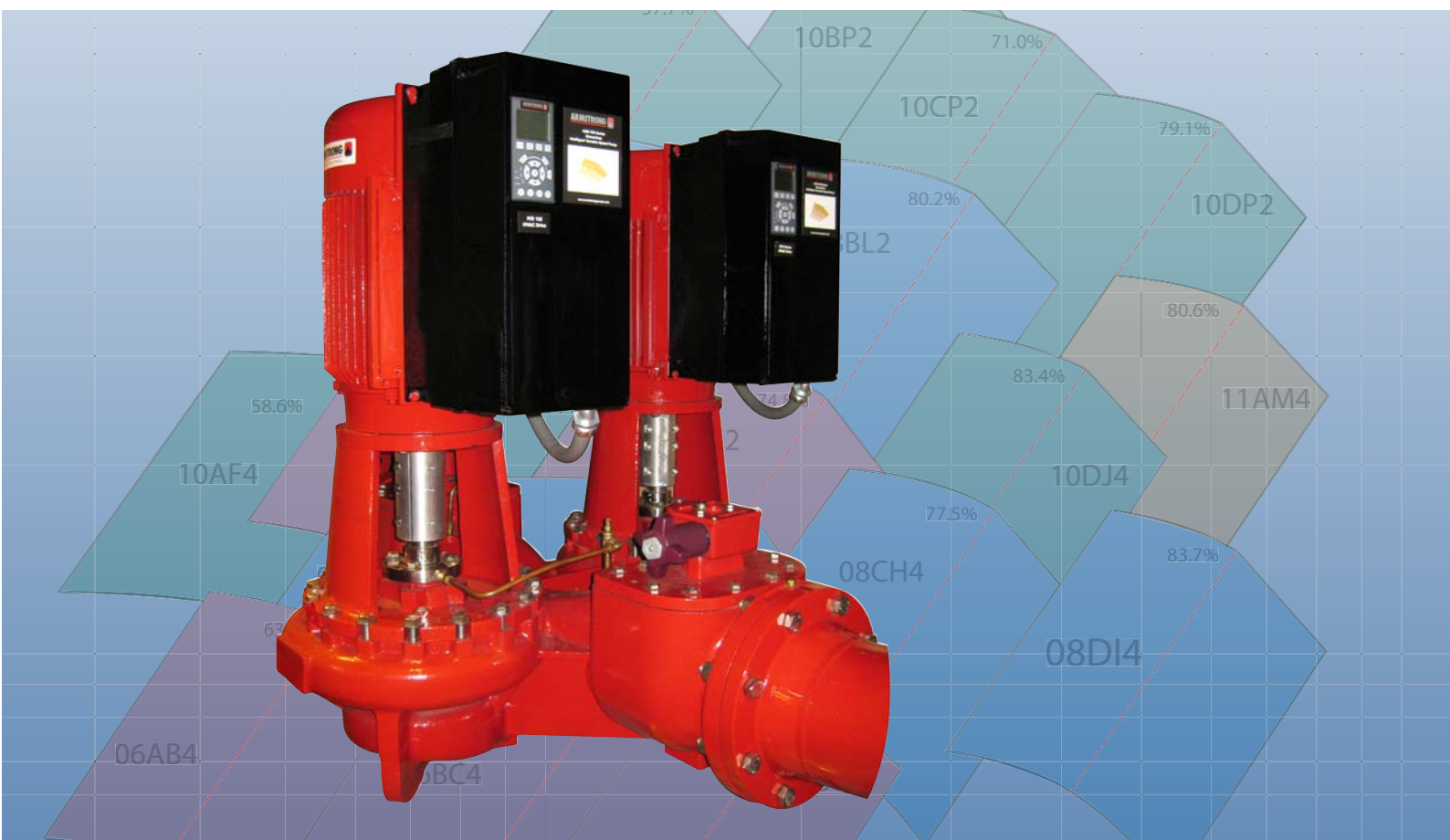


ARMSTRONG



4302 IVS Pumping Units with Integral Sensorless Control or for Remote IPS Control

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The Design Envelope is your Safety Net

The Armstrong Design Envelope is a pre-set arrangement of the most efficient pump selections for a given capacity range. The Design Envelope approach to system selection allows you to reduce design risk and avoid costs from equipment change orders. By calculating your preliminary design requirements, then selecting a Design Envelope with sufficient comfort zone around the preliminary design point, your pump selection will be future-proofed against possible design omissions or system changes during construction and over the life of the building.

There is no longer a need to oversize your initial design point. The Design Envelope can function as a safety net for the anticipated system changes due to as-built design, building envelope adjustments, tenant demographic changes, or changes in building usage.

Specifying an oversized pumping unit typically results in lower efficiency under actual operating conditions. Select the appropriate Design Envelope and be assured that the Armstrong variable speed pumping units will deliver excellent efficiency throughout the entire Design Envelope and the operating range of the unit.

Using the Design Envelope approach, you can select and specify the Design Envelope that suits your current and anticipated needs. With IVS Sensorless control there is no need to source, install or wire a system feedback sensor. The integrated IVS Sensorless software controls the system as efficiently as a unit with remotely installed sensor control. However, the IVS accomplishes this without any external sensors, other than the control valves modulating to satisfy the environmental settings in the conditioned spaces.

The Design Envelope HVAC Pump 4302 IVS also provides built-in redundancy by having duty/standby or two parallel operating units in a single pipe. The individual units can be controlled easily through the building BMS to alternate for service distribution, start and stop in a duty/standby configuration, or run in parallel for load distribution under peak system demands.

► Capital and Installation Costs are Reduced

- Reduced capital cost - no differential pressure sensor to purchase
- Reduced installation cost - no mounting of variable frequency drive (VFD) and no sensor installation or wiring
- Reduced commissioning cost - no sensor positioning issues or installation errors to slow down the process
- Reduced plant room space cost - integrated Sensorless VFD controller fits within the footprint of the pump
- The dual casing of the 4302 IVS replaces two pumping units and uses less floor space

► Increased Energy Savings

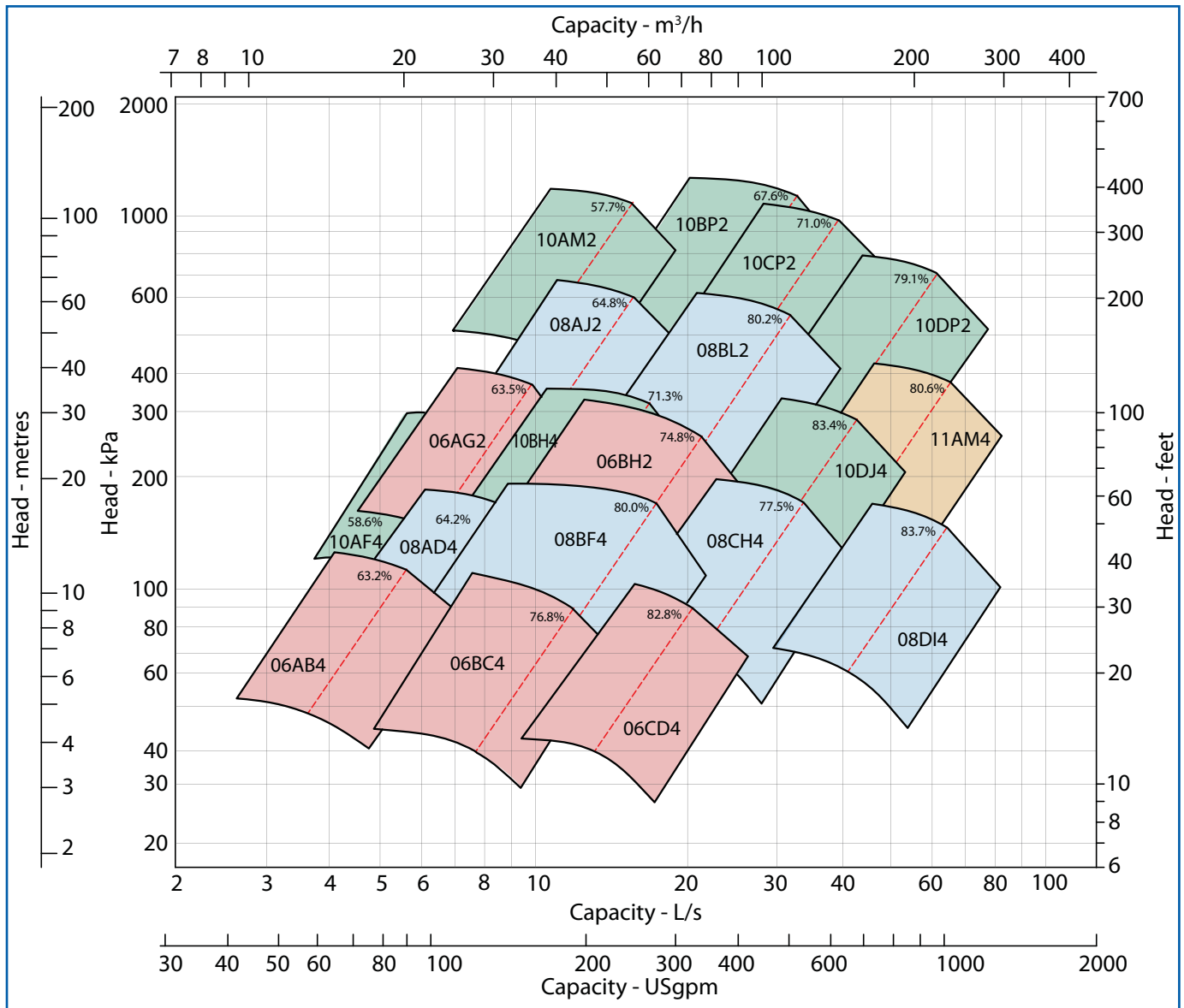
- Armstrong Design Envelope 4302 IVS pumps provide all the savings of variable speed pumping with a reduced installation cost
- VFD is optimised to the motor at the factory, ensuring perfect integration and peak performance
- Control curve optimisation mitigates the energy lost when using an incorrectly placed sensor
- Range of units available makes for simple matching of flow and head requirements and an easy retrofit process for replacing constant-speed pumps

► Project Risk Minimisation

- Integration of VFD reduces the risk of RFI/EMC (radio frequency interference/electromagnetic compatibility) problems
- VFD is matched to the pump, reducing commissioning delays
- Pump seals can be serviced without removing the motor or drive
- Single source of responsibility for variable speed pumping unit
- Easily connects to the building BMS

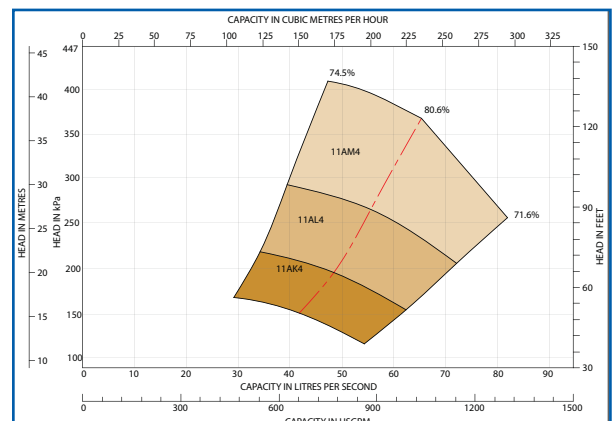
All this value is integrated into one small pumping package for any motor size up to 55 kW (75 hp). The Series 4302 pump, motor and VFD (integrated VFD and Sensorless controls on IVS models) are assembled as a complete pumping package, ready to install in the piping, wire and start for immediate operation. All IVS pumping units incorporate energy efficient totally enclosed fan cooled (TEFC) motors and IP55 (NEMA/UL Type 12) VFD enclosures. Units larger than 55 kW (75 hp) are supplied with the drives shipped loose for on-site wiring.

Design Envelope - 4302 IVS



► Design Envelope Selection Procedure

- Mark your preliminary design flow and head requirements on the Design Envelope (DE) chart
- Choose the DE that best represents your design parameters, plus a comfortable safety margin in the flow and head to cover any increases or reductions in design demand from design errors or building modifications during construction
- Be assured that each DE selection retains the highest efficiency possible throughout the DE range
- Specify the DE model number from the chart, noting the flow, head and efficiency values at the Best Efficiency Point (BEP) for your specification
- The DE technical data chart (inside spread of this brochure) details the size, power requirements, dimension and weight of each unit

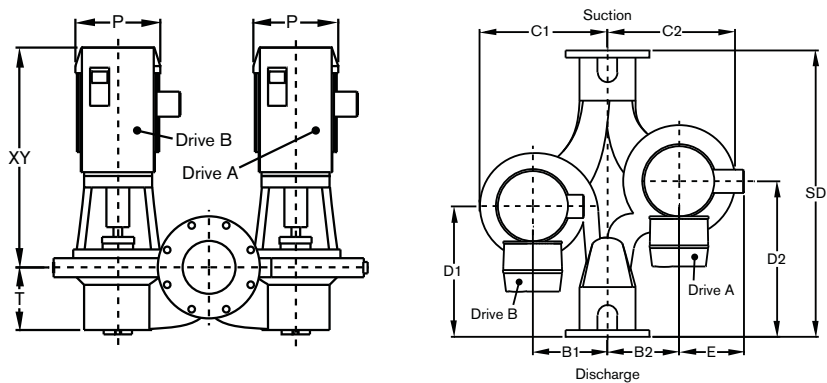


Armstrong's ACE Online will also help you select the most appropriate DE unit using a similar process.

► Design Envelope Data - 4302 IVS

Model No.	Size	Motor kW (hp)	Dimensions - mm (inches)											Weight kg (lbs)
			C1	C2	D1	D2	B1	B2	T	SD	P	E	XY	
06AA4	80-150 (3x3x6)	0.75 (1)	264 (10.38)	267 (10.50)	257 (10.13)	257 (10.13)	149 (5.87)	149 (5.88)	124 (4.87)	464 (18.25)	185 (7.28)	155 (6.09)	521 (20.53)	149.7 (330)
06AB4	80-150 (3x3x6)	1.1 (1.5)	264 (10.38)	267 (10.50)	257 (10.13)	257 (10.13)	149 (5.87)	149 (5.88)	124 (4.87)	464 (18.25)	185 (7.28)	155 (6.09)	521 (20.53)	149.7 (330)
06AD2	80-150 (3x3x6)	2.2 (3)	264 (10.38)	267 (10.50)	257 (10.13)	257 (10.13)	149 (5.87)	149 (5.88)	124 (4.87)	464 (18.25)	243 (9.56)	191 (7.50)	671 (26.42)	172.3 (380)
06AF2	80-150 (3x3x6)	4 (5)	264 (10.38)	267 (10.50)	257 (10.13)	257 (10.12)	149 (5.88)	149 (5.88)	124 (4.87)	464 (18.25)	243 (9.56)	191 (7.50)	671 (26.42)	181.4 (400)
06AG2	80-150 (3x3x6)	5.5 (7.5)	264 (10.38)	267 (10.50)	257 (10.13)	257 (10.12)	149 (5.88)	149 (5.88)	124 (4.87)	464 (18.25)	286 (11.25)	210 (8.25)	741 (29.16)	213.2 (470)
06BA4	100-150 (4x4x6)	0.75 (1)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	185 (7.28)	155 (6.09)	521 (20.53)	172.3 (380)
06BB4	100-150 (4x4x6)	1.1 (1.5)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	185 (7.28)	155 (6.09)	521 (20.53)	172.3 (380)
06BC4	100-150 (4x4x6)	1.5 (2)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	185 (7.28)	155 (6.09)	521 (20.53)	172.3 (380)
06BF2	100-150 (4x4x6)	4 (5)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	243 (9.56)	191 (7.50)	671 (26.42)	204.1 (450)
06BG2	100-150 (4x4x6)	5.5 (7.5)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	286 (11.25)	210 (8.25)	741 (29.16)	235.8 (520)
06BH2	100-150 (4x4x6)	7.5 (10)	308 (12.13)	321 (12.63)	352 (13.84)	352 (13.84)	173 (6.81)	173 (6.81)	147 (5.80)	676 (26.63)	286 (11.25)	210 (8.25)	741 (29.16)	249.4 (550)
06CB4	150-150 (6x6x6)	1.1 (1.5)	346 (13.63)	363 (14.31)	427 (16.81)	427 (16.81)	188 (7.39)	188 (7.39)	197 (7.75)	851 (33.50)	185 (7.28)	155 (6.09)	528 (20.78)	217.7 (480)
06CC4	150-150 (6x6x6)	1.5 (2)	346 (13.63)	363 (14.31)	427 (16.81)	427 (16.81)	188 (7.39)	188 (7.39)	197 (7.75)	851 (33.50)	185 (7.28)	155 (6.09)	528 (20.78)	217.7 (480)
06CD4	150-150 (6x6x6)	2.2 (3)	346 (13.63)	363 (14.31)	427 (16.81)	427 (16.81)	188 (7.39)	188 (7.39)	197 (7.75)	851 (33.50)	243 (9.56)	191 (7.50)	677 (26.67)	240.4 (530)
08AB4	80-200 (3x3x8)	1.1 (1.5)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	185 (7.28)	155 (6.09)	521 (20.51)	176.9 (390)
08AC4	80-200 (3x3x8)	1.5 (2)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	185 (7.28)	155 (6.09)	521 (20.51)	176.9 (390)
08AD4	80-200 (3x3x8)	2.2 (3)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	243 (9.56)	191 (7.50)	671 (26.4)	199.5 (440)
08AH2	80-200 (3x3x8)	7.5 (10)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	286 (11.25)	210 (8.25)	740 (29.14)	254.0 (560)
08AI2	80-200 (3x3x8)	11 (15)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	340 (13.38)	226 (8.90)	866 (34.08)	317.5 (700)
08AJ2	80-200 (3x3x8)	15 (20)	318 (12.50)	321 (12.63)	272 (10.69)	272 (10.69)	178 (7.00)	178 (7.00)	129 (5.08)	484 (19.06)	340 (13.38)	226 (8.90)	866 (34.08)	335.6 (740)
08BC4	100-200 (4x4x8)	1.5 (2)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	185 (7.28)	155 (6.09)	521 (20.53)	208.6 (460)
08BD4	100-200 (4x4x8)	2.2 (3)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	243 (9.56)	191 (7.50)	671 (26.42)	231.3 (510)
08BF4	100-200 (4x4x8)	4 (5)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	243 (9.56)	191 (7.50)	671 (26.42)	240.4 (530)
08BJ2	100-200 (4x4x8)	15 (20)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	340 (13.38)	226 (8.90)	866 (34.10)	367.3 (810)
08BK2	100-200 (4x4x8)	18 (25)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	389 (15.31)	305 (12.00)	1101 (43.36)	403.6 (890)
08BL2	100-200 (4x4x8)	22 (30)	383 (15.09)	397 (15.63)	377 (14.84)	377 (14.84)	222 (8.75)	222 (8.75)	160 (6.28)	702 (27.63)	389 (15.31)	305 (12.00)	1101 (43.36)	467.1 (1030)
08CF4	150-200 (6x6x8)	4 (5)	429 (16.90)	448 (17.63)	427 (16.81)	427 (16.81)	248 (9.75)	248 (9.75)	160 (6.31)	862 (33.94)	243 (9.56)	191 (7.50)	681 (26.82)	294.8 (650)
08CG4	150-200 (6x6x8)	5.5 (7.5)	429 (16.90)	448 (17.63)	427 (16.81)	427 (16.81)	248 (9.75)	248 (9.75)	160 (6.31)	862 (33.94)	286 (11.25)	210 (8.25)	751 (29.57)	326.5 (720)
08CH4	150-200 (6x6x8)	7.5 (10)	429 (16.90)	448 (17.63)	427 (16.81)	427 (16.81)	248 (9.75)	248 (9.75)	160 (6.31)	862 (33.94)	286 (11.25)	210 (8.25)	751 (29.57)	340.1 (750)
08DG4	200-200 (8x8x8)	5.5 (7.5)	470 (18.50)	472 (18.60)	470 (18.50)	584 (23.00)	254 (10.00)	229 (9.00)	240 (9.46)	1156 (45.50)	286 (11.25)	210 (8.25)	756 (29.75)	322.0 (710)

Model No.	Size	Motor kW (hp)	Dimensions - mm (inches)											Weight kg (lbs)
			C1	C2	D1	D2	B1	B2	T	SD	P	E	XY	
08DH4	200-200 (8x8x8)	7.5 (10)	470 (18.50)	472 (18.60)	470 (18.50)	584 (23.00)	254 (10.00)	229 (9.00)	240 (9.46)	1156 (45.50)	286 (11.25)	210 (8.25)	756 (29.75)	335.6 (740)
08DI4	200-200 (8x8x8)	11 (15)	470 (18.50)	472 (18.60)	470 (18.50)	584 (23.00)	254 (10.00)	229 (9.00)	240 (9.46)	1156 (45.50)	340 (13.38)	226 (8.90)	881 (34.69)	399.1 (880)
10AC4	80-250 (3x3x10)	1.5 (2)	397 (15.63)	400 (15.75)	276 (10.87)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	185 (7.28)	155 (6.09)	528 (20.77)	240.4 (530)
10AD4	80-250 (3x3x10)	2.2 (3)	397 (15.63)	400 (15.75)	276 (10.88)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	243 (9.56)	191 (7.50)	677 (26.65)	281.2 (620)
10AF4	80-250 (3x3x10)	4 (5)	397 (15.63)	400 (15.75)	276 (10.88)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	243 (9.56)	191 (7.50)	677 (26.65)	290.2 (640)
10AK2	80-250 (3x3x10)	18 (25)	397 (15.63)	400 (15.75)	276 (10.87)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	389 (15.31)	305 (12.00)	1107 (43.60)	435.4 (960)
10AL2	80-250 (3x3x10)	22 (30)	397 (15.63)	400 (15.75)	276 (10.87)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	389 (15.31)	305 (12.00)	1107 (43.60)	498.9 (1100)
10AM2	80-250 (3x3x10)	30 (40)	397 (15.63)	400 (15.75)	276 (10.87)	403 (15.87)	229 (9.00)	229 (9.00)	142 (5.60)	654 (25.75)	432 (17.00)	353 (13.91)	1131 (44.53)	707.5 (1560)
10BF4	100-250 (4x4x10)	4 (5)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	243 (9.56)	191 (7.50)	679 (26.73)	322.0 (710)
10BG4	100-250 (4x4x10)	5.5 (7.5)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	286 (11.25)	210 (8.25)	749 (29.47)	353.7 (780)
10BH4	100-250 (4x4x10)	7.5 (10)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	286 (11.25)	210 (8.25)	749 (29.47)	367.3 (810)
10BN2	100-250 (4x4x10)	37 (50)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	432 (17.00)	353 (13.91)	1133 (44.61)	839.0 (1850)
10BO2	100-250 (4x4x10)	45 (60)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	483 (19.03)	418 (16.44)	1090 (42.92)	956.9 (2110)
10BP2	100-250 (4x4x10)	55 (75)	418 (16.45)	421 (16.56)	318 (12.50)	419 (16.50)	241 (9.50)	241 (9.50)	164 (6.47)	762 (30.00)	483 (19.03)	418 (16.44)	1090 (42.92)	993.2 (2190)
10CN2	150-250 (6x6x10)	37 (50)	448 (17.63)	473 (18.63)	394 (15.50)	476 (18.75)	254 (10.00)	254 (10.00)	195 (7.66)	914 (36.00)	432 (17.00)	353 (13.91)	1125 (44.29)	929.7 (2050)
10CO2	150-250 (6x6x10)	45 (60)	448 (17.63)	473 (18.63)	394 (15.50)	476 (18.75)	254 (10.00)	254 (10.00)	195 (7.66)	914 (36.00)	483 (19.03)	418 (16.44)	1082 (42.60)	1047.6 (2310)
10CP2	150-250 (6x6x10)	55 (75)	448 (17.63)	473 (18.63)	394 (15.50)	476 (18.75)	254 (10.00)	254 (10.00)	195 (7.66)	914 (36.00)	483 (19.03)	418 (16.44)	1082 (42.60)	1083.9 (2390)
10DH4	200-250 (8x8x10)	7.5 (10)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	286 (11.25)	210 (8.25)	740 (29.13)	535.1 (1180)
10DI4	200-250 (8x8x10)	11 (15)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	340 (13.38)	226 (8.90)	865 (34.07)	598.6 (1320)
10DJ4	200-250 (8x8x10)	15 (20)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	340 (13.38)	226 (8.90)	865 (34.07)	634.9 (1400)
10DN2	200-250 (8x8x10)	37 (50)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	432 (17.00)	353 (13.91)	1124 (44.26)	1070.3 (2360)
10DO2	200-250 (8x8x10)	45 (60)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	483 (19.03)	418 (16.44)	1081 (42.57)	1188.2 (2620)
10DP2	200-250 (8x8x10)	55 (75)	522 (20.56)	533 (21.00)	533 (21.00)	635 (25.00)	305 (12.00)	292 (11.50)	225 (8.85)	1168 (46.00)	483 (19.03)	418 (16.44)	1081 (42.57)	1224.5 (2700)
11AK4	200-290 (8x8x11.5)	18 (25)	511 (20.10)	514 (20.23)	647 (25.48)	525 (20.65)	267 (10.50)	279 (11.00)	224 (8.80)	1192 (46.94)	365 (14.38)	305 (12.00)	930 (36.63)	702.9 (1550)
11AL4	200-290 (8x8x11.5)	22 (30)	511 (20.10)	514 (20.23)	647 (25.48)	525 (20.65)	267 (10.50)	279 (11.00)	224 (8.80)	1192 (46.94)	365 (14.38)	305 (12.00)	930 (36.63)	721.1 (1590)
11AM4	200-290 (8x8x11.5)	30 (40)	511 (20.10)	514 (20.23)	647 (25.48)	525 (20.65)	267 (10.50)	279 (11.00)	224 (8.80)	1192 (46.94)	406 (16.00)	372 (14.63)	940 (37.00)	984.1 (2170)



► Typical Specifications

1.0 Products

1. Provide Armstrong Design Envelope HVAC pump model _____. The Design Envelope shall encompass an initial design point of _____ L/s (USgpm) at _____ kPa (ft)/head. The Design Envelope shall also be capable of supplying _____ L/s (USgpm), at _____ kPa (ft)/head at _____% minimum efficiency level at maximum operating speed.
2. Design Envelope HVAC units shall be 4302 IVS series capable of Sensorless control. The pumps shall be split-coupled type Vertical In-Line design, with rigid spacer type couplings and supplied with high efficiency motors and Armstrong IP55 (NEMA/UL Type 12) enclosure variable speed drives. Refer to pump schedule for pump flows and heads, motor speed, enclosure and power requirements and other system conditions.
3. The drive shall be integrated with the motor on motor sizes to 55kW (75hp) for a self-contained pump, motor and drive combination to ensure optimum component matching and protection from motor overloading at any operating point.
4. Pump Casing - Cast iron with PN16 (ANSI-125) flanges shall be suitable for working pressure to 12 bar (175 psig) at 65°C (150°F). Ductile iron units with PN16 (ANSI-125) flanges shall be suitable for working pressures of 17 bar (250 psig) at 65°C (150°F). The 4302 IVS casing shall contain two pumping units with one of each, equally sized, Din flanged suction and discharge connections, drilled and tapped for seal flush and gauge connections. The 4302 IVS design must include internal valves that allow one pump to be operational while the other is isolated for service.
5. Impeller - Bronze, fully enclosed and dynamically balanced. Two-plane balancing is required where installed impeller diameter is less than six times the impeller width.
6. Shaft - Provide stainless steel pump shaft.
7. Coupling - Rigid spacer of high tensile aluminum alloy with a fully enclosed guard.
8. Mechanical Seals - Shall be stainless steel multi-spring outside balanced type with Viton® secondary seal, carbon rotating face and silicon carbide stationary seat. Provide a 316 stainless steel gland plate. Design Envelope pump design must be split-coupled to allow the pump mechanical seals to be serviced without disturbing the motor or pump connections.

2.0 Integrated Variable Frequency Drive (VFD)

1. VFD shall be of the VVC-PWM type providing near unity displacement power factor without the need for external power factor correction capacitors at all loads and speeds. The VFD shall incorporate DC link chokes to reduce the DC link ripple current caused by harmonic currents in the main electrical connection. The VFD shall be UL listed and CE marked, showing compliance with both

the EMC directive 89/336/EEC and the Low Voltage directive 72/23/EEC. RFI filters shall be incorporated within the drive to ensure it meets the emission and immunity requirements of EN61800-3 to the 1st Environment Class C1 (EN55011 unrestricted sales class B). The VFD and motor protection shall include: motor phase to phase fault, motor phase to ground fault, loss of supply phase, over voltage, under voltage, motor over temperature, inverter overload and over current. Over current is not allowed ensuring 4302 IVS units will not overload the motor at any point in the operating range of the unit.

2. The VFD rated above 7.5kW shall incorporate an integrated graphical user interface that shall provide running and diagnostic information and identify faults and status in clear English language. Faults shall be logged/recorded for review at a later date. It shall be possible to upload parameters from one VFD into the non-volatile memory of a computer and download the parameters into other drives requiring the same settings. The keypad shall incorporate Hand-Off-Auto push buttons to enable switching between BMS and manual control. The VFD shall incorporate a USB port for direct connection to a PC and an RS485 connection with Modbus RTU protocol. Optional protocols available shall include BACnet and Lonworks.
3. Sensorless control software shall be available in the IVS unit to provide automatic speed control in variable volume systems without the need for pump mounted (internal/external) or remotely mounted differential pressure sensors. Control mode setting and minimum/maximum head set-points shall be adjustable via the built-in programming interface.
4. The VFD shall have the following additional features: Sensorless override for BMS or Armstrong IPS pump controller, manual pump control or closed loop PID control, programmable skip frequencies and adjustable switching frequency for noise/vibration control, auto alarm reset, motor pre-heat function, six programmable digital inputs, two analogue inputs, one programmable analogue/digital output and two volt-free contacts.

3.0 System Control

The 4302 IVS shall be capable of operating in any of the following control modes:

- Duty/standby pumps with Sensorless control
- Duty/standby pumps with remote sensor or Building Management System (BMS) control
- Parallel pumps with single or multiple sensor(s) system control with IPS controller

For full specification details on the Armstrong 4302 IVS control modes, performance and operating logic, visit the Armstrong web site at: www.armstrongpumps.com

Our policy is one of continuous improvement and we reserve the right to alter our dimensions and specifications without notice

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