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COMMERCIAL POOL **PUMP SIZING &** SELECTION GUIDE

A practical planning tool for commercial pool operators,
facility managers & contractors.

Selecting the right commercial pool pump requires more than matching horsepower or replacing an existing model. The pump must deliver the required flow under the system's actual operating conditions while remaining compatible with filtration, heating, plumbing, and chemical treatment equipment. Use this guide to gather the key information needed to evaluate pump requirements and prepare for a replacement or upgrade.

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**STEP 01 GATHER YOUR POOL INFORMATION**

Start with the basic operating requirements of the pool.

● **POOL & CURRENT PUMP DETAILS**

Facility type _____

Pool volume _____ gallons Required turnover time _____ hours

Typical operating hours _____ hours/day Current motor horsepower _____ HP

Current pump manufacturer (make) _____

Model _____ Serial _____

STEP 02 CALCULATE REQUIRED FLOW RATE

Commercial pool circulation is typically measured in gallons per minute (GPM).

FLOW RATE FORMULA

$$\left[\frac{\text{Pool Volume} \div \text{Turnover Time}}{60} \right] = \text{Required GPM}$$

EXAMPLE

For a 120,000-gallon pool with a six-hour turnover:

$$[(120,000 \div 6) \div 60] = 333 \text{ GPM}$$

● **YOUR CALCULATION**Pool volume _____ gallons $\div$ Turnover time _____ hours $\div$ 60 =

Required flow _____ GPM

**IMPORTANT**

Confirm applicable turnover requirements for your facility and local jurisdiction before selecting equipment.

**STEP 03****DOCUMENT SYSTEM CONDITIONS**

Required GPM is only part of the equation. The pump must also overcome resistance created by the plumbing and connected equipment.

SYSTEM DETAIL	YOUR INFORMATION
Suction pipe size	_____
Return pipe size	_____
Filter type/model	_____
Filter maximum flow	_____ GPM
Heater type/model	_____
Heater flow range	_____ GPM
Current flow reading	_____ GPM
Estimated Total Dynamic Head	_____ ft.

● EQUIPMENT IN THE CIRCULATION LOOP

☐ Chemical controller/feed system	☐ Heater	☐ Additional treatment equipment
☐ Flow meter	☐ Water features	☐ Other:
_____	_____	_____

STEP 04 ACCOUNT FOR TOTAL DYNAMIC HEAD

Total Dynamic Head (TDH) represents the resistance the pump must overcome to move water through the system.

● TDH CAN BE AFFECTED BY

- ◆ Pipe size and length
- ◆ Elbows, fittings, and valves
- ◆ Filters and heaters
- ◆ Chemical-treatment equipment
- ◆ Elevation changes
- ◆ Plumbing restrictions

KEEP IN MIND

As TDH increases, pump flow typically decreases.

BEST PRACTICE

Compare the required GPM and estimated TDH against the manufacturer's pump performance curve rather than selecting a pump based on horsepower alone.

STEP 05 CONFIRM EQUIPMENT COMPATIBILITY

The proposed pump flow should stay within the operating limits of the surrounding equipment.

COMPONENT	WHAT TO CONFIRM
Filter	Recommended and maximum flow
Heater	Minimum and maximum flow range
Plumbing	Pipe size supports desired flow
Chemical system	Circulation supports treatment needs
Flow meter	Meter matches expected operating range

● POTENTIAL WARNING SIGNS

- | | |
|---|---|
| ☐ Current pump appears oversized or undersized | ☐ Plumbing may restrict circulation |
| ☐ Filter limits system flow | ☐ Equipment has changed since the current pump was installed |

If several apply, consider reviewing the entire circulation system before making a like-for-like replacement.



STEP 06 COMPARE PUMP OPTIONS

Once required GPM and TDH are known, use manufacturer pump curves to compare appropriate models.

TARGET OPERATING POINT

Required flow _____ GPM

Estimated TDH _____ ft.

EVALUATE

- ◆ Flow at required TDH
- ◆ Energy efficiency
- ◆ Electrical requirements
- ◆ Parts availability and support
- ◆ Motor horsepower
- ◆ Variable-speed capability
- ◆ Equipment compatibility



KEY TAKEAWAY

Pumps with the same horsepower can perform very differently under real system conditions.

STEP 07 CONSIDER VARIABLE-SPEED OPERATION

Commercial pools often operate circulation equipment for long periods, making energy use an important part of pump selection.

VARIABLE-SPEED PUMPS AND VFDS MAY OFFER

- ◆ Lower electrical consumption
- ◆ Reduced equipment wear
- ◆ Better flow control
- ◆ Greater operating flexibility

WORTH EVALUATING IF

A variable-speed or VFD upgrade may be worth evaluating if the current pump runs continuously at full speed or if flow requirements vary throughout the day.

**QUICK REFERENCE****REPAIR, RETROFIT OR REPLACE?**

Use this quick reference when evaluating an existing pump.

REPAIR	RETROFIT	REPLACE
Issue is isolated	Pump remains serviceable	Repairs are frequent
Parts are readily available	Energy use is high	Parts are obsolete
Performance is acceptable	Flow control needs improvement	Pump is incorrectly sized
Repair cost is reasonable	A VFD could improve operation	Operating costs are excessive

AVOID THESE**COMMON PUMP SIZING MISTAKES**

- **SELECTING BY HORSEPOWER ALONE**

Horsepower does not show how much flow the pump will deliver at the system's TDH. Always consult manufacturer pump curves to help size the pump and determine the model.

- **AUTOMATICALLY REPLACING LIKE-FOR-LIKE**

The existing pump may not be correctly sized for current conditions.

- **OVERSIZING "JUST TO BE SAFE"**

Excessive capacity can increase energy costs and strain connected equipment.

- **IGNORING SYSTEM RESISTANCE**

Required GPM must always be evaluated together with TDH.

**CHECKLIST****COMMERCIAL POOL PUMP SELECTION CHECKLIST**

Before requesting a recommendation or quote, gather:

● POOL REQUIREMENTS

- ☐ Pool volume
- ☐ Required turnover time
- ☐ Required GPM
- ☐ Operating hours

● EXISTING SYSTEM

- ☐ Pump manufacturer/model
- ☐ Motor horsepower
- ☐ Filter manufacturer/model
- ☐ Heater manufacturer/model
- ☐ Plumbing sizes
- ☐ Current flow reading

● PERFORMANCE INFORMATION

- ☐ Estimated TDH
- ☐ Current circulation issues
- ☐ Recent repair history
- ☐ Energy-use concerns
- ☐ Planned system changes

● HELPFUL DOCUMENTATION

- ☐ Pump and motor nameplate photos
- ☐ Mechanical-room photos
- ☐ Equipment manuals
- ☐ Plumbing or system drawings



Contact Halogen Supply to discuss your commercial pool pump requirements or request a quote.

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REQUEST A QUOTE