

TP, TPD, TPE, TPED, TPE2, TPE2 D, TPE3, TPE3 D

In-line circulator pumps

50 Hz



be
think
innovate

LENNTECH

GRUNDFOS 

11. TPE3



Fig. 24 TPE3 and TPE3 D pumps

Technical data

Flow rate:	Up to 120 m ³ /h
Head:	Up to 25 m
Liquid temperature:	-25 to +120 °C (140 °C for a short period)
Maximum operating pressure:	16 bar
Motor sizes, single-phase:	0.25 to 1.5 kW
Motor sizes, three-phase:	0.25 to 2.2 kW

Construction

The pumps have built-in differential-pressure and temperature sensor.

The permanent-magnet motor has a built-in frequency converter for continuous adjustment of the pressure to the flow rate. All pumps are fitted with Grundfos permanent-magnet MGE motors that have motor efficiency class IE5 according to IEC 60034-30-2.

The range is a preset solution for quick and safe installation.

The pump has a colour display for easy and intuitive pump setup and with full access to all functions.



Fig. 25 Example of status display for TPE3 pumps

The pumps are available as single-head, TPE3, and twin-head, TPE3 D, pumps.

The pumps have PN 6, PN 10 or PN 16 flanges.

The pumps are fitted with an unbalanced mechanical shaft seal.

The power head (motor, pump head and impeller) and pump housing are held together by a specially designed clamp. The clamp allows for fast repositioning of the pump housing and fast service of the pump.

The twin-head pumps are designed with two parallel power heads. A flap valve in the common outlet port is opened by the flow of the pumped liquid and prevents backflow of liquid into the idle pump head.

As radial and axial forces are absorbed by the fixed bearing in the motor drive-end, the pump requires no bearing.

Pumps with stainless-steel pump housing, version I, are suitable for circulation of domestic hot water.

Materials

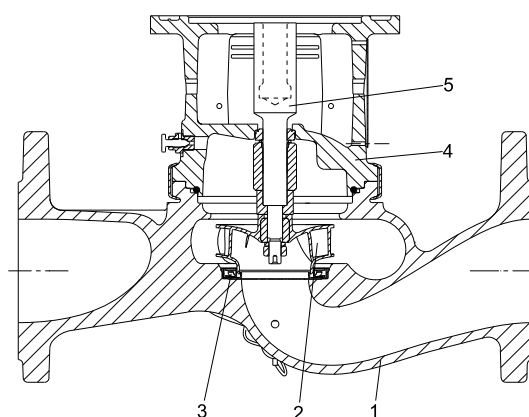


Fig. 26 Sectional drawing of a TPE3 pump

Material specification

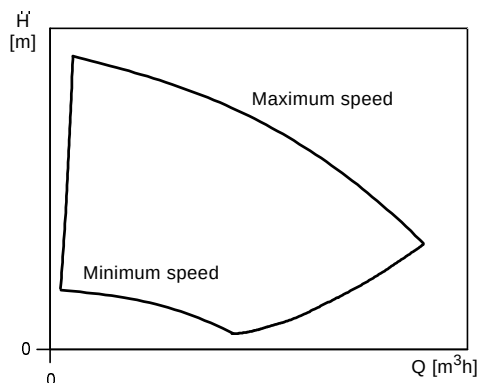
Pos.	Component	Material	EN/DIN
1	Pump housing	Cast iron EN-GJL-250 Stainless steel	EN1561 EN 1.4308
2	Impeller	Composite PES-GF30	
3	Neck ring	Stainless steel	EN 1.4404
4	Pump head/motor stool	Cast iron EN-GJL-250 Stainless steel	EN1561 EN 1.4308
	Secondary seals	EPDM	
	Rotating seal face	Silicon carbide	
	Stationary seat	Carbon (resin-impregnated) Silicon carbide	
5	Stub shaft	Stainless steel	EN 1.4404

Applications

The pumps have integrated speed control for automatic adaptation of performance to current conditions.

The energy consumption is thus kept at a minimum.

The pumps can operate at any duty point within the range between minimum and maximum speed.



TM01 4916 1099

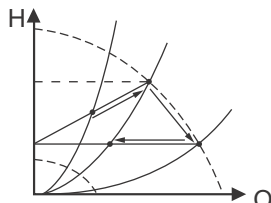
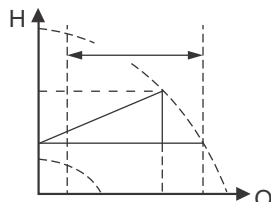
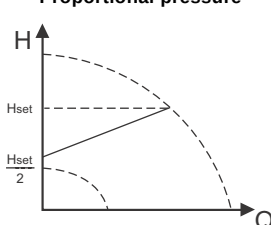
Fig. 27 Duty range of TPE3

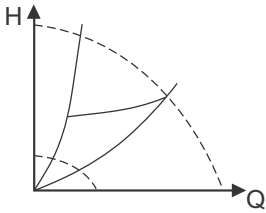
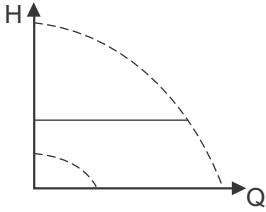
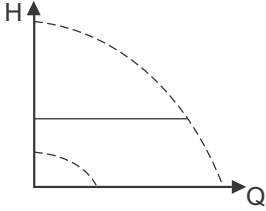
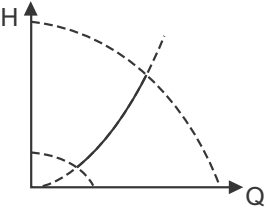
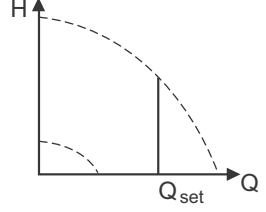
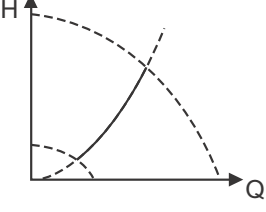
Depending on the application, the pumps offer energy savings, increased comfort or improved processing.

The pumps are suitable for applications requiring pressure control.

AUTO_{ADAPT}

TPE3 pumps are factory-set to AUTO_{ADAPT} which continuously adapts the pump performance according to the actual system characteristic.

System application	Select this control mode	Pump type
Recommended for most heating systems, especially in systems with relatively large pressure losses in the distribution pipes. See description under proportional pressure. In replacement situations where the proportional-pressure duty point is unknown. The duty point has to be within the "AUTO_{ADAPT}" operating range. During operation, the pump automatically makes the necessary adjustment to the actual system characteristics. This setting ensures minimum energy consumption and low noise level from the valves, and therefore reduces operating costs and increases comfort.	"AUTO_{ADAPT}" 	All
The FLOW_{ADAPT} control mode is a combination of AUTO_{ADAPT} and FLOW_{LIMIT}. This control mode is suitable for systems where a maximum flow limit, FLOW_{LIMIT}, is desired. The pump continuously monitors and adjusts the flow, thus ensuring that the selected FLOW_{LIMIT} is not exceeded. Main pumps in boiler applications where a steady flow through the boiler is required. No extra energy is used for pumping too much liquid into the system. In systems with mixing loops, the control mode can control the flow in each loop. Benefits: - Enough water for all loops at peak load conditions if each loop has been set to the right maximum flow. - The dimensioned flow for each zone, required heat energy, is determined by the flow from the pump. This value can be set precisely in the FLOW_{ADAPT} control mode without the use of pump throttling valves. - When the flow is set lower than the balancing valve setting, the pump ramps down instead of losing energy by pumping against a balancing valve. - Cooling surfaces in air-conditioning systems operate at high pressure and low flow.	FLOW_{ADAPT} 	All
In systems with relatively large pressure losses in the distribution pipes and in air-conditioning and cooling systems. - Two-pipe heating systems with thermostatic valves and the following: - very long distribution pipes - strongly throttled pipe balancing valves - differential-pressure regulators - large pressure losses in those parts of the system through which the total quantity of water flows, for example boiler, heat exchanger and distribution pipe up to the first branching. - Primary circuit pumps in systems with large pressure losses in the primary circuit. - Air-conditioning systems with the following: - heat exchangers (fan coils) - cooling ceilings - cooling surfaces.	Proportional pressure 	All

System application	Select this control mode	Pump type
In systems with relatively large pressure losses in the distribution pipes and in air-conditioning and cooling systems. - Two-pipe heating systems with thermostatic valves and the following: - very long distribution pipes - strongly throttled pipe balancing valves - differential-pressure regulators - large pressure losses in those parts of the system through which the total quantity of water flows, for example boiler, heat exchanger and distribution pipe up to the first branching. - Primary circuit pumps in systems with large pressure losses in the primary circuit. - Air-conditioning systems with the following: - heat exchangers (fan coils) - cooling ceilings - cooling surfaces.	Constant differential pressure with differential-pressure sensor located in the system 	All
In systems with relatively small pressure losses in the distribution pipes. - Two-pipe heating systems with thermostatic valves and the following: - dimensioned for natural circulation - small pressure losses in those parts of the system through which the total quantity of water flows, for example boiler, heat exchanger and distribution pipe up to the first branching or modified to a high differential temperature between flow pipe and return pipe, for example district heating. - Underfloor heating systems with thermostatic valves. - One-pipe heating systems with thermostatic valves or pipe balancing valves. - Primary circuit pumps in systems with small pressure losses in the primary circuit.	Constant differential pressure 	All
In pressure boosting systems.	Constant pressure 	All
In systems with a fixed system characteristic. Examples: - one-pipe heating systems - boiler shunts - systems with three-way valves - domestic hot-water circulation. You can use $FLOW_{LIMIT}$ to control the maximum circulation flow.	Constant temperature and constant differential temperature 	All
In systems requiring a constant flow, independently of pressure drop. Examples: - chillers for air-conditioning - heating surfaces - cooling surfaces.	Constant flow rate 	All
In systems requiring a constant tank level, independently of the flow rate. Examples: - process water tanks - boiler condensate tanks.	Constant level 	All
In systems with pumps operating in parallel. The multipump function enables the control of single-head pumps connected in parallel (two to four pumps) and twin-head pumps without the use of external controllers. The pumps in a multipump system communicate with each other via the wireless GENlair connection or the wired GENI connection.	"Assist" menu "Multipump setup"	All

Multipump system

The multipump function enables the control of two pumps connected in parallel without the use of external controllers. The pumps in a multipump system communicate with each other via the wireless GENlair connection or the wired GENI connection.

A multipump system is set via a selected pump, that is the master pump, which is the first selected pump. If two pumps in the system are configured with an outlet-pressure sensor, both pumps can function as master pumps and take over the master pump function if the other fails. This provides additional redundancy in the multipump system.

The multipump functions are described in the following sections.

Alternating operation

Alternating operation functions as a duty-standby operating mode and is possible with two pumps of same size and type connected in parallel. The main purpose of the function is to ensure an even amount of running hours and to ensure that the standby pump takes over if the running pump stops due to an alarm. Each pump requires a non-return valve in series with the pump.

You can choose between two alternating operation modes:

- Alternating operation, time
Pump changeover to the other is based on time.
- Alternating operation, energy
Pump changeover to the other is based on energy consumption.
If the duty pump fails, the other pump takes over automatically.
Only one pump is operating at a time. The change from one pump to the other depends on time or energy. If a pump fails, the other pump takes over automatically.

Pump system:

- Twin-head pump.
- Two single-head pumps connected in parallel.
The pumps must be of the same type and size.
Each pump requires a non-return valve in series with the pump.

Backup operation

Backup operation is possible with two pumps of same size and type connected in parallel. Each pump requires a non-return valve in series with the pump.

One pump is operating continuously. The backup pump is operated for a short time each day to prevent seizing up. If the duty pump stops due to a fault, the backup pump starts automatically.

Pump system:

- Twin-head pump.
- Two single-head pumps connected in parallel.
The pumps must be of the same type and size.
Each pump requires a non-return valve in series with the pump.

Cascade operation

Cascade operation ensures that the pump performance is automatically adapted to the consumption by switching pumps on or off. The system thus runs as energy-efficiently as possible with a constant pressure and a limited number of pumps. When a twin-head pump is running in constant-pressure control mode, the second pump head starts at 90 % and stops at 50 % performance. All pumps in operation run at equal speed. Pump changeover is automatic and depends on energy, operating hours and fault.

Pump system:

- Twin-head pump.
- Two to four single-head pumps connected in parallel.
The pumps must be of the same type and size.
Each pump requires a non-return valve in series with the pump.
Set the control mode to "Const. pressure" or "Const. curve".

Control options

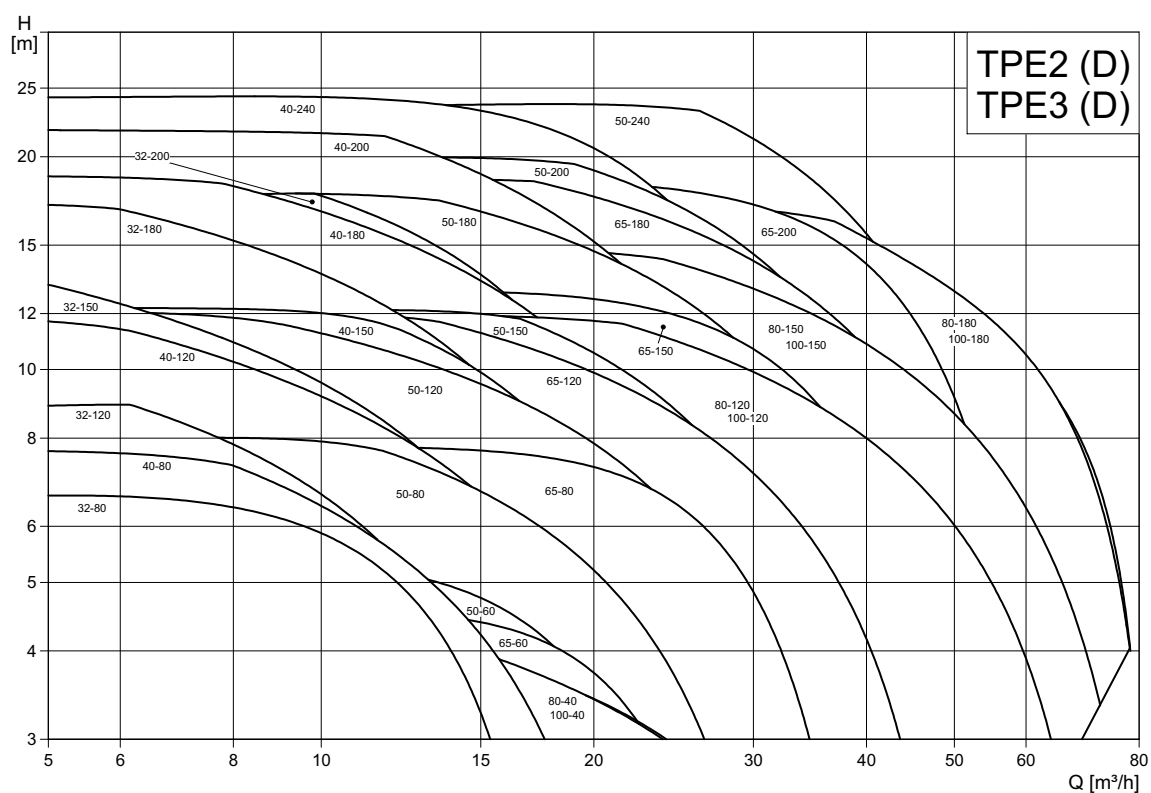
Communication with the pumps is possible via the control panel, Grundfos GO or a central building management system.

The purpose of controlling the pumps is to monitor and control the pressure, temperature, flow rate of the system.

For further information on control options of the pumps, see page [105](#).

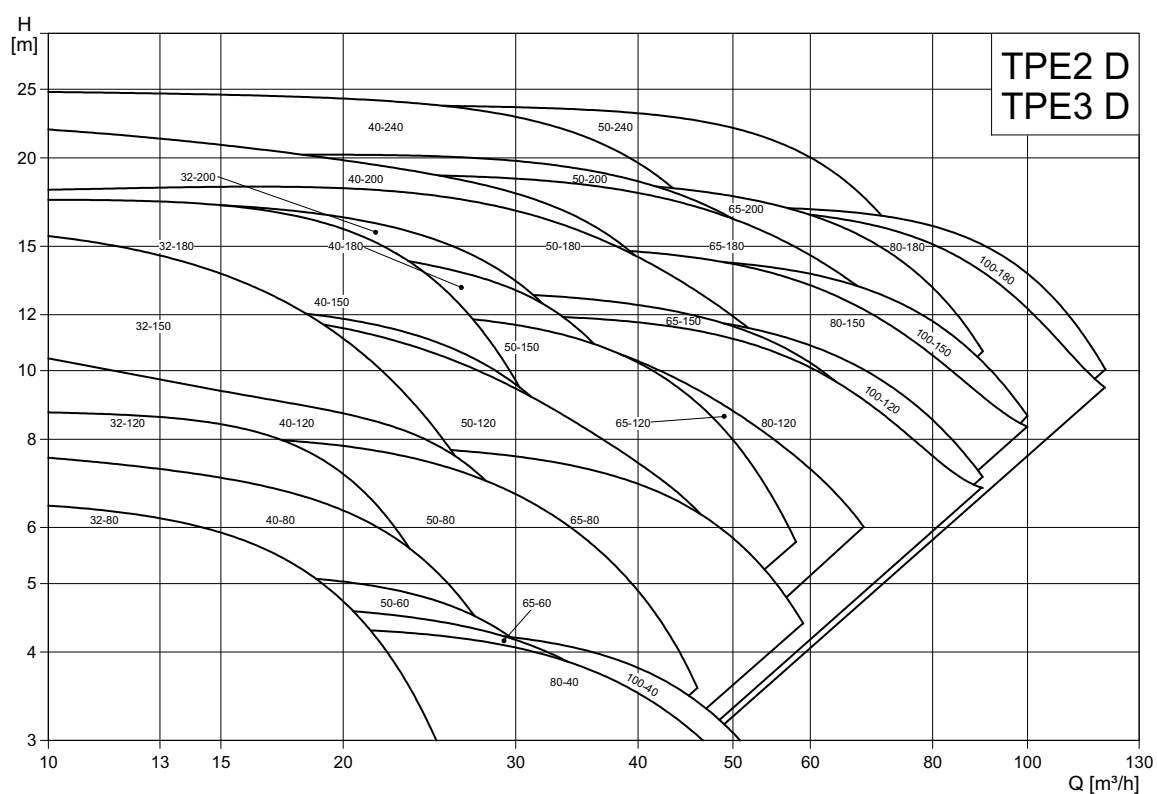
2. Performance range

Performance range, TPE2, TPE3, PN 6, 10, 16



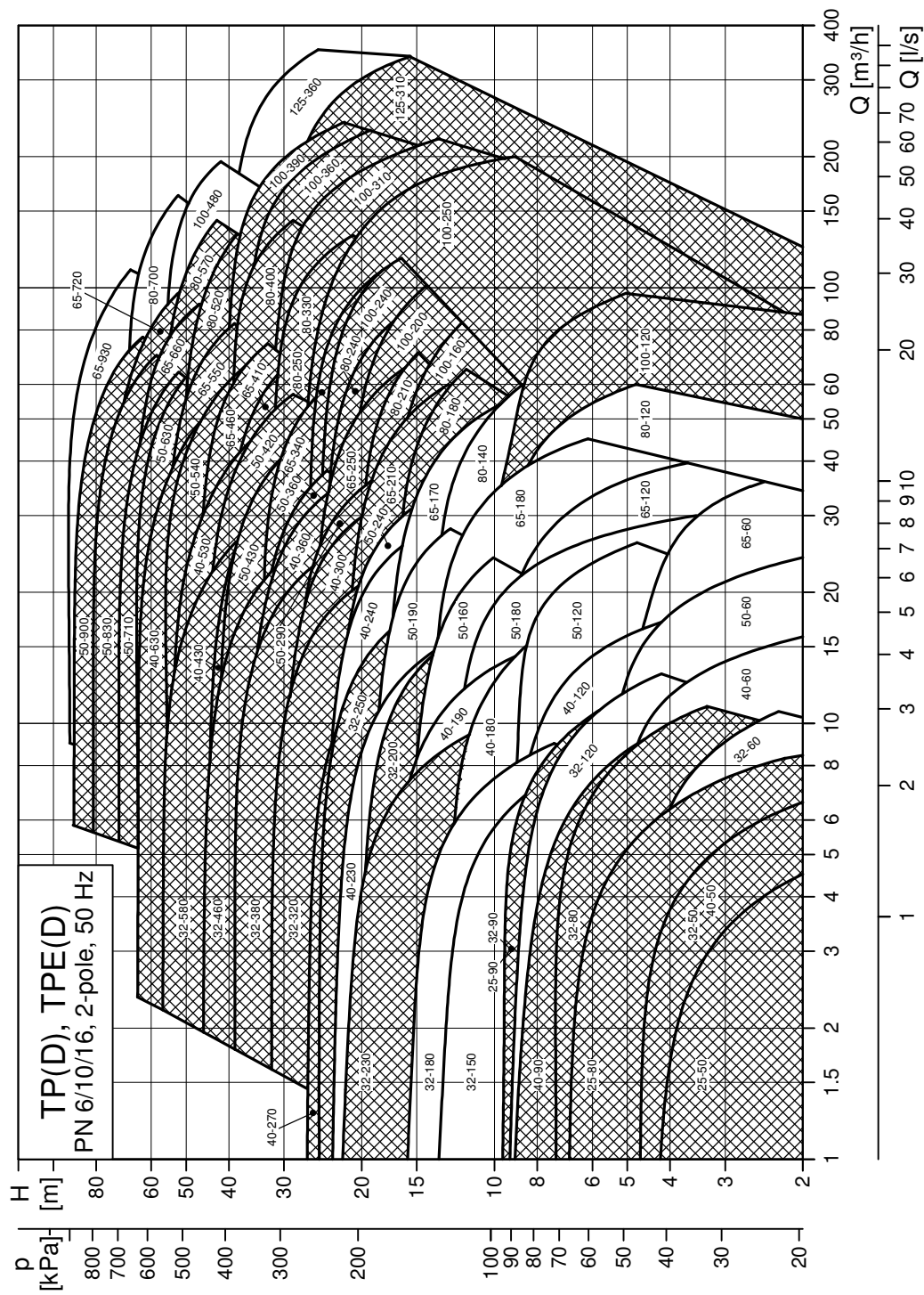
TM05 8177 4914

Performance range, TPE2 D, TPE3 D, twin-head operation, PN 6, 10, 16



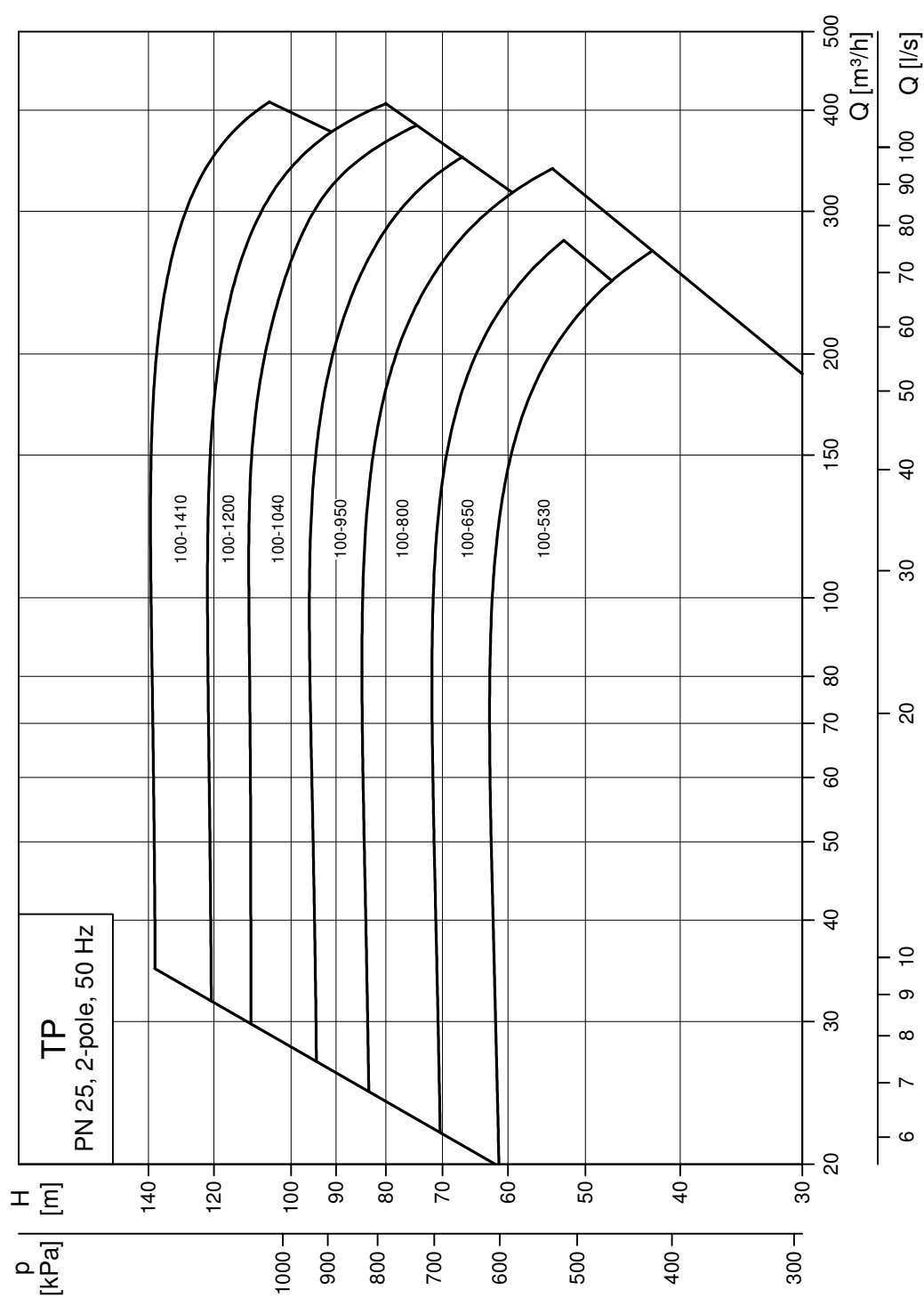
TM05 8198 4914

Performance range, 2-pole, PN 6, 10, 16

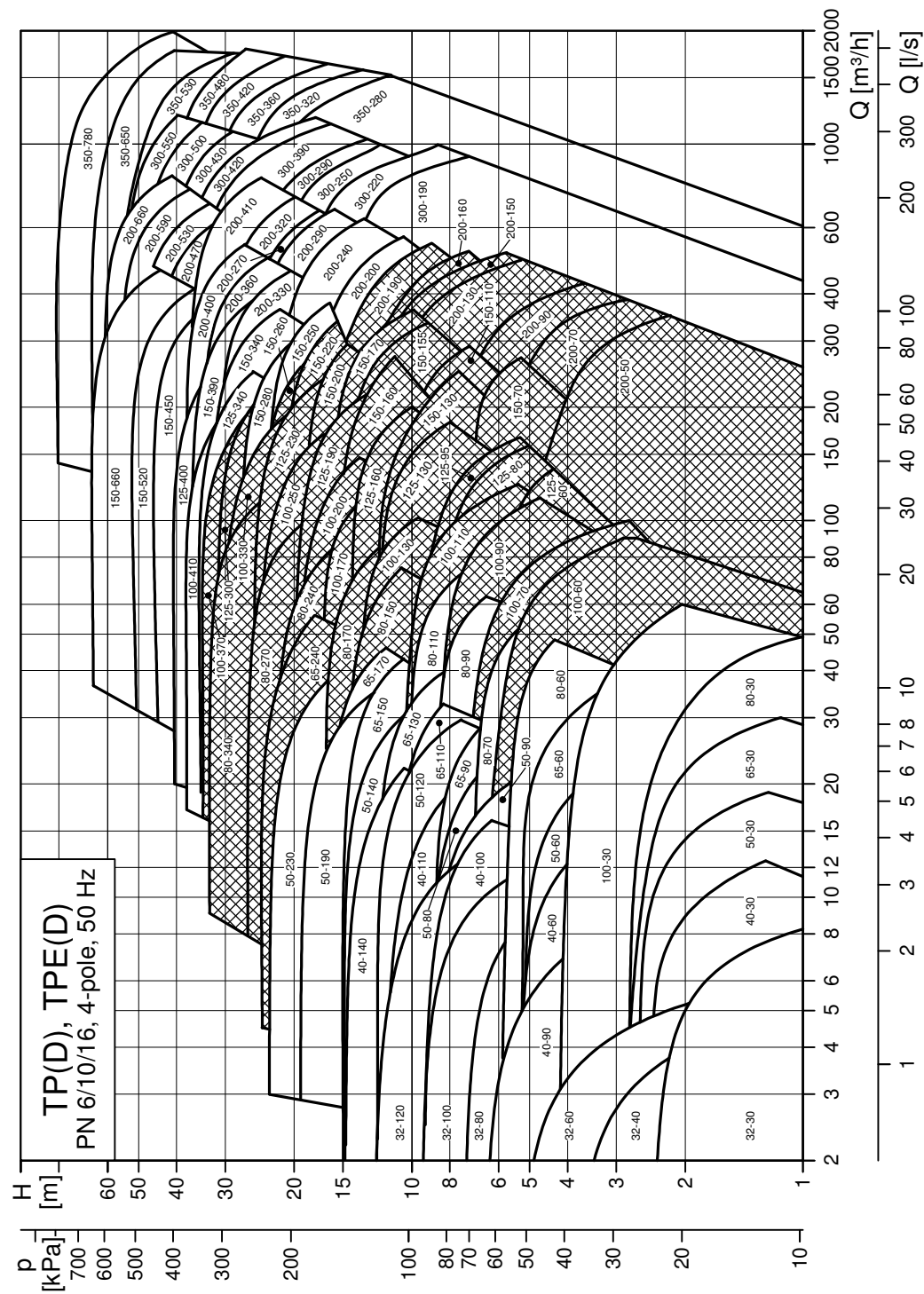


TM02 7550 4617

Performance range, 2-pole, PN 25

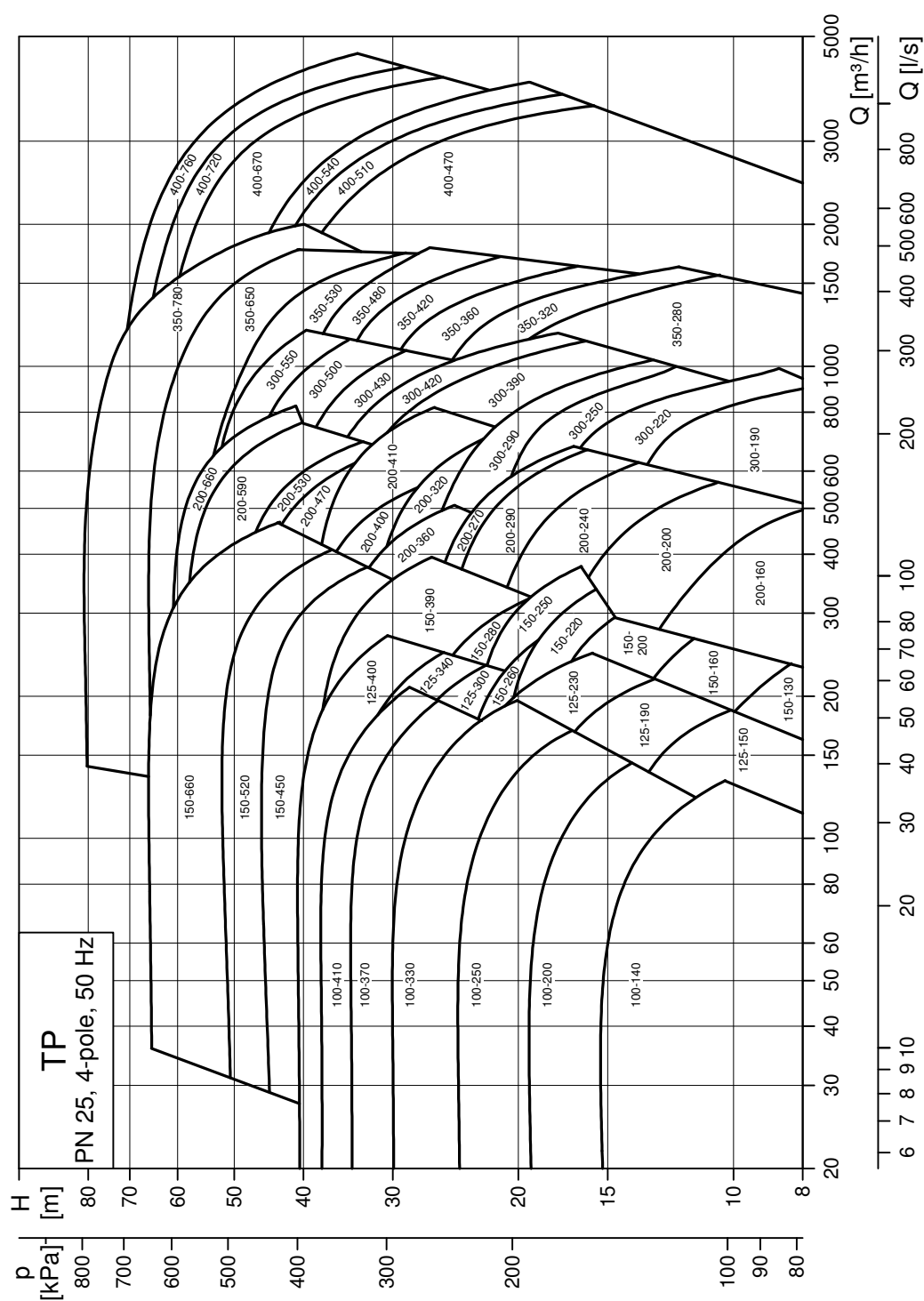


Performance range, 4-pole, PN 6, 10, 16

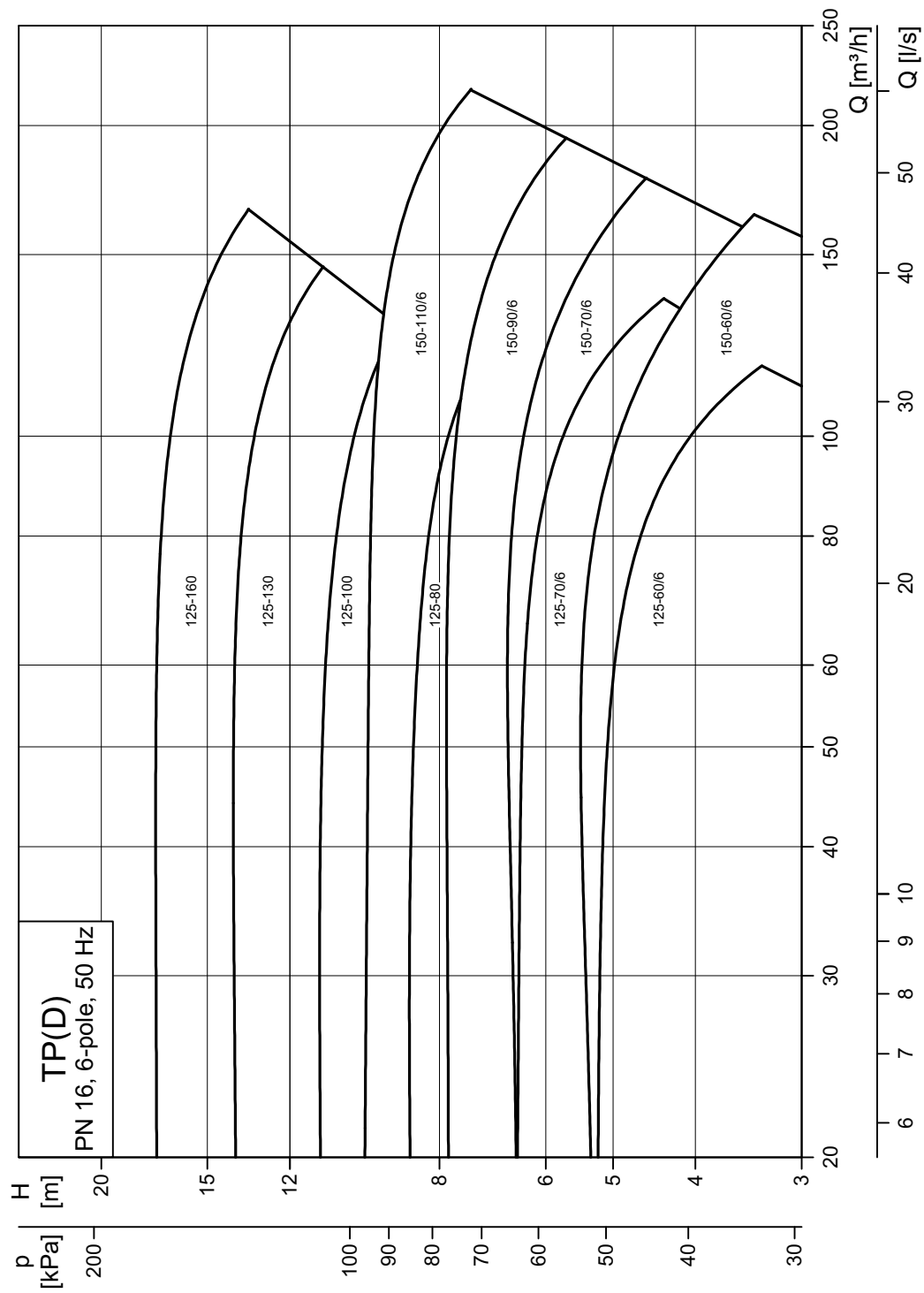


TM02 7551 4217

Performance range, 4-pole, PN 25



Performance range, 6-pole, PN 16



TM02 8768 3814

V7124417 1117

ECM: 1222592

LENNTECH

info@lennotech.com Tel. +31-152-610-900
www.lennotech.com Fax. +31-152-616-289

GRUNDFOS 