PUMP SELECTION REPORT

SAMPLE - Office Tower Booster System

30.00 m³/h at 50.0 m total head | 50 Hz | Clean Water

CUSTOMER	REFERENCE	PREPARED	PUMPS FOUND
Sample Client Ltd.	CNP-S-001	12 Oct 2026	22

Design basis

Duty point	**30.00 m³/h (8.33 l/s) at 50.0 m**
Operating frequency	**50 Hz**
Liquid and conditions	**Clean Water, max 20 °C, 998 kg/m³, 1 cSt; 50 Hz (catalogue data for this frequency).**
Acceptance tolerance	**GB3216 2016, grade 2B: flow 92 to 108 %, head 95 to 105 %**
System curve	**Friction only, proportional to Q squared through the duty point**
Running cost basis	**4,000 h/year at 0.100 per kWh, 10 year evaluation**

Recommendation

Closest match to the duty point: ZS65-50-200/11.0 (30.00 m³/h at 50.0 m, +0.0 % flow, +0.0 % head).

Highest efficiency among the listed pumps: CDL32-40-2 at 76.2 %.

Lowest energy cost: CDL32-40-2 at USD 2,359 per year (USD 23,593 over 10 years).

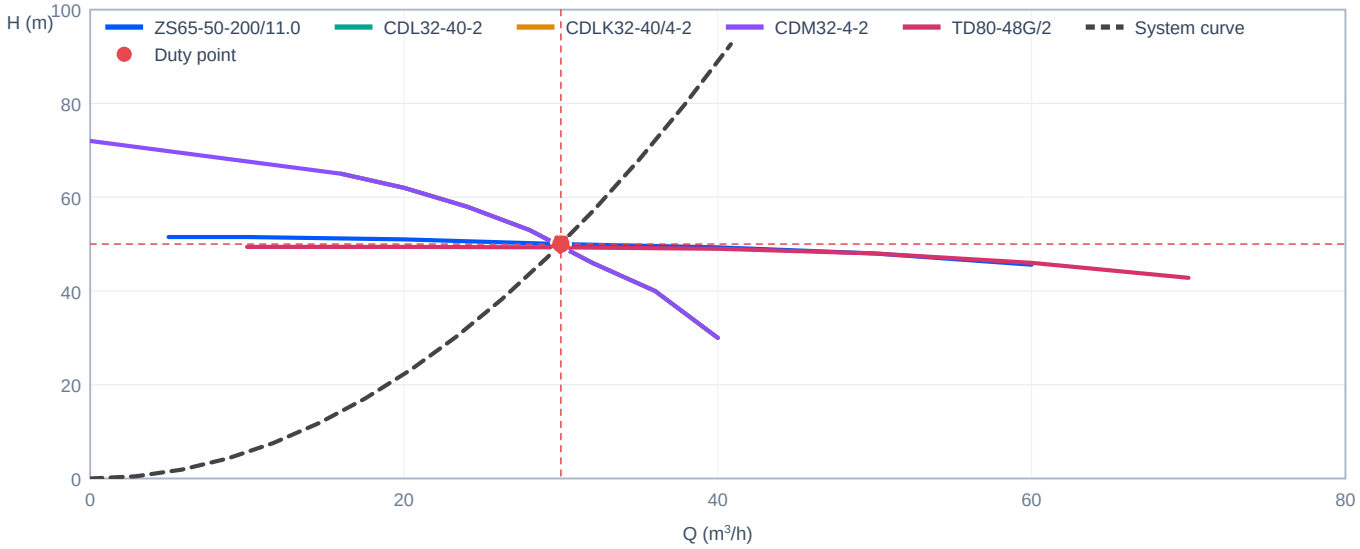
4 warnings across the listed pumps; read the pump pages before choosing.

Matching pumps

#	Model	Operating point	Offset	Eff. %	Shaft kW	Motor	NPSH	Cost/yr
1	ZS65-50-200/11.0	30.0 m³/h @ 50.0 m	+0.0% Q / +0.0% H	60.2	6.77	11 kW	NPSHr 1.5 m (est.)	USD 3,011
2	CDL32-40-2	29.9 m³/h @ 49.8 m	-0.4% Q / -0.4% H	76.2	5.31	7.5 kW	NPSHr 1.7 m	USD 2,359
3	CDLK32-40/4-2	29.9 m³/h @ 49.8 m	-0.4% Q / -0.4% H	76.2	5.31	7.5 kW	NPSHr 1.7 m	USD 2,359
4	CDM32-4-2	29.9 m³/h @ 49.8 m	-0.4% Q / -0.4% H	76.2	5.31	7.5 kW	NPSHr 1.7 m	USD 2,359
5	TD80-48G/2	30.0 m³/h @ 49.3 m	+0.0% Q / -1.4% H	54.5	7.37	15 kW	NPSHr 1.3 m (est.)	USD 3,277

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Head curves of the leading pumps against your duty point



Running cost comparison

Model	Shaft kW	kWh per year	Cost per year	Cost over 10 y	Against lowest
ZS65-50-200/11.0	6.77	30,108	USD 3,011	USD 30,108	+USD 6,515
CDL32-40-2	5.31	23,593	USD 2,359	USD 23,593	lowest
CDLK32-40/4-2	5.31	23,593	USD 2,359	USD 23,593	lowest
CDM32-4-2	5.31	23,593	USD 2,359	USD 23,593	lowest
TD80-48G/2	7.37	32,772	USD 3,277	USD 32,772	+USD 9,179

Energy cost per year



Energy cost only. Purchase price, installation, maintenance and spares are not included; quote them separately. Motor efficiency assumed 0.90.

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

RESULT #1 | ZS (stainless horizontal)

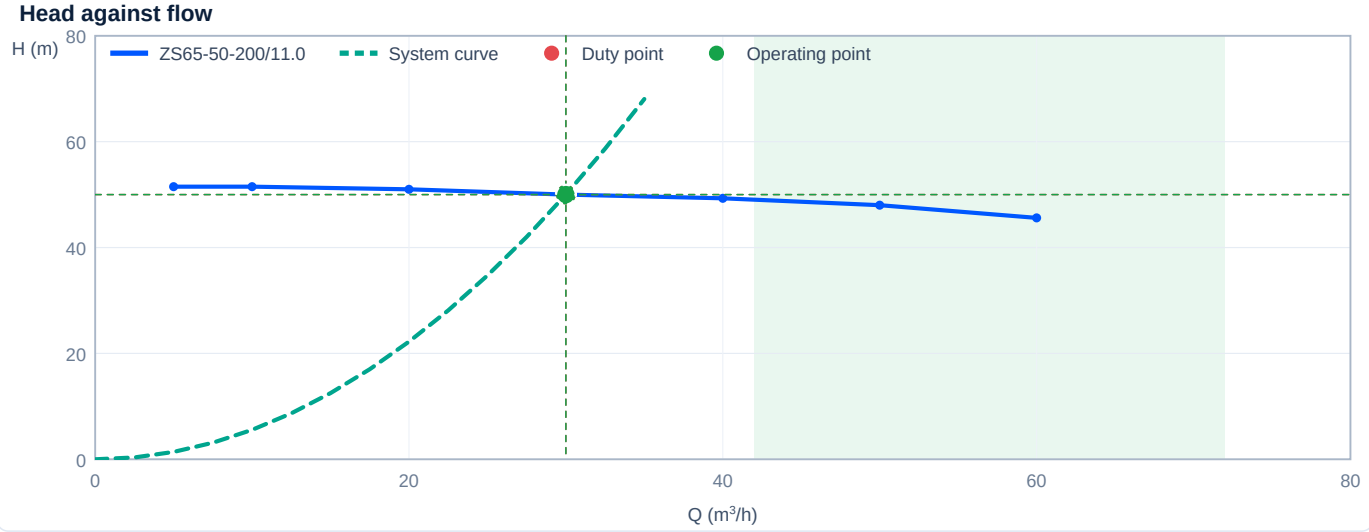
ZS65-50-200/11.0

50 Hz | 2-pole | source: Performance table, PDF p. 8

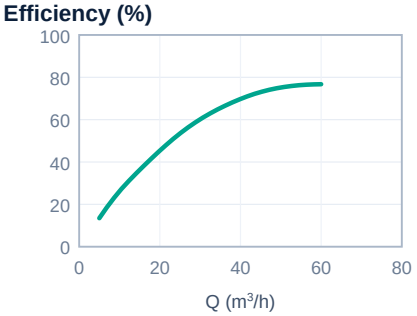
OPERATING POINT	OFFSET FROM DUTY	EFFICIENCY	SHAFT POWER
30.00 m³/h @ 50.0 m	**+0.0 % Q / +0.0 % H**	**60.2 %**	**6.77 kW**

MOTOR	MOTOR LOAD	NPSHR	FLOW VS BEST EFF.
11 kW	**62 %**	**1.5 m**	**50 %**

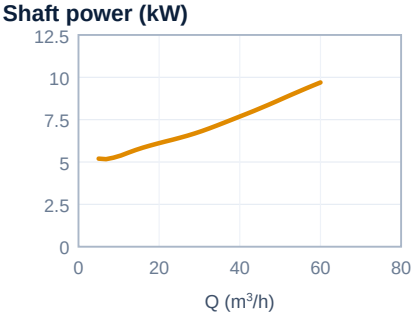
Head against flow



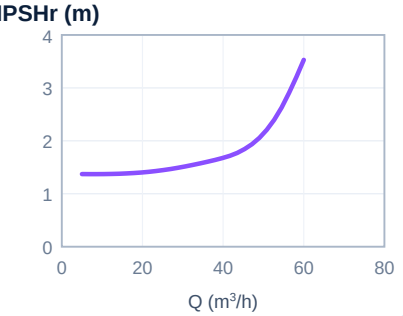
Efficiency (%)



Shaft power (kW)



NPSHr (m)



Efficiency, power and NPSHr: Estimate: blend of the digitized curves of the two nearest sizes.

Shaded band: 70 to 120 % of the best-efficiency flow (preferred operating range).

Checks

Motor check	**62% load (est.)**
NPSH check	**NPSHr 1.5 m (est.)**
Pressure check	**about 5.0 bar at shut-off against 10 bar maximum: OK**
Liquid (Clean Water)	**Suitable**
Electrical	**1~ 220 V (small sizes) · 3~ 380 V · IP55 · insulation class F**
Weight / length	**161 kg / n/a mm**
Connections	**Flange DN65 inlet / DN50 outlet (PN16)**
Shut-off head	**51.5 m**
Best-efficiency basis	**estimated curve**

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Warnings and cautions

Flow is 50 % of the best-efficiency flow (estimated curve): below the preferred 70–120 % band. Expect lower efficiency, recirculation and more vibration.

Operating point is within 5 % of the shut-off head: avoid continuous running here (heating and recirculation).

Installation notes (from the catalogue)

- Catalogue suction rule: H = Pb × 10.2 - NPSH - Hf - Hv - Hs, with the safety margin Hs at least 0.5 m. NPSHa must exceed NPSHr by at least 0.5 m.
- The catalogue motor ratings hold for an ambient temperature up to 40 °C and an altitude up to 1000 m; above that the motor must be derated or a larger motor used.
- Liquid temperature range -20 to 100 °C.

Wet-end materials

Stainless steel (06Cr19Ni10 / AISI 304) casing, impeller and lining; carbon / silicon-carbide seal; NBR O-ring.

Running cost

Energy per year	**30,108 kWh**
Energy cost per year	**USD 3,011**
Energy cost over 10 years	**USD 30,108**
Against the lowest-cost pump (CDL32-40-2)	**+USD 6,515 over 10 years**

Energy = shaft power at the operating point divided by an assumed motor efficiency of 0.90, times running hours (4,000 h/year) and tariff (0.100 per kWh). Maintenance, spares and installation are not included.

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

RESULT #2 | CDL / CDLF

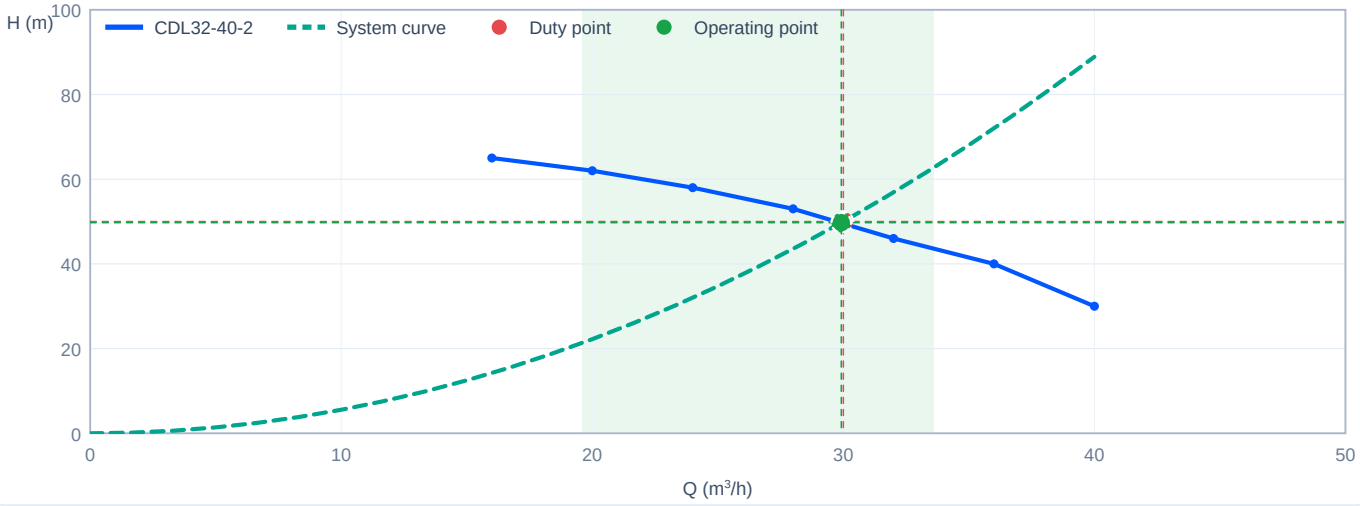
CDL32-40-2

50 Hz | 2-pole | 4 stages | source: Performance table, printed pp. 31–32

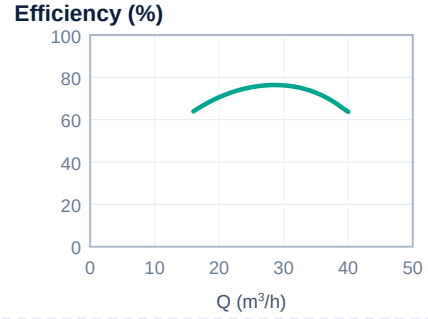
OPERATING POINT	OFFSET FROM DUTY	EFFICIENCY	SHAFT POWER
29.88 m³/h @ 49.8 m	**-0.4 % Q / -0.4 % H**	**76.2 %**	**5.31 kW**

MOTOR	MOTOR LOAD	NPSHR	FLOW VS BEST EFF.
7.5 kW	**71 %**	**1.7 m**	**107 %**

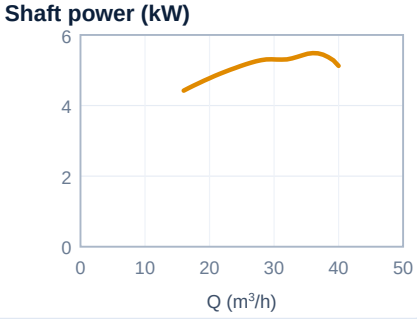
Head against flow



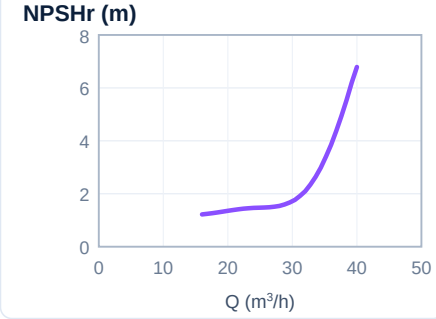
Efficiency (%)



Shaft power (kW)



NPSHr (m)



Efficiency, power and NPSHr: Digitized from the chart of the identical CDM pump (same head table).

Shaded band: 70 to 120 % of the best-efficiency flow (preferred operating range).

Checks

Motor check	**71% load**
NPSH check	**NPSHr 1.7 m**
Pressure check	**about 6.4 bar at shut-off against 16 bar maximum: OK**
Liquid (Clean Water)	**Suitable**
Electrical	**1~ 220–240 V (small sizes) · 3~ 380–415 V · IP55 · insulation class F**
Weight / length	**108 kg / 1,105 mm**
Connections	**Flange DN65**
Shut-off head	**65.0 m**
Best-efficiency basis	**efficiency curve**

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Installation notes (from the catalogue)

- Catalogue suction rule: H = Pb × 10.2 - NPSH - Hf - Hv - Hs, with the safety margin Hs at least 0.5 m. NPSHa must exceed NPSHr by at least 0.5 m.
- The catalogue motor ratings hold for an ambient temperature up to 40 °C and an altitude up to 1000 m; above that the motor must be derated or a larger motor used.

Wet-end materials

Cast-iron pump head and base; AISI 304 stainless impellers, diffusers and sleeves; AISI 304/316L shaft; tungsten-carbide bearings.

Running cost

Energy per year	**23,593 kWh**
Energy cost per year	**USD 2,359**
Energy cost over 10 years	**USD 23,593**
Position	**Lowest energy cost of the listed pumps**

Energy = shaft power at the operating point divided by an assumed motor efficiency of 0.90, times running hours (4,000 h/year) and tariff (0.100 per kWh). Maintenance, spares and installation are not included.

Neighbouring sizes on your system curve

Model	Direction	Runs at	Efficiency	Shaft kW	Motor
CDL32-30-2	one stage down	26.6 m^3/h @ 39.2 m (-11 %)	76.0 %	3.72	5.5 kW
CDL32-30	one stage down	28.1 m^3/h @ 43.9 m (-6 %)	76.3 %	4.39	5.5 kW
CDL32-50-2	one stage up	32.6 m^3/h @ 58.9 m (+9 %)	75.0 %	6.95	11.0 kW
CDL32-50	one stage up	33.8 m^3/h @ 63.6 m (+13 %)	74.0 %	7.91	11.0 kW

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

RESULT #3 | CDLK / CDLKF (immersion)

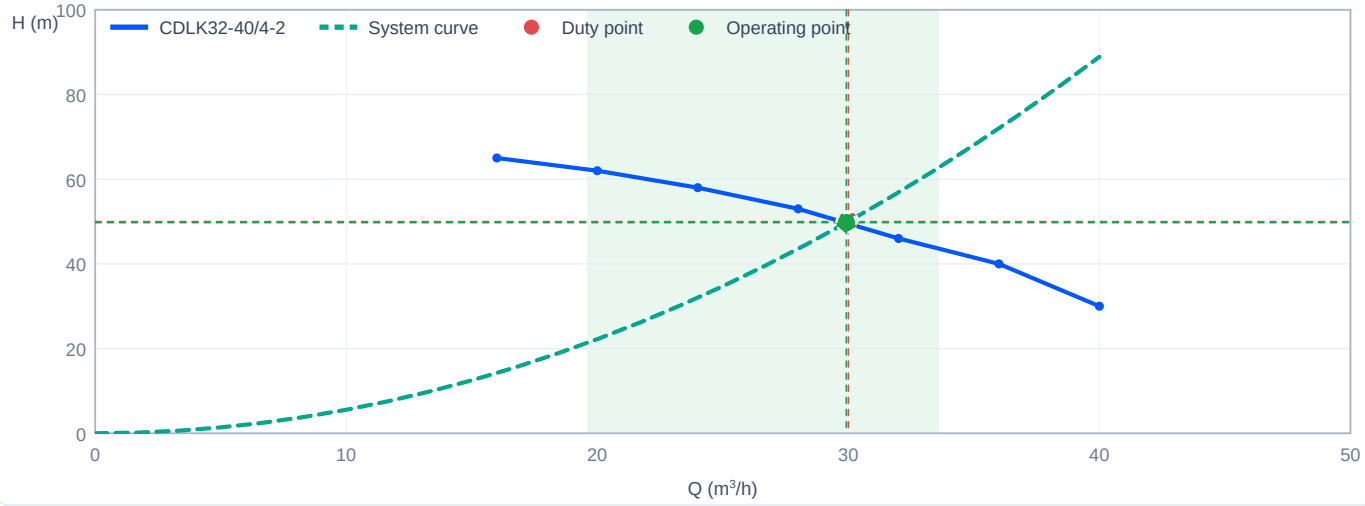
CDLK32-40/4-2

50 Hz | 2-pole | 4 stages | source: Performance table, printed pp. 27–28

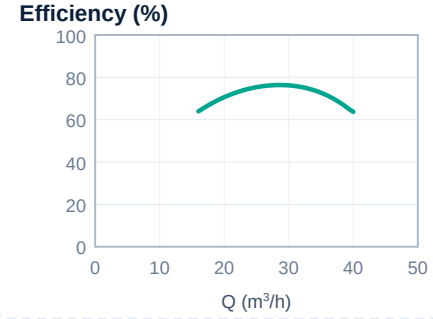
OPERATING POINT	OFFSET FROM DUTY	EFFICIENCY	SHAFT POWER
29.88 m³/h @ 49.8 m	**-0.4 % Q / -0.4 % H**	**76.2 %**	**5.31 kW**

MOTOR	MOTOR LOAD	NPSHR	FLOW VS BEST EFF.
7.5 kW	**71 %**	**1.7 m**	**107 %**

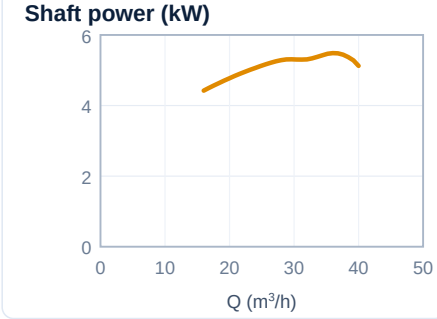
Head against flow



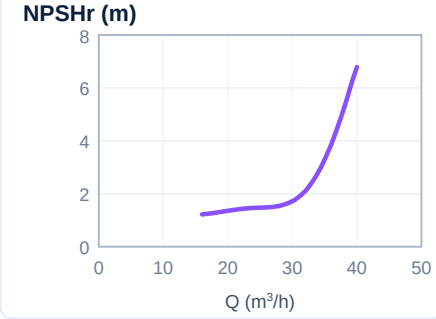
Efficiency (%)



Shaft power (kW)



NPSHr (m)



Efficiency, power and NPSHr: Digitized from the chart of the identical CDM pump (same head table).

Shaded band: 70 to 120 % of the best-efficiency flow (preferred operating range).

Checks

Motor check	**71% load**
NPSH check	**NPSHr 1.7 m**
Pressure check	**about 6.4 bar at shut-off against 26 bar maximum: OK**
Liquid (Clean Water)	**Suitable**
Electrical	**1~ 220–240 V (0.37–2.2 kW) · 3~ 380–415 V · IP55 · insulation class F**
Weight / length	**78 kg / 958 mm**
Connections	**DIN flange DN65**
Shut-off head	**65.0 m**
Best-efficiency basis	**efficiency curve**

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Installation notes (from the catalogue)

- The catalogue motor ratings hold for an ambient temperature up to 40 °C and an altitude up to 1000 m; above that the motor must be derated or a larger motor used.
- Motor protector (dry running, phase loss, overload) is available on request. Choose the immersion length B and a cavity body to match the tank depth.

Wet-end materials

AISI 304 stainless impellers, diffusers and suction head; AISI 316 shaft.

Running cost

Energy per year	**23,593 kWh**
Energy cost per year	**USD 2,359**
Energy cost over 10 years	**USD 23,593**
Against the lowest-cost pump (CDL32-40-2)	**+USD 0 over 10 years**

Energy = shaft power at the operating point divided by an assumed motor efficiency of 0.90, times running hours (4,000 h/year) and tariff (0.100 per kWh). Maintenance, spares and installation are not included.

Neighbouring sizes on your system curve

Model	Direction	Runs at	Efficiency	Shaft kW	Motor
CDLK32-30/3-2	one stage down	26.6 m^3/h @ 39.2 m (-11 %)	76.0 %	3.72	5.5 kW
CDLK32-30/3	one stage down	28.1 m^3/h @ 43.9 m (-6 %)	76.3 %	4.39	5.5 kW
CDLK32-50/5-2	one stage up	32.6 m^3/h @ 58.9 m (+9 %)	75.0 %	6.95	11.0 kW
CDLK32-50/5	one stage up	33.8 m^3/h @ 63.6 m (+13 %)	74.0 %	7.91	11.0 kW

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

RESULT #4 | CDM / CDMF

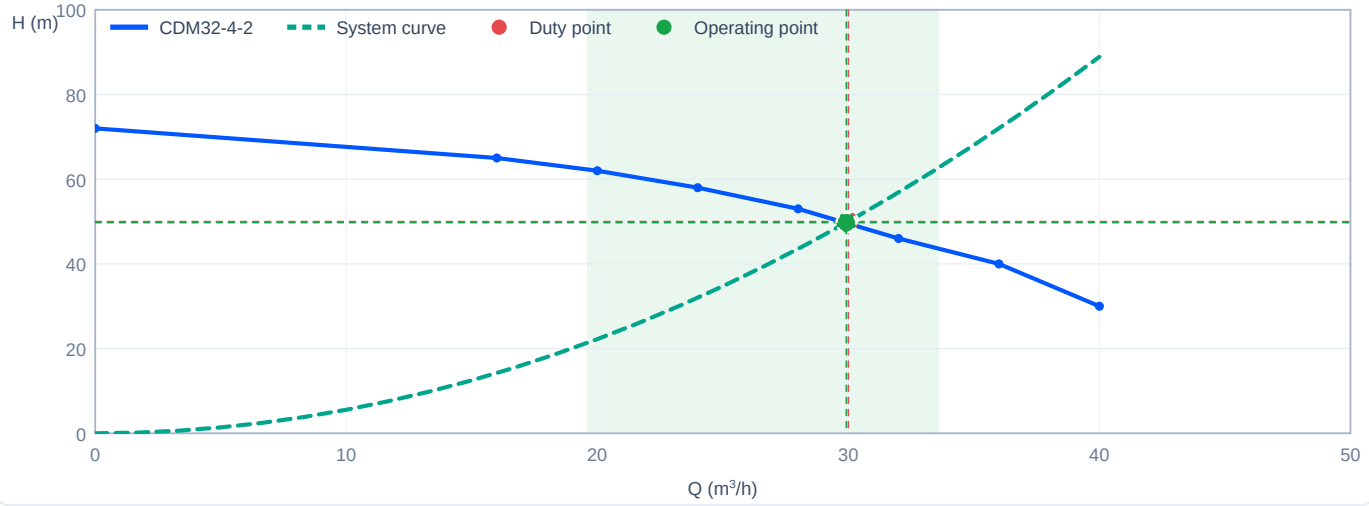
CDM32-4-2

50 Hz | 2-pole | 4 stages | source: Performance table printed p. 23; dimensions p. 42

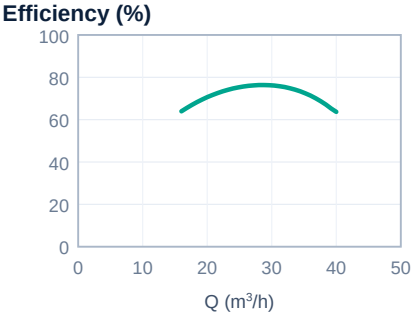
OPERATING POINT	OFFSET FROM DUTY	EFFICIENCY	SHAFT POWER
29.88 m³/h @ 49.8 m	**-0.4 % Q / -0.4 % H**	**76.2 %**	**5.31 kW**

MOTOR	MOTOR LOAD	NPSHR	FLOW VS BEST EFF.
7.5 kW	**71 %**	**1.7 m**	**107 %**

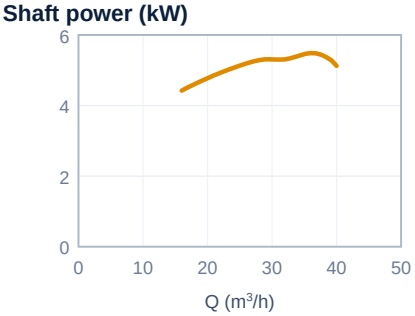
Head against flow



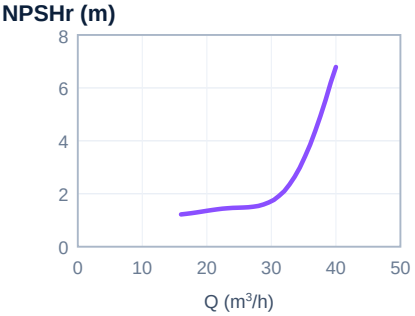
Efficiency (%)



Shaft power (kW)



NPSHr (m)



Efficiency, power and NPSHr: Digitized from the catalogue chart of this pump.

Shaded band: 70 to 120 % of the best-efficiency flow (preferred operating range).

Checks

Motor check	**71% load**
NPSH check	**NPSHr 1.7 m**
Pressure check	**about 7.0 bar at shut-off against 16 bar maximum: OK**
Liquid (Clean Water)	**Suitable**
Electrical	**1~ 200–240 V (small sizes) · 3~ 380–415 V · IP55 · insulation class F**
Weight / length	**113 kg / 1,125 mm**
Connections	**DIN flange DN65**
Shut-off head	**72.0 m**
Best-efficiency basis	**efficiency curve**

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Installation notes (from the catalogue)

- Catalogue suction rule: H = Pb × 10.2 - NPSH - Hf - Hv - Hs, with the safety margin Hs at least 0.5 m. NPSHa must exceed NPSHr by at least 0.5 m.
- The catalogue motor ratings hold for an ambient temperature up to 40 °C and an altitude up to 1000 m; above that the motor must be derated or a larger motor used.

Wet-end materials

Cast-iron pump head and chambers; AISI 304 stainless impellers and diffusers; tungsten-carbide / carbon mechanical seal.

Running cost

Energy per year	**23,593 kWh**
Energy cost per year	**USD 2,359**
Energy cost over 10 years	**USD 23,593**
Against the lowest-cost pump (CDL32-40-2)	**+USD 0 over 10 years**

Energy = shaft power at the operating point divided by an assumed motor efficiency of 0.90, times running hours (4,000 h/year) and tariff (0.100 per kWh). Maintenance, spares and installation are not included.

Neighbouring sizes on your system curve

Model	Direction	Runs at	Efficiency	Shaft kW	Motor
CDM32-3-2	one stage down	26.6 m^3/h @ 39.2 m (-11 %)	76.0 %	3.72	5.5 kW
CDM32-3	one stage down	28.1 m^3/h @ 43.9 m (-6 %)	76.3 %	4.39	5.5 kW
CDM32-5-2	one stage up	32.6 m^3/h @ 58.9 m (+9 %)	75.0 %	6.95	11.0 kW
CDM32-5	one stage up	33.8 m^3/h @ 63.6 m (+13 %)	74.0 %	7.91	11.0 kW

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

RESULT #5 | TD (in-line circulation)

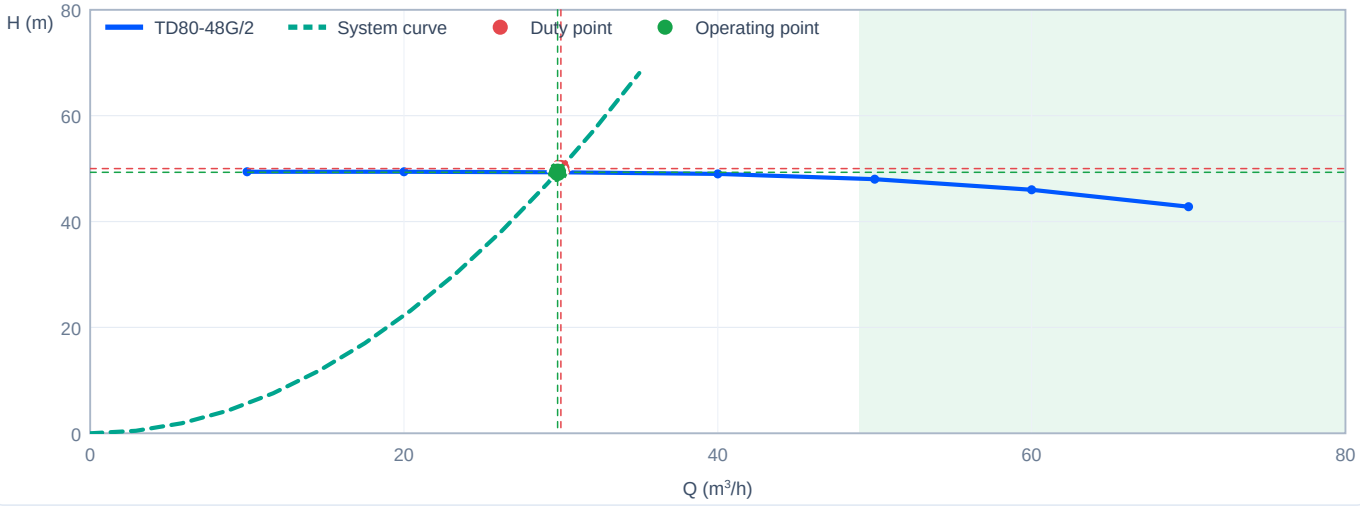
TD80-48G/2

50 Hz | 2-pole | source: Performance table, PDF p. 17

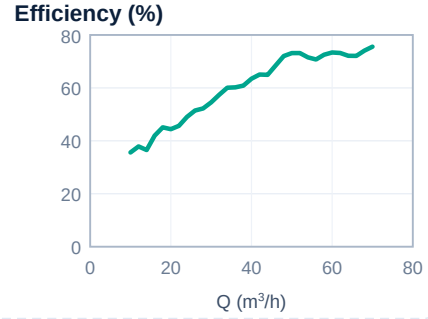
OPERATING POINT	OFFSET FROM DUTY	EFFICIENCY	SHAFT POWER
30.00 m³/h @ 49.3 m	**+0.0 % Q / -1.4 % H**	**54.5 %**	**7.37 kW**

MOTOR	MOTOR LOAD	NPSHR	FLOW VS BEST EFF.
15 kW	**49 %**	**1.3 m**	**43 %**

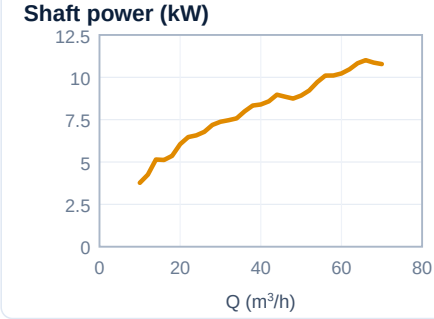
Head against flow



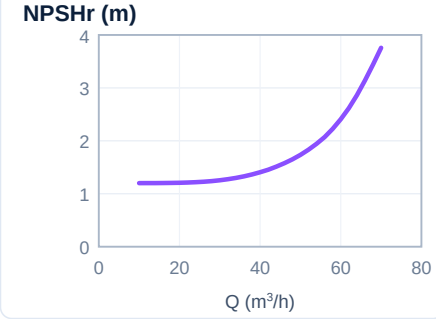
Efficiency (%)



Shaft power (kW)



NPSHr (m)



Efficiency, power and NPSHr: Estimate: blend of the digitized curves of the two nearest sizes.

Shaded band: 70 to 120 % of the best-efficiency flow (preferred operating range).

Checks

Motor check	**49% load (est.)**
NPSH check	**NPSHr 1.3 m (est.)**
Pressure check	**about 4.8 bar at shut-off against 12 bar maximum: OK**
Liquid (Clean Water)	**Suitable**
Electrical	**1~ 220–240 V (small sizes) · 3~ 380–415 V · IP55 · insulation class F**
Weight / length	**191 kg / n/a mm**
Connections	**Flange DN80 (PN16)**
Shut-off head	**49.4 m**
Best-efficiency basis	**estimated curve**

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Warnings and cautions

Flow is 43 % of the best-efficiency flow (estimated curve): below the preferred 70–120 % band. Expect lower efficiency, recirculation and more vibration.

Operating point is within 5 % of the shut-off head: avoid continuous running here (heating and recirculation).

Installation notes (from the catalogue)

- Catalogue suction rule: H = Pb × 10.2 - NPSH - Hf - Hv - Hs, with the safety margin Hs at least 0.5 m. NPSHa must exceed NPSHr by at least 0.5 m.
- The catalogue motor ratings hold for an ambient temperature up to 40 °C and an altitude up to 1000 m; above that the motor must be derated or a larger motor used.
- Liquid temperature range -15 to 110 °C.

Wet-end materials

Cast-iron HT200 pump body and head; cast-iron or stainless (304-grade) impeller; carbon / silicon-carbide seal; NBR O-ring.

Running cost

Energy per year	**32,772 kWh**
Energy cost per year	**USD 3,277**
Energy cost over 10 years	**USD 32,772**
Against the lowest-cost pump (CDL32-40-2)	**+USD 9,179 over 10 years**

Energy = shaft power at the operating point divided by an assumed motor efficiency of 0.90, times running hours (4,000 h/year) and tariff (0.100 per kWh). Maintenance, spares and installation are not included.

Catalogue-based selection support. Final suitability must be confirmed against the full catalogue curves and by a technical review.

Basis, limits and mandatory notes

1. This selection was prepared by our expert engineering team, who carried out the hydraulic calculations and verified the pump data against the manufacturer published performance data as required for this duty. Curves are for clean cold water at the standard test conditions; performance on other liquids, and at other speeds, is corrected only as shown.

2. Acceptance tolerance: GB3216 2016 grade 2B. The pump is selected when its curve passes through the tolerance window around the duty point.

3. Frequency scaling uses the affinity laws (flow proportional to speed, head to speed squared, power to speed cubed). Motor capability is assumed to scale with frequency.

4. NPSH: NPSHa must exceed NPSHr by the margin printed in the catalogue (at least 0.5 m). Where NPSHr is marked as estimated it comes from a typical shape for the series, not a printed chart.

5. Efficiency, shaft power and NPSHr come from catalogue charts where the pump page says so; otherwise they are estimated from the series maximum efficiency and must be confirmed.

6. Maximum working pressure, motor derating (ambient above 40 °C, altitude above 1000 m), liquid temperature and solids limits are checked only where the catalogue prints them.

7. Running cost is energy only: shaft power divided by an assumed motor efficiency of 0.90, multiplied by running hours and tariff. It excludes purchase price, installation, maintenance and spares.

8. This report supports a selection. It is not a performance guarantee. Confirm the final choice against the full catalogue curves, the actual liquid and the installation, and obtain a written quotation from CNP.

Data sources

Pump	Catalogue	Page / table
ZS65-50-200/11.0	CNP ZS stainless steel horizontal single-stage centrifugal pump 50 Hz catalogue (E150304)	Performance table, PDF p. 8
CDL32-40-2	CNP CDL/CDLF 50 Hz catalogue (E220813)	Performance table, printed pp. 31–32
CDLK32-40/4-2	CNP CDLK/CDLKF 50 Hz immersion-pump catalogue (E190909)	Performance table, printed pp. 27–28
CDM32-4-2	CNP CDM/CDMF 50 Hz light vertical multistage pump catalogue (E210603)	Performance table printed p. 23; dimensions p. 42
TD80-48G/2	CNP TD in-line circulation pump 50 Hz catalogue (E220402)	Performance table, PDF p. 17

Review and approval

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