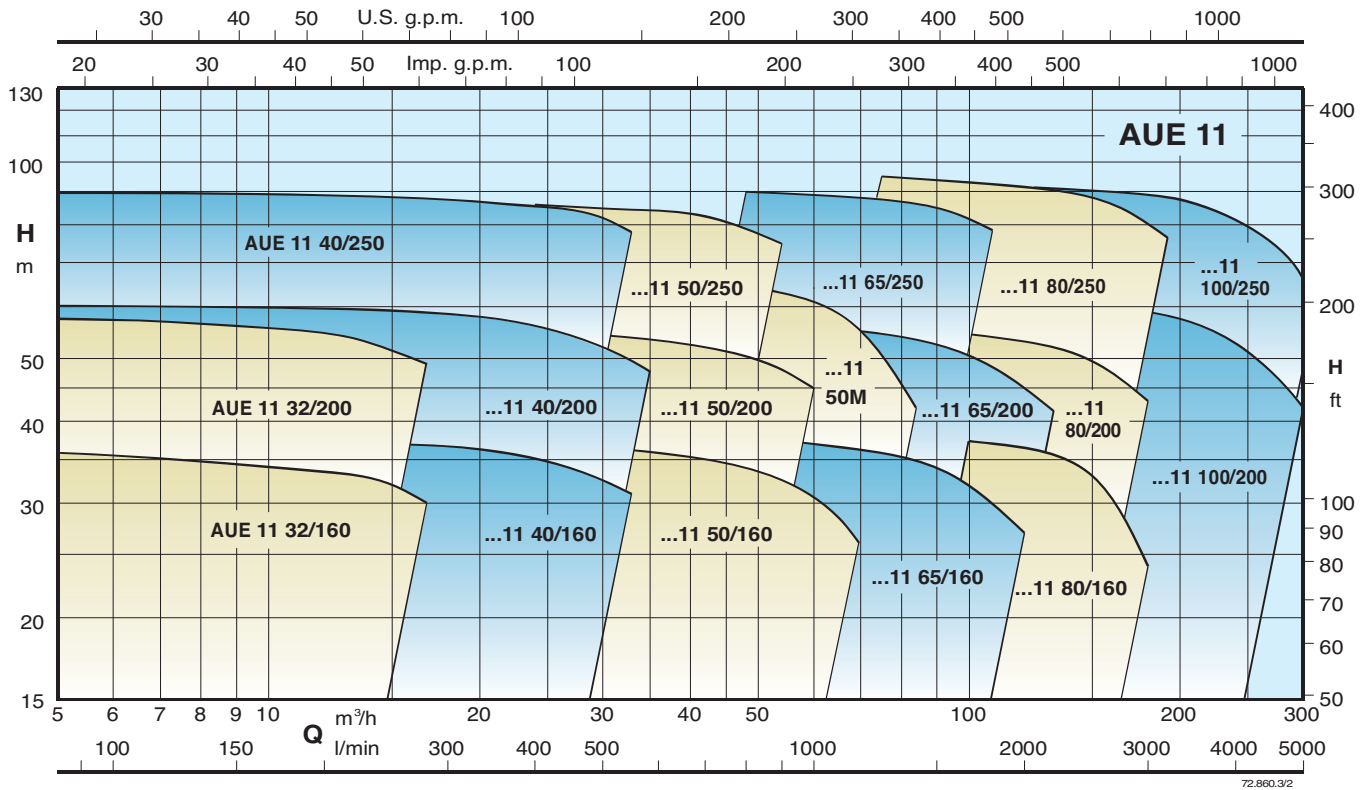
**QTPAN 1ST 55+75 kW**  
Main pump control panel (Y/Δ starting)

**QANM 1**  
Main pump control panel (diesel motor)

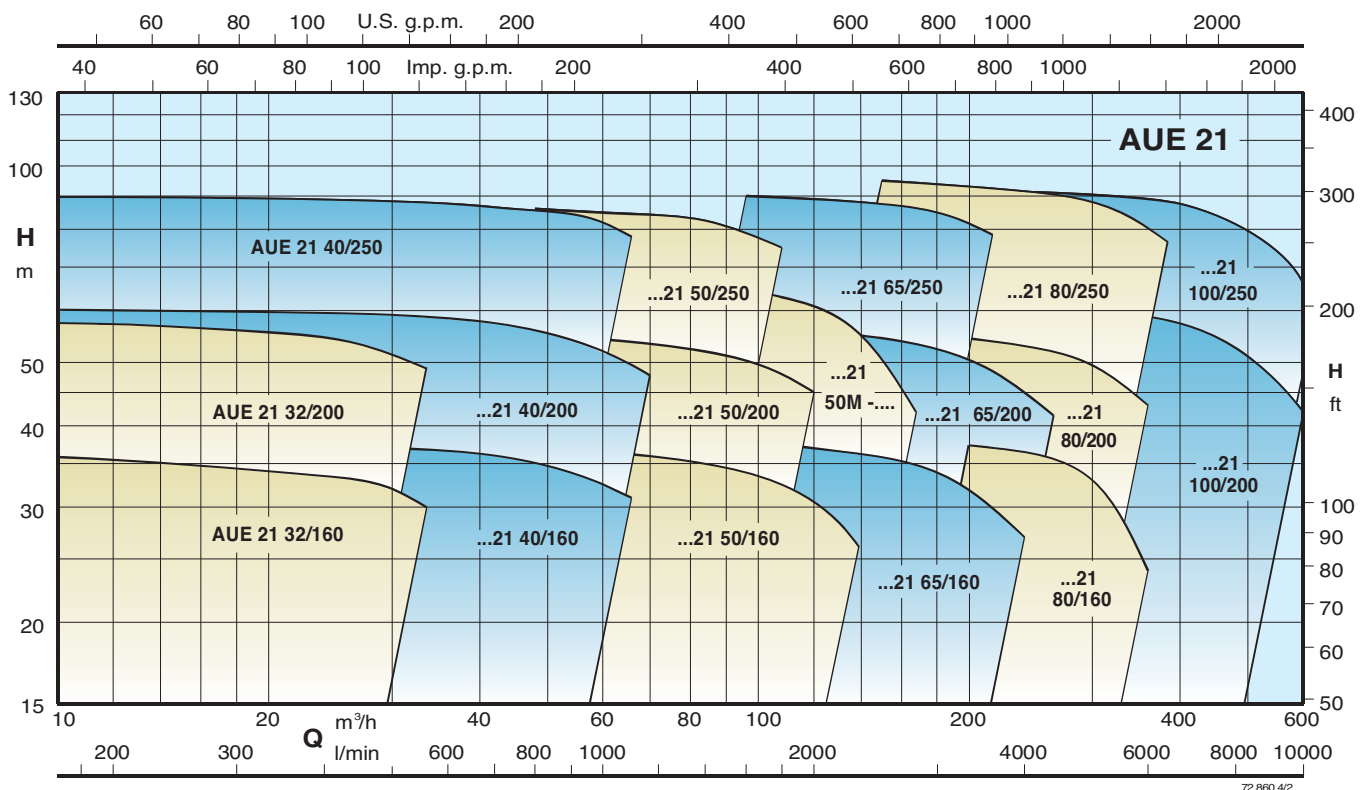
## Accessories on request

<p><b>TPS 24</b> Weekly test supply 24 V</p> 	<p><b>T20 - 24</b> Timer 20' - supply 24 V (according to UNI 10779)</p> 	<p><b>QACR 11-21</b> Control panel for remote control</p> 
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### With 1 electric pump



### With 2 electric pumps





### Performance

Unit designation	Main pump	Jockey pump	Power kW	Average capacity pump		Max. capacity pump		Pressure switch settings	
				m <sup>3</sup> /h	m	m <sup>3</sup> /h	m	Main pump bar	Jockey pump bar
AUE 11 - 32/160A/A	NG 5/18E	3 + 1,1	12	34	16,8	30	2,7 ÷ 3,3	3 ÷ 3,6	
AUE 11 - 32/200C/A	NG 5/16E	4 + 1,1	12	41	16,8	36	3,6 ÷ 4,2	4 ÷ 4,7	
AUE 11 - 32/200A/A	NG 6/18E	5,5 + 1,5	12	54,5	16,8	49	4,7 ÷ 5,4	5 ÷ 5,7	
AUE 11 - 40/160B/A	NG 5/22E	4 + 1,1	28,5	32,5	42	14	1,8 ÷ 2,5	2,2 ÷ 2,9	
AUE 11 - 40/160A/A	NG 5/18E	5,5 + 1,1	32	30	48	17	2,3 ÷ 3	2,8 ÷ 3,5	
AUE 11 - 40/200D/A	NG 5/18E	5,5 + 1,1	26,5	331	37,8	14	2,8 ÷ 3,4	3,3 ÷ 4	
AUE 11 - 40/200B/A	NG 5/16E	7,5 + 1,1	26,5	44	37,8	30,5	3,6 ÷ 4,3	3,9 ÷ 4,6	
AUE 11 - 40/200A/A	NG 6/18E	11 + 1,5	29	51	42	35	4,3 ÷ 5	4,6 ÷ 5,3	
AUE 11 - 40/250C/A	NG 6/18E	11 + 1,5	28,5	55	42	33,5	4,5 ÷ 5,3	4,8 ÷ 5,6	
AUE 11 - 40/250B/A	NG 7/18/A	15 + 2,2	28,5	64,5	42	45	5,5 ÷ 6,3	5,8 ÷ 6,6	
AUE 11 - 40/250A/A	NG 7/16/A	18,5 + 2,2	28,5	86	42	70,5	7,6 ÷ 8,2	8 ÷ 8,6	
AUE 11 - 50/160B/A	NG 5/22E	5,5 + 1,1	55,5	23	81	9,5	1,5 ÷ 2,2	1,8 ÷ 2,5	
AUE 11 - 50/160A/A	NG 5/18E	11 + 1,1	55,5	32	81	19	2,3 ÷ 3	2,6 ÷ 3,3	
AUE 11 - 50/200B/A	NG 5/16E	11 + 1,1	51	41,5	78	23	3,3 ÷ 4	3,6 ÷ 4,3	
AUE 11 - 50/200A/A	NG 6/18E	15 + 1,5	51	49	78	32,5	4 ÷ 4,7	4,3 ÷ 5	
AUE 11 - 50/200S/A	NG 6/18E	18,5 + 1,5	51	54,5	78	37	4,6 ÷ 5,2	5 ÷ 5,7	
AUE 11 - 50/250C/A	NG 5/16E	15 + 1,1	46,5	48,5	69	24,5	3,5 ÷ 4,2	3,8 ÷ 4,5	
AUE 11 - 50/250B/A	NG 7/18/A	18,5 + 2,2	46,5	62	69	43	5 ÷ 5,6	5,4 ÷ 6	
AUE 11 - 50/250A/A	NG 7/16/A	22 + 2,2	46,5	75	69	58,5	6,5 ÷ 7,2	6,8 ÷ 7,5	
AUE 11 - 50M/E/A	NG 6/18E	15 + 1,5	51	42	75	24	3,8 ÷ 4,4	4,2 ÷ 4,9	
AUE 11 - 50M/D/A	NG 6/18E	18,5 + 1,5	57	50	84	25	4,6 ÷ 5,3	5 ÷ 5,8	
AUE 11 - 50M/C/A	NG 7/18/A	22 + 2,2	57	62	84	42	5,7 ÷ 6,4	6,2 ÷ 6,9	
AUE 11 - 65/160B/A	NG 5/18E	15 + 1,1	84	30	120	22	2,4 ÷ 3	2,8 ÷ 3,5	
AUE 11 - 65/160A/A	NG 5/18E	18,5 + 1,1	84	35	120	27	2,8 ÷ 3,4	3,2 ÷ 3,8	
AUE 11 - 65/200C/A	NG 5/16E	18,5 + 1,1	90	38,5	132	27	3,4 ÷ 4	3,8 ÷ 4,5	
AUE 11 - 65/200B/A	NG 5/16E	22 + 1,1	90	45,5	132	35	3,9 ÷ 4,5	4,3 ÷ 5	
AUE 11 - 65/200A/A	NG 6/18E	30 + 1,5	90	52	132	41,5	4,5 ÷ 5,2	5 ÷ 5,6	
AUE 11 - 65/250C	NG 7/18/A	30 + 2,2	78	59	108	50	5,4 ÷ 6	5,8 ÷ 6,5	
AUE 11 - 65/250B	NG 7/16/A	37 + 2,2	78	76	108	67	7 ÷ 7,6	7,4 ÷ 8	
AUE 11 - 65/250A	NMD 25/190A/A	45 + 4	78	87	108	78	7,8 ÷ 8,5	8,3 ÷ 9	
AUE 11 - 80/160B/A	NG 5/18E	18,5 + 1,1	128	31	180	18	2,4 ÷ 3	2,8 ÷ 3,5	
AUE 11 - 80/160A/A	NG 5/18E	22 + 1,1	128	36	180	24	2,8 ÷ 3,4	3,3 ÷ 3,9	
AUE 11 - 80/200B	NG 6/18E	30 + 1,5	128	42	180	32	3,5 ÷ 4,2	4 ÷ 4,7	
AUE 11 - 80/200A	NG 6/18E	37 + 1,5	128	52	180	43	4,5 ÷ 5,2	5 ÷ 5,7	
AUE 11 - 80/250E	NG 6/18E	30 + 1,5	128	43	180	29	4,1 ÷ 4,7	4,5 ÷ 5,1	
AUE 11 - 80/250D	NG 7/18/A	37 + 2,2	134	56	192	41	5,5 ÷ 6,1	5,9 ÷ 6,5	
AUE 11 - 80/250C	NG 7/16/A	45 + 2,2	134	67	192	51	6,3 ÷ 6,9	6,8 ÷ 7,4	
AUE 11 - 80/250B	NG 7/16/A	55 + 2,2	134	78	192	63	7,2 ÷ 7,9	7,8 ÷ 8,4	
AUE 11 - 80/250A	NMD 25/190A/A	75 + 4	134	90	192	76	8,3 ÷ 9	8,8 ÷ 9,4	
AUE 11 - 100/200E	NG 5/22E	22 + 1,1	174	26	240	19	2 ÷ 2,6	2,4 ÷ 3	
AUE 11 - 100/200D	NG 6/22E	30 + 1,5	189	31	270	19	2,5 ÷ 3,2	3 ÷ 3,7	
AUE 11 - 100/200C	NG 7/22/A	37 + 2,2	204	39	300	22	3,5 ÷ 4,1	3,9 ÷ 4,6	
AUE 11 - 100/200B	NG 7/18/A	45 + 2,2	204	48	300	32	4,4 ÷ 5	4,8 ÷ 5,5	
AUE 11 - 100/200A	NG 7/18/A	55 + 2,2	204	57	300	42	4,8 ÷ 5,5	5,4 ÷ 6	
AUE 11 - 100/250B	NG 7/16/A	75 + 2,2	204	65	300	48	6 ÷ 6,8	6,6 ÷ 7,3	
AUE 11 - 100/250A	NMD 25/190A/A	92 + 4	204	85	300	67	7,8 ÷ 8,5	8,2 ÷ 9	

### Performance

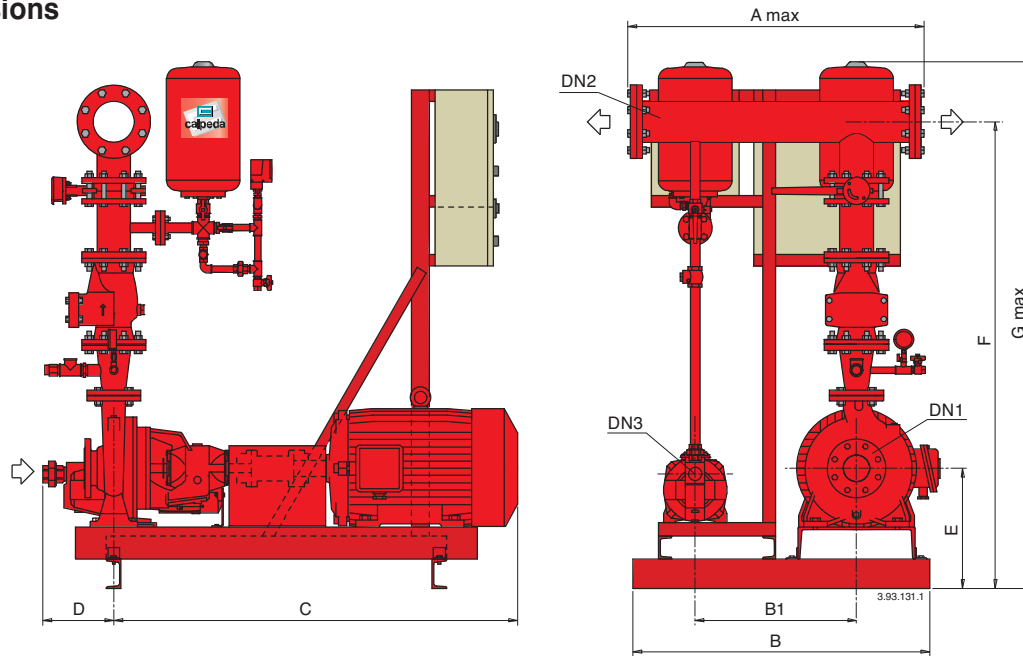
Unit designation		Power	Average capacity of one pump		Max. capacity of one pump		Pressure switch settings		
							Main pump 1 bar	Main pump 2 bar	Jockey pump bar
Main pump	Jockey pump	kW	m³/h	m	m³/h	m			
AUE 21 - 32/160A/A	NG 5/18E	3 + 3 + 1,1	12	34	16,8	30	2,7 ÷ 3,3	2,3 ÷ 2,9	3 ÷ 3,6
AUE 21 - 32/200C/A	NG 5/16E	4 + 4 + 1,1	12	41	16,8	36	3,6 ÷ 4,2	3,2 ÷ 3,8	4 ÷ 4,7
AUE 21 - 32/200A/A	NG 6/18E	5,5+5,5+1,5	12	54,5	16,8	49	4,7 ÷ 5,4	4,3 ÷ 5	5 ÷ 5,7
AUE 21 - 40/160B/A	NG 5/22E	4 + 4 + 1,1	28,5	32,5	42	14	1,8 ÷ 2,5	1,5 ÷ 2,3	2,2 ÷ 2,9
AUE 21 - 40/160A/A	NG 5/18E	5,5+5,5+1,1	32	30	48	17	2,3 ÷ 3	2 ÷ 2,7	2,8 ÷ 3,5
AUE 21 - 40/200D/A	NG 5/18E	5,5+5,5+1,1	26,5	31	37,8	14	2,8 ÷ 3,4	2,4 ÷ 3	3,3 ÷ 4
AUE 21 - 40/200B/A	NG 5/16E	7,5+7,5+1,1	26,5	44	37,8	30,5	3,6 ÷ 4,3	3,3 ÷ 4	3,9 ÷ 4,6
AUE 21 - 40/200A/A	NG 6/18E	11 + 11 + 1,5	29	51	42	35	4,3 ÷ 5	4 ÷ 4,7	4,6 ÷ 5,3
AUE 21 - 40/250C/A	NG 6/18E	11 + 11 + 1,5	28,5	55	42	33,5	4,5 ÷ 5,3	4,2 ÷ 5,1	4,8 ÷ 5,6
AUE 21 - 40/250B/A	NG 7/18/A	15 + 15 + 2,2	28,5	64,5	42	45	5,5 ÷ 6,3	5,2 ÷ 6,3	5,8 ÷ 6,6
AUE 21 - 40/250A/A	NG 7/16/A	18,5+18,5+2,2	28,5	86	42	70,5	7,6 ÷ 8,2	7,2 ÷ 7,8	8 ÷ 8,6
AUE 21 - 50/160B/A	NG 5/12E	5,5+5,5+1,1	55,5	23	81	9,5	1,5 ÷ 2,2	1,2 ÷ 1,9	1,8 ÷ 2,5
AUE 21 - 50/160A/A	NG 5/18E	11 + 11 + 1,1	55,5	32	81	19	2,3 ÷ 3	2 ÷ 2,7	2,6 ÷ 3,3
AUE 21 - 50/200B/A	NG 5/16E	11 + 11 + 1,1	51	41,5	78	23	3,3 ÷ 4	3 ÷ 3,7	3,6 ÷ 4,3
AUE 21 - 50/200A/A	NG 6/18E	15 + 15 + 1,5	51	49	78	32,5	4 ÷ 4,7	3,7 ÷ 4,4	4,3 ÷ 5
AUE 21 - 50/200S/A	NG 6/18E	18,5+18,5+1,5	51	54,5	78	37	4,6 ÷ 5,2	4,2 ÷ 4,8	5 ÷ 5,7
AUE 21 - 50/250C/A	NG 5/16E	15 + 15 + 1,1	46,5	48,5	69	24,5	3,5 ÷ 4,2	3,2 ÷ 3,9	3,8 ÷ 4,5
AUE 21 - 50/250B/A	NG 7/18/A	18,5+18,5+2,2	46,5	62	69	43	5 ÷ 5,6	4,7 ÷ 5,3	5,4 ÷ 6
AUE 21 - 50/250A/A	NG 7/16/A	22 + 22 + 2,2	46,5	75	69	58,5	6,5 ÷ 7,2	6,2 ÷ 6,9	6,8 ÷ 7,5
AUE 21 - 50M/E/A	NG 6/18E	15 + 15 + 1,5	51	42	75	24	3,8 ÷ 4,4	3,4 ÷ 4	4,2 ÷ 4,9
AUE 21 - 50M/D/A	NG 6/18E	18,5+18,5+1,5	57	50	84	25	4,6 ÷ 5,3	4,2 ÷ 4,9	5 ÷ 5,8
AUE 21 - 50M/C/A	NG 7/18/A	22 + 22 + 2,2	57	62	84	42	5,7 ÷ 6,4	5,3 ÷ 6	6,2 ÷ 6,9
AUE 21 - 65/160B/A	NG 5/18E	15 + 15 + 1,1	84	30	120	22	2,4 ÷ 3	2 ÷ 2,6	2,8 ÷ 3,5
AUE 21 - 65/160A/A	NG 5/18E	18,5+18,5+1,1	84	35	120	27	2,8 ÷ 3,4	2,4 ÷ 3	3,2 ÷ 3,8
AUE 21 - 65/200C/A	NG 5/16E	18,5+18,5+1,1	90	38,5	132	27	3,4 ÷ 4	3 ÷ 3,6	3,8 ÷ 4,5
AUE 21 - 65/200B/A	NG 5/16E	22 + 22 + 1,1	90	45,5	132	35	3,9 ÷ 4,5	3,5 ÷ 4,1	4,3 ÷ 5
AUE 21 - 65/200A/A	NG 6/18E	30 + 30 + 1,5	90	52	132	41,5	4,5 ÷ 5,2	4,1 ÷ 4,8	5 ÷ 5,6
AUE 21 - 65/250C	NG 7/18/A	30 + 30 + 2,2	78	59	108	50	5,4 ÷ 6	5 ÷ 5,6	5,8 ÷ 6,5
AUE 21 - 65/250B	NG 7/16/A	37 + 37 + 2,2	78	76	108	67	7 ÷ 7,6	6,6 ÷ 7,2	7,4 ÷ 8
AUE 21 - 65/250A	NMD 25/190A/A	45 + 45 + 4	78	87	108	78	7,8 ÷ 8,5	7,4 ÷ 8,1	8,3 ÷ 9
AUE 21 - 80/160B/A	NG 5/18E	18,5+18,5+1,1	128	31	180	18	2,4 ÷ 3	2 ÷ 2,6	2,8 ÷ 3,5
AUE 21 - 80/160A/A	NG 5/18E	22 + 22 + 1,1	128	36	180	24	2,8 ÷ 3,4	2,4 ÷ 3	3,3 ÷ 3,9
AUE 21 - 80/200B	NG 6/18E	30 + 30 + 1,5	128	42	180	32	3,5 ÷ 4,2	3,1 ÷ 3,8	4 ÷ 4,7
AUE 21 - 80/200A	NG 6/18E	37 + 37 + 1,5	128	52	180	43	4,5 ÷ 5,2	4,1 ÷ 4,8	5 ÷ 5,7
AUE 21 - 80/250E	NG 6/18E	30 + 30 + 1,5	128	43	180	29	4,1 ÷ 4,7	3,7 ÷ 4,3	4,5 ÷ 5,1
AUE 21 - 80/250D	NG 7/18/A	37 + 37 + 2,2	134	56	192	41	5,5 ÷ 6,1	5,1 ÷ 5,7	5,9 ÷ 6,5
AUE 21 - 80/250C	NG 7/16/A	45 + 45 + 2,2	134	67	192	51	6,3 ÷ 6,9	5,9 ÷ 6,5	6,8 ÷ 7,4
AUE 21 - 80/250B	NG 7/16/A	55 + 55 + 2,2	134	78	192	63	7,2 ÷ 7,9	6,8 ÷ 7,5	7,8 ÷ 8,4
AUE 21 - 80/250A	NMD 25/190A/A	75 + 75 + 4	134	90	192	76	8,3 ÷ 9	7,9 ÷ 8,6	8,8 ÷ 9,4
AUE 21 - 100/200E	NG 5/22E	22 + 22 + 1,1	174	26	240	19	2 ÷ 2,6	1,6 ÷ 2,2	2,4 ÷ 3
AUE 21 - 100/200D	NG 6/22E	30 + 30 + 1,5	189	31	270	19	2,5 ÷ 3,2	2,1 ÷ 2,8	3 ÷ 3,7
AUE 21 - 100/200C	NG 7/22/A	37 + 37 + 2,2	204	39	300	22	3,5 ÷ 4,1	3,1 ÷ 3,7	3,9 ÷ 4,6
AUE 21 - 100/200B	NG 7/18/A	45 + 45 + 2,2	204	48	300	32	4,4 ÷ 5	4 ÷ 4,6	4,8 ÷ 5,5
AUE 21 - 100/200A	NG 7/18/A	55 + 55 + 2,2	204	57	300	42	4,8 ÷ 5,5	4,4 ÷ 5,1	5,4 ÷ 6
AUE 21 - 100/250B	NG 7/16/A	75 + 75 + 2,2	204	65	300	48	6 ÷ 6,8	5,6 ÷ 6,4	6,6 ÷ 7,3
AUE 21 - 100/250A	NMD 25/190A/A	92 + 92 + 4	204	85	300	67	7,8 ÷ 8,5	7,4 ÷ 8,1	8,2 ÷ 9

# AUE 11

UNI-EN 12845 units with 1 electric main pump



## Dimensions



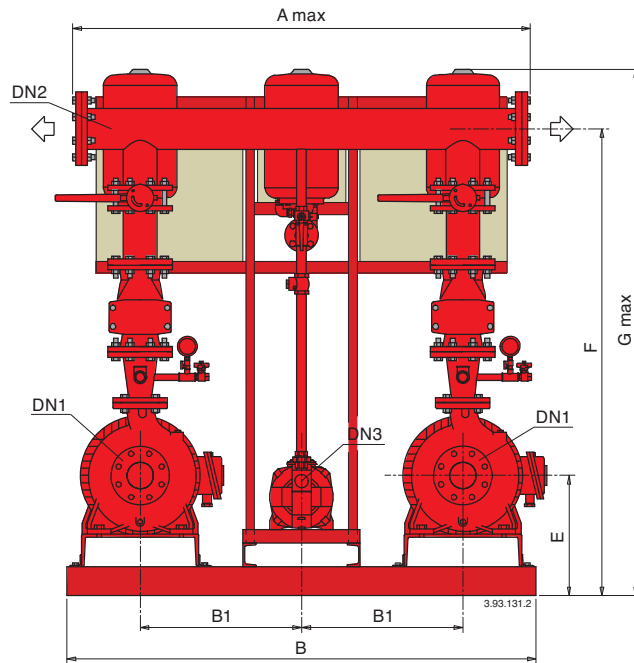
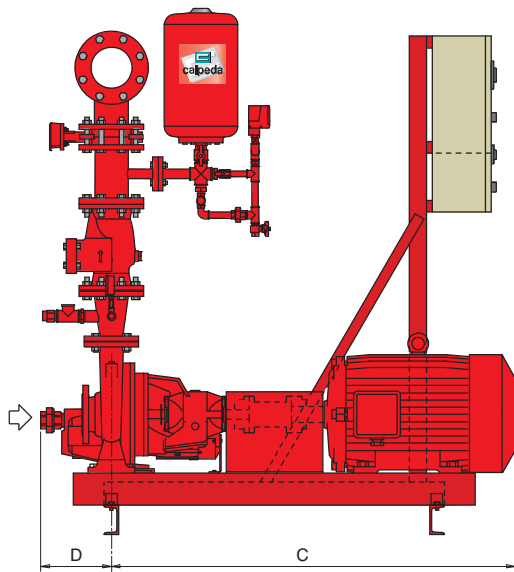
Unit designation		Connections			Dimensions							
					mm							
Main pump	Jockey pump	DN 1	DN 2	DN 3	A	B	B1	C	D	E	F	G
AUE 11 - 32/160A/A	NG 5/18E	50	G2	G 1 1/2	750	900	500	835	240	317	1150	1500
AUE 11 - 32/200C/A	NG 5/16E	50	G2	G 1 1/2	750	900	500	855	240	345	1200	1500
AUE 11 - 32/200A/A	NG 6/18E							915		360		
AUE 11 - 40/160B/A	NG 5/22E	65	65	G 1 1/2	800	900	500	835	240	317	1290	1530
AUE 11 - 40/160A/A	NG 5/18E							855				
AUE 11 - 40/200D/A	NG 5/18E	65	65	G 1 1/2	800	950	500	855	240	360	1355	1600
AUE 11 - 40/200B/A	NG 5/16E							915				
AUE 11 - 40/200A/A	NG 6/18E							1065				
AUE 11 - 40/250C/A	NG 6/18E	65	65	G 1 1/2	800	950	500	955	240	380	1420	1660
AUE 11 - 40/250B/A	NG 7/18/A							1060				
AUE 11 - 40/250A/A	NG 7/16/A							1060				
AUE 11 - 50/160B/A	NG 5/22E	65	80	G 1 1/2	850	950	550	915	240	360	1380	1615
AUE 11 - 50/160A/A	NG 5/18E							1065				
AUE 11 - 50/200B/A	NG 5/16E	65	80	G 1 1/2	850	1000	550	955	240	360	1400	1635
AUE 11 - 50/200A/A	NG 6/18E							1060				
AUE 11 - 50/200S/A	NG 6/18E							1060				
AUE 11 - 50/250C/A	NG 5/16E	65	80	G 1 1/2	850	1000	550	1060	240	380	1445	1700
AUE 11 - 50/250B/A	NG 7/18/A							1060				
AUE 11 - 50/250A/A	NG 7/16/A							1100				
AUE 11 - 50M/E/A	NG 6/18E	65	80	G 1 1/2	850	1000	550	1060	240	380	1445	1700
AUE 11 - 50M/D/A	NG 6/18E							1100				
AUE 11 - 50M/C/A	NG 7/18/A							1100				
AUE 11 - 65/160B/A	NG 5/18E	80	100	G 1 1/2	850	1000	550	1060	240	360	1480	1700
AUE 11 - 65/160A/A	NG 5/18E							1100				
AUE 11 - 65/200C/A	NG 5/16E	80	100	G 1 1/2	850	1000	550	1100	240	380	1525	1740
AUE 11 - 65/200B/A	NG 5/16E							1140				
AUE 11 - 65/200A/A	NG 6/18E							1140				
AUE 11 - 65/250C	NG 7/18/A	80	100	G 1 1/2	850	1050	550	1275	240	410	1580	1795
AUE 11 - 65/250B	NG 7/16/A							1375				
AUE 11 - 65/250A	NMD 25/190A/A							1375				
AUE 11 - 80/160B/A	NG 5/18E	100	125	G 1 1/2	950	1000	550	1100	250	380	1640	1840
AUE 11 - 80/160A/A	NG 5/18E							1140				
AUE 11 - 80/200B	NG 6/18E	100	125	G 1 1/2	950	1000	550	1275	250	380	1675	1875
AUE 11 - 80/200A	NG 6/18E							1375				
AUE 11 - 80/250E	NG 6/18E	100	125	G 1 1/2	950	1050	550	1275	250	410	1725	1925
AUE 11 - 80/250D	NG 7/18/A							1375				
AUE 11 - 80/250C	NG 7/16/A							1375				
AUE 11 - 80/250B	NG 7/16/A							1415				
AUE 11 - 80/250A	NMD 25/190A/A							1530				
AUE 11 - 100/200E	NG 5/22E							125		150		
AUE 11 - 100/200D	NG 6/22E	1275										
AUE 11 - 100/200C	NG 7/22/A	1375										
AUE 11 - 100/200B	NG 7/18/A	1375										
AUE 11 - 100/200A	NG 7/18/A	1415										
AUE 11 - 100/250B	NG 7/16/A	1530										
AUE 11 - 100/250A	NMD 25/190A/A	1620										

# AUE 21

UNI-EN 12845 units with 2 electric main pumps



## Dimensions



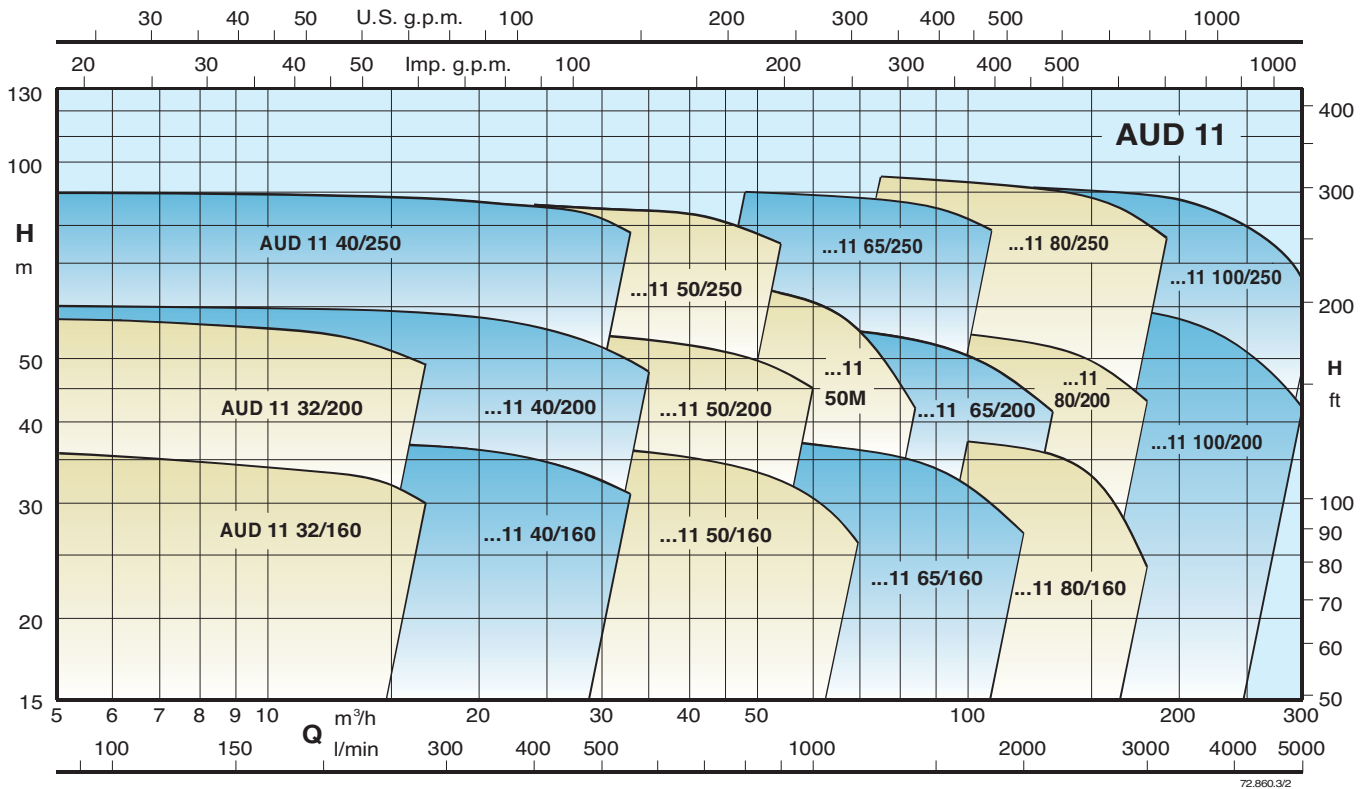
Unit designation		Connections			Dimensions mm																
Main pump	Jockey pump	DN 1	DN 2	DN 3	A	B	B1	C	D	E	F	G									
AUE 21 - 32/160A/A	NG 5/18E	50	65	G 1 1/2	1200	1350	450	835	240	317	1160	1500									
AUE 21 - 32/200C/A	NG 5/16E	50	65	G 1 1/2	1200	1350	450	855	240	345	1210	1500									
AUE 21 - 32/200A/A	NG 6/18E							915		360			1225								
AUE 21 - 40/160B/A	NG 5/22E	65	80	G 1 1/2	1200	1350	450	835	240	317	1295	1530									
AUE 21 - 40/160A/A	NG 5/18E							855													
AUE 21 - 40/200D/A	NG 5/18E	65	80	G 1 1/2	1200	1350	450	855	240	360	1360	1600									
AUE 21 - 40/200B/A	NG 5/16E							915													
AUE 21 - 40/200A/A	NG 6/18E							915													
AUE 21 - 40/250C/A	NG 6/18E	65	80	G 1 1/2	1200	1550	450	955	240	380	1425	1660									
AUE 21 - 40/250B/A	NG 7/18/A							1060													
AUE 21 - 40/250A/A	NG 7/16/A							1060													
AUE 21 - 50/160B/A	NG 5/12E	65	100	G 1 1/2	1400	1500	550	915	240	360	1395	1615									
AUE 21 - 50/160A/A	NG 5/18E							1060													
AUE 21 - 50/200B/A	NG 5/16E	65	100	G 1 1/2	1400	1500	550	955	240	360	1415	1635									
AUE 21 - 50/200A/A	NG 6/18E							1060													
AUE 21 - 50/200S/A	NG 6/18E							1060													
AUE 21 - 50/250C/A	NG 5/16E							1060													
AUE 21 - 50/250B/A	NG 7/18/A	65	100	G 1 1/2	1400	1550	550	1060	240	380	1460	1700									
AUE 21 - 50/250A/A	NG 7/16/A							1100													
AUE 21 - 50M/E/A	NG 6/18E							1060													
AUE 21 - 50M/D/A	NG 6/18E	65	100	G 1 1/2	1400	1550	550	1100	240	380	1460	1700									
AUE 21 - 50M/C/A	NG 7/18/A							1100													
AUE 21 - 50M/A/A	NG 7/16/A							1100													
AUE 21 - 65/160B/A	NG 5/18E	80	125	G 1 1/2	1500	1550	550	1060	240	360	1495	1700									
AUE 21 - 65/160A/A	NG 5/18E							1100													
AUE 21 - 65/200C/A	NG 5/16E	80	125	G 1 1/2	1500	1550	550	1100	240	380	1540	1740									
AUE 21 - 65/200B/A	NG 5/16E							1140													
AUE 21 - 65/200A/A	NG 6/18E							1140													
AUE 21 - 65/250C	NG 7/18E	80	125	G 1 1/2	1500	1550	550	1275	240	410	1595	1795									
AUE 21 - 65/250B	NG 7/16/A							1375													
AUE 21 - 65/250A	NMD 25/190A/A							1375													
AUE 21 - 80/160B/A	NG 5/18E	100	150	G 1 1/2	1500	1550	550	1100	250	380	1655	1840									
AUE 21 - 80/160A/A	NG 5/18E							1140													
AUE 21 - 80/200B	NG 6/18E	100	150	G 1 1/2	1500	1550	550	1275	250	380	1690	1875									
AUE 21 - 80/200A	NG 6/18E							1375													
AUE 21 - 80/250E	NG 6/18E	100	150	G 1 1/2	1500	1800	550	1275	250	410	1740	1925									
AUE 21 - 80/250D	NG 7/18/A							1375		410			1740	1925							
AUE 21 - 80/250C	NG 7/16/A							1275		410			1740	1925							
AUE 21 - 80/250B	NG 7/16/A							1415		485			1815	2000							
AUE 21 - 80/250A	NMD 25/190A/A							1530		515			1845	2030							
AUE 21 - 100/200E	NG 5/22E							125		200			G 1 1/2	1500	1800	550	1250	260	410	1830	1990
AUE 21 - 100/200D	NG 6/22E																1275		410		
AUE 21 - 100/200C	NG 7/22/A	1375	410	1830	1990																
AUE 21 - 100/200B	NG 7/18/A	1375	410	1830	1990																
AUE 21 - 100/200A	NG 7/18/A	1415	485	1905	2065																
AUE 21 - 100/250B	NG 7/16/A	125	200	G 1 1/2	1500	1800	550		1530		260	515					1935		2095		
AUE 21 - 100/250A	NMD 25/190A/A								1620			665									

# AUD - AUED

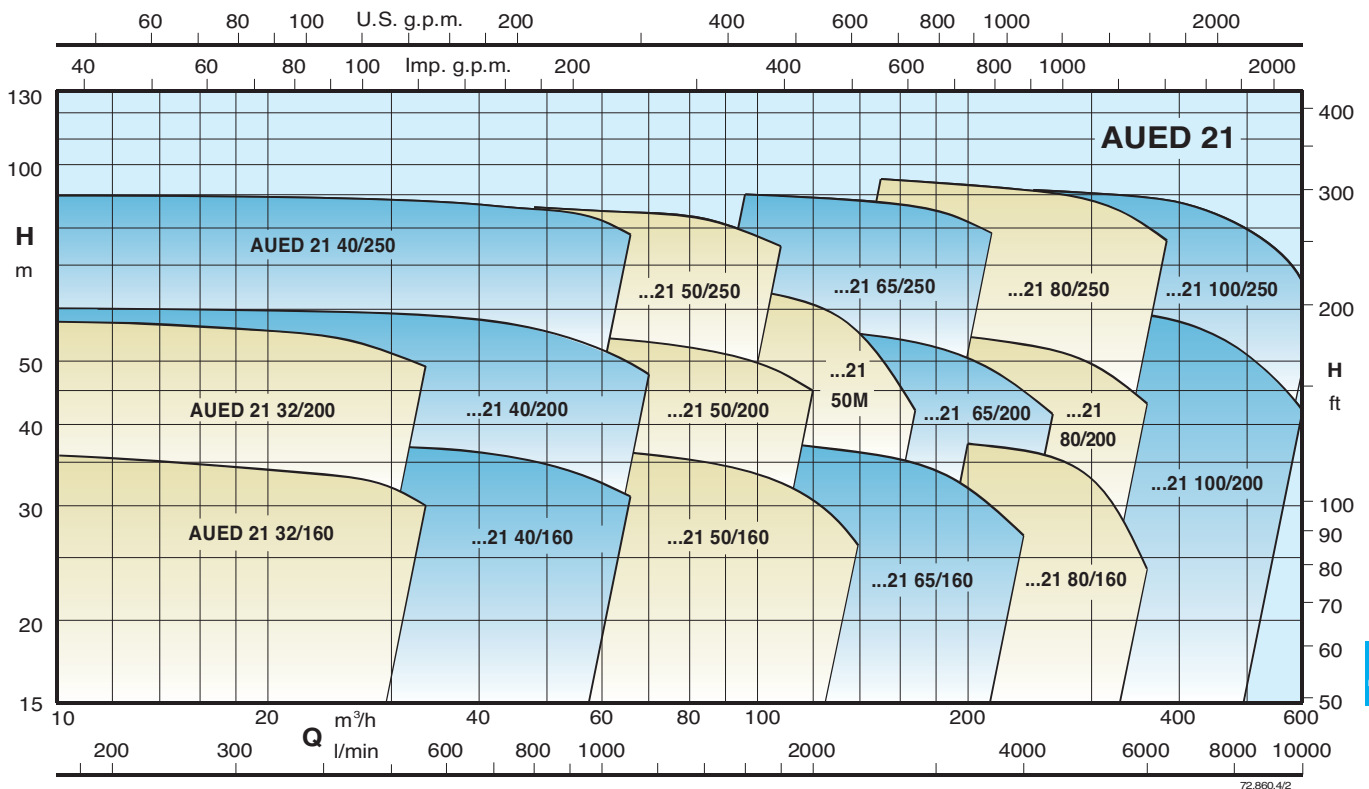
UNI-EN 12845 fire-fighting systems



With 1 pump (diesel motor)



With 2 pumps (electric and diesel motors)



### Performance

Unit designation		Power kW	Average capacity pump		Max. capacity pump		Pressure switch settings	
Main pump	Jockey pump		m³/h	m	m³/h	m	Main pump bar	Jockey pump bar
AUD 11 - 32/160A/A	NG 5/18E	4,4 / 2900	12	34	16,8	30	2,7 ÷ 3,3	3 ÷ 3,6
AUD 11 - 32/200C/A	NG 5/16E	4,4 / 2900	12	41	16,8	36	3,6 ÷ 4,2	4 ÷ 4,7
AUD 11 - 32/200A/A	NG 6/18E	6,5 / 2900	12	54,5	16,8	49	4,7 ÷ 5,4	5 ÷ 5,7
AUD 11 - 40/160B/A	NG 5/12E	4,4 / 2900	28,5	32,5	42	14	1,8 ÷ 2,5	2,2 ÷ 2,9
AUD 11 - 40/160A/A	NG 5/18E	6,5 / 2900	32	30	48	17	2,3 ÷ 3	2,8 ÷ 3,5
AUD 11 - 40/200D/A	NG 5/18E	6,5 / 2900	26,5	31	37,8	14	2,8 ÷ 3,4	3,3 ÷ 4
AUD 11 - 40/200B/A	NG 5/16E	6,5 / 2900	26,5	44	37,8	30,5	3,6 ÷ 4,3	3,9 ÷ 4,6
AUD 11 - 40/200A/A	NG 6/18E	10,2 / 2900	29	51	42	35	4,3 ÷ 5	4,6 ÷ 5,3
AUD 11 - 40/250C/A	NG 6/18E	10,2 / 2900	28,5	55	42	33,5	4,5 ÷ 5,3	4,8 ÷ 5,6
AUD 11 - 40/250B/A	NG 7/18/A	17 / 2900	28,5	64,5	42	45	5,5 ÷ 6,3	5,8 ÷ 6,6
AUD 11 - 40/250A/A	NG 7/16/A	24,3 / 2900	28,5	86	42	70,5	7,6 ÷ 8,2	8 ÷ 8,6
AUD 11 - 50/160B/A	NG 5/22E	6,5 / 2900	55,5	23	81	9,5	1,5 ÷ 2,2	1,8 ÷ 2,5
AUD 11 - 50/160A/A	NG 5/18E	10,2 / 2900	55,5	32	81	19	2,3 ÷ 3	2,6 ÷ 3,3
AUD 11 - 50/200B/A	NG 5/16E	10,2 / 2900	51	41,5	78	23	3,3 ÷ 4	3,6 ÷ 4,3
AUD 11 - 50/200A/A	NG 6/18E	17 / 2900	51	49	78	32,5	4 ÷ 4,7	4,3 ÷ 5
AUD 11 - 50/200S/A	NG 6/18E	17 / 2900	51	54,5	78	37	4,6 ÷ 5,2	5 ÷ 5,7
AUD 11 - 50/250C/A	NG 5/16E	17 / 2900	46,5	48,5	69	24,5	3,5 ÷ 4,2	3,8 ÷ 4,5
AUD 11 - 50/250B/A	NG 7/18/A	24,3 / 2900	46,5	62	69	43	5 ÷ 5,6	5,4 ÷ 6
AUD 11 - 50/250A/A	NG 7/16/A	24,3 / 2900	46,5	75	69	58,5	6,5 ÷ 7,2	6,8 ÷ 7,5
AUD 11 - 50M/E/A	NG 6/18E	17 / 2900	51	42	75	24	3,8 ÷ 4,4	4,2 ÷ 4,9
AUD 11 - 50M/D/A	NG 6/18E	17 / 2900	57	50	84	25	4,6 ÷ 5,3	5 ÷ 5,8
AUD 11 - 50M/C/A	NG 7/18/A	24,3 / 2900	57	62	84	42	5,7 ÷ 6,4	6,2 ÷ 6,9
AUD 11 - 65/160B/A	NG 5/18E	17 / 2900	84	30	120	22	2,4 ÷ 3	2,8 ÷ 3,5
AUD 11 - 65/160A/A	NG 5/18E	24,3 / 2900	84	35	120	27	2,8 ÷ 3,4	3,2 ÷ 3,8
AUD 11 - 65/200C/A	NG 5/16E	24,3 / 2900	90	38,5	132	27	3,4 ÷ 4	3,8 ÷ 4,5
AUD 11 - 65/200B/A	NG 5/16E	24,3 / 2900	90	45,5	132	35	3,9 ÷ 4,5	4,3 ÷ 5
AUD 11 - 65/200A/A	NG 6/18E	32,5 / 2900	90	52	132	41,5	4,5 ÷ 5,2	5 ÷ 5,6
AUD 11 - 65/250C	NG 7/18/A	32,5 / 2900	78	59	108	50	5,4 ÷ 6	5,8 ÷ 6,5
AUD 11 - 65/250B	NG 7/16/A	48 / 2900	78	76	108	67	7 ÷ 7,6	7,4 ÷ 8
AUD 11 - 65/250A	NMD 25/190A/A	48 / 2900	78	87	108	78	7,8 ÷ 8,5	8,3 ÷ 9
AUD 11 - 80/160B/A	NG 5/18E	17 / 2900	128	31	180	18	2,4 ÷ 3	2,8 ÷ 3,5
AUD 11 - 80/160A/A	NG 5/18E	24,3 / 2900	128	36	180	24	2,8 ÷ 3,4	3,3 ÷ 3,9
AUD 11 - 80/200B	NG 6/18E	24,3 / 2900	128	42	180	32	3,5 ÷ 4,2	4 ÷ 4,7
AUD 11 - 80/200A	NG 6/18E	32,5 / 2900	128	52	180	43	4,5 ÷ 5,2	5 ÷ 5,7
AUD 11 - 80/250E	NG 6/18E	24,3 / 2900	128	43	180	29	4,1 ÷ 4,7	4,5 ÷ 5,1
AUD 11 - 80/250D	NG 7/18E	32,5 / 2900	134	60	192	41	5,5 ÷ 6,1	5,9 ÷ 6,5
AUD 11 - 80/250C	NG 7/16/A	48 / 2900	134	67	192	51	6,3 ÷ 6,9	6,8 ÷ 7,4
AUD 11 - 80/250B	NG 7/16/A	66 / 2900	134	78	192	63	7,2 ÷ 7,9	7,8 ÷ 8,4
AUD 11 - 80/250A	NMD 25/190A/A	66 / 2900	134	90	192	76	8,3 ÷ 9	8,8 ÷ 9,4
AUD 11 - 100/200E	NG 5/22E	24,3 / 2900	174	26	240	19	2 ÷ 2,6	2,4 ÷ 3
AUD 11 - 100/200D	NG 6/22E	24,3 / 2900	189	31	270	19	2,5 ÷ 3,2	3 ÷ 3,7
AUD 11 - 100/200C	NG 7/22/A	32,5 / 2900	204	39	300	22	3,5 ÷ 4,1	3,9 ÷ 4,6
AUD 11 - 100/200B	NG 7/18/A	48 / 2900	204	48	300	32	4,4 ÷ 5	4,8 ÷ 5,5
AUD 11 - 100/200A	NG 7/18/A	66 / 2900	204	57	300	42	4,8 ÷ 5,5	5,4 ÷ 6
AUD 11 - 100/250B	NG 7/16/A	66 / 2900	204	65	300	48	6 ÷ 6,8	6,6 ÷ 7,3
AUD 11 - 100/250A	NMD 25/190A/A	99 / 2900	204	85	300	67	7,8 ÷ 8,5	8,2 ÷ 9

Jockey pump	kW	Diesel motors	kW*	* Continuous rating overloading capacity, NA curve.
NG 5/16E	1,1	RY75/15LD350	4,4	
NG 5/18E	1,1	RY110/15LD440	6,5	
NG 5/22E	1,1	RY125/15LD500	7,3	
NG 6/18E	1,5	MD190/25LD425-2	10,2	
NG 6/22E	1,5	RD290/9LD625-2	17	
NG 7/16E	2,2	SP420/11LD626-3	24,3	
NG 7/18E	2,2	D703E0	32,5	
NMD 25/190AE	4	D703TE0	48	
		D725TPE2	66	
		D756IPE2	99	

### Performance

Unit designation	Jockey pump	Motors power		Average capacity of one pump		Max. capacity of one pump		Pressure switch settings		
		Electric	diesel	m³/h	m	m³/h	m	Pump 1	Pump 2	Jockey pump
								bar	bar	bar
AUED 21 - 32/160A/A - 32/160A/A	NG 5/18E	3	4,4 / 2900	12	34	16,8	30	2,7 ÷ 3,3	2,3 ÷ 2,9	3 ÷ 3,6
AUED 21 - 32/200C/A - 32/200C/A	NG 5/16E	4	4,4 / 2900	12	41	16,8	36	3,6 ÷ 4,2	3,2 ÷ 3,8	4 ÷ 4,7
AUED 21 - 32/200A/A - 32/200A/A	NG 6/18E	5,5	6,5 / 2900	12	54,5	16,8	49	4,7 ÷ 5,4	4,3 ÷ 5	5 ÷ 5,7
AUED 21 - 40/160B/A - 40/160B/A	NG 5/22E	4	4,4 / 2900	28,5	32,5	42	14	1,8 ÷ 2,5	1,5 ÷ 2,3	2,2 ÷ 2,9
AUED 21 - 40/160A/A - 40/160A/A	NG 5/18E	5,5	6,5 / 2900	32	30	48	17	2,3 ÷ 3	2 ÷ 2,7	2,8 ÷ 3,5
AUED 21 - 40/200D/A - 40/200D/A	NG 5/18E	5,5	6,5 / 2900	26,5	31	37,8	14	2,8 ÷ 3,4	2,4 ÷ 3	3,3 ÷ 4
AUED 21 - 40/200B/A - 40/200B/A	NG 5/16E	7,5	6,5 / 2900	26,5	44	37,8	30,5	3,6 ÷ 4,3	3,3 ÷ 4	3,9 ÷ 4,6
AUED 21 - 40/200A/A - 40/200A/A	NG 6/18E	11	10,2 / 2900	29	51	42	35	4,3 ÷ 5	4 ÷ 4,7	4,6 ÷ 5,3
AUED 21 - 40/250C/A - 40/250C/A	NG 6/18E	11	10,2 / 2900	28,5	55	42	33,5	4,5 ÷ 5,3	4,2 ÷ 5,1	4,8 ÷ 5,6
AUED 21 - 40/250B/A - 40/250B/A	NG 7/18/A	15	17 / 2900	28,5	64,5	42	45	5,5 ÷ 6,3	5,2 ÷ 6	5,8 ÷ 6,6
AUED 21 - 40/250A/A - 40/250A/A	NG 7/16/A	18,5	24,3 / 2900	28,5	86	42	70,5	7,6 ÷ 8,2	7,2 ÷ 7,8	8 ÷ 8,6
AUED 21 - 50/160B/A - 50/160B/A	NG 5/22E	5,5	6,5 / 2900	55,5	23	81	9,5	1,5 ÷ 2,2	1,2 ÷ 1,9	1,8 ÷ 2,5
AUED 21 - 50/160A/A - 50/160A/A	NG 5/18E	11	10,2 / 2900	55,5	32	81	19	2,3 ÷ 3	2 ÷ 2,7	2,6 ÷ 3,3
AUED 21 - 50/200B/A - 50/200B/A	NG 5/16E	11	10,2 / 2900	51	41,5	78	23	3,3 ÷ 4	3 ÷ 3,7	3,6 ÷ 4,3
AUED 21 - 50/200A/A - 50/200A/A	NG 6/18E	15	17 / 2900	51	49	78	32,5	4 ÷ 4,7	3,7 ÷ 4,4	4,3 ÷ 5
AUED 21 - 50/200S/A - 50/200S/A	NG 6/18E	18,5	17 / 2900	51	49	78	32,5	4 ÷ 4,7	3,7 ÷ 4,4	4,3 ÷ 5
AUED 21 - 50/250C/A - 50/250C/A	NG 5/16E	15	17 / 2900	46,5	48,5	69	24,5	3,5 ÷ 4,2	3,2 ÷ 3,9	3,8 ÷ 4,5
AUED 21 - 50/250B/A - 50/250B/A	NG 7/18/A	18,5	24,3 / 2900	46,5	62	69	43	5 ÷ 5,6	4,7 ÷ 5,3	5,4 ÷ 6
AUED 21 - 50/250A/A - 50/250A/A	NG 7/16/A	22	24,3 / 2900	46,5	75	69	58,5	6,5 ÷ 7,2	6,2 ÷ 6,9	6,8 ÷ 7,5
AUED 21 - 50M/E/A - 50M/E/A	NG 6/18E	15	17 / 2900	51	42	75	24	3,8 ÷ 4,4	3,4 ÷ 4	4,2 ÷ 4,9
AUED 21 - 50M/D/A - 50M/D/A	NG 6/18E	18,5	17 / 2900	57	50	84	25	4,6 ÷ 5,3	4,2 ÷ 4,9	5 ÷ 5,8
AUED 21 - 50M/C/A - 50M/C/A	NG 7/18/A	22	24,3 / 2900	57	62	84	42	5,7 ÷ 6,4	5,3 ÷ 6	6,2 ÷ 6,9
AUED 21 - 65/160B/A - 65/160B/A	NG 5/18E	15	17 / 2900	84	30	120	22	2,4 ÷ 3	2 ÷ 2,6	2,8 ÷ 3,5
AUED 21 - 65/160A/A - 65/160A/A	NG 5/18E	18,5	24,3 / 2900	84	35	120	27	2,8 ÷ 3,4	2,4 ÷ 3	3,2 ÷ 3,8
AUED 21 - 65/200C/A - 65/200C/A	NG 5/16E	18,5	24,3 / 2900	90	38,5	132	27	3,4 ÷ 4	3 ÷ 3,6	3,8 ÷ 4,5
AUED 21 - 65/200B/A - 65/200B/A	NG 5/16E	22	24,3 / 2900	90	45,5	132	35	3,9 ÷ 4,5	3,5 ÷ 4,1	4,3 ÷ 5
AUED 21 - 65/200A/A - 65/200A/A	NG 6/18E	30	32,5 / 2900	90	52	132	41,5	4,5 ÷ 5,2	4,1 ÷ 4,8	5 ÷ 5,6
AUED 21 - 65/250C - 65/250C	NG 7/18/A	30	32,5 / 2900	78	59	108	50	5,4 ÷ 6	5 ÷ 5,6	5,8 ÷ 6,5
AUED 21 - 65/250B - 65/250B	NG 7/16/A	37	48 / 2900	78	76	108	67	7 ÷ 7,6	6,6 ÷ 7,2	7,4 ÷ 8
AUED 21 - 65/250A - 65/250A	NMD 25/190A/A	45	48 / 2900	78	87	108	78	7,8 ÷ 8,5	7,4 ÷ 8,1	8,3 ÷ 9
AUED 21 - 80/160B/A - 80/160B/A	NG 5/18E	18,5	17 / 2900	128	31	180	18	2,4 ÷ 3	2 ÷ 2,6	2,8 ÷ 3,5
AUED 21 - 80/160A/A - 80/160A/A	NG 5/18E	22	24,3 / 2900	128	36	180	24	2,8 ÷ 3,4	2,4 ÷ 3	3,3 ÷ 3,9
AUED 21 - 80/200B - 80/200B	NG 6/18E	30	24,3 / 2900	128	42	180	32	3,5 ÷ 4,2	3,1 ÷ 3,8	4 ÷ 4,7
AUED 21 - 80/200A - 80/200A	NG 6/18E	37	32,5 / 2900	128	52	180	43	4,5 ÷ 5,2	4,1 ÷ 4,8	5 ÷ 5,7
AUED 21 - 80/250E - 80/250E	NG 6/18E	30	24,3 / 2900	128	43	180	29	4,1 ÷ 4,7	3,7 ÷ 4,3	4,5 ÷ 5,1
AUED 21 - 80/250D - 80/250D	NG 7/18/A	37	32,5 / 2900	134	56	192	41	5,5 ÷ 6,1	5,1 ÷ 5,7	5,9 ÷ 6,5
AUED 21 - 80/250C - 80/250C	NG 7/16/A	45	48 / 2900	134	67	192	51	6,3 ÷ 6,9	5,9 ÷ 6,5	6,8 ÷ 7,4
AUED 21 - 80/250B - 80/250B	NG 7/16/A	55	66 / 2900	134	78	192	63	7,2 ÷ 7,9	6,8 ÷ 7,5	7,8 ÷ 8,4
AUED 21 - 80/250A - 80/250A	NMD 25/190A/A	75	66 / 2900	134	90	192	76	8,3 ÷ 9	7,9 ÷ 8,6	8,8 ÷ 9,4
AUED 21 - 100/200E - 100/200E	NG 5/22E	22	24,3 / 2900	174	26	240	19	2 ÷ 2,6	1,6 ÷ 2,2	2,4 ÷ 3
AUED 21 - 100/200D - 100/200D	NG 6/22E	30	24,3 / 2900	189	31	270	19	2,5 ÷ 3,2	2,1 ÷ 2,8	3 ÷ 3,7
AUED 21 - 100/200C - 100/200C	NG 7/22/A	37	32,5 / 2900	204	39	300	22	3,5 ÷ 4,1	3,1 ÷ 3,7	3,9 ÷ 4,6
AUED 21 - 100/200B - 100/200B	NG 7/18/A	45	48 / 2600	204	48	300	32	4,4 ÷ 5	4 ÷ 4,6	4,8 ÷ 5,5
AUED 21 - 100/200A - 100/200A	NG 7/18/A	55	66 / 2900	204	57	300	42	4,8 ÷ 5,5	4,4 ÷ 5,1	5,4 ÷ 6
AUED 21 - 100/250B - 100/250B	NG 7/16/A	75	66 / 2900	204	65	300	48	6 ÷ 6,8	5,6 ÷ 6,4	6,6 ÷ 7,3
AUED 21 - 100/250A - 100/250A	NMD 25/190A/A	92	99 / 2900	204	85	300	67	7,8 ÷ 8,5	7,4 ÷ 8,1	8,2 ÷ 9

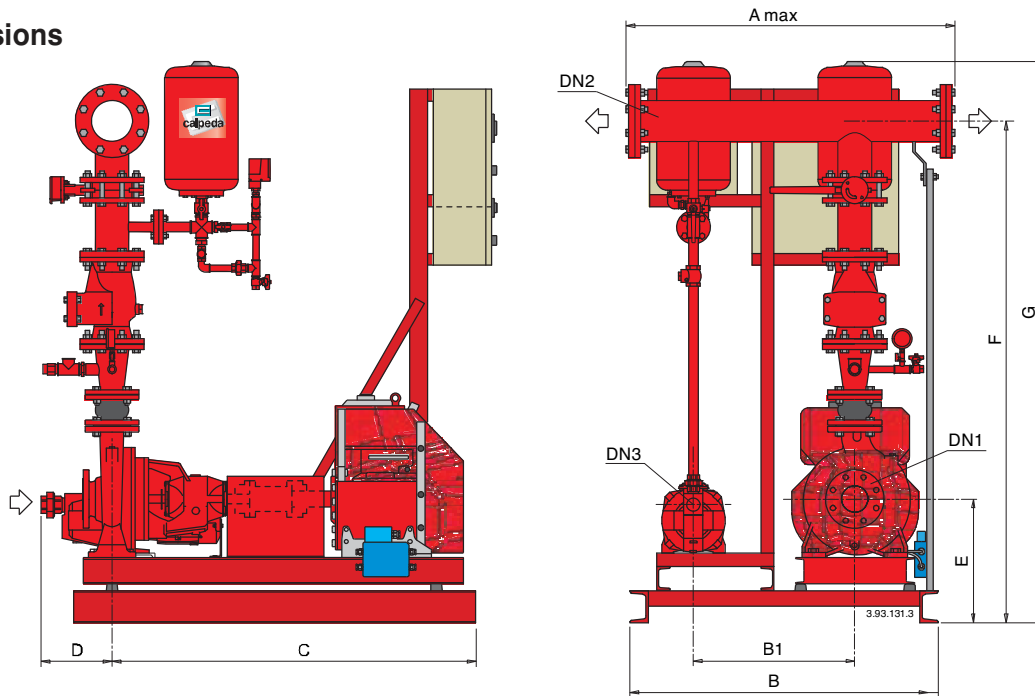
Jockey pump	kW	Diesel motors	kW*	* Continuous rating overloading capacity, NA curve.
NG 5/16E	1,1	RY75/15LD350	4,4	
NG 5/18E	1,1	RY110/15LD440	6,5	
NG 5/22E	1,1	RY125/15LD500	7,3	
NG 6/18E	1,5	MD190/25LD425-2	10,2	
NG 6/22E	1,5	RD290/9LD625-2	17	
NG 7/16E	2,2	SP420/11LD626-3	24,3	
NG 7/18E	2,2	D703E0	32,5	
NMD 25/190AE	4	D703TE0	48	
		D725TPE2	66	
		D756IPE2	99	

# AUD 11

UNI-EN 12845 units with 1 main pump (diesel motor)



## Dimensions



Unit designation		Connections			Dimensions mm								
Main pump	Jockey pump	DN 1	DN 2	DN 3	A	B	B1	C	D	E	F	G	
AUD 11 - 32/160A/A	NG 5/18E	50	G2	G 1 1/2	1150	1000	500	900	240	532	1470	1695	
AUD 11 - 32/200C/A	NG 5/16E	50	G2	G 1 1/2	1150	1000	500	950	240	560	1520	1745	
AUD 11 - 32/200A/A	NG 6/18E												
AUD 11 - 40/160B/A	NG 5/22E	65	65	G 1 1/2	1200	1000	500	950	240	532	1620	1860	
AUD 11 - 40/160A/A	NG 5/18E												
AUD 11 - 40/200D/A	NG 5/18E	65	65	G 1 1/2	1200	1050	500	1000	240	560	1670	1910	
AUD 11 - 40/200B/A	NG 5/16E									570	1680	1920	
AUD 11 - 40/200A/A	NG 6/18E									570	1680	1920	
AUD 11 - 40/250C/A	NG 6/18E	65	65	G 1 1/2	1200	1050	500	1200	240	590	1745	1985	
AUD 11 - 40/250B/A	NG 7/18/A									605	1760	2000	
AUD 11 - 40/250A/A	NG 7/16/A									605	1760	2000	
AUD 11 - 50/160B/A	NG 5/22E	65	80	G 1 1/2	1250	1050	550	1000	240	570	1720	1955	
AUD 11 - 50/160A/A	NG 5/18E												
AUD 11 - 50/200B/A	NG 5/16E	65	80	G 1 1/2	1250	1050	550	1200	240	570	1740	1975	
AUD 11 - 50/200A/A	NG 6/18E									585	1755	1990	
AUD 11 - 50/200S/A	NG 6/18E									585	1755	1990	
AUD 11 - 50/250C/A	NG 5/16E	65	80	G 1 1/2	1250	1050	550	1200	240	605	1800	2035	
AUD 11 - 50/250B/A	NG 7/18/A									605	1800	2035	
AUD 11 - 50/250A/A	NG 7/16/A									1400	625	1820	2055
AUD 11 - 50M/E/A	NG 6/18E	65	80	G 1 1/2	1250	1050	550	1200	240	605	1805	2040	
AUD 11 - 50M/D/A	NG 6/18E									605	1805	2040	
AUD 11 - 50M/C/A	NG 7/18/A									1400	625	1825	2060
AUD 11 - 65/160B/A	NG 5/18E	80	100	G 1 1/2	1300	1200	550	1200	240	585	1840	2055	
AUD 11 - 65/160A/A	NG 5/18E												
AUD 11 - 65/200C/A	NG 5/16E	80	100	G 1 1/2	1300	1200	550	1400	240	605	1885	2100	
AUD 11 - 65/200B/A	NG 5/16E									625	1905	2120	
AUD 11 - 65/200A/A	NG 6/18E									625	1905	2120	
AUD 11 - 65/250C	NG 7/18/A	80	100	G 1 1/2	1300	1200	550	1500	240	645	1950	2165	
AUD 11 - 65/250B	NG 7/16/A									1750	665	1970	2185
AUD 11 - 65/250A	NMD 25/190A/A									1750	665	1970	2185
AUD 11 - 80/160B/A	NG 5/18E	100	125	G 1 1/2	1300	1200	550	1500	250	605	2035	2235	
AUD 11 - 80/160A/A	NG 5/18E									625	2055	2255	
AUD 11 - 80/200B	NG 6/18E	100	125	G 1 1/2	1300	1200	550	1700	250	645	2110	2310	
AUD 11 - 80/200A	NG 6/18E									665	2130	2330	
AUD 11 - 80/250E	NG 6/18E	100	125	G 1 1/2	1300	1200	550	1500	250	645	2130	2330	
AUD 11 - 80/250D	NG 7/18/A					1250				1750	665	2150	2350
AUD 11 - 80/250C	NG 7/16/A					1250				1750	665	2150	2350
AUD 11 - 80/250B	NG 7/16/A					1350				1750	665	2150	2350
AUD 11 - 80/250A	NMD 25/190A/A					1250				1750	665	2150	2350
AUD 11 - 100/200E	NG 5/22E					125				150	G 1 1/2	1500	1250
AUD 11 - 100/200D	NG 6/22E	1250	1500	645	2220		2405						
AUD 11 - 100/200C	NG 7/22/A	1250	1750	665	2240		2425						
AUD 11 - 100/200B	NG 7/18/A	1250	1750	665	2240		2425						
AUD 11 - 100/200A	NG 7/18/A	1300	1750	665	2240		2425						
AUD 11 - 100/250B	NG 7/16/A	125	150	G 1 1/2	1500		1250	700	1750				260
AUD 11 - 100/250A	NMD 25/190A/A					1350				1900	735	2310	

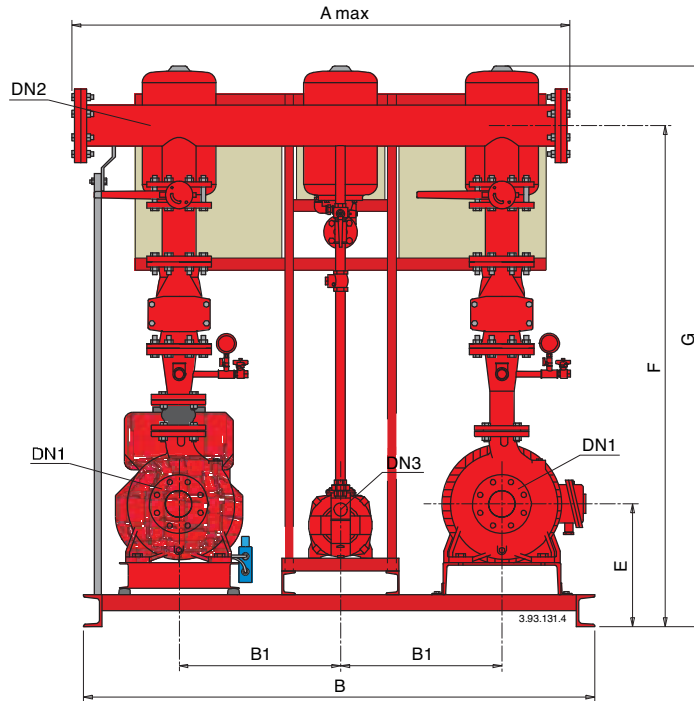
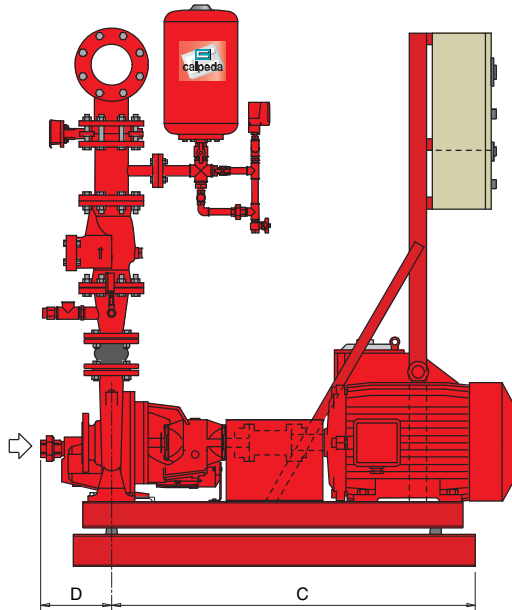


# AUED 21

UNI-EN 12845 units with 2 main pumps (electric and diesel motor)



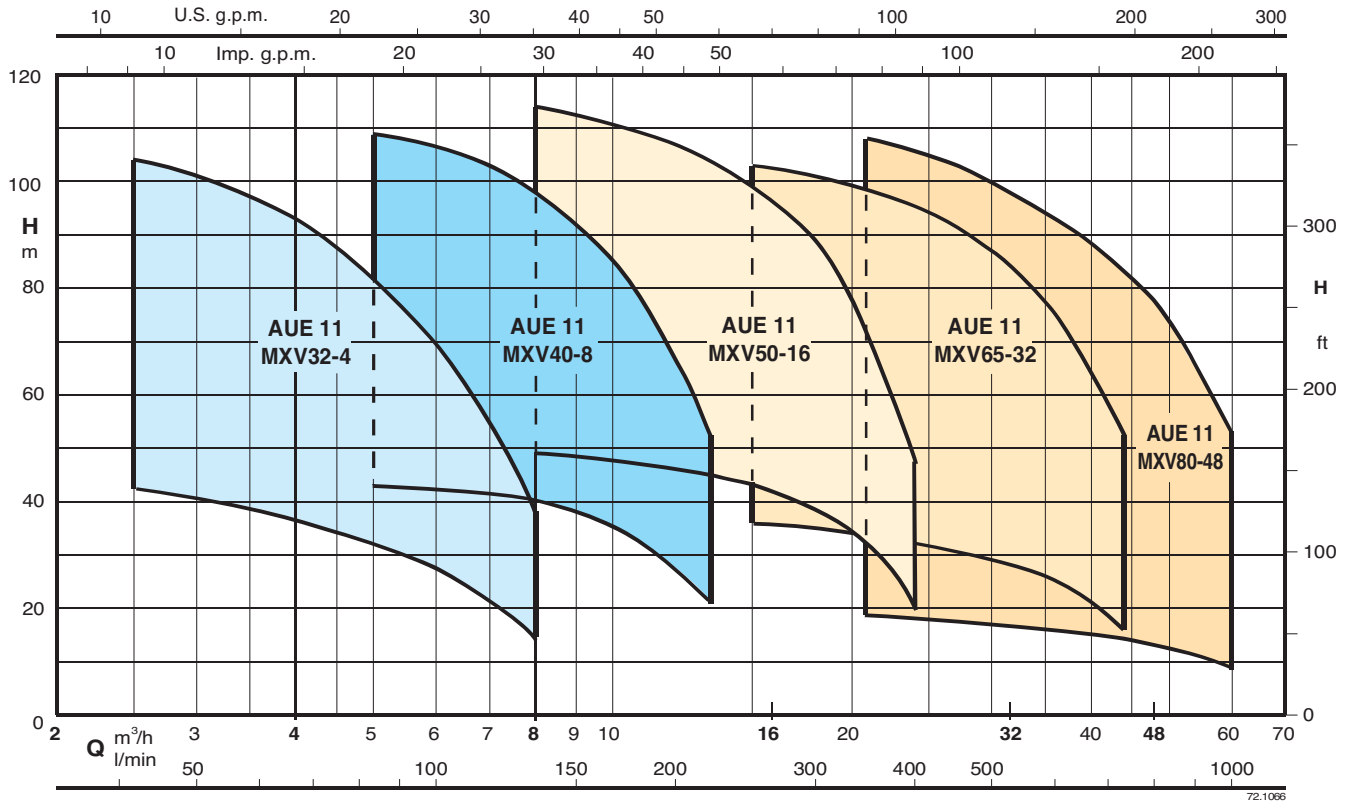
## Dimensions



Unit designation				Connections			Dimensions mm							
Main pump	Electric	Diesel	Jockey pump	DN 1	DN 2	DN 3	A	B	B1	C	D	E	F	G
AUED 21 - 32/160A/A - 32/160A/A			NG 5/18E	50	65	G 1 1/2	1450	1400	450	900	240	532	1480	1695
AUED 21 - 32/200C/A - 32/200C/A			NG 5/16E	50	65	G 1 1/2	1450	1400	450	950	240	560	1530	1745
AUED 21 - 32/200A/A - 32/200A/A			NG 6/18E	50	65	G 1 1/2	1450	1400	450	950	240	560	1530	1745
AUED 21 - 40/160B/A - 40/160B/A			NG 5/22E	65	80	G 1 1/2	1500	1400	450	950	240	532	1625	1860
AUED 21 - 40/160A/A - 40/160A/A			NG 5/18E	65	80	G 1 1/2	1500	1450	450	950	240	532	1625	1860
AUED 21 - 40/200D/A - 40/200D/A			NG 5/18E	65	80	G 1 1/2	1500	1450	450	1000	240	560	1675	1910
AUED 21 - 40/200B/A - 40/200B/A			NG 5/16E	65	80	G 1 1/2	1500	1450	450	1000	240	570	1685	1920
AUED 21 - 40/200A/A - 40/200A/A			NG 6/18E	65	80	G 1 1/2	1500	1450	450	1150	240	570	1685	1920
AUED 21 - 40/250C/A - 40/250C/A			NG 6/18E	65	80	G 1 1/2	1500	1450	450	1200	240	605	1765	2000
AUED 21 - 40/250B/A - 40/250B/A			NG 7/18/A	65	80	G 1 1/2	1500	1450	450	1200	240	605	1765	2000
AUED 21 - 40/250A/A - 40/250A/A			NG 7/16/A	65	80	G 1 1/2	1500	1450	450	1200	240	605	1765	2000
AUED 21 - 50/160B/A - 50/160B/A			NG 5/22E	65	100	G 1 1/2	1700	1600	550	1000	240	570	1745	1955
AUED 21 - 50/160A/A - 50/160A/A			NG 5/18E	65	100	G 1 1/2	1700	1600	550	1150	240	570	1745	1955
AUED 21 - 50/200B/A - 50/200B/A			NG 5/16E	65	100	G 1 1/2	1700	1600	550	1200	240	570	1755	1975
AUED 21 - 50/200A/A - 50/200A/A			NG 6/18E	65	100	G 1 1/2	1700	1600	550	1200	240	585	1770	1990
AUED 21 - 50/200S/A - 50/200S/A			NG 6/18E	65	100	G 1 1/2	1700	1600	550	1200	240	585	1770	1990
AUED 21 - 50/250C/A - 50/250C/A			NG 6/16E	65	100	G 1 1/2	1700	1600	550	1200	240	605	1815	2035
AUED 21 - 50/250B/A - 50/250B/A			NG 7/18/A	65	100	G 1 1/2	1700	1600	550	1200	240	605	1815	2035
AUED 21 - 50/250A/A - 50/250A/A			NG 7/16/A	65	100	G 1 1/2	1700	1600	550	1400	240	625	1835	2055
AUED 21 - 50M/E/A - 50M/E/A			NG 6/18E	65	100	G 1 1/2	1700	1600	550	1200	240	605	1820	2040
AUED 21 - 50M/D/A - 50M/D/A			NG 6/18E	65	100	G 1 1/2	1700	1600	550	1200	240	605	1820	2040
AUED 21 - 50M/C/A - 50M/C/A			NG 7/18/A	65	100	G 1 1/2	1700	1600	550	1400	240	625	1830	2060
AUED 21 - 65/160B/A - 65/160B/A			NG 5/18E	80	125	G 1 1/2	1800	1750	550	1200	240	585	1855	2055
AUED 21 - 65/160A/A - 65/160A/A			NG 5/18E	80	125	G 1 1/2	1800	1750	550	1200	240	585	1855	2055
AUED 21 - 65/200C/A - 65/200C/A			NG 5/16E	80	125	G 1 1/2	1800	1750	550	1400	240	605	1900	2100
AUED 21 - 65/200B/A - 65/200B/A			NG 5/16E	80	125	G 1 1/2	1800	1750	550	1400	240	625	1920	2120
AUED 21 - 65/200A/A - 65/200A/A			NG 6/18E	80	125	G 1 1/2	1800	1750	550	1400	240	625	1920	2120
AUED 21 - 65/250C - 65/250C			NG 7/18/A	80	125	G 1 1/2	1800	1750	550	1500	240	645	1965	2165
AUED 21 - 65/250B - 65/250B			NG 7/16/A	80	125	G 1 1/2	1800	1750	550	1750	240	665	1985	2185
AUED 21 - 65/250A - 65/250A			NMD 25/190A/A	80	125	G 1 1/2	1800	1750	550	1750	240	665	1985	2185
AUED 21 - 80/160B/A - 80/160B/A			NG 5/18E	100	150	G 1 1/2	1800	1750	550	1500	250	605	2050	2235
AUED 21 - 80/160A/A - 80/160A/A			NG 5/18E	100	150	G 1 1/2	1800	1750	550	1500	250	625	2070	2255
AUED 21 - 80/200B - 80/200B			NG 6/18E	100	150	G 1 1/2	1800	1800	550	1700	250	645	2125	2310
AUED 21 - 80/200A - 80/200A			NG 6/18E	100	150	G 1 1/2	1800	1800	550	1700	250	665	2145	2330
AUED 21 - 80/250E - 80/250E			NG 6/18E	100	150	G 1 1/2	1800	1750	550	1500	250	645	2145	2330
AUED 21 - 80/250D - 80/250D			NG 7/18/A	100	150	G 1 1/2	1800	1800	550	1750	250	665	2165	2350
AUED 21 - 80/250C - 80/250C			NG 7/16/A	100	150	G 1 1/2	1800	1800	550	1750	250	665	2165	2350
AUED 21 - 80/250B - 80/250B			NG 7/16/A	100	150	G 1 1/2	1800	1900	550	1750	250	665	2165	2350
AUED 21 - 80/250A - 80/250A			NMD 25/190A/A	100	150	G 1 1/2	1800	1800	550	1750	250	665	2165	2350
AUED 21 - 100/200E - 100/200E			NG 5/22E	125	200	G 1 1/2	2150	1850	700	1500	260	645	2245	2405
AUED 21 - 100/200D - 100/200D			NG 6/22E	125	200	G 1 1/2	2150	1850	700	1500	260	645	2245	2405
AUED 21 - 100/200C - 100/200C			NG 7/22/A	125	200	G 1 1/2	2150	1850	700	1700	260	665	2265	2425
AUED 21 - 100/200B - 100/200B			NG 7/18/A	125	200	G 1 1/2	2150	1850	700	1700	260	665	2265	2425
AUED 21 - 100/200A - 100/200A			NG 7/18/A	125	200	G 1 1/2	2150	1850	700	1700	260	665	2265	2425
AUED 21 - 100/250B - 100/250B			NG 7/16/A	125	200	G 1 1/2	2150	2200	700	1750	260	690	2290	2450
AUED 21 - 100/250A - 100/250A			NMD 25/190A/A	125	200	G 1 1/2	2150	2200	700	1900	260	735	2335	2495

# AUE 11 MXV

UNI-EN 12845 units with 1 multi-stage vertical electric main pump



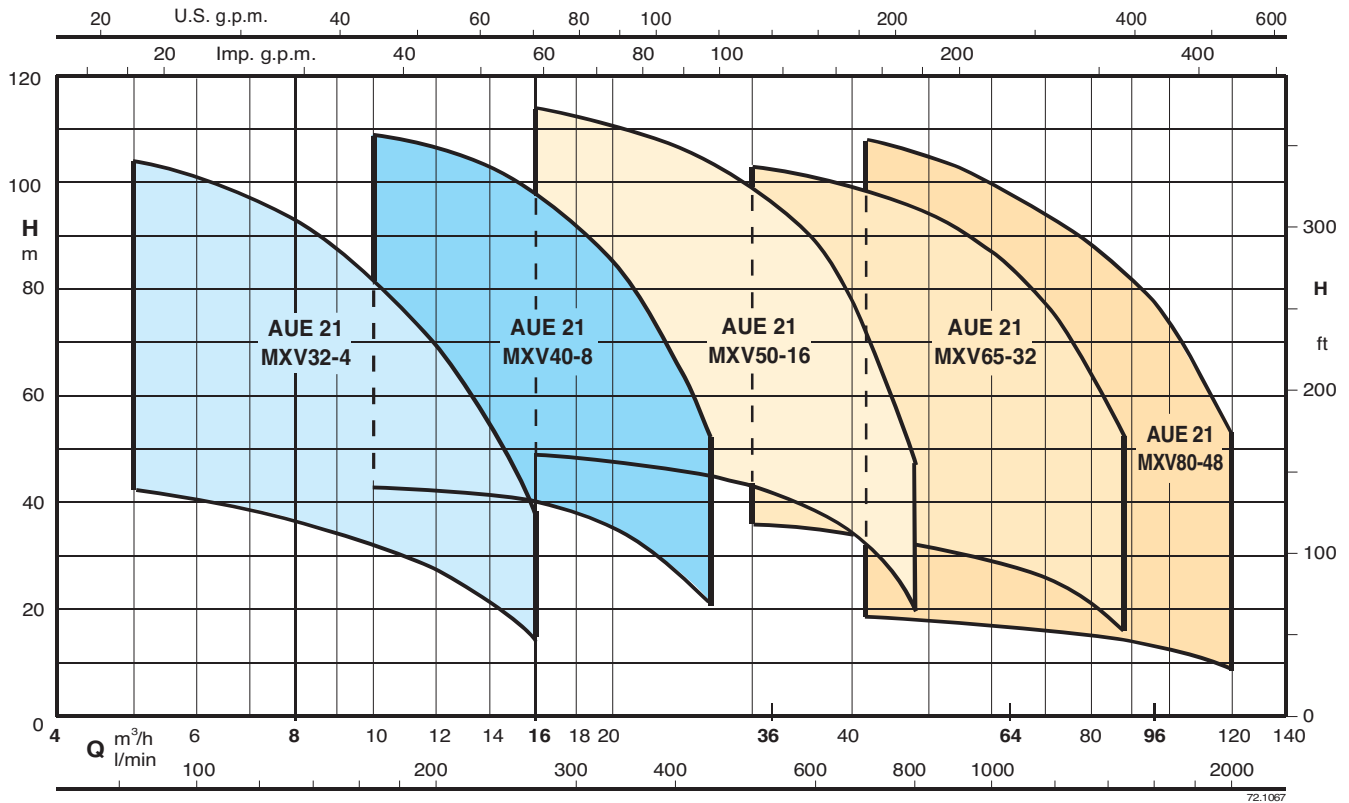
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## Performance

Unit designation		Power kW	Average capacity pump		Max. capacity pump		Pressure switch settings	
Main pump	Jockey pump		m³/h	m	m³/h	m	Main pump bar	Jockey pump bar
AUE 11 - MXV 32-404	MXV 25-205	1,1 + 0,75	5	32	8	14	3,4 ÷ 4,0	3,7 ÷ 4,3
AUE 11 - MXV 32-405	MXV 25-206	1,1 + 1,1	5	41	8	18	4,5 ÷ 5,1	4,8 ÷ 5,4
AUE 11 - MXV 32-406	MXV 25-206	1,5 + 1,1	5	49	8	22	5,4 ÷ 6,0	5,7 ÷ 6,3
AUE 11 - MXV 32-407	MXV 25-207	1,5 + 1,1	5	58	8	26	6,4 ÷ 7,0	6,7 ÷ 7,3
AUE 11 - MXV 32-408	MXV 25-208	2,2 + 1,5	5	66	8	30	7,4 ÷ 8,0	7,7 ÷ 8,3
AUE 11 - MXV 32-410	MXV 25-210	2,2 + 1,5	5	83	8	38	9,0 ÷ 9,6	9,4 ÷ 10
AUE 11 - MXV 40-804	MXV 25-205	1,5 + 0,75	9	37	13	21	3,7 ÷ 4,3	4,0 ÷ 4,6
AUE 11 - MXV 40-805	MXV 25-206	2,2 + 1,1	9	47	13	26	4,8 ÷ 5,4	5,1 ÷ 5,7
AUE 11 - MXV 40-806	MXV 25-207	2,2 + 1,1	9	56	13	31	5,8 ÷ 6,4	6,1 ÷ 6,7
AUE 11 - MXV 40-807	MXV 25-208	3 + 1,5	9	66	13	36	6,8 ÷ 7,4	7,1 ÷ 7,7
AUE 11 - MXV 40-808	MXV 25-210	3 + 1,5	9	75	13	42	7,5 ÷ 8,1	7,8 ÷ 8,4
AUE 11 - MXV 40-810	MXV 25-210	4 + 1,5	9	94	13	52	9,0 ÷ 9,6	9,4 ÷ 10
AUE 11 - MXV 50-1603	MXV 25-205	3 + 0,75	16	41	24	20	4,0 ÷ 4,6	4,4 ÷ 5,0
AUE 11 - MXV 50-1604	MXV 25-207	4 + 1,1	16	55	24	27	5,5 ÷ 6,1	5,9 ÷ 6,5
AUE 11 - MXV 50-1605	MXV 25-208	5,5 + 1,5	16	69	24	33	7,0 ÷ 7,6	7,4 ÷ 8,0
AUE 11 - MXV 50-1606	MXV 25-210	5,5 + 1,5	16	83	24	40	8,5 ÷ 9,1	8,9 ÷ 9,5
AUE 11 - MXV 50-1607	MXV 25-212	7,5 + 2,2	16	97	24	47	9,0 ÷ 9,6	9,4 ÷ 10
AUE 11 - MXV 65-3202	MXV 25-204	4 + 0,75	30	29	44	17	2,8 ÷ 3,4	3,2 ÷ 3,8
AUE 11 - MXV 65-3203	MXV 25-206	5,5 + 1,1	30	43	44	25	4,5 ÷ 5,1	4,9 ÷ 5,5
AUE 11 - MXV 65-3204	MXV 25-207	7,5 + 1,1	30	58	44	35	6,0 ÷ 6,6	6,4 ÷ 7,0
AUE 11 - MXV 65-3205	MXV 25-210	11 + 1,5	30	73	44	44	7,5 ÷ 8,1	7,9 ÷ 8,5
AUE 11 - MXV 65-3206	MXV 25-210	11 + 1,5	30	87	44	52	9,0 ÷ 9,6	9,4 ÷ 10
AUE 11 - MXV 80-4802	MXV 25-205	5,5 + 0,75	40	30	60	17	3,0 ÷ 3,6	3,3 ÷ 3,9
AUE 11 - MXV 80-4803	MXV 25-206	7,5 + 1,1	40	45	60	26	4,8 ÷ 5,4	5,1 ÷ 5,7
AUE 11 - MXV 80-4804	MXV 25-208	11 + 1,5	40	59	60	35	6,5 ÷ 7,1	6,8 ÷ 7,4
AUE 11 - MXV 80-4805	MXV 25-210	15 + 1,5	40	74	60	44	8,0 ÷ 8,6	8,3 ÷ 8,9
AUE 11 - MXV 80-4806	MXV 25-212	15 + 2,2	40	89	60	53	9,0 ÷ 9,6	9,4 ÷ 10

# AUE 21 MXV

UNI-EN 12845 units with 2 multi-stage vertical electric main pumps



## Performance

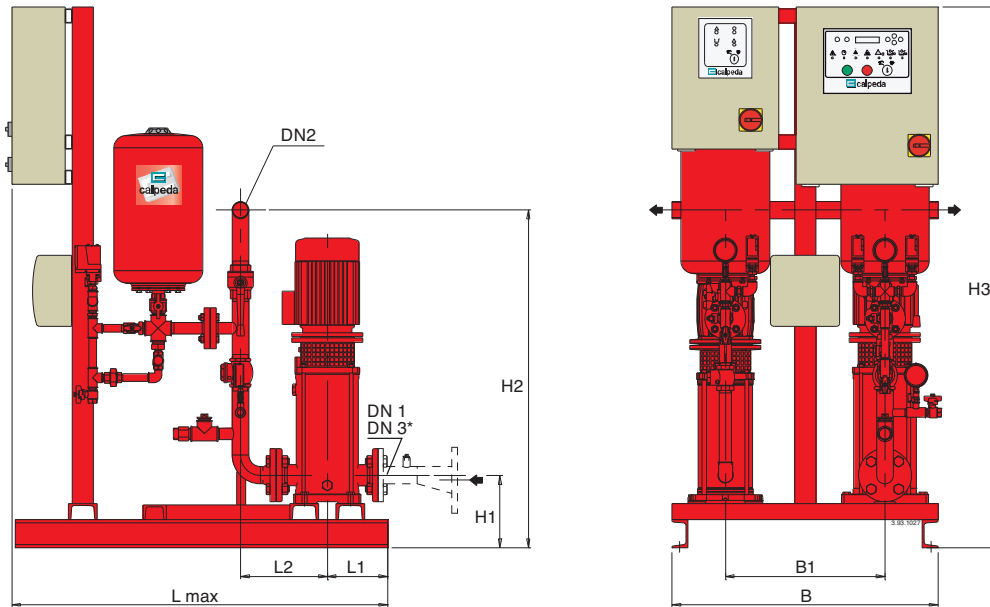
Unit designation	Main pump	Jockey pump	Power kW	Average capacity of one pump		Max. capacity of one pump		Pressure switch settings		
				m³/h	m	m³/h	m	Main pump 1 bar	Main pump 2 bar	Jockey pump bar
AUE 21 - MXV 32-404	MXV 25-205	MXV 25-205	1,1 + 1,1 + 0,75	5	32	8	14	3,4 ÷ 4,0	3,1 ÷ 3,7	3,7 ÷ 4,3
AUE 21 - MXV 32-405	MXV 25-206	MXV 25-206	1,1 + 1,1 + 1,1	5	41	8	18	4,5 ÷ 5,1	4,2 ÷ 4,8	4,8 ÷ 5,4
AUE 21 - MXV 32-406	MXV 25-206	MXV 25-206	1,5 + 1,5 + 1,1	5	49	8	22	5,4 ÷ 6,0	5,1 ÷ 5,7	5,7 ÷ 6,3
AUE 21 - MXV 32-407	MXV 25-207	MXV 25-207	1,5 + 1,5 + 1,1	5	58	8	26	6,4 ÷ 7,0	6,0 ÷ 6,6	6,7 ÷ 7,3
AUE 21 - MXV 32-408	MXV 25-208	MXV 25-208	2,2 + 2,2 + 1,5	5	66	8	30	7,4 ÷ 8,0	7,0 ÷ 7,6	7,7 ÷ 8,3
AUE 21 - MXV 32-410	MXV 25-210	MXV 25-210	2,2 + 2,2 + 1,5	5	83	8	38	9,0 ÷ 9,6	8,5 ÷ 9,1	9,4 ÷ 10
AUE 21 - MXV 40-804	MXV 25-205	MXV 25-205	1,5 + 1,5 + 0,75	9	37	13	21	3,7 ÷ 4,3	3,4 ÷ 4,0	4,0 ÷ 4,6
AUE 21 - MXV 40-805	MXV 25-206	MXV 25-206	2,2 + 2,2 + 1,1	9	47	13	26	4,8 ÷ 5,4	4,5 ÷ 5,1	5,1 ÷ 5,7
AUE 21 - MXV 40-806	MXV 25-207	MXV 25-207	2,2 + 2,2 + 1,1	9	56	13	31	5,8 ÷ 6,4	5,5 ÷ 6,1	6,1 ÷ 6,7
AUE 21 - MXV 40-807	MXV 25-208	MXV 25-208	3 + 3 + 1,5	9	66	13	36	6,8 ÷ 7,4	6,4 ÷ 7,0	7,1 ÷ 7,7
AUE 21 - MXV 40-808	MXV 25-210	MXV 25-210	3 + 3 + 1,5	9	75	13	42	7,5 ÷ 8,1	7,0 ÷ 7,6	7,8 ÷ 8,4
AUE 21 - MXV 40-810	MXV 25-210	MXV 25-210	4 + 4 + 1,5	9	94	13	52	9,0 ÷ 9,6	8,5 ÷ 9,1	9,4 ÷ 10
AUE 21 - MXV 50-1603	MXV 25-205	MXV 25-205	3 + 3 + 0,75	16	41	24	20	4 ÷ 4,6	3,7 ÷ 4,3	4,4 ÷ 5,0
AUE 21 - MXV 50-1604	MXV 25-207	MXV 25-207	4 + 4 + 1,1	16	55	24	27	5,5 ÷ 6,1	5,2 ÷ 5,8	5,9 ÷ 6,5
AUE 21 - MXV 50-1605	MXV 25-208	MXV 25-208	5,5 + 5,5 + 1,5	16	69	24	33	7,0 ÷ 7,6	6,5 ÷ 7,1	7,4 ÷ 8,0
AUE 21 - MXV 50-1606	MXV 25-210	MXV 25-210	5,5 + 5,5 + 1,5	16	83	24	40	8,5 ÷ 9,1	8,0 ÷ 8,6	8,9 ÷ 9,5
AUE 21 - MXV 50-1607	MXV 25-212	MXV 25-212	7,5 + 7,5 + 2,2	16	97	24	47	9,0 ÷ 9,6	8,5 ÷ 9,1	9,4 ÷ 10
AUE 21 - MXV 65-3202	MXV 25-204	MXV 25-204	4 + 4 + 0,75	30	29	44	17	2,8 ÷ 3,4	2,5 ÷ 3,1	3,2 ÷ 3,8
AUE 21 - MXV 65-3203	MXV 25-206	MXV 25-206	5,5 + 5,5 + 1,1	30	43	44	25	4,5 ÷ 5,1	4,1 ÷ 4,7	4,9 ÷ 5,5
AUE 21 - MXV 65-3204	MXV 25-207	MXV 25-207	7,5 + 7,5 + 1,1	30	58	44	35	6 ÷ 6,6	5,5 ÷ 6,1	6,4 ÷ 7,0
AUE 21 - MXV 65-3205	MXV 25-210	MXV 25-210	11 + 11 + 1,5	30	73	44	44	7,5 ÷ 8,1	7,0 ÷ 7,6	7,9 ÷ 8,5
AUE 21 - MXV 65-3206	MXV 25-210	MXV 25-210	11 + 11 + 1,5	30	87	44	52	9,0 ÷ 9,6	8,5 ÷ 9,1	9,4 ÷ 10
AUE 21 - MXV 80-4802	MXV 25-205	MXV 25-205	5,5 + 5,5 + 0,75	40	30	60	17	3,0 ÷ 3,6	2,7 ÷ 3,3	3,3 ÷ 3,9
AUE 21 - MXV 80-4803	MXV 25-206	MXV 25-206	7,5 + 7,5 + 1,1	40	45	60	26	4,8 ÷ 5,4	4,5 ÷ 5,1	5,1 ÷ 5,7
AUE 21 - MXV 80-4804	MXV 25-208	MXV 25-208	11 + 11 + 1,5	40	59	60	35	6,5 ÷ 7,1	6,0 ÷ 6,6	6,8 ÷ 7,4
AUE 21 - MXV 80-4805	MXV 25-210	MXV 25-210	15 + 15 + 1,5	40	74	60	44	8,0 ÷ 8,6	7,5 ÷ 8,1	8,3 ÷ 8,9
AUE 21 - MXV 80-4806	MXV 25-212	MXV 25-212	15 + 15 + 2,2	40	89	60	53	9,0 ÷ 9,6	8,5 ÷ 9,1	9,4 ÷ 10

# AUE 11 MXV

UNI-EN 12845 units with 1 multi-stage vertical electric main pump



## Dimensions



Unit designation	Connections			Dimensions mm								
	DN1	DN2	DN3*	L max	B	B1	L1	L2	H1	H2	H3	
AUE 11 - MXV 32-...	32	G 1 ¼	G 1	1005	750	450	150	215	200	910	1525	
AUE 11 - MXV 40-...	40	G 1 ½	G 1	1060	750	450	170	245	205	955	1525	
AUE 11 - MXV 50-...	50	G 2	G 1	1125	850	450	200	270	215	980	1525	
AUE 11 - MXV 65-...	65	65	G 1	1160	850	450	200	300	230	1200	1525	
AUE 11 - MXV 80-...	80	80	G 1	1210	850	450	200	335	230	1255	1525	

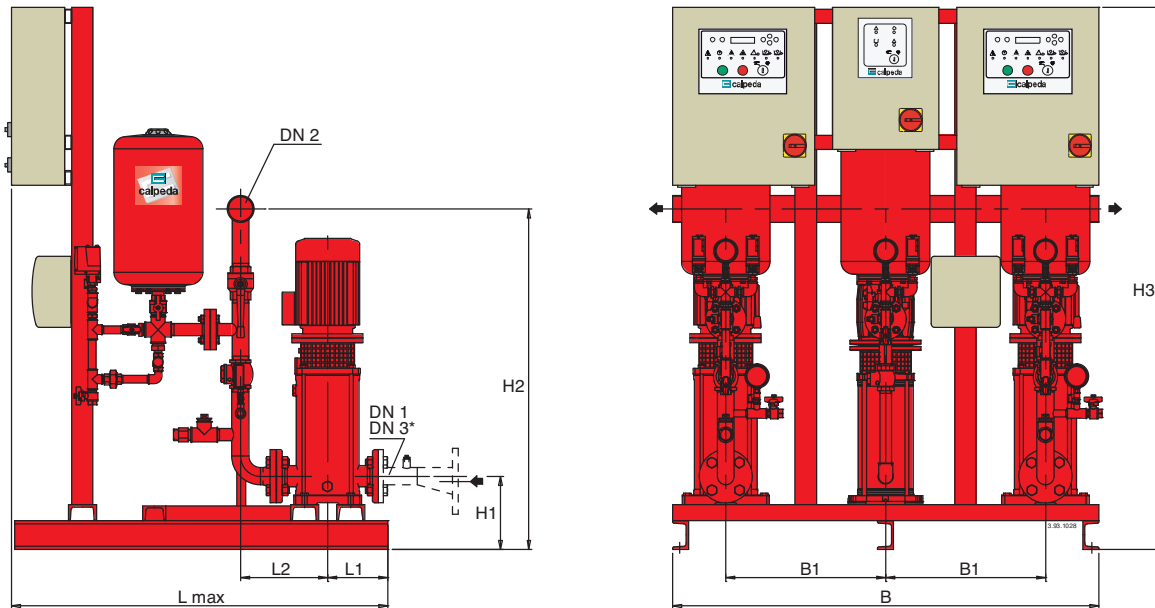
\* Suction connection jockey pump

# AUE 21 MXV

UNI-EN 12845 units with 2 multi-stage vertical electric main pumps



## Dimensions



Unit designation	Connections			Dimensions mm								
	DN1	DN2	DN3*	L max	B	B1	L1	L2	H1	H2	H3	
AUE 21 - MXV 32-...	32	G 1 1/2	G 1	1005	1200	450	150	215	200	910	1525	
AUE 21 - MXV 40-...	40	G 2	G 1	1060	1200	450	170	245	205	960	1525	
AUE 21 - MXV 50-...	50	65	G 1	1125	1400	450	200	270	215	990	1525	
AUE 21 - MXV 65-...	65	80	G 1	1160	1400	450	200	300	230	1205	1525	
AUE 21 - MXV 80-...	80	100	G 1	1210	1400	450	200	335	230	1270	1525	

\* Suction connection jockey pump

## Characteristics of full-jet nozzles

### Capacity

Pressure bar	Nozzle diameter mm			
	10	12	16	20
	Flow-rate l/min			
3	115	165	295	460
4	130	190	340	530
5	150	215	380	590
6	160	235	415	650
7	175	250	450	700
8	185	270	480	750

### Water-jet range

Pressure bar	Nozzle diameter mm			
	10	12	16	20
	Range m			
3	10 a 20	11 a 22	15 a 30	16 a 33
5	11 a 23	11 a 25	17 a 33	18 a 36
8	12 a 26	12 a 30	19 a 36	20 a 40

## Characteristics of sprinkler nozzles

### Capacity

Pressure bar	Rated diameter of orifice mm		
	10	15	20
	Flow-rate l/min		
2	80	113	162
3	98	139	199
4	114	160	230
5	127	180	258
6	139	196	282
7	150	214	305
8	161	226	325
9	171	240	345

# QM, QT

## Control panels



TYPE	Supply		No. pumps				Application		
	1 ~	3 ~	1	2	3	4	Bore-hole	Submersible	Surface
QM	✓		✓				✓	✓	✓
M COMP	✓		✓				✓	✓	
PFC-M	✓		✓				✓		
QML 1 FT	✓		✓				✓	✓	✓
T COMP		✓	✓				✓	✓	
PFC-T		✓	✓				✓		
QTL 1 FT		✓	✓				✓		✓
QTL 1 D FTE		✓	✓				✓		✓
QTL 1 ST FT		✓	✓				✓		✓
QTL 1 ST FTE		✓	✓				✓		✓
QTL 1 SS E		✓	✓				✓		✓
QTL 1 IS FTE		✓	✓				✓		
QML 2 D	✓			✓					✓
QTL 2 FT		✓		✓					✓
QTL 2 ST FT		✓		✓					✓
QML 3 FT	✓				✓				✓
QTL 3 FT		✓			✓				✓
QTL 3 ST FT		✓			✓				✓
QTL 4 D FT		✓				✓			✓
QTL 4 ST FT		✓				✓			✓
QML 1 VFT	✓		✓						✓
QTL 1 VFT		✓	✓						✓
QML 2 VFT	✓			✓			✓		✓
QTL 2 VFT		✓		✓			✓		✓
QML 1.1 VFT	✓			✓					✓
QTL 1.1 VFT				✓					✓
QML 3 VFT	✓				✓				✓
QTL 3 VFT		✓			✓				✓
QTL 1.2 VFT		✓			✓				✓
QTL 4 VFT		✓				✓			✓
QTL 1.3 VFT		✓				✓			✓
QTL 2 VFDE		✓		✓					✓
QTL 1.1 VFDE		✓		✓					✓
QTL 3 VFDE		✓			✓				✓
QTL 1.2 VFDE		✓			✓				✓
QTL 4 VFDE		✓				✓			✓
QTL 1.3 VFDE		✓				✓			✓
QMLD 1D	✓		✓					✓	
QTLD 1D		✓	✓					✓	
QTLD 1ST FT		✓	✓					✓	
QMLD 2D	✓			✓				✓	
QTLD 2D		✓		✓				✓	
QTLD 2ST FT		✓		✓				✓	
QTLD 3D FT-RL		✓			✓			✓	
QTLD 3 ST-RL		✓			✓			✓	



Power kW	Rotation speed		Starting				Typology		page
	Fixed Speed	Variable speed	D.O.L.	Y/Δ	Soft start	Impedance stator	Electromechanical	Electronic	
0,3 ÷ 1,5	✓		✓				✓		542
0,37 ÷ 2,2	✓		✓				✓		543
0,37 ÷ 2,2	✓		✓					✓	543
0,37 ÷ 2,2	✓		✓					✓	544
0,37 ÷ 7,5	✓		✓				✓		544
0,37 ÷ 5,5	✓		✓					✓	545
0,37 ÷ 11	✓		✓					✓	545
4 ÷ 30	✓		✓				✓		546
5,5 ÷ 45	✓			✓				✓	546
5,5 ÷ 110	✓			✓			✓		547
7,5 ÷ 132	✓				✓			✓	547
5,5 ÷ 110	✓					✓	✓		548
0,37 ÷ 1,5	✓		✓					✓	549
0,37 ÷ 5,5	✓		✓					✓	549
5,5 ÷ 45	✓			✓				✓	550
0,37 ÷ 2,2	✓		✓					✓	550
0,37 ÷ 5,5	✓		✓					✓	551
5,5 ÷ 4,5	✓							✓	551
0,37 ÷ 5,5	✓		✓					✓	552
5,5 ÷ 45	✓							✓	552
0,37 ÷ 3,7		✓	✓					✓	553
0,4 ÷ 7,5		✓	✓					✓	553
0,37 ÷ 3,7		✓						✓	554
0,4 ÷ 7,5		✓						✓	554
0,37 ÷ 3,7		✓						✓	555
0,4 ÷ 75		✓						✓	555
0,37 ÷ 3,7		✓						✓	556
0,4 ÷ 75		✓						✓	556
0,4 ÷ 75		✓						✓	557
0,4 ÷ 75		✓						✓	557
0,4 ÷ 75		✓						✓	558
0,75 ÷ 7,5		✓						✓	558
0,75 ÷ 7,5		✓						✓	559
0,75 ÷ 7,5		✓						✓	559
0,75 ÷ 7,5		✓						✓	560
0,75 ÷ 7,5		✓						✓	560
0,75 ÷ 7,5		✓						✓	561
0,25 ÷ 1,1	✓		✓					✓	562
0,25 ÷ 1,1	✓		✓					✓	562
4 ÷ 92	✓			✓				✓	563
0,25 ÷ 1,1	✓		✓					✓	564
0,25 ÷ 1,1	✓		✓					✓	564
4 ÷ 92	✓			✓				✓	565
0,55 ÷ 5,5	✓		✓					✓	566
4 ÷ 92	✓			✓				✓	566

## QM Control panel for 1 single-phase submersible pump



Code	Type	Capacitor	Motor 230V - 1~	Dimensions
		450Vc	kW	HxBxP mm
44017940000	<b>QM 6,3</b>	6,3 $\mu$ F	0,3	200x75x76
44017960000	<b>QM 20</b>	20 $\mu$ F	0,55 - 0,75	200x75x76
44017950000	<b>QM 25</b>	25 $\mu$ F	0,9 - 1,1	200x75x76
44017990000	<b>QM 30</b>	30 $\mu$ F	0,9 - 1,1	200x75x76
	<b>QM 35</b>	35 $\mu$ F	1,5	200x75x76

### Construction

Control panel with ON-OFF switch and capacitor, for 1 submersible pump with single-phase motor without built-in capacitor.

### Technical data

- Mains single-phase 230V  $\pm$ 10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Enclosure in thermoplastic material
- ON-OFF switch with lamp
- Capacitor
- Terminal board
- Cable glands

## QM Control panel with circuit breaker for 1 single-phase submersible pump



Code	Type	Protector	Capacitor	Motor 230V - 1~	Dimensions
		max A	450Vc	kW	HxBxP mm
-	<b>QM 4-16</b>	4	16 $\mu$ F	0,37	200x75x76
	<b>QM 5-20</b>	5	20 $\mu$ F	0,55	200x75x76
	<b>QM 5-25</b>	5	25 $\mu$ F	0,55	200x75x76
	<b>QM 6-20</b>	6	20 $\mu$ F	0,75	200x75x76
	<b>QM 7-25</b>	7	25 $\mu$ F	0,9	200x75x76
	<b>QM 7-30</b>	7	30 $\mu$ F	0,75	200x75x76
	<b>QM 8-25</b>	8	25 $\mu$ F	1,1	200x75x76
	<b>QM 8-30</b>	8	30 $\mu$ F	1,1	200x75x76
	<b>QM 10-40</b>	10	40 $\mu$ F	1,1	200x75x76
	<b>QM 12-35</b>	12	35 $\mu$ F	1,5	200x75x76

### Construction

Control panel with ON-OFF switch, circuit breaker and capacitor, for 1 submersible pump with single-phase motor without built-in capacitor.

### Technical data

- Mains single-phase 230V  $\pm$ 10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Enclosure in thermoplastic material
- ON-OFF switch with lamp
- Thermal device
- Capacitor
- Terminal board
- Cable glands

## M COMP Control panel for 1 single-phase submersible pump



Code	Type	Protector	Capacitor	Motor 230V - 1~	Dimensions HxBxP mm
		max A	450Vc	kW	
4402000000	<b>M COMP 4-16</b>	4,5	16 $\mu$ F	0,37	230x215x115
4402001000	<b>M COMP 4-20</b>	4,5	20 $\mu$ F	0,55	230x215x115
4402001000	<b>M COMP 5-20</b>	5	20 $\mu$ F	0,55	230x215x115
44020011000	<b>M COMP 5-25</b>	5	25 $\mu$ F	0,55	230x215x115
44020021000	<b>M COMP 6-20</b>	6	20 $\mu$ F	0,75	230x215x115
44020023000	<b>M COMP 6-35</b>	6	35 $\mu$ F	0,9	230x215x115
44020031000	<b>M COMP 7-25</b>	7	25 $\mu$ F	0,9	230x215x115
44020032000	<b>M COMP 7-30</b>	7	30 $\mu$ F	0,9	230x215x115
44020040000	<b>M COMP 8-25</b>	8	25 $\mu$ F	1,1	230x215x115
44020041000	<b>M COMP 8-30</b>	8	30 $\mu$ F	1,1	230x215x115
44020052000	<b>M COMP 10-35</b>	10	35 $\mu$ F	1,1	230x215x115
44020053000	<b>M COMP 10-40</b>	10	40 $\mu$ F	1,1	230x215x115
44020060000	<b>M COMP 12-35</b>	12	35 $\mu$ F	1,5	230x215x115
44020062000	<b>M COMP 12-50</b>	12	50 $\mu$ F	1,5	230x215x115
	<b>M COMP 12-60</b>	12	60 $\mu$ F	1,5	230x215x115
44020081000	<b>M COMP 16-70</b>	16	70 $\mu$ F	2,2	230x215x115

### Construction

Control panel with ON-OFF switch and capacitor for 1 submersible pump with single-phase motor.  
Suitable for use with LVBT board for level control.  
Protection is provided by means of a main bi-polar switch with a phase-protected against overload by means of a thermal element.

### Technical data

- Mains single-phase 230V  $\pm$ 10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.
- Control through pressure switch (pressure booster set).
- Control through float switch (for filling a tank).

### Components

- Enclosure in thermoplastic material.
- ON-OFF switch with pilot lamp with thermal protector.
- Capacitor.
- Terminal board.
- Terminals for LVBT board for level control.
- In/Out cable glands.
- Power relay (for M COMP 18 only)

### On request:

- LVBT card for level control.

## PFC-M Power Factor Control Control panel for 1 submersible pump with single-phase motor, PF control



Type	Setting	Capacitor	Motor 50/60Hz 220V-240V - 1~	Dimensions HxBxP mm
	A	450Vc	kW	
<b>PFC-M 18-16</b>	1 - 18	16 $\mu$ F	0,37	220x210x110
<b>PFC-M 18-20</b>	1 - 18	20 $\mu$ F	0,55	220x210x110
<b>PFC-M 18-25</b>	1 - 18	25 $\mu$ F	0,55	220x210x110
<b>PFC-M 18-30</b>	1 - 18	30 $\mu$ F	0,75	220x210x110
<b>PFC-M 18-35</b>	1 - 18	35 $\mu$ F	0,75	220x210x110
<b>PFC-M 18-40</b>	1 - 18	40 $\mu$ F	1,1	220x210x110
<b>PFC-M 18-50</b>	1 - 18	50 $\mu$ F	1,5	220x210x110
<b>PFC-M 18-60</b>	1 - 18	60 $\mu$ F	1,5	220x210x110
<b>PFC-M 18-70</b>	1 - 18	70 $\mu$ F	2,2	220x210x110

### Construction

Control panel for controlling one submersible pump with single-phase motor. Electronic control of the operation and dry-running protection through the power factor (PF) control.  
The installation of level probes into the well is not required.  
It stops the pump in case of lack of air cushion in the pressure vessel (patented system).  
Displayed operating data and alarms available in four languages.

### Technical data

- Mains single-phase 220-240V, 50/60 Hz.
- Max output current: 18 A.
- Ambient temperature from -5 °C to +40 °C.
- Relative humidity: from 20% to 90% without condensation
- Protection IP 55.
- Control through pressure switch (pressure booster set).
- Control through float switch (for filling a tank).
- Alarm output signal.
- Constructed in accordance with: IEC/EN 60439-1.

### Setting

- Min – Max voltage range.
- Motor rated current.
- Power factor (PF) value for dry-running protection.
- Up to four programmable restarts in case of no water condition.

### Alarms (with pump stop)

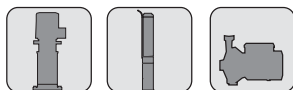
- Mains failure.
- Undervoltage and overvoltage.
- Motor overload.
- No water.
- No air cushion in the pressure vessel.

### Components

- Enclosure in thermoplastic material.
- Capacitor.
- Terminal board.
- Display : 2x16 characters.
- 6 button key board.
- In/Out Cable glands.

**On request:** - RA 100 control panel for remote alarm.

## QML 1 FT Control panel for 1 pump with single-phase motor, direct starting



Code	Type	Motor 230V - 1~ kW	Setting A	Dimensions HxBxP mm
---	<b>QML 1 FT 0,37</b>	0,37	1,6 - 2,5	200x255x170
	<b>QML 1 FT 0,55</b>	0,45 - 0,55	2,5 - 4	200x255x170
	<b>QML 1 FT 0,75</b>	0,75	4 - 6,5	200x255x170
	<b>QML 1 FT 1,1</b>	1,1	6,3 - 10	200x255x170
	<b>QML 1 FT 1,5</b>	1,5	9 - 12	200x255x170

### Construction

Control panel for 1 pump with single-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for the capacitor internal connection (for pumps without built-in capacitor) and for the SRL 3 level control card application against dry running.

Pump operation controlled by an electronic board type MP 1000 with microprocessor which allows three different modes of operation of the pump: standard, emergency and timed.

### Technical data

- Mains single-phase 230V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Thermoplastic case.
  - Door lock master switch.
  - Fuses for power line.
  - Fuses for auxiliary circuit.
  - Starting contactor.
  - Thermal relay.
  - Electronic board type MP 1000 with microprocessor.
  - Terminals for pressure switch connection.
  - Terminals for float switch connection against dry-running.
  - Cable glands.
- The panel is suitable for remote control of all the signals of the box (excluding pump stop led and push buttons).

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## T COMP Control panel for 1 submersible pump with three-phase motor



LVBT



Code	Type	Protector A	Motor 230V - 3~ kW	Motor 400V - 3~ kW	Dimensions HxBxP mm
14013130000	<b>T COMP 8</b>	1 ÷ 8	0,37 ÷ 1,5	0,5 ÷ 2,2	170x145x85
14013480000	<b>T COMP 10</b>	7 ÷ 10	---	3 ÷ 3,7	230x180x155
14024250000	<b>T COMP 12</b>	9 ÷ 12	2,2	4	230x180x155
14013560000	<b>T COMP 16</b>	11 ÷ 16	3	5,5	230x180x155
14013490000	<b>T COMP 20</b>	14 ÷ 20	3,7 - 4	7,5	230x180x155

### Construction

Control panel and protection for 1 submersible pump with three-phase motor.

Arranged for the LVBT level control internal connection against dry running (T COMP8 model has the level control as a standard).

Control pumps with pressure switch and float-type switch.

### Technical data

- Mains 230V or 400V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### Components

- Enclosure in thermoplastic material
- ON-OFF control switch
- Fuse holder - Contactor - Thermal relay
- Fuses for change of voltage: 230 V or 400 V - Transformer
- Terminals for pressure switch or float switch connection
- Terminals for LVBT board (for T COMP 10,12,16,20 models)
- Green LED indicator: voltage ON
- Red LED indicator: thermic block
- Cable glands

### ON REQUEST:

- LVBT board for level control (for T COMP 10,12,16,20 models)

## PFC-T Power Factor Control Control panel for 1 submersible pump with three-phase motor, PF control



Type	Setting <b>A</b>	Motor		Dimensions	
		400V 50Hz - 3~ <b>kW</b>	380V 60Hz - 3~ <b>kW</b>	<i>HxBxP mm</i>	<i>kg</i>
<b>PFC-T 8</b>	1 - 8	0,37 - 3	0,37 - 2,2	255x200x135	1,7
<b>PFC-T 11</b>	1 - 11	4	3 - 4	255x200x135	1,7
<b>PFC-T 16</b>	1 - 16	5,5	5,5	255x200x135	1,7

### Construction

Control panel for controlling 1 submersible pump with three-phase motor. Electronic control of the operation and dry-running protection through the power factor (PF) control.

The installation of level probes into the well is not required. It stops the pump in case of lack of air cushion in the pressure vessel (patented system)

Displayed operating data and alarms, available in four languages.

### Technical data

- Mains three-phase 380-400V - 3 ~ ±10% 50-60 Hz
- Output current: 8 A - 11 A - 16 A
- Ambient temperature from -5 °C to +40 °C.
- Relative humidity: from 20% to 90% without condensation
- IP 55 protection
- Control through pressure switch (pressure booster set)
- Control through float switch (for filling a tank)
- Alarm output signal
- Constructed in accordance with: IEC/EN 60439-1.

### Setting

- Min – Max voltage range
- Motor rated current
- Power factor (PF) value for dry-running protection
- Up to four programmable restarts in case of no water condition

### Alarms (with pump stop)

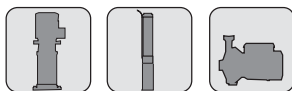
- Phase failure - Wrong phase sequence
- Undervoltage and overvoltage
- Motor overload
- No water
- No air cushion in the pressure vessel

### Components

- Enclosure in thermoplastic material.
- Terminal board.
- Display : 2x16 characters. - 6 button key board.
- In/Out Cable glands.

**On request:** - RA 100 control panel for remote alarm.

## QTL 1 FT Control panel for 1 pump with three-phase motor, direct starting



Code	Type	Motor 400V - 3~	Setting	Dimensions
		<b>kW</b>	<b>A</b>	<i>HxBxP mm</i>
---	<b>QTL 1 FT 0,55</b>	0,37 - 0,45 - 0,55	1 - 1,6	200x255x170
	<b>QTL 1 FT 1,1</b>	0,75 - 1,1	1,6 - 2,5	200x255x170
	<b>QTL 1 FT 1,5</b>	1,5	2,5 - 4	200x255x170
	<b>QTL 1 FT 3</b>	2,2 - 3	4 - 6,5	200x255x170
	<b>QTL 1 FT 4</b>	4	6,3 - 10	200x255x170
	<b>QTL 1 FT 5,5</b>	5,5	9 - 12	200x255x170
	<b>QTL 1 D 7,5 FT</b>	7,5	13 - 18	400x300x160
	<b>QTL 1 D 9,2 FT</b>	9,2	17 - 23	400x300x160
	<b>QTL 1 D 11 FT</b>	11	20 - 25	400x300x160

### Construction

Control panel for 1 pump with three-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel.

Pump operation controlled by an electronic card type MP 1000 with microprocessor which allows three different modes of operation of the pump: standard, emergency and timed.

Dry-running protection with float switch.

Arranged for SRL 3 level control application for probes connection against dry-running.

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

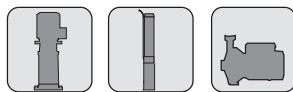
### Components

- Thermoplastic case (metallic for 7,5-9,2-11kW).
- Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactor. - Thermal relay.
- Electronic board type MP 1000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 1 D FTE Control panel for 1 pump with three-phase motor, direct starting



Code	Type	Motor 400V - 3~		Dimensions HxBxP mm
		kW	Setting A	
---	<b>QTL 1 D 4 FTE</b>	4	6,3 - 10	400x300x160
	<b>QTL 1 D 5,5 FTE</b>	5,5	9 - 12	400x300x160
	<b>QTL 1 D 7,5 FTE</b>	7,5	13 - 18	400x300x160
	<b>QTL 1 D 9,2 FTE</b>	9,2	17 - 23	400x300x160
	<b>QTL 1 D 11 FTE</b>	11	20 - 25	400x300x160
	<b>QTL 1 D 15 FTE</b>	15	24 - 32	500x350x200
	<b>QTL 1 D 18,5 FTE</b>	18,5	32 - 38	500x350x200
	<b>QTL 1 D 22 FTE</b>	22	35 - 50	500x350x200
	<b>QTL 1 D 30 FTE</b>	30	46 - 65	500x350x200

### Construction

Electromechanical control panel for 1 pump with three-phase motor, direct starting.

Operating signals by E 1000 led card.

Dry-running protection with float switch.

Construction with SRLE level control for probes connection against dry-running on request .

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).

- Ambient temperature from -5 °C to +40 °C.

- Protection IP 55.

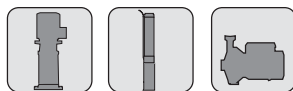
### Components

- Metal case. - Door lock master switch.
- Power circuit fuses. - Fuses for auxiliary circuit.
- Starting contactor. - Thermal relay
- Transformer. - E 1000 led card.
- Terminals for connection pump operating signal.
- Terminals for float switch connection against dry-running.
- Cable glands.

### ON REQUEST:

- RLE level control for probes against dry running
- RLE level control for pump operating probes.
- Voltmeter. - Ammeter.

## QTL 1 ST FT Control panel for 1 pump with three-phase motor, Y/Δ starting



Code	Type	Motor 400V - 3~		Dimensions HxBxP mm
		Power kW	Current A	
---	<b>QTL 1 ST 5,5 FT</b>	5,5	11 - 15	600x400x200
	<b>QTL 1 ST 7,5 FT</b>	7,5	12 - 17	600x400x200
	<b>QTL 1 ST 11 FT</b>	9,2 - 11	16 - 24	600x400x200
	<b>QTL 1 ST 15 FT</b>	15	23 - 31	600x400x200
	<b>QTL 1 ST 18,5 FT</b>	18,5	30 - 39	600x400x200
	<b>QTL 1 ST 22 FT</b>	22	35 - 43	700x500x200
	<b>QTL 1 ST 30B FT</b>	30	42 - 55	700x500x200
	<b>QTL 1 ST 30A FT</b>	30	55 - 65	700x500x200
	<b>QTL 1 ST 37 FT</b>	37	61 - 84	800x600x250
	<b>QTL 1 ST 45 FT</b>	45	80 - 105	800x600x250

### Construction

Control panel for 1 pump with three-phase motor, Y/Δ starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel.

Pump operation controlled by an electronic card type MP 1000 with microprocessor with 3 different pump operating modes: standard, emergency and timed.

Dry-running protection with float switch.

Arranged for SRL 3 level control application for probes connection against dry-running on request .

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).

- Ambient temperature from -5 °C to +40 °C.

- Protection IP 55.

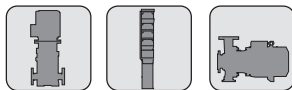
### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors. - Thermal relay. - Transformer.
- Electronic board MP 1000 with microprocessor.
- Terminals for motor connection.
- Terminals for connection pressure switch of pump operating.
- Terminals for float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm .
- Voltmeter. - Ammeter.

## QTL 1 ST FTE Control panel for 1 pump with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~	Dimensions HxBxP mm
			Current A	
---	<b>QTL 1 ST 5,5 FTE</b>	5,5	11 - 15	500x350x200
	<b>QTL 1 ST 7,5 FTE</b>	7,5	12 - 17	500x350x200
	<b>QTL 1 ST 11 FTE</b>	9,2 - 11	16 - 24	500x350x200
	<b>QTL 1 ST 15 FTE</b>	15	23 - 31	500x350x200
	<b>QTL 1 ST 18,5 FTE</b>	18,5	30 - 39	500x350x200
	<b>QTL 1 ST 22 FTE</b>	22	35 - 43	600x400x200
	<b>QTL 1 ST 30B FTE</b>	30	42 - 55	600x400x200
	<b>QTL 1 ST 30A FTE</b>	30	55 - 65	600x400x200
	<b>QTL 1 ST 37 FTE</b>	37	61 - 84	700x500x200
	<b>QTL 1 ST 45 FTE</b>	45	80 - 105	700x500x200
	<b>QTL 1 ST 55 FTE</b>	55	100 - 125	700x500x200
	<b>QTL 1 ST 75 FTE</b>	75	120 - 160	800x600x250
	<b>QTL 1 ST 92 FTE</b>	92	140 - 198	800x600x250
	<b>QTL 1 ST 110 FTE</b>	110	180 - 250	800x600x250

### Construction

Electromechanical control panel for 1 pump with three-phase motor, Y/Δ starting.

Operating signals by E 1000 led board.

Dry-running protection with float switch.

Construction with SRLE level control for probes connection against dry-running on request .

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - Starting contactors. - Thermal relay.
- Y/Δ timer. - Transformer. - E 1000 led board.
- Terminals for motor connection.
- Terminals for connection of pump operating signal.
- Terminals for float switch connection against dry-running.
- Cable glands.

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### ON REQUEST:

- RLE level control for probes against dry running.
- RLE level control for pump operating probes.
- Voltmeter. - Ammeter.

## QTL 1 SS E Control panel for 1 pump with three-phase motor, start/stop with soft starter



Code	Type	Motor 400V - 3~	Max current output max A	Dimensions HxBxP mm
		kW		
---	<b>QTL 1 SS 7,5 E</b>	7,5	17	700x500x250
	<b>QTL 1 SS 9,2 E</b>	9,2	22	700x500x250
	<b>QTL 1 SS 15 E</b>	11 - 15	34	700x500x250
	<b>QTL 1 SS 22 E</b>	18,5 - 22	48	700x500x250
	<b>QTL 1 SS 26 E</b>	26	58	900x600x300
	<b>QTL 1 SS 30 E</b>	30	68	900x600x300
	<b>QTL 1 SS 37 E</b>	37	82	900x600x300
	<b>QTL 1 SS 45 E</b>	45	92	900x600x300
	<b>QTL 1 SS 55 E</b>	55	114	900x600x300
	<b>QTL 1 SS 63 E</b>	63	126	1100x700x300
	<b>QTL 1 SS 75 E</b>	75	150	1100x700x300
	<b>QTL 1 SS 92 E</b>	92	196	1200x800x400
	<b>QTL 1 SS 110 E</b>	110	231	1200x800x400
	<b>QTL 1 SS 132 E</b>	132	245	1200x800x400

### Construction

Control panel for 1 pump with three-phase motor, start/stop with soft starter.

Operating signals on E 1000 led board.

Application: control of submersible motor with great cable length and surface motors.

Dry-running protection with float switch.

Construction with SRLE level control for probes connection against dry-running on request .

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Soft starter - Transformer.
- By pass contactors (built into the soft starter) - E 1000 led board.
- Terminals for float switch or level probes connection for pump operating.
- Terminals for float switch or level probes connection against dry-running.
- Cable glands.

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### ON REQUEST:

- RLE level control for connection level probes of pump operating.
- RLE level control for probes against dry running.
- Voltmeter. - Ammeter.

## QTL 1 IS FTE Control panel for 1 pump with three-phase motor, with Stator Impedance starter



Code	Type	Motor Power kW	400V - 3~ Current A	Dimensions HxBxP mm
---	QTL 1 IS 5,5 FTE-2RL	5,5	11 - 15	
	QTL 1 IS 7,5 FTE-2RL	7,5	12 - 17	
	QTL 1 IS 11 FTE-2RL	9,2 - 11	16 - 24	
	QTL 1 IS 15 FTE-2RL	15	23 - 31	
	QTL 1 IS 18,5 FTE-2RL	18,5	30 - 39	
	QTL 1 IS 22 FTE-2RL	22	35 - 43	
	QTL 1 IS 30 FTE-2RL	30	42 - 65	
	QTL 1 IS 37 FTE-2RL	37	61 - 84	
	QTL 1 IS 45 FTE-2RL	45	80 - 105	
	QTL 1 IS 55 FTE-2RL	55	100 - 125	
	QTL 1 IS 75 FTE-2RL	75	120 - 160	
	QTL 1 IS 92 FTE-2RL	92	140 - 198	
	QTL 1 IS 110 FTE-2RL	110	180 - 250	

### Construction

Electromechanical control panel for 1 submersible pump with three-phase motor, with Stator Impedance starter.

Operating signals on led board type E 1000.

Application : submersible motors control with great cable length.

Construction with SRLE level control for probes connection against dry-running .

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).

- Ambient temperature from -5 °C to +40 °C.

- Protection IP 55.

### Components

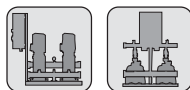
- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Stator Impedance - By pass contactors
- Transformer. - E 1000 led board.
- RLE level control for connection level probes of pump control.
- RLE level control for probes against dry running.
- Terminals for connection level probes or float switch for operating pump.
- Terminals for level probes or float switch connection against dry-running.
- Cable glands.

### ON REQUEST:

- Voltmeter. - Ammeter.



## QML 2 D Control panel for 2 pumps with single-phase motor, direct starting



Code	Type	Motor 230V - 1~ kW	Protector max A	Dimensions HxBxP mm
---	<b>QML 2 D 0,45</b>	0,37 - 0,45	4	200x255x110
	<b>QML 2 D 0,55</b>	0,55	6	200x255x110
	<b>QML 2 D 0,75</b>	0,75	7	200x255x110
	<b>QML 2 D 1,1</b>	1,1	9	200x255x110
	<b>QML 2 D 1,5</b>	1,5	12	200x255x110

### Construction

Control panel for 2 pumps with single-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running. Pump operation cascade mode controlled by an electronic board type MP 2000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains single-phase 230V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

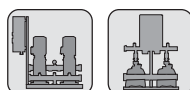
### Components

- Thermoplastic case.
- Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting relay. - Circuit breaker.
- Two capacitor (on request)
- Electronic board type MP 2000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch or float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 2 FT Control panel for 2 pumps with three-phase motor, direct starting



Code	Type	Motor 400V - 3~ kW	Setting max A	Dimensions HxBxP mm
---	<b>QTL 2 FT 0,45</b>	0,37 - 0,45	0,9 - 1,5	230x310x130
	<b>QTL 2 FT 0,55</b>	0,55	1,4 - 2,3	230x310x130
	<b>QTL 2 FT 1,1</b>	0,75 - 1,1	2 - 3,3	230x310x130
	<b>QTL 2 FT 1,5</b>	1,5	3 - 5	230x310x130
	<b>QTL 2 FT 3</b>	2,2 - 3	4,5 - 7,5	230x310x130
	<b>QTL 2 FT 4</b>	4	6,3 - 10	230x310x130
	<b>QTL 2 FT 5,5</b>	5,5	9 - 12	230x310x130

### Construction

Control panel for 2 pumps with three-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running. Pump operation cascade mode controlled by an electronic board type MP 2000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V 3 ~  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

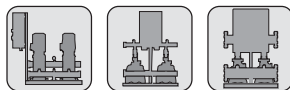
### Components

- Thermoplastic case.
- Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors. - Thermal relay.
- Electronic board type MP 2000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch or flow switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 2 ST FT Control panel for 2 pumps with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~ Current A	Dimensions HxBxP mm
---	<b>QTL 2 ST 5,5 FT</b>	5,5	11 - 15	700x500x200
	<b>QTL 2 ST 7,5 FT</b>	7,5	12 - 17	700x500x200
	<b>QTL 2 ST 11 FT</b>	9,2 - 11	16 - 24	700x500x200
	<b>QTL 2 ST 15 FT</b>	15	23 - 31	700x500x200
	<b>QTL 2 ST 18,5 FT</b>	18,5	30 - 39	700x500x200
	<b>QTL 2 ST 22 FT</b>	22	35 - 43	900x600x250
	<b>QTL 2 ST 30B FT</b>	30	42 - 55	900x600x250
	<b>QTL 2 ST 30A FT</b>	30	55 - 65	900x600x250
	<b>QTL 2 ST 37 FT</b>	37	61 - 84	1100x700x250
	<b>QTL 2 ST 45 FT</b>	45	80 - 105	1100x700x250

### Construction

Control panel for 2 pumps with three-phase motor, Y/Δ starting, for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Pump operation cascade mode controlled by an electronic board type MP 2000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

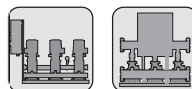
### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors. - Thermal relay. - Y/Δ timers. - Transformer.
- Electronic board type MP 2000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch or float switch connection against dry-running.
- Terminals for remote signals - Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Voltmeter. - Ammeter. - Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QML 3 FT Control panel for 3 pumps with single-phase motor, direct starting



Code	Type	Motor 230V - 1~ kW	Setting max A	Dimensions HxBxP mm
---	<b>QML 3 FT 0,37</b>	0,37	1,6 - 2,5	390x470x130
	<b>QML 3 FT 0,55</b>	0,45 - 0,55	2,5 - 4	390x470x130
	<b>QML 3 FT 0,75</b>	0,75	4 - 6,5	390x470x130
	<b>QML 3 FT 1,1</b>	1,1	6,3 - 10	390x470x130
	<b>QML 3 FT 1,5</b>	1,5	9 - 12	390x470x130
	<b>QML 3 FT 2,2</b>	2,2	13 - 18	390x470x130

### Construction

Control panel for 2 pumps with single-phase motor, direct starting for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation cascade mode controlled by an electronic board type MP 2000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains single-phase 230V ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

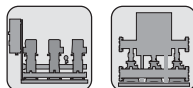
### Components

- Thermoplastic case.
- Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting relay. - Circuit breaker.
- Electronic board type MP 3000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch or float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 3 FT Control panel for 3 pumps with three-phase motor, direct starting



Code	Type	Motor 400V - 3~ kW	Setting max A	Dimensions HxBxP mm
---	<b>QTL 3 FT 0,55</b>	0,37 - 0,45 - 0,55	1 - 1,6	470x390x170
	<b>QTL 3 FT 1,1</b>	0,75 - 1,1	1,6 - 2,5	470x390x170
	<b>QTL 3 FT 1,5</b>	1,5	2,5 - 4	470x390x170
	<b>QTL 3 FT 3</b>	2,2 - 3	4 - 6,5	470x390x170
	<b>QTL 3 FT 4</b>	4	6,3 - 10	470x390x170
	<b>QTL 3 FT 5,5</b>	5,5	9 - 12	470x390x170

### Construction

Control panel for 3 pumps with three-phase motor, direct starting, for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation cascade mode controlled by an electronic board type MP 3000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

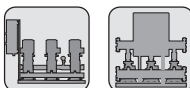
### Components

- Thermoplastic case.
- Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors. - Thermal relay.
- Electronic board type MP 3000 with microprocessor.
- Terminals for pressure switch connection.
- Terminals for float switch or flow switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 3 ST FT Control panel for 3 pumps with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~ Current A	Dimensions HxBxP mm
---	<b>QTL 3 ST 5,5 FT</b>	5,5	11 - 15	800x600x250
	<b>QTL 3 ST 7,5 FT</b>	7,5	12 - 17	800x600x250
	<b>QTL 3 ST 11 FT</b>	9,2 - 11	16 - 24	800x600x250
	<b>QTL 3 ST 15 FT</b>	15	23 - 31	800x600x250
	<b>QTL 3 ST 18,5 FT</b>	18,5	30 - 39	1000x600x250
	<b>QTL 3 ST 22 FT</b>	22	35 - 43	1100x700x250
	<b>QTL 3 ST 30B FT</b>	30	42 - 55	1200x800x300
	<b>QTL 3 ST 30A FT</b>	30	55 - 65	1200x800x300
	<b>QTL 3 ST 37 FT</b>	37	61 - 84	1400x800x400
	<b>QTL 3 ST 45 FT</b>	45	80 - 105	1400x800x400

### Construction

Control panel for 3 pumps with three-phase motor, Y/Δ starting, for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation cascade mode controlled by an electronic board type MP 3000 with microprocessor which allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

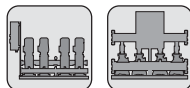
### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - Starting contactors.
- Thermal relay. - Y/Δ timers. - Transformer.
- Electronic board type MP 3000 with microprocessor.
- Terminals for pumps connection.
- Terminals for pressure switch connection.
- Terminals for float switch or flow switch connection against dry-running.
- Terminals for remote signals - Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Voltmeter. - Ammeter.
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 4 D FT Control panel for 4 pumps with three-phase motor, direct starting



Code	Type	Motor 400V - 3~	Setting	Dimensions
		kW	max A	HxBxP mm
---	<b>QTL 4 D 0,55 FT</b>	0,37- 0,45 - 0,55	1 - 1,6	600x400x200
	<b>QTL 4 D 1,1 FT</b>	0,75 - 1,1	1,6 - 2,5	600x400x200
	<b>QTL 4 D 1,5 FT</b>	1,5	2,5 - 4	600x400x200
	<b>QTL 4 D 3 FT</b>	2,2 - 3	4 - 6,5	600x400x200
	<b>QTL 4 D 4 FT</b>	4	6,3 - 10	600x400x200
	<b>QTL 4 D 5,5 FT</b>	5,5	9 - 12	600x400x200

### Construction

Control panel for 4 pumps with three-phase motor, direct starting, for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation cascade mode controlled by an electronic board type MP 6000 with microprocessor alternating the starting order and allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

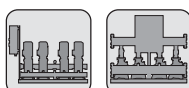
### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors.
- Thermal relay. - Transformer.
- Electronic board type MPS 6000 with microprocessor.
- Terminals for pressure transducer connection.
- Terminals for float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M.
- RA 100 control panel for remote alarm.

## QTL 4 ST FT Control panel for 4 pumps with three-phase motor, Y/Δ starting



**5,5 ÷ 45 kW**

Code	Type	Motor	400V - 3~	Dimensions
		Power kW	Current A	HxBxP mm
---	<b>QTL 4 ST 5,5 FT</b>	5,5	11 - 15	
	<b>QTL 4 ST 7,5 FT</b>	7,5	12 - 17	900x600x250
	<b>QTL 4 ST 11 FT</b>	11	16 - 24	900x600x250
	<b>QTL 4 ST 15 FT</b>	15	23 - 31	1000x800x250
	<b>QTL 4 ST 18,5 FT</b>	18,5	30 - 39	1000x800x250
	<b>QTL 4 ST 22 FT</b>	22	35 - 43	1200x800x250
	<b>QTL 4 ST 30B FT</b>	30	42 - 55	1200x800x250
	<b>QTL 4 ST 30A FT</b>	30	55 - 65	1200x800x250
	<b>QTL 4 ST 37 FT</b>	37	61 - 84	1400x800x400
	<b>QTL 4 ST 45 FT</b>	45	80 - 105	1400x800x400

### Construction

Control panel for 3 pumps with three-phase motor, Y/Δ starting, for pressure booster sets, with a patented working time-measuring system that stops the pump in case of lack of air cushion in the pressure vessel. Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation cascade mode controlled by an electronic board type MP 6000 with microprocessor alternating the starting order and allows three different operation modes: standard, emergency and timed.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - Starting contactors.
- Thermal relay. - Y/Δ timers. - Transformer.
- Electronic board type MPS 6000 with microprocessor.
- Terminals for pumps connection.
- Terminals for pressure transducer connection.
- Terminals for float switch connection against dry-running.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Voltmeter. - Ammeter.

## QML 1 VFT Control panel for 1 pump with variable speed three-phase motor.



Code	Type	Motor 230V - 1~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QML 1 VFT 0,4</b>	0,37 - 0,45	2,6	500x350x200
	<b>QML 1 VFT 0,75</b>	0,55 - 0,75	4	500x350x200
	<b>QML 1 VFT 1,5</b>	1,1 - 1,5	7,1	500x350x200
	<b>QML 1 VFT 2,2</b>	2,2	10	500x350x200
	<b>QML 1 VFT 3,7</b>	3,7	17,5	500x350x200

### Construction

Single-phase mains supply control panel with frequency converter for 1 pump with three-phase variable speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor.

### Technical data

- Mains single-phase 230V ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

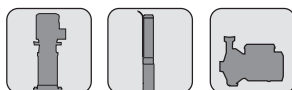
### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter. - MPS 4000 electronic card.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QTL 1 VFT Control panel for 1 pump with variable speed three-phase motor



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 1 VFT 0,4</b>	0,4	1,5	500x350x200
	<b>QTL 1 VFT 0,75</b>	0,55 - 0,75	2,5	500x350x200
	<b>QTL 1 VFT 1,5</b>	1,1 - 1,5	3,8	500x350x200
	<b>QTL 1 VFT 2,2</b>	2,2	5,5	500x350x200
	<b>QTL 1 VFT 4</b>	3 - 4	8,6	500x350x200
	<b>QTL 1 VFT 5,5</b>	5,5	13	600x400x200
	<b>QTL 1 VFT 7,5</b>	7,5	16	600x400x200
	<b>QTL 1 VFT 11</b>	9,2 - 11	22	700x500x200
	<b>QTL 1 VFT 15</b>	15	29	700x500x200
	<b>QTL 1 VFT 22</b>	18,5 - 22	43	800x600x250
	<b>QTL 1 VFT 30</b>	30	57	800x600x250
	<b>QTL 1 VFT 37</b>	37	70	1100x700x300
	<b>QTL 1 VFT 45</b>	45	85	1200x800x300
	<b>QTL 1 VFT 55</b>	55	105	1200x800x300
	<b>QTL 1 VFT 75</b>	75	135	1200x800x300

### Construction

Control panel with frequency converter for 1 pump with three-phase variable speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

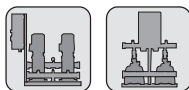
### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter. - MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QML 2 VFT Control panel for 2 pumps with variable speed three-phase motor



Code	Type	Motor 230V - 1~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QML 2 VFT 0,4</b>	0,37 - 0,45	2,6 x 2	600x400x200
	<b>QML 2 VFT 0,75</b>	0,55 - 0,75	4 x 2	600x400x200
	<b>QML 2 VFT 1,5</b>	1,1 - 1,5	7,1 x 2	600x400x200
	<b>QML 2 VFT 2,2</b>	2,2	10 x 2	600x400x200
	<b>QML 2 VFT 3,7</b>	3,7	17,5 x 2	600x400x200

### Construction

Single-phase mains supply control panel with frequency converter for 2 pumps with three-phase variable speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit. - EMC filter.
- Frequency converter (1 for each pump).
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals
- Cable glands.

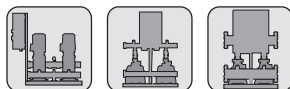
### Technical data

- Mains single-phase 230V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QTL 2 VFT Control panel for 2 pumps with variable speed three-phase motor



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 2 VFT 0,4</b>	0,4	1,5 x 2	600x400x200
	<b>QTL 2 VFT 0,75</b>	0,55 - 0,75	2,5 x 2	600x400x200
	<b>QTL 2 VFT 1,5</b>	1,1 - 1,5	3,8 x 2	600x400x200
	<b>QTL 2 VFT 2,2</b>	2,2	5,5 x 2	600x400x200
	<b>QTL 2 VFT 4</b>	3 - 4	8,6 x 2	600x400x200
	<b>QTL 2 VFT 5,5</b>	5,5	13 x 2	700x500x200
	<b>QTL 2 VFT 7,5</b>	7,5	16 x 2	700x500x200
	<b>QTL 2 VFT 11</b>	9,2 - 11	22 x 2	1000x800x250
	<b>QTL 2 VFT 15</b>	15	29 x 2	1000x800x250
	<b>QTL 2 VFT 22</b>	18,5 - 22	43 x 2	1200x800x300
	<b>QTL 2 VFT 30</b>	30	57 x 2	1200x800x300
	<b>QTL 2 VFT 37</b>	37	70 x 2	1600x1000x400
	<b>QTL 2 VFT 45</b>	45	85 x 2	2100x1400x500
	<b>QTL 2 VFT 55</b>	55	105 x 2	2100x1400x500
	<b>QTL 2 VFT 75</b>	75	135 x 2	2100x1400x500

### Construction

Control panel with frequency converter for 2 pump with three-phase variable speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

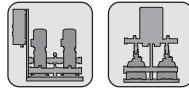
### Technical data

- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QML 1.1 VFT Control panel for 1 variable speed pump and 1 fixed speed pump



Code	Type	Motor 230V - 1~ kW	Max current output max A	Dimensions HxBxP mm
---	QML 1.1 VFT 0,4 - D 0,4	0,37 - 0,45	2,6	600x400x200
	QML 1.1 VFT 0,75 - D 0,75	0,55 - 0,75	4	600x400x200
	QML 1.1 VFT 1,5 - D 1,5	1,1 - 1,5	7,1	600x400x200
	QML 1.1 VFT 2,2 - D 2,2	2,2	10	600x400x200
	QML 1.1 VFT 3,7 - D 3,7	3,7	17	600x400x200

### Construction

Single-phase mains supply control panel with frequency converter for 2 pumps, one with three-phase variable speed motor and one with fixed speed single-phase motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter.
- Starting contactors of the second pump. - Transformer.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

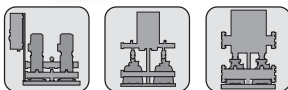
### Technical data

- Mains single-phase 230V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QTL 1.1 VFT Control panel for 1 variable speed pump and 1 fixed speed pump



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	QTL 1.1 VFT 0,4 - D 0,4	0,4	1,5	600x400x200
	QTL 1.1 VFT 0,75 - D 0,75	0,55 - 0,75	2,5	600x400x200
	QTL 1.1 VFT 1,5 - D 1,5	1,1 - 1,5	3,8	600x400x200
	QTL 1.1 VFT 2,2 - D 2,2	2,2	5,5	600x400x200
	QTL 1.1 VFT 4 - D 3	3	8,6	600x400x200
	QTL 1.1 VFT 4 - D 4	4	8,6	600x400x200
	QTL 1.1 VFT 5,5 - D 5,5	5,5	13	700x500x200
	QTL 1.1 VFT 7,5 - ST 7,5	7,5	16	700x500x200
	QTL 1.1 VFT 11 - ST 11	9,2 - 11	22	800x600x250
	QTL 1.1 VFT 15 - ST 15	15	29	800x600x250
	QTL 1.1 VFT 22 - ST 18,5	18,5	43	1000x800x250
	QTL 1.1 VFT 22 - ST 22	22	43	1000x800x250
	QTL 1.1 VFT 30 - ST 30B	30	57	1000x800x250
	QTL 1.1 VFT 30 - ST 30A	30	57	1000x800x250
	QTL 1.1 VFT 37 - ST 37	37	70	1200x800x300
	QTL 1.1 VFT 45 - ST 45	45	85	1200x800x300
	QTL 1.1 VFT 55 - ST 55	55	105	1200x800x300
	QTL 1.1 VFT 75 - ST 75	75	135	1200x800x300

### Construction

Control panel with frequency converter for 2 pumps with three-phase motor, one with variable speed and one with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - EMC filter. - Frequency converter.
- Starting contactors of the second pump. - Timer (Y/Δ) from 7,5 kW.
- Transformer. - MPS 4000 electronic card.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

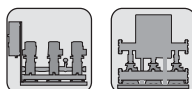
### Technical data

- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 9M.
- RA 100 control panel for remote alarm.

## QML 3 VFT Control panel for 3 variable speeds pump with three-phase motor



Code	Type	Motor 230V - 1~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QML 3 VFT 0,4</b>	0,37 - 0,45	2,6 x 3	700x500x200
	<b>QML 3 VFT 0,75</b>	0,55 - 0,75	4 x 3	700x500x200
	<b>QML 3 VFT 1,5</b>	1,1 - 1,5	7,1 x 3	700x500x200
	<b>QML 3 VFT 2,2</b>	2,2	10 x 3	700x500x200
	<b>QML 3 VFT 3,7</b>	3,7	17,5 x 3	700x500x200

### Construction

Single-phase mains supply control panel with frequency converter for 3 pumps with three-phase variable speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter (1 for each pump).
- MPS 4000 electronic card.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals
- Cable glands.

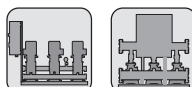
### Technical data

- Mains single-phase 230V  $\pm 10\%$  50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 3 VFT Control panel for 3 pumps with variable speed three-phase motor



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 3 VFT 0,4</b>	0,4	1,5 x 3	700x500x200
	<b>QTL 3 VFT 0,75</b>	0,55 - 0,75	2,5 x 3	700x500x200
	<b>QTL 3 VFT 1,5</b>	1,1 - 1,5	3,8 x 3	700x500x200
	<b>QTL 3 VFT 2,2</b>	2,2	5,5 x 3	700x500x200
	<b>QTL 3 VFT 4</b>	3 - 4	8,6 x 3	700x500x200
	<b>QTL 3 VFT 5,5</b>	5,5	13 x 3	1000x800x250
	<b>QTL 3 VFT 7,5</b>	7,5	16 x 3	1000x800x250
	<b>QTL 3 VFT 11</b>	9,2 - 11	22 x 3	1700x1000x400
	<b>QTL 3 VFT 15</b>	15	29 x 3	1700x1000x400
	<b>QTL 3 VFT 22</b>	18,5 - 22	43 x 3	1700x1000x400
	<b>QTL 3 VFT 30</b>	30	57 x 3	1700x1000x400
	<b>QTL 3 VFT 37</b>	37	70 x 3	A richiesta
	<b>QTL 3 VFT 45</b>	45	85 x 3	A richiesta
	<b>QTL 3 VFT 55</b>	55	105 x 3	A richiesta
	<b>QTL 3 VFT 75</b>	75	135 x 3	A richiesta

### Construction

Control panel with frequency converter for 3 pumps with variable speed three-phase motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter (1 for each pump).
- MPS 4000 electronic card.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

### Technical data

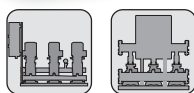
- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.



## QTL 1.2 VFT Control panel for 1 variable speed pump and 2 fixed speed pumps



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	QTL 1.2 VFT 0,4 - D 0,4	0,4	1,5	600x400x200
	QTL 1.2 VFT 0,75 - D 0,75	0,55 - 0,75	2,5	600x400x200
	QTL 1.2 VFT 1,5 - D 1,5	1,1 - 1,5	3,8	600x400x200
	QTL 1.2 VFT 2,2 - D 2,2	2,2	5,5	600x400x200
	QTL 1.2 VFT 4 - D 3	3	8,6	600x400x200
	QTL 1.2 VFT 4 - D 4	4	8,6	600x400x200
	QTL 1.2 VFT 5,5 - D 5,5	5,5	13	700x500x200
	QTL 1.2 VFT 7,5 - ST 7,5	7,5	16	800x600x250
	QTL 1.2 VFT 11 - ST 11	9,2 - 11	22	900x600x250
	QTL 1.2 VFT 15 - ST 15	15	29	900x600x250
	QTL 1.2 VFT 22 - ST 18,5	18,5	43	900x600x250
	QTL 1.2 VFT 22 - ST 22	22	43	1000x800x250
	QTL 1.2 VFT 30 - ST 30B	30	57	1000x800x250
	QTL 1.2 VFT 30 - ST 30A	30	57	1000x800x250
	QTL 1.2 VFT 37 - ST 37	37	70	1200x800x300
	QTL 1.2 VFT 45 - ST 45	45	85	
	QTL 1.2 VFT 55 - ST 55	55	105	
	QTL 1.2 VFT 75 - ST 75	75	135	

### Construction

Control panel with frequency converter for 3 pumps with three-phase motor: one with variable speed motor (with frequency converter) and 2 with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - EMC filter. - Frequency converter.
- Starting contactors of the second and third pump.
- Timer (Y/Δ) from 7,5 kW. - Transformer.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

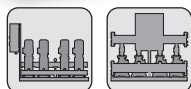
### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 4 VFT Control panel for 4 pumps with variable speed three-phase motor



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	QTL 4 VFT 0,4	0,4	1,5 x 4	900x600x250
	QTL 4 VFT 0,75	0,55 - 0,75	2,5 x 4	900x600x250
	QTL 4 VFT 1,5	1,1 - 1,5	3,8 x 4	900x600x250
	QTL 4 VFT 2,2	2,2	5,5 x 4	900x600x250
	QTL 4 VFT 4	3 - 4	8,6 x 4	900x600x250
	QTL 4 VFT 5,5	5,5	13 x 4	1200x800x300
	QTL 4 VFT 7,5	7,5	16 x 4	1200x800x300
	QTL 4 VFT 11	9,2 - 11	22 x 4	1700x1000x400
	QTL 4 VFT 15	15	29 x 4	1700x1000x400
	QTL 4 VFT 22	18,5 - 22	43 x 4	2000x1800x400
	QTL 4 VFT 30	30	57 x 4	2000x1800x400
	QTL 4 VFT 37	37	70 x 4	2000x1800x400
	QTL 4 VFT 45	45	85 x 4	2000x1800x400
	QTL 4 VFT 55	55	105 x 4	2000x1800x400
	QTL 4 VFT 75	75	135 x 4	2000x1800x400

### Construction

Control panel with frequency converter for 4 pumps with variable speed three-phase motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- EMC filter. - Frequency converter (1 for each pump).
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

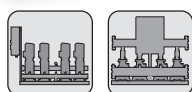
### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 1.3 VFT Control panel for 1 variable speed pump and 3 fixed speed pumps



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 1.3 VFT 0,4 - D 0,4</b>	0,4	1,5	800x600x250
	<b>QTL 1.3 VFT 0,75 - D 0,75</b>	0,55 - 0,75	2,5	800x600x250
	<b>QTL 1.3 VFT 1,5 - D 1,5</b>	1,1 - 1,5	3,8	800x600x250
	<b>QTL 1.3 VFT 2,2 - D 2,2</b>	2,2	5,5	800x600x250
	<b>QTL 1.3 VFT 4 - D 3</b>	3	8,6	800x600x250
	<b>QTL 1.3 VFT 4 - D 4</b>	4	8,6	800x600x250
	<b>QTL 1.3 VFT 5,5 - D 5,5</b>	5,5	13	1100x700x250
	<b>QTL 1.3 VFT 7,5 - ST 7,5</b>	7,5	16	1100x700x250
	<b>QTL 1.3 VFT 11 - ST 11</b>	9,2 - 11	22	1200x800x300
	<b>QTL 1.3 VFT 15 - ST 15</b>	15	29	1200x800x300
	<b>QTL 1.3 VFT 22 - ST 18,5</b>	18,5	43	1200x800x300
	<b>QTL 1.3 VFT 22 - ST 22</b>	22	43	1200x800x300
	<b>QTL 1.3 VFT 30 - ST 30B</b>	30	57	1200x800x300
	<b>QTL 1.3 VFT 30 - ST 30A</b>	30	57	1200x800x300
	<b>QTL 1.3 VFT 37 - ST 37</b>	37	70	1700x800x400
	<b>QTL 1.3 VFT 45 - ST 45</b>	45	85	1700x800x400
	<b>QTL 1.3 VFT 55 - ST 55</b>	55	105	
	<b>QTL 1.3 VFT 75 - ST 75</b>	75	135	

### Construction

Control panel with frequency converter for 4 pumps with three-phase motor: one with variable speed motor (with frequency converter) and 3 with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - EMC filter. - Frequency converter.
- Starting contactors of the second, third and fourth pump.
- Timer (Y/Δ) from 7,5 kW. - Transformer. - MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Ventilator for electric panel cooling.
- Terminals board. - Terminals for remote signals - Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 2 VFDE Control panel for 2 variable speed pumps with on-board frequency converter



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 2 VFDE 3</b>	0,75 ÷ 3	5	400x300x200
	<b>QTL 2 VFDE 5,5</b>	4 ÷ 5,5	12	400x300x200
	<b>QTL 2 VFDE 7,5</b>	7,5	15	400x300x200

### Construction

Control panel for 2 variable speed pumps MXVE model with on board frequency converter, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 1.1 VFDE Control panel for 1 variable speed (on-board frequency converter) pump and 1 fixed speed pump



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 1.1 VFDE 0,75 - D 0,75</b>	0,75	1,8	400x300x200
	<b>QTL 1.1 VFDE 1,1 - D 1,1</b>	1,1	2,3	400x300x200
	<b>QTL 1.1 VFDE 1,5 - D 1,5</b>	1,5	3,4	400x300x200
	<b>QTL 1.1 VFDE 2,2 - D 2,2</b>	2,2	4,5	400x300x200
	<b>QTL 1.1 VFDE 3 - D 3</b>	3	5	400x300x200
	<b>QTL 1.1 VFDE 4 - D 4</b>	4	8	400x300x200
	<b>QTL 1.1 VFDE 5,5 - D 5,5</b>	5,5	12	400x300x200
	<b>QTL 1.1 VFDE 7,5 - ST 7,5</b>	7,5	15	500x350x200

### Construction

Control panel for 2 three-phase pumps: one MXVE model with on board frequency converter and one with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Technical data

- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### Components

- Metal case. - Door lock master switch. - Fuses for power line.
- Fuses for auxiliary circuit. - Starting contactors of the second pump.
- Timer (Y/ $\Delta$ ) from 7,5 kW. - Transformer.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board. - Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 3 VFDE Control panel for 3 variable speed pumps with on-board frequency converter



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 3 VFDE 2,2</b>	0,75 ÷ 2,2	4,5	500x350x200
	<b>QTL 3 VFDE 5,5</b>	3 ÷ 5,5	12	500x350x200
	<b>QTL 3 VFDE 7,5</b>	7,5	15	500x350x200

### Construction

Control panel for 3 variable speed pumps MXVE model with on board frequency converter, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Technical data

- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board.
- Terminals for remote signals
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 1.2 VFDE Control panel for 1 variable speed (on-board frequency converter) pump and 2 fixed speed pumps



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 1.2 VFDE 0,75 - D 0,75</b>	0,75	1,8	500x400x200
	<b>QTL 1.2 VFDE 1,1 - D 1,1</b>	1,1	2,3	500x400x200
	<b>QTL 1.2 VFDE 1,5 - D 1,5</b>	1,5	3,4	500x400x200
	<b>QTL 1.2 VFDE 2,2 - D 2,2</b>	2,2	4,5	500x400x200
	<b>QTL 1.2 VFDE 3 - D 3</b>	3	5	500x400x200
	<b>QTL 1.2 VFDE 4 - D 4</b>	4	8	500x400x200
	<b>QTL 1.2 VFDE 5,5 - D 5,5</b>	5,5	12	500x400x200
	<b>QTL 1.2 VFDE 7,5 - ST 7,5</b>	7,5	15	700x500x200

### Construction

Control panel for 3 three-phase pumps: one MXVE model with on board frequency converter and 2 with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors of the second pump.
- Timer (Y/Δ) from 7,5 kW. - Transformer.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board.
- Terminals for remote signals
- Cable glands.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QTL 4 VFDE Control panel for 4 variable speed pumps with on-board frequency converter



Code	Type	Motor 400V - 3~ kW	Max current output max A	Dimensions HxBxP mm
---	<b>QTL 4 VFDE 2,2</b>	0,75 ÷ 2,2	4,5	500x400x200
	<b>QTL 4 VFDE 5,5</b>	3 ÷ 5,5	12	500x400x200
	<b>QTL 4 VFDE 7,5</b>	7,5	15	500x400x200

### Construction

Control panel for 4 variable speed pumps MXVE model with on board frequency converter, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

### Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board.
- Terminals for remote signals
- Cable glands.

### Technical data

- Mains 400V ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

**QTL 1.3 VFDE** Control panel for 1 **variable speed** (on-board frequency converter) pump and 3 fixed speed pumps



Code	Type	Motor 400V - 3~	Max current output max A	Dimensions
		kW		HxBxP mm
---	<b>QTL 1.3 VFDE 0,75 - D 0,75</b>	0,75	1,8	600x400x200
	<b>QTL 1.3 VFDE 1,1 - D 1,1</b>	1,1	2,3	600x400x200
	<b>QTL 1.3 VFDE 1,5 - D 1,5</b>	1,5	3,4	600x400x200
	<b>QTL 1.3 VFDE 2,2 - D 2,2</b>	2,2	4,5	600x400x200
	<b>QTL 1.3 VFDE 3 - D 3</b>	3	5	600x400x200
	<b>QTL 1.3 VFDE 4 - D 4</b>	4	8	600x400x200
	<b>QTL 1.3 VFDE 5,5 - D 5,5</b>	5,5	12	600x400x200
	<b>QTL 1.3 VFDE 7,5 - ST 7,5</b>	7,5	15	800x600x250

## Construction

Control panel for 4 three-phase pumps: one MXVE model with on board frequency converter and 3 with fixed speed motor, for constant pressure booster sets.

Arranged for SRL 3 level control application for probes connection against dry-running.

Pump operation controlled by an electronic board type MPS 4000 with microprocessor alternating the starting order at each start.

## Technical data

- Mains 400V  $\pm 10\%$  50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 44.

## Components

- Metal case. - Door lock master switch.
- Fuses for power line. - Fuses for auxiliary circuit.
- Starting contactors of the second pump.
- Timer (Y/ $\Delta$ ) from 7,5 kW. - Transformer.
- MPS 4000 electronic board.
- Interface for MPS 4000 electronic board.
- Terminals board. - Terminals for remote signals
- Cable glands.

## ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M, MPS 13M.
- RA 100 control panel for remote alarm.

## QMLD 1 D Control panel for 1 submersible drainage pump with single-phase motor, direct starting



Code	Type	Motor 230V - 1~ kW	Setting A	Capacitor 450Vc	Dimensions HxBxP mm
---	<b>QMLD 1D 12A-FA</b>	0,25 ÷ 1,1	1 ÷ 12 A	-	200x255x135
	<b>QMLD 1D 12A-FA-20</b>	0,25 ÷ 1,1	1 ÷ 12 A	20 µF	200x255x135
	<b>QMLD 1D 12A-FA-25</b>	0,25 ÷ 1,1	1 ÷ 12 A	25 µF	200x255x135

### Construction

Control panel with protection for 1 submersible drainage pump with single-phase motor, with a 12A max. nominal current.

Possibility to install one capacitor inside the control panel, for pumps without capacitor inside the motor.

Operation managed by a DR 1000 type electronic board with microprocessor that has the following functions:

- automatic operating test of the pump every 48 hours of inactivity (with pump in the automatic operating mode).
- Pump control with signals coming from:
- **2 float switches:** one for starting-up and stopping pump, one for the alarm maximum level (optional).
- **3 float switches:** one for starting-up pump, one for stopping the pump and one for the alarm maximum level (optional).

### Technical data

- Mains: 230V 1~ ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Thermoplastic case.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Starting-up relay.
- Amperometric transformer.
- Capacitor (on request).
- DR 1000 type electronic board with microprocessor.
- Terminals for capacitor connection.
- Terminals for float switches connection.
- Terminals for connection of remote alarm control panel RA 100E, RA 100A type.
- Cable glands.

The panel is suitable for remote control of all the signals of the box.

### ON REQUEST:

- Volt free contact module MSP 1M - MSP 9M.
- RA 100 - RA 100A control panel for remote alarm.

## QTLD 1 D Control panel for 1 submersible drainage pump with three-phase motor, direct starting



Code	Type	Motor 230V - 1~ kW	Setting A	Dimensions HxBxP mm
14039020000	<b>QTLD 1D 12A-FA</b>	0,25 ÷ 3	1 ÷ 12 A	200x255x135

### Construction

Control panel with protection for 1 submersible drainage pump with three-phase motor, with a 12A max. nominal current.

Operation managed by a DR 1000 type electronic board with microprocessor that has the following functions:

- automatic operating test of the pump every 48 hours of inactivity (with pump in the automatic operating mode).
- Pump control with signals coming from:
- **2 float switches:** one for starting-up and stopping pump, one for the alarm maximum level (optional).
- **3 float switches:** one for starting-up pump, one for stopping the pump and one for the alarm maximum level (optional).

### Technical data

- Mains: 400V 3~ ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Thermoplastic case.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Contactor.
- Amperometric transformer.
- DR 1000 electronic board with microprocessor.
- Terminals for float switches connection.
- Connection terminals for the RA 100 RA 100A type remote alarm control panel or volt free contact module.
- Cable glands.

### ON REQUEST:

- SRL 3 level control for probes against dry running
- Volt free contact module MSP 1M - MSP 9M.
- RA 100 - RA 100A control panel for remote alarm.

## QTLD 1 ST FT Control panel for 1 submersible drainage pump with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~	Dimensions HxBxP mm
			Current A	
---	<b>QTLD 1ST 4 FT-RL</b>	4	7 - 11	600x400x200
	<b>QTLD 1ST 5,5 FT-RL</b>	5,5	11 - 15	600x400x200
	<b>QTLD 1ST 7,5 FT-RL</b>	7,5	12 - 17	600x400x200
	<b>QTLD 1ST 11 FT-RL</b>	9,2 - 11	16 - 24	600x400x200
	<b>QTLD 1ST 15 FT-RL</b>	15	23 - 31	600x400x200
	<b>QTLD 1ST 18,5 FT-RL</b>	18,5	30 - 39	600x400x200
	<b>QTLD 1ST 22 FT-RL</b>	22	35 - 43	700x500x250
	<b>QTLD 1ST 30B FT-RL</b>	30	42 - 55	700x500x250
	<b>QTLD 1ST 30A FT-RL</b>	30	55 - 65	700x500x250
	<b>QTLD 1ST 37 FT-RL</b>	37	61 - 84	800x600x250
	<b>QTLD 1ST 45 FT-RL</b>	45	80 - 105	800x600x250
	<b>QTLD 1ST 55 FT-RL</b>	55	100 - 125	1100x700x250
	<b>QTLD 1ST 75 FT-RL</b>	75	120 - 150	1100x700x250
	<b>QTLD 1ST 92 FT-RL</b>	92	155 - 255	1100x700x250

### Construction

Control panel with protection for 1 submersible drainage pump with three-phase motor, Y/Δ starting.

Operation managed by the DR1000 electronic circuit board that has the following functions:

- automatic operating test of the pump every 24 hours of inactivity (with pump in the automatic operating mode).
- Pump control with signals coming from:
  - **2 float switches:** for starting-up and stopping pump, for the alarm (maximum level is optional).
  - **3 float switches:** for starting-up pump, for stopping the pump and for the alarm (maximum level is optional).

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Metal case.
- Line selector switch with door-locking device.
- Power line fuses. - Auxiliary circuit fuses. - Contactors.
- Y/Δ timer. - Thermal relay. - Level regulator.
- DR 1000 type circuit board with microprocessor.
- Connection terminals for float switches or level probes.
- Connection terminals for thermal protectors.
- Connection terminals for water seepages probe.
- Connection terminals for the RA 100 RA 100A type remote alarm control panel or volt free contact module.
- Cable glands.

### ON REQUEST:

- Volt free contact module MSP 1M - MSP 9M.
- RA 100 - RA 100A control panel for remote alarm.
- Voltmeter. - Ammeter.

## QMLD 2 D Control panel for 2 submersible drainage pumps with single-phase motor, direct starting



Code	Type	Motor 230V - 1~		Capacitor 450Vc	Dimensions HxBxP mm
		kW	A		
---	<b>QMLD 2D 12A-FA ...</b>	0,25 ÷ 1,1	1 ÷ 12 A	-	230x310x130
	<b>QMLD 2D 12A-FA 20</b>	0,25 ÷ 1,1	1 ÷ 12 A	2x20 µF	230x310x130
	<b>QMLD 2D 12A-FA 25</b>	0,25 ÷ 1,1	1 ÷ 12 A	2x25 µF	230x310x130
	<b>QMLD 2D 12A-FA 35-85</b>	0,25 ÷ 1,1	1 ÷ 12 A	2x35 µF	470x390x170

### Construction

Control panel with protection for 2 submersible drainage pumps with single-phase motor, with a 12A max. nominal current.

Possibility to install two capacitors inside the control panel, for pump without capacitor inside the motor.

Operation managed by the DR 2000 electronic board that has the following functions:

- pump changing at every pump start.
- working pumps changing after 30 minutes of uninterrupted operation.
- automatic operating test of each individual pump every 48 hours of inactivity (with pumps in the automatic functioning mode).
- Pump control with signals coming from:
  - **3 float switches:** for starting-up and stopping pump 1, for starting-up and stopping pump 2, for the alarms (maximum level is optional).
  - **4 float switches:** for starting-up pump 1, for starting up pump 2, for stopping the pumps and for the alarms (maximum level is optional).

### Technical data

- Mains: 230V 1~ ±10% 50/60 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Box in thermoplastic material.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Starting-up relays.
- Amperometric transformers.
- Capacitors (on request).
- DR 2000 electronic board with microprocessor.
- Terminals for capacitors connection.
- Terminals for float switches connection.
- Terminals for connection the RA 100E, RA 100A type remote alarm control panel or volt free contact module.
- Cable glands.

The panel is suitable for remote control of all the signals of the box.

### ON REQUEST:

- Volt free contact module MSP 1M - MSP 9M.
- RA 100 - RA 100A control panel for remote alarm.

## QTLD 2 D Control panel for 2 submersible drainage pumps with three-phase motor, direct starting



Code	Type	Motor 230V - 1~		Dimensions HxBxP mm
		kW	A	
---	<b>QTLD 2D 12A-FA</b>	0,25 ÷ 1,1	6 ÷ 12 A	230x310x130

### Construction

Control panel with protection for 2 submersible drainage pumps with three-phase motors, with a 12A max. nominal current.

Operation managed by the DR 2000 electronic card that incorporates the following functions:

- changes pumps at every pump start.
- changes working pumps after 30 minutes of uninterrupted operation.
- automatic functioning test of each individual pump every 48 hours of inactivity (with pumps in the automatic functioning mode).
- Pump control with signals coming from:
  - **3 float switches:** for starting-up and stopping pump 1, for starting-up and stopping pump 2, for the alarms (maximum level is optional).
  - **4 float switches:** for starting-up pump 1, for starting up pump 2, for stopping the pumps and for the alarms (maximum level is optional).

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C. - Protection IP 55.

### Components

- Box in thermoplastic material.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Contactors.
- Amperometric transformers.
- DR 2000 type electronic board with microprocessor.
- Connection terminals for float switches.
- Terminals for connection the RA 100A type remote alarm control panel or volt free contact module.
- Cable glands.

The panel is suitable for remote control of all the signals of the box.

### ON REQUEST:

- Volt free contact module MSP 1M - MSP 9M.
- RA 100A control panel for remote alarm.



## QTLD 2 ST FT Electric control panel for 2 drainage pumps with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~	Dimensions HxBxP mm
			Current A	
---	QTLD 2ST 4 FT-RL	4	7 - 11	700x500x200
	QTLD 2ST 5,5 FT-RL	5,5	11 - 15	700x500x200
	QTLD 2ST 7,5 FT-RL	7,5	12 - 17	700x500x200
	QTLD 2ST 11 FT-RL	9,2 - 11	16 - 24	700x500x200
	QTLD 2ST 15 FT-RL	15	23 - 31	700x500x200
	QTLD 2ST 18,5 FT-RL	18,5	30 - 39	700x500x200
	QTLD 2ST 22 FT-RL	22	35 - 43	900x600x250
	QTLD 2ST 30B FT-RL	30	42 - 55	900x600x250
	QTLD 2ST 30A FT-RL	30	55 - 65	900x600x250
	QTLD 2ST 37 FT-RL	37	61 - 84	1100x700x250
	QTLD 2ST 45 FT-RL	45	80 - 105	1100x700x250
	QTLD 2ST 55 FT-RL	55	100 - 125	1200x800x300
	QTLD 2ST 75 FT-RL	75	120 - 150	1200x800x300
	QTLD 2ST 92 FT-RL	92	155 - 255	1400x800x400

### Construction

Control panel with protection for 2 submersible drainage pumps with three-phase motor, Y/Δ starting.

Operation managed by the DR 2000 electronic circuit board that has the following functions:

- pump changing at every pump start.
- working pumps changing after 30 minutes of uninterrupted operation.
- automatic operating test of each individual pump every 48 hours of inactivity (with pumps in the automatic functioning mode).
- Pump control with signals coming from:
  - **3 float switches:** for starting-up and stopping pump 1, for starting-up and stopping pump 2, for the alarms (maximum level is optional).
  - **4 float switches:** for starting-up pump 1, for starting up pump 2, for stopping the pumps and for the alarms (maximum level is optional).

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C.
- Protection IP 55.

### Components

- Metal case.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses. - Contactors.
- Y/Δ timers. - Level regulator.
- DR 2000 type circuit board with microprocessor.
- Connection terminals for float switches.
- Connection terminals for thermal protectors.
- Connection terminals for water seepages probe.
- Connection terminals for the RA 100, RA 100A type remote alarm control panel or volt free contact module.
- Cable glands.

### ON REQUEST:

- Volt free contact module MSP 1M - MSP 9M.
- RA 100 - RA 100A control panel for remote alarm.
- Voltmeter.
- Ammeter.

## QTLD 3 D FT Control panel for 3 submersible drainage pumps with three-phase motor, direct starting



Code	Type	Motor Power kW	400V - 3~	Dimensions HxBxP mm
			Current A	
---	<b>QTLD 3D 0,55 FT</b>	0,55	1 - 1,6	470x390x170
	<b>QTLD 3D 1,1 FT</b>	0,75 - 1,1	1,6 - 2,5	470x390x170
	<b>QTLD 3D 1,5 FT</b>	1,5	2,5 - 4	470x390x170
	<b>QTLD 3D 3 FT</b>	2,2 - 3	4 - 6,5	470x390x170
	<b>QTLD 3D 4 FT</b>	4	6,3 - 10	470x390x170
	<b>QTLD 3D 5,5 FT</b>	5,5	9 - 12	470x390x170

### Construction

Control panel with protection for 3 submersible drainage pumps with three-phase motor, direct starting.

Operation managed by the DR 3000 electronic circuit board that has the following functions:

- changes pumps at every pump start.
- changes working pumps after 30 minutes of uninterrupted operation.
- automatic functioning test of each individual pump every 48 hours of inactivity (with pumps in the automatic functioning mode).
- Pump control with signals coming from:
  - **4 float switches:** for starting-up and stopping pump, for the alarm (maximum level is optional).
  - **5 float switches:** for starting-up pump, for stopping the pumps and for the alarm (maximum level is optional).

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C. - Protection IP 55.

### Components

- Metal case.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Contactors.
- Thermal relay
- DR 3000 type circuit board with microprocessor.
- Connection terminals for float switches.
- Connection terminals for the RA 100, RA 100A type remote alarm control panel or MSP 1M volt free contact module.
- Cable glands.

### ON REQUEST:

- Volt free contact module MSP 1M.
- RA 100 - RA 100A control panel for remote alarm .
- Voltmeter.
- Ammeter.

## QTLD 3 ST FT Electric control panel for 3 drainage pumps with three-phase motor, Y/Δ starting



Code	Type	Motor Power kW	400V - 3~	Dimensions HxBxP mm
			Current A	
---	<b>QTLD 3ST 4 FT-RL</b>	4	7 - 11	800x600x250
	<b>QTLD 3ST 5,5 FT-RL</b>	5,5	11 - 15	800x600x250
	<b>QTLD 3ST 7,5 FT-RL</b>	7,5	12 - 17	800x600x250
	<b>QTLD 3ST 11 FT-RL</b>	9,2 - 11	16 - 24	800x600x250
	<b>QTLD 3ST 15 FT-RL</b>	15	23 - 31	800x600x250
	<b>QTLD 3ST 18,5 FT-RL</b>	18,5	30 - 39	1000x600x250
	<b>QTLD 3ST 22 FT-RL</b>	22	35 - 43	1100x700x250
	<b>QTLD 3ST 30B FT-RL</b>	30	42 - 55	1200x800x300
	<b>QTLD 3ST 30A FT-RL</b>	30	55 - 65	1200x800x300
	<b>QTLD 3ST 37 FT-RL</b>	37	61 - 84	1400x800x400
	<b>QTLD 3ST 45 FT-RL</b>	45	80 - 105	1400x800x400
	<b>QTLD 3ST 55 FT-RL</b>	55	100 - 125	1600x800x400
	<b>QTLD 3ST 75 FT-RL</b>	75	120 - 150	1600x1000x400
	<b>QTLD 3ST 92 FT-RL</b>	92	155 - 255	1600x1000x400

### Construction

Control panel with protection for 3 submersible drainage pumps with three-phase motor, Y/Δ starting.

Operation managed by the DR 3000 electronic circuit board that incorporates the following functions:

- changes pumps at every pump start.
- changes working pumps after 30 minutes of uninterrupted operation.
- automatic functioning test of each individual pump every 48 hours of inactivity (with pumps in the automatic functioning mode).
- Pump control with signals coming from:
  - **4 float switches:** for starting-up and stopping pump, for the alarm (maximum level is optional).
  - **5 float switches:** for starting-up pump, for stopping the pumps and for the alarm (maximum level is optional).

### Technical data

- Mains 400V 3 ~ ±10% 50 Hz (other voltages on request).
- Ambient temperature from -5 °C to +40 °C. - Protection IP 55.

### Components

- Metal case.
- Line selector switch with door-locking device.
- Power line fuses.
- Auxiliary circuit fuses.
- Contactors.
- Y/Δ timers.
- Level regulator.
- DR 3000 type circuit board with microprocessor.
- Interface for DR 3000.
- Connection terminals for float switches.
- Connection terminals for thermal protectors.
- Connection terminals for water seepages probe.
- Connection terminals for the RA 100E, RA 100A type remote alarm control panel or MSP 1M volt free contact module.
- Cable glands.

### ON REQUEST:

- Volt free contact module MSP 1M.
- RA 100 - RA 100A control panel for remote alarm .
- Voltmeter.
- Ammeter.

# ACCESSORIES

## VALVES



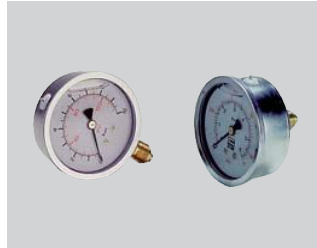
check valve

VNR 1
VNR 1 1/4
VNR 1 1/2
VNR 2

foot valve

VDF 1
VDF 1 1/4
VDF 1 1/2
VDF 2

## PRESSURE GAUGES



axial connection type

MA 0-6
MA 0-6 ABS

radial connection type

MR 0-10
MR 0-12
MR 0-16

## CONNECTOR



type	connection
RA5 H 92	G 1
RA5 H 105	G 1

## PRESSURE SWITCHES



type	standard setting	max pressure
FSG 2	1,4 - 2,8 bar	4,5 bar
FYG 22	5,4 - 7 bar	7 bar
FYG 32	8 - 10,5 bar	10,5 bar

## SPHERICAL VESSEL



type	connect.	capacity
SS 24	G 1	24 l

BUTYL rubber diaphragm.

## CYLINDRICAL VESSEL



vessel with base and feet

type	connect.	capacity
SC 20 BP	G 1	20 l

BUTYL rubber diaphragm.

## INOX CYLINDRICAL VESSEL



vertical cylindrical vessel

type	connect.	capacity
SCX 20	G 1	20 l

BUTYL rubber diaphragm.

## INOX CYLINDRICAL VESSEL



vessel with base and feet

type	connect.	capacity
SCX 20 BP	G 1	20 l

BUTYL rubber diaphragm.

# ACCESSORIES

**KIT 1**



Type	KIT 1A	KIT 1B	KIT 1CX	KIT 1DX
<b>Components</b>				
<b>Connector</b>	RA5 H 92	RA5 H 92	RA5 H 92	RA5 H 92
<b>Pressure switch</b>	FSG 2	FYG 22	FSG 2	FYG 22
<b>Pressure gauge</b>	MA 0-6 ABS	MR 0-10	MA 0-6 ABS	MR 0-10
<b>Vessel</b>	SS 24	SS 24	SCX 20	SCX 20

**KIT 2**



Type	KIT 2A	KIT 2B	KIT 2CX	KIT 2DX
<b>Components</b>				
<b>Connector</b>	RA5 H 92	RA5 H 92	RA5 H 92	RA5 H 92
<b>Pressure switch</b>	FSG 2	FYG 22	FSG 2	FYG 22
<b>Pressure gauge</b>	MA 0-6 ABS	MR 0-10	MA 0-6 ABS	MR 0-10
<b>Flexible hose</b>	FP 1-680	FP 1-680	FP 1-680	FP 1-680
<b>Bend</b>	1" M.F.	1" M.F.	1" M.F.	1" M.F.
<b>Bend</b>	1" F.F.	1" F.F.	1" F.F.	1" F.F.
<b>Vessel</b>	SC 20 BP	SC 20 BP	SCX 20 BP	SCX 20 BP

# ACCESSORIES

## AUTOMATIC AIR FEEDER



### ARIAMAT

type

AR 300E

AR 1000E

AR 2000E

Complete with connections and 1 m polyethylene pipe

## LEVEL PROBES



type

SL 2 electrodes

SLA Assembled level probes

Cable 2x0,75 mm<sup>2</sup>

(cable length on request)

example:

Assembled level probes  
30 m cable length

SLA 30

## FLOAT SWITCH

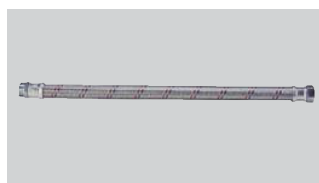


tipo

INTGALL

(cable 2,5 m)

## FLEXIBLE HOSE



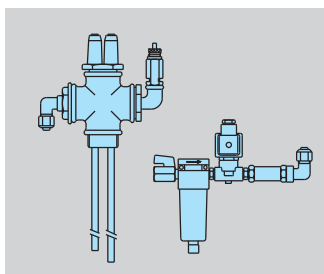
type

d x length

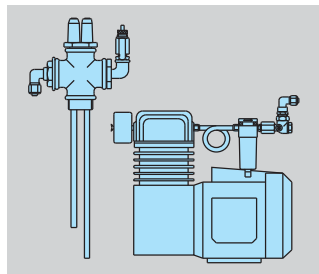
FP 1-630 G 1 x 630

FP 1-680 G 1 x 680

## SYSTEM FOR AIR INTAKE

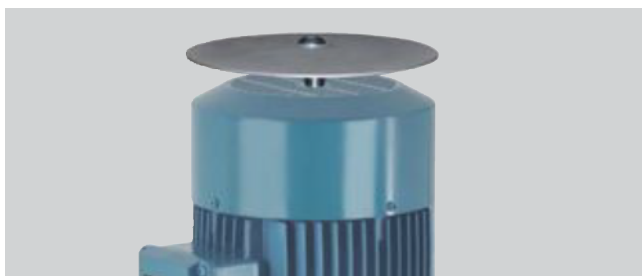


Kit of level probes  
with solenoid valve



Kit of level probes  
with compressor

## KIT TETTuccio PROTEZIONE MOTORI



Tipo	Motore	
	2 poli	4 poli
Tettuccio Ø 157	0,75 ÷ 2,2	0,75 ÷ 1,1
Tettuccio Ø 180	3 ÷ 4	1,5 ÷ 2,2
Tettuccio Ø 223	5,5 ÷ 7,5	3 ÷ 4
Tettuccio Ø 263	9,2 ÷ 18,5	5,5 ÷ 9,2
Tettuccio Ø 314	22 ÷ 30	11 ÷ 15

Kit comprende: 1 Disco  
1 Cilindretto  
2 Vite con  
1 Rondella

## AUTOMATIC AIR FEEDER



### ARIAMAT

#### type

AR 300E

AR 1000E

AR 2000E

Complete with connections and 1 m polyethylene pipe

### Construction

The automatic air feeder ARIAMAT controls the air cushion in the pressure vessel by replacing the air dissolved in the water at every pump start. This device limits the number of pump starts and stops, allows a better use of the water reserve and improves the overall performance of the automatic pressure system.

### Operation

ARIAMAT operation is explained in pictures 1-2-3-4.

At the end of every cycle, ARIAMAT AR 300E, AR 1000E and AR 2000E let in the vessel 300, 1000 and 2000 cm<sup>3</sup> of air respectively.

For a good operation of ARIAMAT it is necessary to have enough suction pressure in the pipe whilst the pumps are running.

If the pumps work under positive suction head and water falls to the suction inlet, there will not be enough suction pressure in the suction pipe to allow a correct operation of ARIAMAT; in this case, it is necessary to create an artificial loss in the suction pipe, by closing gradually the gate valve when the pump is running until the water level in the ARIAMAT starts dropping.

When a sufficient suction pressure to grant a safe ARIAMAT operation cannot be achieved, it is recommended to feed the vessel with a compressed air system and level probes.

### Description of the supply

The ARIAMAT is normally fitted on our automatic water systems.

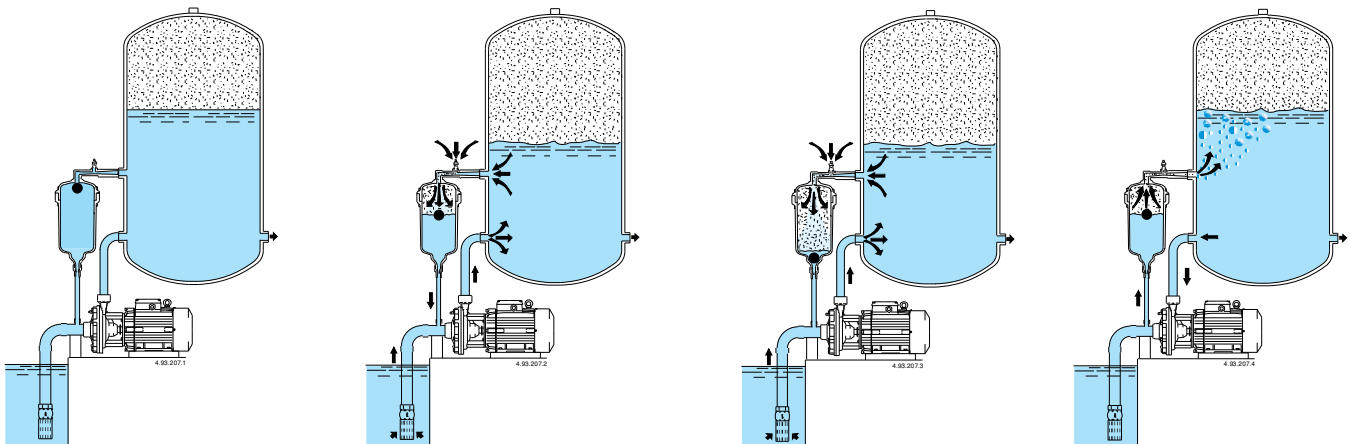
The supply of ARIAMAT, as a spare part to be installed by the customer, includes:

- n° 1 ARIAMAT assembled with upper elbow and air valve;
- m 1 Polyethylene tube with ring nut and fitting for connection to the pump suction side.

### Materials

Component	Material
Upper elbow	Brass
Air valve	Brass
Feeder body	Polycarbonate
Ball valve	Rubber
Conical fittings	Polyethylene
Pipe	Polyethylene

Pressure in m	Pressure vessel capacity in litres											
	100	200	300	400	500	750	1000	1500	2000	3000	4000	5000
14/28	AR 300E						AR 1000E					AR 2000E
20/30	AR 300E					AR 1000E						AR 2000E
30/40	AR 300E			AR 1000E							AR 2000E	
35/55	AR 300E			AR 1000E							AR 2000E	
55/70	AR 300E		AR 1000E							AR 2000E		
75/95	AR 300E	AR 1000E				The use of an air compressor is recommended.						



- 1) When the pump is stopped, ARIAMAT is full of water.
- 2) When starting, the pumps creates a suction pressure which also takes the water from ARIAMAT, allowing some more water to come from the vessel. The water through the ARIAMAT venturi sucks air from the upper valve.
- 3) The water level in the ARIAMAT drops until the ball valve moves to the bottom of the ARIAMAT closing the hole of the pipe connected to the pump. ARIAMAT is now full of water.
- 4) When stopping, there is a back-flow of water from the vessel through the pump, to the ARIAMAT. Air is pushed inside the vessel.

# Technical appendix



## How to select a centrifugal pump

The selection of a centrifugal pump should be made according to the actual characteristics and conditions of the plant.

The required data for a correct selection are the following:

### Flow Q

Quantity of fluid delivered by the pump in the unit of time, generally expressed in m<sup>3</sup>/h.

### Total manometric head Hmt

It is considered as the sum between the geometric head existing between the fluid levels and the head loss due to frictions from the fluid passage in the pipework, into the pump and relevant hydraulic accessories.

The expression is the following:

$$H_{mt} = H_g + \Delta p_c \text{ mt fluid column}$$

**H<sub>g</sub>** = geometric head inlet (H<sub>ga</sub>) + geometric head outlet (H<sub>gp</sub>)

**Δp<sub>c</sub>** = sum of head loss of the plant calculated from the following data:

- Diameter, length and material of the suction and delivery piping (see table no. 1 page 578).
- Number and type of elbows in the piping and hydraulic accessories such as foot valves, gate valves, non-return valves and strainers etc. (see table no. 2 page 578).
- Type, temperature, viscosity and density of the fluid (if different from that of water)

Pay attention to the manometric suction lift **H<sub>ga</sub> + Δp<sub>c</sub> asp**, which should be compared with the suction capability of the pump.

This suction capability or **NPSH<sub>r</sub>** is defined as net positive suction head and its value is obtained from a curve in accordance with the flow.

For this purpose, once the pump has been selected according to the required flow and head, where possible at the middle of the curve, check the following simplified formula:

$$10 \text{ mt} \pm H_{ga} - \Delta p_c \text{ asp} > \text{NPSH required} + 0.5 \text{ mt}$$

**H<sub>ga</sub>** is the difference in height between the free surface of the water, and its value is negative if the pump is installed above the free water surface.

**Δp<sub>c</sub> asp** is the sum of the remaining distributed (piping) and concentrate (valves, bends, etc.) suction head loss

If the final result is negative, it is often possible to adjust flow via a gate valve on the delivery side, in order to restore correct pump operating conditions, without cavitation.

For fluid temperatures higher than the average of about 20°C, the pumps loose their suction capability.

Such changes, referred to pumps with suction capability of 7 meter at normal temperature, are shown on table no. 3 page 579.

## CHARACTERISTIC DATA OF THE PUMPS

Once the flow (Q) and total manometric head of the installation (H<sub>mt</sub>) are established, the pump absorbed power **N** should be calculated through the following formula:

$$N = \frac{Q \times H \times \gamma}{367 \times \eta_p} \text{ in kW}$$

where:

Q = Flow in m<sup>3</sup>/h

H = Head in mt

γ = Fluid density (water = 1 kg/dm<sup>3</sup>)

η<sub>p</sub> = Pump efficiency (Ex. Pump efficiency 68% = ⇒ η<sub>p</sub> = 0.68)

The pumps are normally connected to electric motors, which operate at 2900 rpm with 2-pole motors at 50Hz, or at 1450 rpm with 4-pole motors at 50Hz.

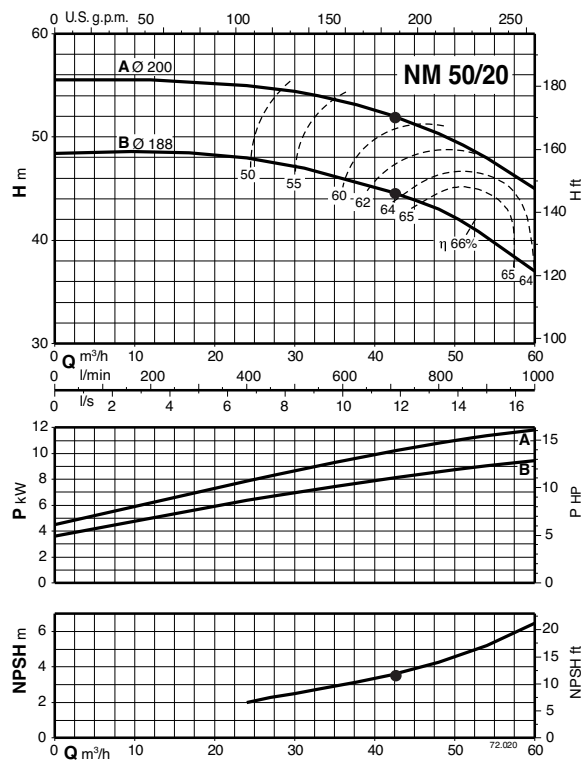
However, they can run at any other speed within the limits of design.

Therefore, when changing the number of revolutions, the pump performance will change according to the following rules:

The flow in proportion to the number of revolutions:  $Q_2 = Q_1 \times \frac{n_2}{n_1}$

The head, in proportion to the square of the number of revolutions:  $H_2 = H_1 \times \left(\frac{n_2}{n_1}\right)^2$

The absorbed power, in proportion to the cube of the number of revolutions:  $N_2 = N_1 \times \left(\frac{n_2}{n_1}\right)^3$



# How to select a centrifugal pump

## Calculation example for the selection of a centrifugal pump

### Case A Installation data

- Q (Flow) = 42 m<sup>3</sup>/h
- H<sub>ga</sub> (geometric head inlet) = 3,5 m
- H<sub>gp</sub> (geometric head outlet) = 39 m
- 5 m DN 100 mm diameter suction pipe complete with 1 elbow and 1 foot valve
- 70 m DN 80 mm diameter delivery pipe with 1 non-return valve, 1 gate valve and 3 sweep elbows

**H<sub>g</sub>** = H<sub>gp</sub> + H<sub>ga</sub> = 39 + 3,5 = 42,5 m Geometric head of the installation

**Δpc** = total head loss

Suction side:	
5 m Ø100 piping	pc = 0,12 m
1 Elbows	pc = 0,045 m
1 Foot valve	pc = 0,46 m

Delivery side:	
70 m Ø 80 pipe	pc = 5,25 m
1 Non-return valve	pc = 0,5 m
1 Gate valve	pc = 0,05 m
3 Elbows	pc = 0,09 m

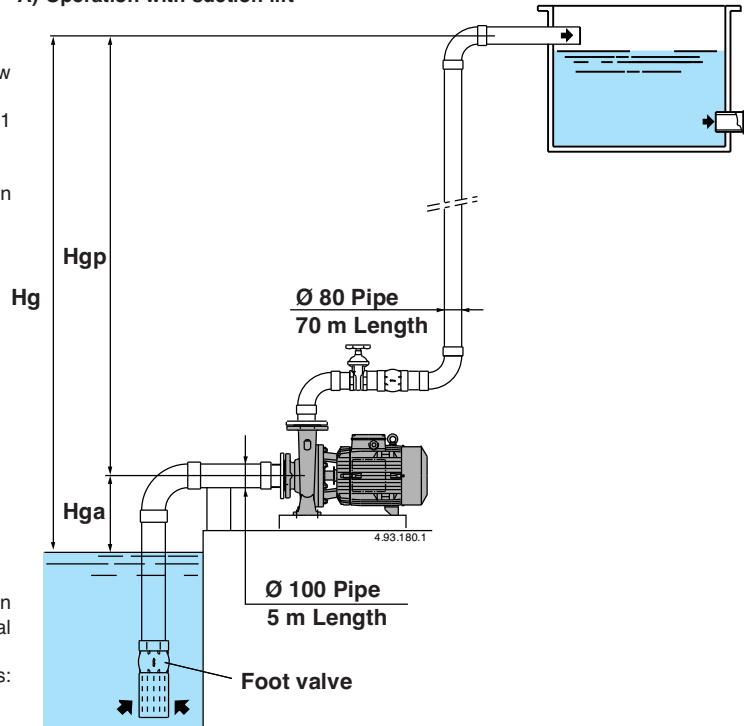
**Total Δpc = 6,5 m.**

Considering that the calculation has been made for new pipes, an increase of 15/20% is to be applied for ageing etc. Therefore the total head loss Δp amounts to about 8 m.

Therefore, the total manometric head which the pump must achieve is:

H<sub>mt</sub> = H<sub>g</sub> + Δp = H<sub>gp</sub> + H<sub>ga</sub> + Δpc = 39 + 3,5 + 8 = 50,5 m total.  
 The pump type NM 50/20AE can be chosen (see pump diagram)

A) Operation with suction lift



### Case B Installation data

- Q (Flow) = 42 m<sup>3</sup>/h
- H<sub>ga</sub> (geometric head inlet) = 3,5 m
- H<sub>gp</sub> (geometric head outlet) = 39 m
- 5 m DN 100 mm diameter suction pipe complete with 1 gate valve and 1 foot valve
- 70 m DN 80 mm diameter delivery pipe with 1 non-return valve, 1 gate valve and 3 sweep elbows

**H<sub>g</sub>** = H<sub>gp</sub> - H<sub>ga</sub> = 39 - 3,5 = 35,5 m Geometric head of the installation

**Δpc** = total head loss

Suction side:	
5 m Ø 100 piping	pc = 0,12 m
1 Non-return valve	pc = 0,5 m
1 Gate valve	pc = 0,05 m

Delivery side:	
70 m Ø 80 pipe	pc = 5,25 m
1 Non-return valve	pc = 0,5 m
1 Gate valve	pc = 0,05 m
3 Elbows	pc = 0,09 m

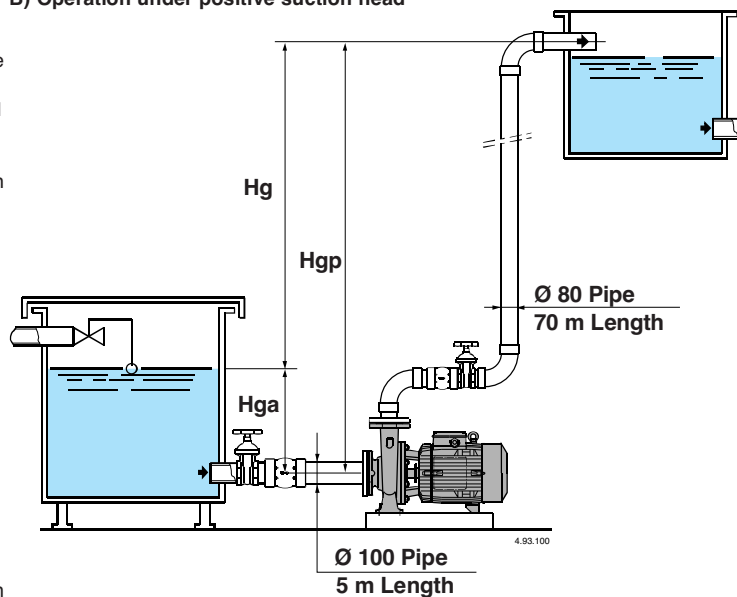
**Total Δpc = 6,5 m**

Considering that the calculation has been made for new pipes, an increase of 15/20% is to be applied for ageing etc. Therefore the total head loss Δpc amount to about 8 m.

Therefore, the total manometric head which the pump must achieve is:

H<sub>mt</sub> = H<sub>g</sub> + Δp = H<sub>gp</sub> - H<sub>ga</sub> + Δpc = 39 - 3,5 + 8 = 43,5 m total.  
 The pump type NM 50/20BE can be chosen (see pump diagram)

B) Operation under positive suction head





### ACCESSORIES FOR WATER SUPPLY

**Foot valve with strainer** - Sealing member installed on the lower end of the suction pipe. It prevents the water coming out from the piping and pump at every plant stop. It must be always immersed in the fluid at an installation depth which allows a perfect operation without cavitation.

It is a good rule to also install a float switch to automatically stop the pump when the water goes below a fixed level.

**Non-return valve** - It must be installed on the pump delivery port to avoid reflux in case of a sudden stop of the plant. It is recommended using a type fitted with an inner return spring and with ogive shutter, as this will help to diminish water hammering.

**Gate valve** - The installation of a gate valve is very important. In addition to allowing the pump to be disassembled without emptying the plant, it is used to start the plant and to adjust the flow.

### PIPING

The piping must be selected in-line with the water velocity which is recommended to be 1.5 meter per second on the suction side and 3 meter per second on the delivery side. The calculation of the suction piping must be carefully checked so as to avoid the maximum head loss and allow the pumps maximum suction capability. The piping must be perfectly tight and have no counterslopes towards the pump port, so to avoid the development or entrapment of air bubbles or pockets.

All the piping must be secured to rests, so that they will not weigh on the pump ports.

### Problems at the pump

Faults	Possible causes
<b>Jammed pump</b>	<p>This may happen after periods of inactivity due to inner oxidation.</p> <p>To release smaller sized monobloc electropumps use a screwdriver at the notch on the back part of the shaft.</p> <p>For the larger sizes, turn on the shaft or the flexible coupling</p>
<b>Pumps which do not prime</b>	<p>Pump and/or suction pipe with air entrapped.</p> <p>Uncomplete priming or totally unprimed.</p> <p>Possible air entering from taps, drain or fill plugs, joints or stuffing box</p> <p>Foot valve not fully immersed in the fluid or obstructed by deposits.</p> <p>Suction lift too high compared with the capability of the pump.</p> <p>Wrong direction of rotation</p> <p>Wrong number of revolutions</p>
<b>Insufficient flow</b>	<p>Piping and accessories of too small a diameter which cause too high head loss.</p> <p>Jammed impeller with presence of debris in the vanes.</p> <p>Corroded or broken impeller</p> <p>Impeller wear rings and/or pump casing worn by abrasion.</p> <p>Gas presence in the water, or too high fluid viscosity in case of fluids different from water.</p>
<b>Noise and vibrations in the pump</b>	<p>Unbalanced rotary part or worn ball bearings.</p> <p>Pump and piping not properly secured.</p> <p>Too low flow rate for the selected pump</p> <p>Operation with cavitation</p>
<b>Overloaded motor</b>	<p>Pump characteristics higher than those of the plant</p> <p>Fixed and rotary parts in contact tending to seize owing to a lack of lubrication</p> <p>Too high rotation speed</p> <p>Wrong mains supply</p> <p>Poor unit allignement</p> <p>Fluid with too higher density than the design</p>

## Choosing a pressure-boosting plant

### Required quantity of water

The public water-supply system is normally capable of supplying water at an adequate pressure and capacity level to the various outlets connected to it. In those cases where a water-supply system is non-existent or insufficient for correct operation of the various facilities, a pressure-boosting system has to be installed to ensure an acceptable level of pressure and capacity also at the outlets in the most unfavourable positions. The size of the water-supply unit is determined according to the quantity of water and pressure required.

### Residential buildings

The main data needed for calculation of the quantity of water required is given in the following list:

- the number of outlets
- consumption per each type of outlet (Tab.1)
- the contemporaneity factor (Fc)

**Table 1: Maximum consumption at points of demand**

Outlet	Qu. delivered (l/min)
Sink	10
Wash-basin	10
Bath/whirlpool tub	18
Shower	12
WC - flush-tank type	7
WC - fast-feed type	90
Bidet	6
Washing machine	12
Kitchen sink	12
Dishwasher	8
Outlet w/ 1/2" tap	20
Outlet w/ 3/4" tap	25

The maximum theoretical requirement is given by the sum of the quantities of water delivered to the various outlets of an apartment multiplied by the number of apartments. In practice, it is generally found that only some of the outlets are used simultaneously.

The contemporaneity factor (Fc) allows for definition of the real maximum delivery that may be required by the outlets.

The following formulae are used to calculate the Fc factor. The value "Ut" is the total number of outlets (the number of outlets in an apartment multiplied by the number of apartments).

$$\text{Apartments with 1 toilet - flush-type tank: } Fc = \frac{1}{\sqrt{0,85 \times Ut}}$$

$$\text{Apartments with 1 toilet - fast-feed type: } Fc = \frac{1}{\sqrt{0,7 \times Ut}}$$

$$\text{Apartments with 2 toilets - flush-type tank: } Fc = \frac{1}{\sqrt{1,1 \times Ut}}$$

$$\text{Apartments with 2 toilets - fast-feed type: } Fc = \frac{1}{\sqrt{0,83 \times Ut}}$$

Diagram **A** gives the values of actual delivery, which depend on the number of apartments connected to the water-supply system. Seven outlets are hypothesized for one-bathroom apartments and ten outlets for two-bathroom apartments.

### Non-residential buildings

For calculation of quantities of water required, the following types of building are considered:

- offices
- shopping centres
- hospitals
- hotels

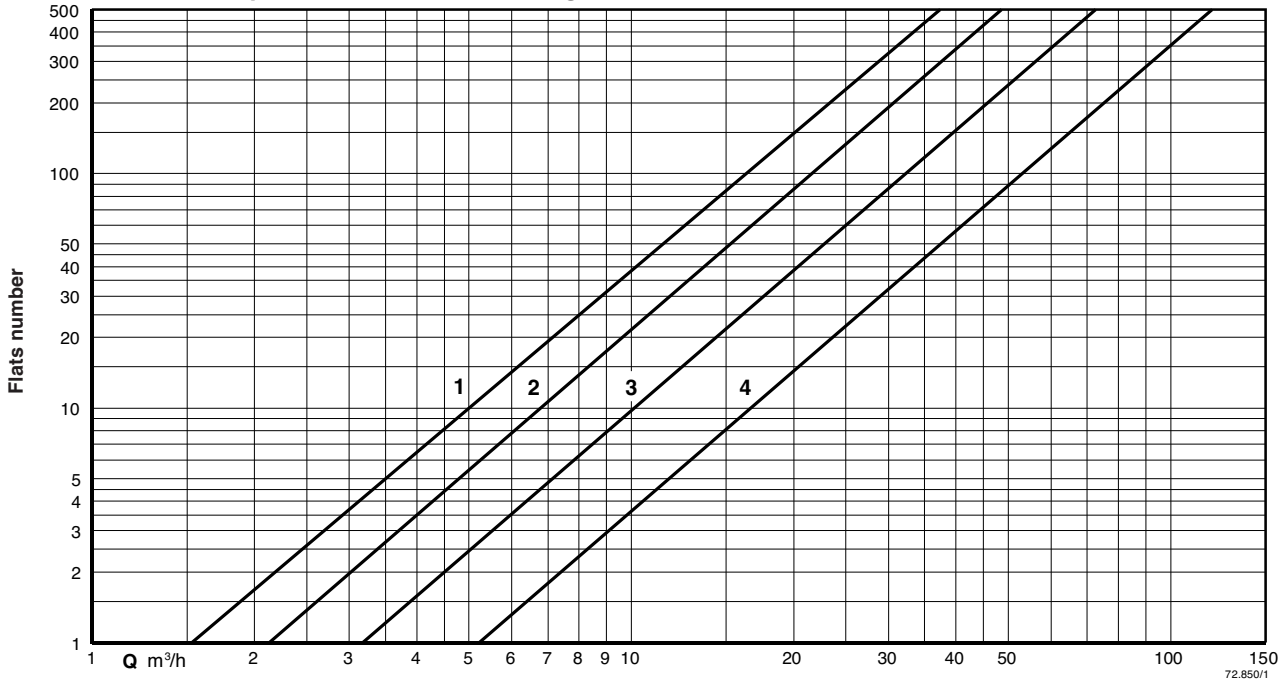
These buildings require quantities of water greater than those needed in residential buildings.

Diagram **B** shows the values of actual delivery for the main types of building. The values are based on hypothetical numbers of persons present in these buildings.

These values offer a guideline and may vary in accordance with particular requirements of projects.

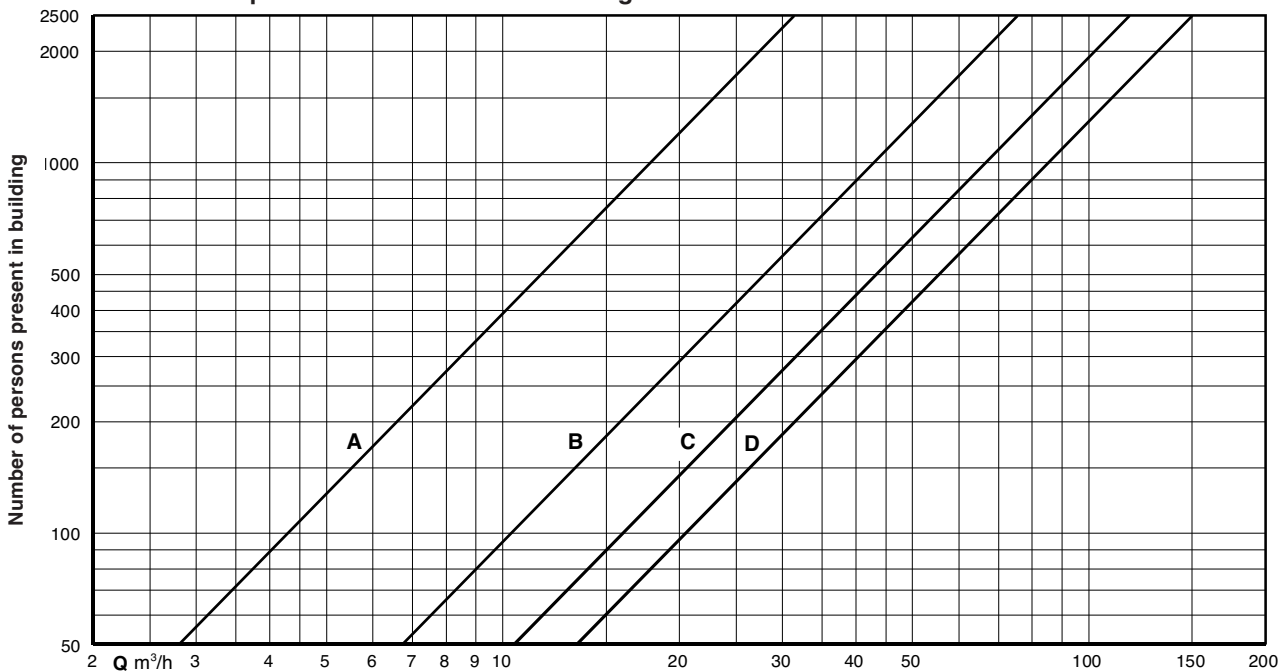
## Choosing a pressure-boosting plant

### A Consumption in residential buildings



- 1 Apartments with one toilet, flush-tank type
- 2 Apartments with two toilets, flush-tank type
- 3 Apartments with one toilet, fast-feed type
- 4 Apartments with two toilets, fast-feed type

### B Consumption in non-residential buildings



- A Offices
- B Shopping centres
- C Hospitals
- D Hotels

## Choosing a pressure-boosting plant

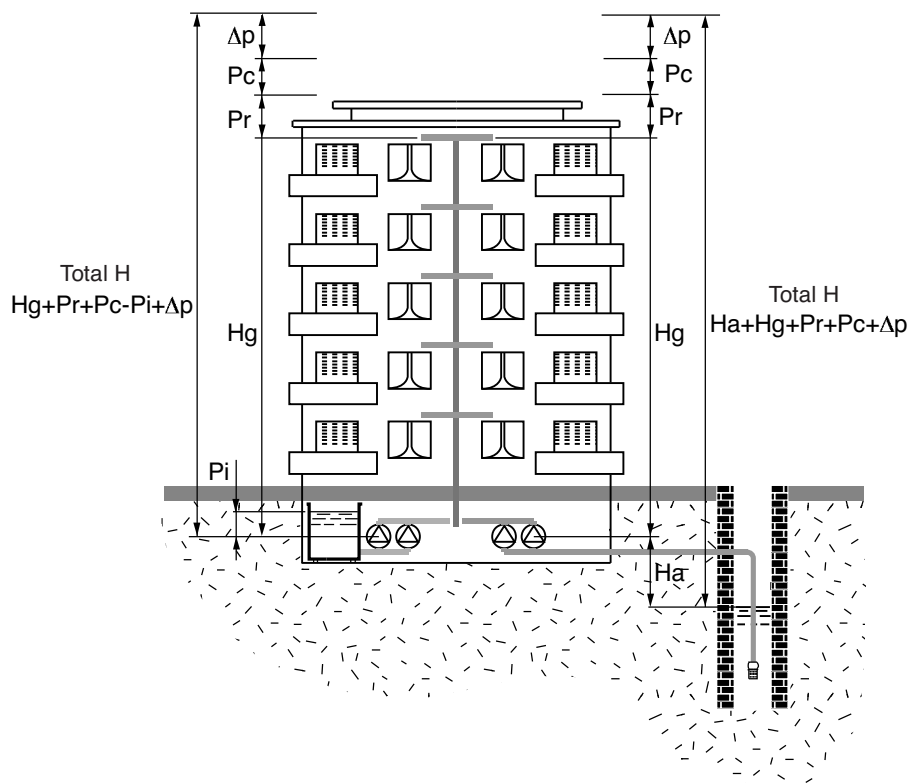
### Delivery head

The outlet pressure required for proper operation of electrical appliances must not be lower than 1.5 bar and not greater than 4-5 bar.

When the pressure level is insufficient and to such a degree that it impedes operation of domestic appliances, a pressure-boosting system must be installed to ensure adequate pressure also at the more unfavourably—located points of demand.

The values to consider for calculation of the pressure level are the following:

- **H<sub>g</sub>** the geodetic head between the pressure-boosting unit and the highest outlet.
- **H<sub>a</sub>** the suction lift.
- **P<sub>i</sub>** the initial pressure (or positive suction head).
- **P<sub>r</sub>** the minimum residual pressure at the highest outlet (normally 1.5 bar).
- **P<sub>c</sub>** the system head loss.
- **Δp** the difference in pressure between starting and stopping pumps.



When the pumps draw water from a well, the dynamic height difference ( $H_a$ ), when pumps are operating, should not exceed 4 m. A greater suction head or erroneous sizing of the suction pipe may cause improper operation of the pumps - e.g. cavitation and priming loss. The pumps are installed with a positive suction head when they are connected to a raised tank or a pressurized primary collection tank.

The pumps therefore have an initial pressure at the suction port which can vary from 0.1 bar (suction with a collection tank) to 2-3 bar (with suction from a pressurized primary collection tank).

When choosing a pressure-boosting system, the positive value of the initial pressure ( $P_i$ ) must be considered as a value to be subtracted from the height ( $H_g$ ).

The system head loss ( $P_c$ ) are given by the sum of the losses of the pipes (including the suction pipe) added to the losses due to gate valves, non-return valves, water purifiers, counters, filters, elbows etc.

Head loss in the tubes, caused by the friction of the water against the inner surface of the pipelines, may be quantified as 0.5 m per floor in the case of new systems and 1 m per floor in the case of old systems.

To avoid pressure levels greater than 4-5 bar arriving at outlets on the lower floors of apartment blocks and other buildings with a height greater than 30 m (about 10 floors), pressure reducers must be installed at the offtake point of the lower floors or otherwise two pressure-boosting units can be installed: one for the lower floors and one for the upper floors.

## Surge tanks

The purpose of surge tanks is to retain a quantity of water, under pressure, thus avoiding continuous pump starts, as water is demanded. The selection of the vessel must be made in-line with the pump flow and pressure and number of starts allowed by the motor. For water pressure units with more than one pump, the selection of the vessel should refer to the data for one pump only.

The surge vessel may be of the following type:

- a) Air cushion vessels
- b) Membrane vessels

### Air cushion vessels

In this type of vessels the air and water are in contact with each other. This will therefore result in a decrease of air as it dissolves into the water. The installation will therefore require an automatic air feed ("Ariamat" air feeder, compressor or auto valve connected to existing compressed air network).

Air cushion vessels are normally manufactured from hot galvanized sheet steel, with rated pressures from 6 to 12 bar and capacity from 100 to 5000 ltrs, complete with safety valves, pressure gauge and level indicator.

### Membrane vessels

These vessels are fitted with an inner membrane separating the water and air. When installed, they must be pre-charged at a pressure in-line with the pressure switch settings.

### Calculation to size an air cushion vessel.

$$V_t = \frac{1.25 \times Q_m \times (P_1 + 10)}{4 \times Z \times (P_1 - P_2)}$$

where:

- V<sub>t</sub>** = Total volume of air cushion vessel in m<sup>3</sup>
- Q<sub>m</sub>** = Average pump flow in m<sup>3</sup>
- P<sub>1</sub>** = Maximum set pressure of pressure switch
- P<sub>2</sub>** = Minimum set pressure of pressure switch
- Z** = Maximum number of starts/hour allowed by the motor (see table).

**Q<sub>m</sub>** flow is the average between the flow at starting pressure (Q min) and the flow at stop pressure (Q max):

$$Q_m = \frac{Q_{min} + Q_{max}}{2} \quad (m^3/h)$$

Example: Pump MXV 40-807  
 P<sub>1</sub> = 70 m  
 P<sub>2</sub> = 50 m  
 Q<sub>m</sub> = 9,45 m<sup>3</sup>/h  
 Z = 23 starts/hour

$$V_t = \frac{1.25 \times 9.45 \times (70 + 10)}{4 \times 23 \times (70 - 50)} = 0,514 \text{ m}^3$$

From the calculation, it would result in the selection of a 500 litre vessel.

### Calculation to size a membrane vessel

$$V_t = \frac{Q_m}{4 \times Z} \times \frac{1}{1 - \frac{(P_2 - 2)}{P_1}}$$

where:

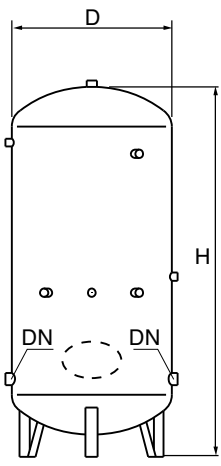
- V<sub>t</sub>** = Total volume of air cushion vessel in m<sup>3</sup>
- Q<sub>m</sub>** = Average pump flow in m<sup>3</sup>
- P<sub>1</sub>** = Maximum set pressure of pressure switch
- P<sub>2</sub>** = Minimum set pressure of pressure switch
- Z** = Maximum number of starts/hour allowed by the motor (see table)

Example: Pump MXV 40-807  
 P<sub>1</sub> = 70 m  
 P<sub>2</sub> = 50 m  
 Q<sub>m</sub> = 9,45 m<sup>3</sup>/h  
 Z = 23 starts/hour

$$V_t = \frac{9.45}{4 \times 23} \times \frac{1}{1 - \frac{(50 - 2)}{70}} = 0,327 \text{ m}^3$$

From the calculation it will result in the selection of a 300 litre membrane vessel.

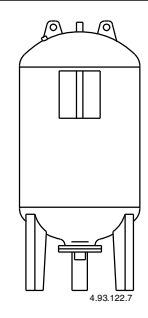
## CE 97/23 PED APPROVED PRESSURE VESSELS (Air tanks)

Hot galvanized vessels	TYPE	Dimensions D x H mm	DN	Weight
				kg
	100- 5	400 x 1020	G 1	32
	200- 5	450 x 1440	G 1	48
	300- 8	550 x 1500	G 1 1/2	65
	500- 8	650 x 1820	G 2	105
	500- 12	600 x 2000	G 2	120
	800- 8	800 x 1900	G 2	145
	1000- 8	800 x 2150	G 2 1/2	160
	1000- 12 ▲	800 x 2300	G 2 1/2	203
	1500- 5	950 x 2500	G 2	190
	1500- 8 ▲	950 x 2500	G 2	255
	2000- 8 ▲	1100 x 2570	G 2 1/2	330
	2000- 12 ▲	1000 x 2780	G 2 1/2	387
	3000- 8 ▲	1250 x 2930	G 3	470
	3000- 12 ▲	1200 x 2930	G 3	596
	4000- 8 ▲	1450 x 3090	G 3	620
	4000- 12 ▲	1450 x 3090	G 3	880
	5000- 8 ▲	1450 x 3590	G 4	715
	5000- 12 ▲	1450 x 3590	G 4	1020

The vessels are suitable for water up to 50 °C

They are all approved at manufactureris premises and are supplied complete with safety valve, tested pressure gauge and fittings.

## CE 97/23 PED APPROVED MEMBRANE VESSELS

	TYPE	Pressure bar	Dimensions D x H mm	DN	Weight
					kg
	<b>SM 60 C</b>	10	365 x 783	G 1	-
	<b>SM 80 C</b>	10	410 x 810	G 1	-
	<b>SM 100 C</b>	10	495 x 849	G 1	-
	<b>SM 200 C</b>	10	600 x 1085	G 1 1/4	-
	<b>SM 300 C</b>	10	650 x 1240	G 1 1/4	-
	<b>SM 500 C</b>	10	750 x 1490	G 1 1/4	-
	<b>SM 750 C</b>	10	800 x 1820	G 2	-
	<b>SM 1000 C</b>	10	800 x 2160	G 2	-

Painted carbon steel flange  
 BUTYL rubber diaphragm  
 Temperature -10 ÷ +100° C  
 With safety valve and pressure gauge 0÷16 bar

## How to select a centrifugal pump

### Number of starts/hour allowed for CALPEDA motors

Rated motor power output	kW	0,25	0,37	0,55	0,75	1,1	1,5	2,2	3	4	5,5	7,5	9,2	11	15	18,5	22	30	37	45
Max. number of starts/hour	Z	59	51	44	38	35	30	25	23	20	18	16	15	14	12	11	10	9	9	8

The number of starts/hour mentioned in the table is approximate.

The maximum admissible starts/hour depends on the pump model and are mentioned in the original operating manual.

**Table no. 1**

### Head loss in m for steel pipes

Pipe G Ø mm	Q m³/h	1	3	6	9	12	18	24	30	36	42	48	60	90	120	180	240	300	360	420
		Q l/min	16	50	100	150	200	300	400	500	600	700	800	1000	1500	2000	3000	4000	5000	6000
G 1 DN 25		2,7 0,6	21 1,7	80 3,5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G 1 1/4 DN 32		0,7 0,35	5,5 1	22 2,1	47 3,1	75 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G 1 1/2 DN 40		-	1,8 0,7	7 1,35	14 1,9	23 2,5	50 3,8	90 5,2	-	-	-	-	-	-	-	-	-	-	-	-
G 2 DN 50		-	0,5 0,4	2,2 0,8	4 1,25	8 1,5	17 2,5	28 3,2	45 4,1	62 5	-	-	-	-	-	-	-	-	-	-
G 2 1/2 DN 65		-	-	0,6 0,5	1,2 0,75	2,1 1	4,2 1,4	8 2	12 2,5	17 3	22 3,4	28 4	45 5	-	-	-	-	-	-	-
DN 80	HL v m/100m m/s	-	-	-	-	0,8 0,7	1,6 0,95	2,8 1,25	4,2 1,6	6,5 2	7,5 2,1	10,5 2,6	15 3,3	32 4,9	50 6	-	-	-	-	-
DN 100		-	-	-	-	-	0,55 0,6	0,9 0,8	1,4 1,1	2 1,25	2,4 1,4	3,5 1,6	5 2	11 3,2	20 4	40 6	-	-	-	-
DN 125		-	-	-	-	-	-	-	-	-	0,9 0,95	1,2 1,1	1,8 1,4	4 2,7	6,5 4	15 5,2	23 4	-	-	-
DN 150		-	-	-	-	-	-	-	-	-	-	-	0,6 0,9	1,5 1,4	2,5 1,7	5 2,7	8 3,5	14 4,8	20 5,6	-
DN 200		-	-	-	-	-	-	-	-	-	-	-	-	0,4 0,8	0,6 1	1,3 1,6	2 2	3,5 2,6	4,6 3	6,5 3,5
DN 250		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,4 1	0,7 1,3	1,1 1,6	1,6 2	2 2,3
DN 300		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,3 0,9	0,45 1,25	0,7 1,4	0,9 1,6

Q Flow.

HL Head loss, m per 100 m.

v = Flow velocity: max 1,5 m/s for suction and 3 m/s for delivery.

**Table no. 2**

### Head loss in cm for bends, gate valves, foot valves and check valves

Water flow velocity m/sec.	Elbows					$\alpha = 90$ sweep elbow					Gate valves	Foot valves	Check valves
	$\alpha = 30$	$\alpha = 40$	$\alpha = 60$	$\alpha = 80$	$\alpha = 90$	$\frac{d}{R} = 0,4$	$\frac{d}{R} = 0,6$	$\frac{d}{R} = 0,8$	$\frac{d}{R} = 1$	$\frac{d}{R} = 1,5$			
0,4	0,43	0,52	0,71	1,0	1,2	0,11	0,13	0,16	0,23	0,43	0,23	32	31
0,5	0,67	0,81	1,1	1,6	1,9	0,18	0,21	0,26	0,37	0,67	0,37	33	32
0,6	0,97	1,2	1,6	2,3	2,8	0,25	0,29	0,36	0,52	0,97	0,52	34	32
0,7	1,35	1,65	2,2	3,2	3,9	0,34	0,40	0,48	0,70	1,35	0,70	35	32
0,8	1,7	2,1	2,8	4,0	4,8	0,45	0,53	0,64	0,93	1,7	0,95	36	33
0,9	2,2	2,7	3,6	5,2	6,2	0,57	0,67	0,82	1,18	2,2	1,20	37	34
1,0	2,7	3,3	4,5	6,4	7,6	0,7	0,82	1,0	1,45	2,7	1,45	38	35
1,5	6,0	7,3	10	14	17	1,6	1,9	2,3	3,3	6	3,3	47	40
2,0	11	14	18	26	31	2,8	3,3	4,0	5,8	11	5,8	61	48
2,5	17	21	28	40	48	4,4	5,2	6,3	9,1	17	9,1	78	58
3,0	25	30	41	60	70	6,3	7,4	9	13	25	13	100	71
3,5	33	40	55	78	93	8,5	10	12	18	33	18	123	85
4,0	43	52	70	100	120	11	13	16	23	42	23	150	100
4,5	55	67	90	130	160	14	21	26	37	55	37	190	120
5,0	67	82	110	160	190	18	29	36	52	67	52	220	140

**Table no. 3**  
**Diagram of manometric suction head with water up to 100 °C**

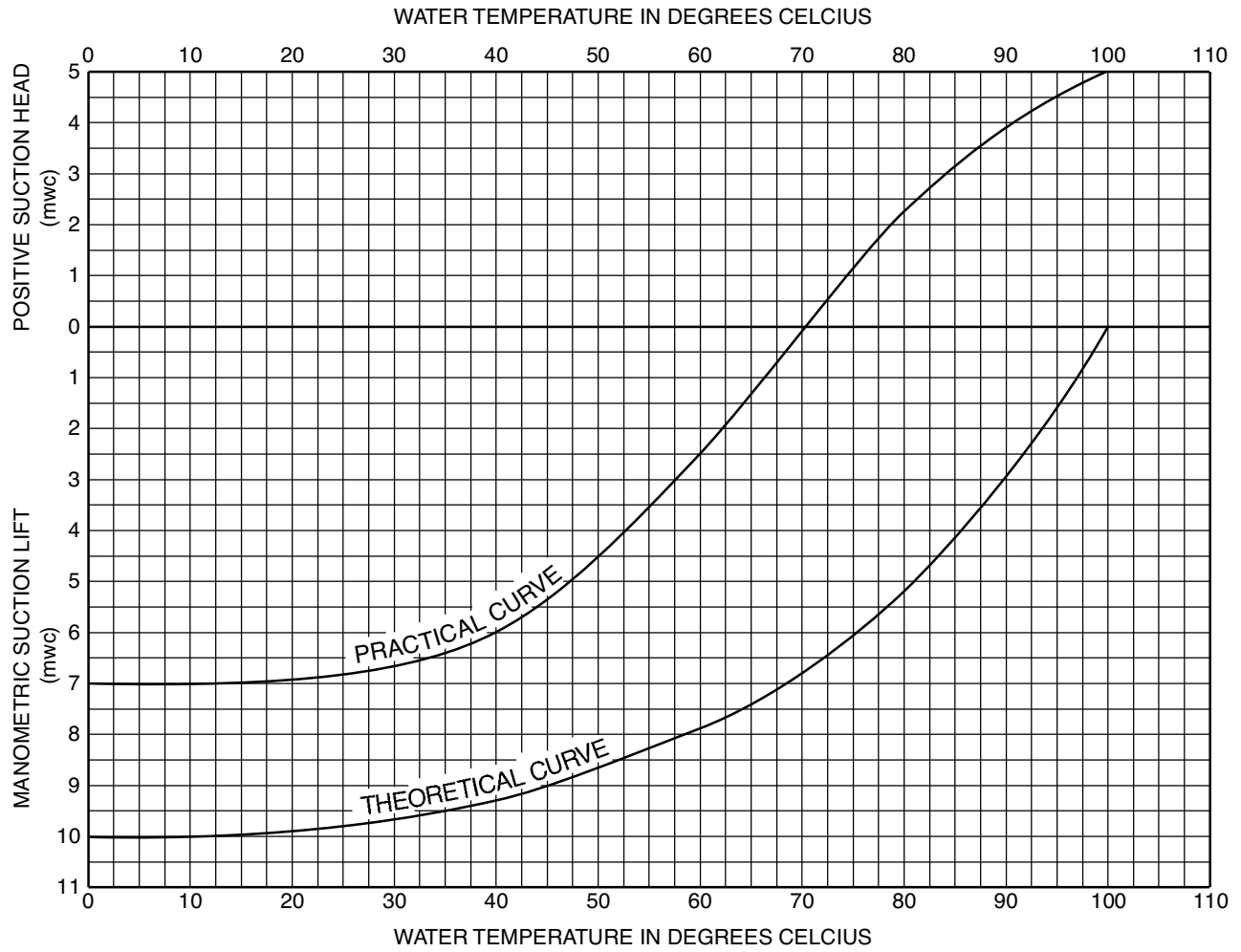


Diagram referred to pumps with manometric suction head of 7 mwc. at 20 °C

## EFFICIENCY OF ELECTRIC MOTORS

### Directive of the European Parliament COMMISSION REGULATION (EC) No 640/2009

Having regard to Directive 2005/32/EC of the European Parliament establishing a framework for the setting of ecodesign requirements for energy-related products, it specifies the time and the efficiency levels that motors sold in the European market will have to comply.



#### This Regulation shall apply to:

electric single speed motor, three-phase 50 Hz or 50/60 Hz, squirrel cage induction motor that:

- has 2 to 6 poles,
- has a rated voltage of U<sub>N</sub> up to 1 000 V,
- has a rated output P<sub>N</sub> between 0,75 kW and 375 kW,
- is rated on the basis of continuous duty operation.

#### This Regulation shall not apply to:

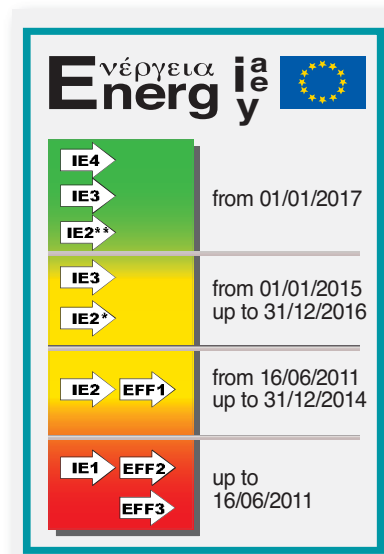
- a) motors designed to operate wholly immersed in a liquid;
- b) motors completely integrated into a product (for example gear, pump, fan or compressor) of which the energy performance cannot be tested independently from the product;
- c) motors specifically designed to operate:
  - at altitudes exceeding 1000 metres above sea-level;
  - where ambient air temperatures exceed 40 °C;
  - in maximum operating temperature above 400 °C;
  - where ambient air temperatures are less than -15 °C for any motor or less than 0 °C for a motor with air cooling;
  - where the water coolant temperature at the inlet to a product is less than 5 °C or exceeding 25 °C;
  - in potentially explosive atmospheres as defined in Directive 94/9/EC of the European Parliament and of the Council.
- d) brake motors.

#### Each ecodesign requirement shall apply in accordance with the following timetable:

- 1) **from 16 June 2011:**  
motors shall not be less efficient than the IE2 efficiency level;
- 2) **from 1 January 2015:**  
motors with a rated output of 7,5-375 kW shall not be less efficient than the IE3 efficiency level or meet the IE2 efficiency level, and be equipped with a variable speed drive.
- 3) **from 1 January 2017:**  
all motors with a rated output of 0,75-375 kW shall not be less efficient than the IE3 efficiency level or meet the IE2 efficiency, and be equipped with a variable speed drive.

\* IE2 up to 7,5 kW from 7,5 up to 375 kW shall be equipped with a variable speed drive

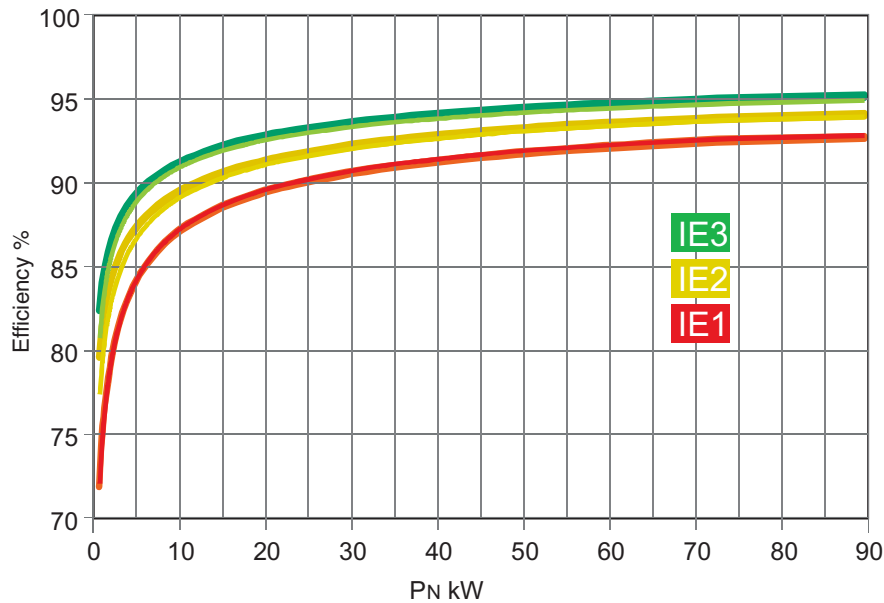
\*\* IE2 from 0,75 up to 375 kW shall be equipped with a variable speed drive





## EFFICIENCY OF ELECTRIC MOTORS

Summary table of the levels of efficiency as expected in IEC 60034-30



Rated power output kW	Efficiency %		
	IE1	IE2	IE3
0.75	72.1	77.4	80.7
1.1	75.0	79.6	82.7
1.5	77.2	81.3	84.2
1.8	78.4	82.2	85.0
2.2	79.7	83.2	85.9
3	81.5	84.6	87.1
4	83.1	85.8	88.1
4.4	83.6	86.2	88.4
5.5	84.7	87.0	89.2
7.5	86.0	88.1	90.1
9.2	86.9	88.8	90.7
11	87.6	89.4	91.2
15	88.7	90.3	91.9
18.5	89.3	90.9	92.4
22	89.9	91.3	92.7
30	90.7	92.0	93.3
37	91.2	92.5	93.7
45	91.7	92.9	94.0
55	92.1	93.2	94.3
75	92.7	93.8	94.7
90	93.0	94.1	95.0

Rated power output kW	Efficiency %		
	IE1	IE2	IE3
0.75	72.1	79.6	82.5
1.1	75.0	81.4	84.1
1.5	77.2	82.8	85.3
2.2	79.7	84.3	86.7
3	81.5	85.5	87.7
4	83.1	86.6	88.6
5.5	84.7	87.7	89.6
7.5	86.0	88.7	90.4
9.2	86.9	89.3	91.0
11	87.6	89.8	91.4
15	88.7	90.6	92.1
18.5	89.3	91.2	92.6
22	89.9	91.6	93.0
30	90.7	92.3	93.6
37	91.2	92.7	93.9
45	91.7	93.1	94.2
55	92.1	93.5	94.6
75	92.7	94.0	95.0
90	93.0	94.2	95.2

## CALPEDA MOTORS FEATURES

### 2-pole

Motor	Rated power output P <sub>N</sub>		Rated current 400 V A	Fréquence Hz	Rotation speed R.P.M.	Power factor cos φ	Efficiency			I <sub>A</sub> IN	C <sub>A</sub> CN	Efficiency class <b>IE</b>
	kW	HP					100%	75%	50%			
71	0.75	1	2.2	50	2900	0.76	77.4	77.8	74.6	3.9	2.6	IE2-77.4
80	0.75	1	1.9	50	2900	0.75	77.4	76.2	72.0	5.8	3.2	IE2-77.4
80	1.1	1.5	3	50	2900	0.75	79.6	79.2	76.1	5.1	3.2	IE2-79.6
80	1.5	2	4.3	50	2900	0.75	81.3	81.5	79.3	5.5	3.5	IE2-81.3
80	1.8	2.5	4.3	50	2900	0.77	82.2	82.7	80.6	9.1	5.4	IE2-82.2
80	2.2	3	5.5	50	2900	0.81	83.2	84.7	82.8	7.1	4.4	IE2-83.2
90	3	4	6.6	50	2900	0.80	84.6	85.2	84.5	8.2	4.4	IE2-84.6
90	4	5.5	9.6	50	2900	0.80	85.8	86.4	85.7	7.6	3.9	IE2-85.8
112	5.5	7.5	10.9	50	2900	0.84	87.5	88.1	87.4	9.1	3.1	IE2-87
112	7.5	10	14.3	50	2900	0.86	88.5	89.3	89.2	9.1	3.2	IE2-88,1
132	9.2	12.5	18.5	50	2900	0.82	88.8	88.8	87.4	8.2	3.2	IE2-88.8
132	11	15	21.5	50	2900	0.85	89.4	89.9	88.9	8.5	3.4	IE2-89.4
132	15	20	27.3	50	2900	0.87	90.3	90.4	89.1	9.5	4.3	IE2-90.3
132	18.5	25	34	50	2900	0.87	90.9	91.0	89.7	9.4	3.3	IE2-90.9
160	22	20	41	50	2900	0.88	91.3	91.3	90.1	10.7	3.6	IE2-91.3
160	30	40	54	50	2900	0.88	92.0	92.0	90.8	8.8	3.1	IE2-92.0

### 4-pole

Motor	Rated power output P <sub>N</sub>		Rated current 400 V A	Fréquence Hz	Rotation speed R.P.M.	Power factor cos φ	Efficiency			I <sub>A</sub> IN	C <sub>A</sub> CN	Efficiency class <b>IE</b>
	kW	HP					100%	75%	50%			
80	0.75	1	1.9	50	1450	0.76	79.6	79.9	77.2	5.5	2.8	IE2-79.6
80	1.1	1.5	2.9	50	1450	0.77	81.4	81.9	79.6	5.9	2.7	IE2-81.4
90	1.5	2	3.5	50	1450	0.77	82.8	82.7	80.0	7.4	3.7	IE2-82.8
90	2.2	3	5	50	1450	0.81	84.3	85.1	83.8	7.2	3.4	IE2-84.3
112	3	4	6.4	50	1450	0.79	85.5	85.9	84.7	5.8	2.6	IE2-85.5
112	4	5.5	8.3	50	1450	0.83	86.8	87.1	86.0	7.2	3.2	IE2-86.6
132	5.5	7.5	12.5	50	1450	0.83	87.7	88.0	86.4	8.2	2.3	IE2-87.7
132	7.5	10	16	50	1450	0.81	88.7	88.8	87.3	8.1	2.2	IE2-88.7
132	9.2	12.5	19.0	50	1450	0.82	89.3	89.2	87.2	8.4	2.8	IE2-89.3
160	11	15	22.5	50	1450	0.82	89.8	89.8	88.4	8.5	3.6	IE2-89.8
160	15	20	29	50	1450	0.83	90.6	91.3	90.9	9.0	3.6	IE2-90.6

### NAMEPLATE

The legislation requires that a nameplate is fitted detailing the following data; the class of motor efficiency (IE1 or IE2 or IE3), the rated power, and the value of the performance with 100% efficiency at full load, 75% load and 50 % load.

### Example of CALPEDA nameplate:

the legend describes the parameters and values shown on the nameplate.

### DISPOSAL:

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact your local Calpeda representative.

Example plate motor

calpeda		MONTORSO VICENZA		CE		Made in Italy	
5,5kW (7,5Hp)		0705158995					
400Δ/690Y V3~50Hz 10,8 / 6,2 A							
n 2900/min S1 I.cl. F							
V	%	cos φ	η				
400	100	0,84	87,5				
400	75	0,78	88,1				
400	50	0,67	87,4				
IEC 60034-1				45kg			
				IP 54			
				IE2-87			

Efficiency class  
Rotation speed rpm  
Operation Duty / Insul. class  
Supply voltage  
Fréquence/Nom. motor current  
Rated power  
Protection  
Weight

## EFFICIENCY OF CIRCULATORS

### Directive of the European Parliament COMMISSION REGULATION (EC) No 641/2009

Eco-design Directive of Energy Using Products (**ErP Directive - Energy-related Products**). The European Union wants to improve the design of equipment that "consume" significant energy e.g. (televisions, refrigerators, washing machines, boilers, pumps, and motors etc.) To improve eco-design providing environmental sustainability, reducing negative environmental impact as the consequence of production, use and disposal of products.

The objective of the Directive is to force manufacturers and importers to produce and distribute products with high energy efficiency, and carbon output.

The criteria for eco-design will be an integral part of the declaration of conformity (**CE**), which is a necessary requirement/mark for products being sold in the EU.



#### This Regulation shall apply to:

Stand-alone\* or integrated\*\* circulators with the motor immersed in the pumped medium, with hydraulic power from 1 up to 2500 W, designed for use in heating systems or in secondary circuits of cooling distribution systems.

\* Stand alone circulators are commonly available on the market.

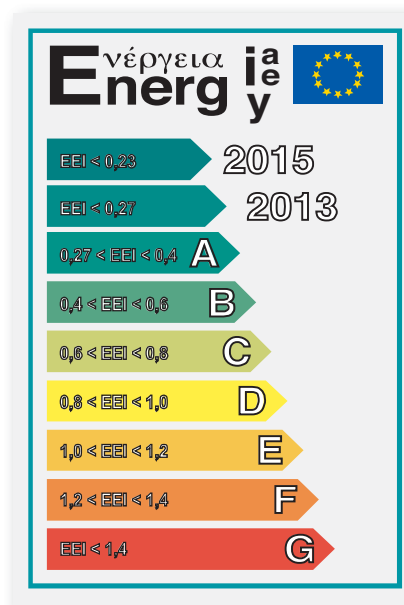
\*\* circulators integrated in products are component of a device, such as boilers, heat pumps, etc..

#### This Regulation shall not apply to:

- drinking water circulators
- circulators integrated in products and placed on the market not later than 1 January 2020 as replacement for identical circulators integrated in products and placed on the market no later than 1 August 2015. The replacement product or its packaging must clearly indicate the product(s) for which it is intended.

#### This Regulation shall apply in accordance with the following timetable:

- from **1 January 2013**, glandless standalone circulators shall meet the efficiency level (EEI) less than 0.27, with the exception of those specifically designed for primary circuits of thermal solar systems and of heat pumps;
- from **1 August 2015**, glandless standalone circulators and glandless circulators integrated in products shall meet the efficiency level (EEI) less than 0.23.



**Catalogue** *50Hz*  
September 2012 c201-12/1,0

*Changes reserved*