

# TACOSOL LOAD EXA L

STORAGE LOADING STATION FOR LARGE SOLAR INSTALLATIONS



Connection-ready storage loading station for efficiently transferring heat from solar energy to large installations

## DESCRIPTION

The ready-to-connect TacoSol Load Exa L is both a solar energy station and a loading module combined in a single unit. It has been designed to load one or two storage tanks via a solar heating energy system according to the flow temperature on a zone-specific basis. The solar energy gained is transferred via a high-efficiency stainless steel plate heat exchanger to the storage tank(s). The storage loading station is suitable for collector surfaces of up to 240 m<sup>2</sup> (see design diagrams).

## INSTALLATION POSITION

Fully preassembled, connection-ready and designed for direct mounting on the wall. Only the storage and collector sensors still need to be fitted.

## OPERATION

- The solar energy is transferred to the storage tank(s) by means of a highly efficient stainless steel plate heat exchanger
- The pre-set, user-friendly controller uses rotational speed regulation to adjust the primary and secondary pump for ensuring optimum temperature differentials for loading the storage tank(s)

## ADVANTAGES

### Compact

- Equipped with all the necessary valves and components, ideally complements the TacoTherm Fresh Exa C fresh water station

### Secure

- Intrinsic safety of the system thanks to an integrated safety subassembly

### Simple

- Station is fully preassembled and supplied with ready-to-connect wiring

### Efficient

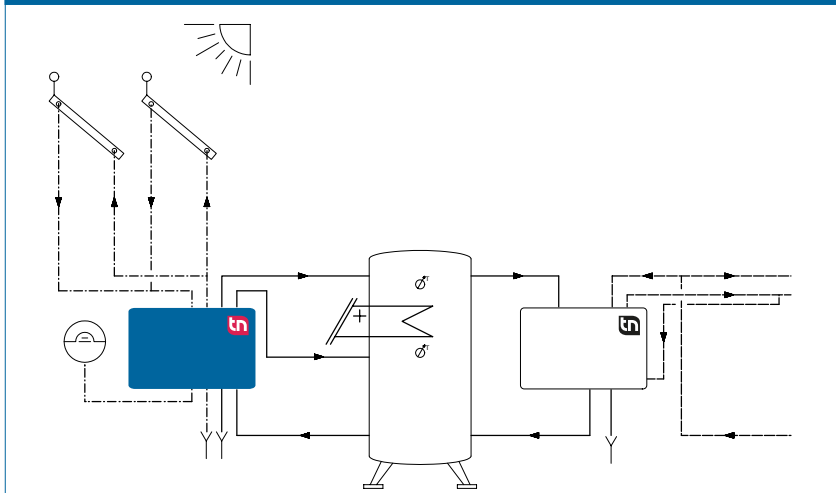
- Highly efficient system operation due to permanent air separation, use of high-efficiency pumps as well as maximum solar yield from the roof owing to the possible dual-zone loading of the storage tank

- The controller regulates the three-way switching valve to operate either storage inflow 1 or 2, thereby enabling optimal dual-zone supply in the storage unit

## BUILDING CATEGORIES

- Apartment blocks, multiple dwelling units
- Residential care facilities and hospitals
- Administration and service buildings
- Hotels and restaurants, industrial kitchens
- School buildings and sports facilities
- Industrial buildings and systems

## SYSTEM/BASIC DIAGRAM



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## SPECIFICATION TEXT

See [www.taconova.com](http://www.taconova.com)

## TECHNICAL DATA

### General

- TSL EXA L Controller
- Weight (empty): 135 kg
- Overall dimensions (overall dimensions of hood): W 1176 mm × H 746 mm × D 316 mm

### Material

- Design hood made from galvanized sheet metal, powder-coated
- Pumps: Cast iron
- Valve housing: Brass
- Pipes: Stainless steel 1.4404
- Plate heat exchanger: Stainless steel
- Plates and connector pieces: Stainless steel 1.4401
- Solder: 99.99 % copper
- Seals: AFM 34

### Primary side

- Operating temperature  $T_{0 \text{ max}}$ : 110 °C
- Operating pressure  $P_{0 \text{ max}}$ : 8 bar
- DN25 safety valve (intrinsic safety) with 8 bar discharge pressure
- Primary pump: Wilo Stratos Para 30/1-12 (0-10 V)
- Ventilator group with integrated shutoff, filling, purging and drainage facility

### Secondary side

- Operating temperature  $T_{0 \text{ max}}$ : 110 °C
- Operating pressure  $P_{0 \text{ max}}$ : 3 bar
- Temperature and flow rate sensor integrated in the return line, measurement range: 10 to 200 l/min
- DN25 safety valve (intrinsic safety) with 3 bar discharge pressure
- Wilo Stratos Para 30/1-12 (0-10 V)
- Switching valve DN 32 (optional)
- TacoSetter Bypass (optional)

### Power consumption

- Circulating pump (primary): 16 - 310 W

### Electrical connection data

- Mains voltage: 230 VAC ± 10 %
- Mains frequency: 50...60 Hz
- Protection type: IP 40

### Fluids

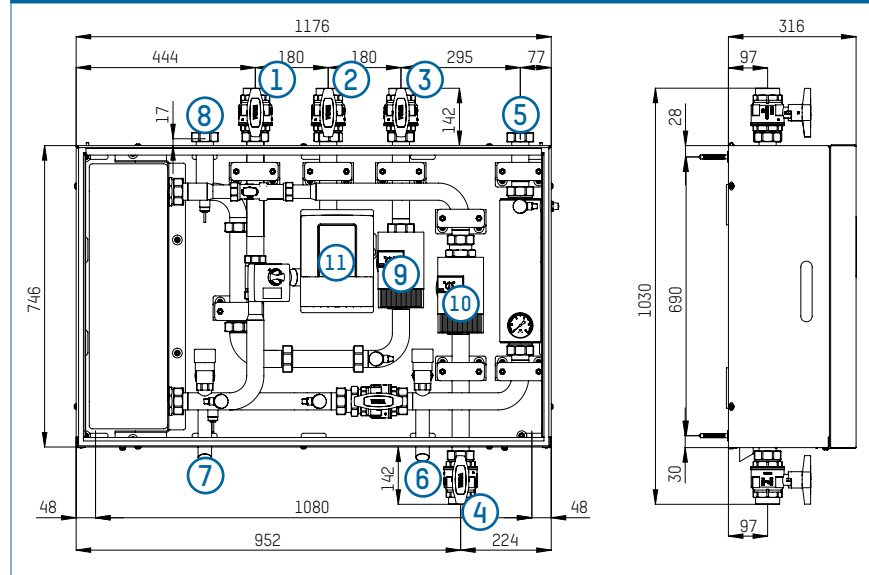
- Heating water (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Cold water (DIN 1988-200:2012-05)
- Water mixtures with typical corrosion and anti-frost additives

## TYPE OVERVIEW

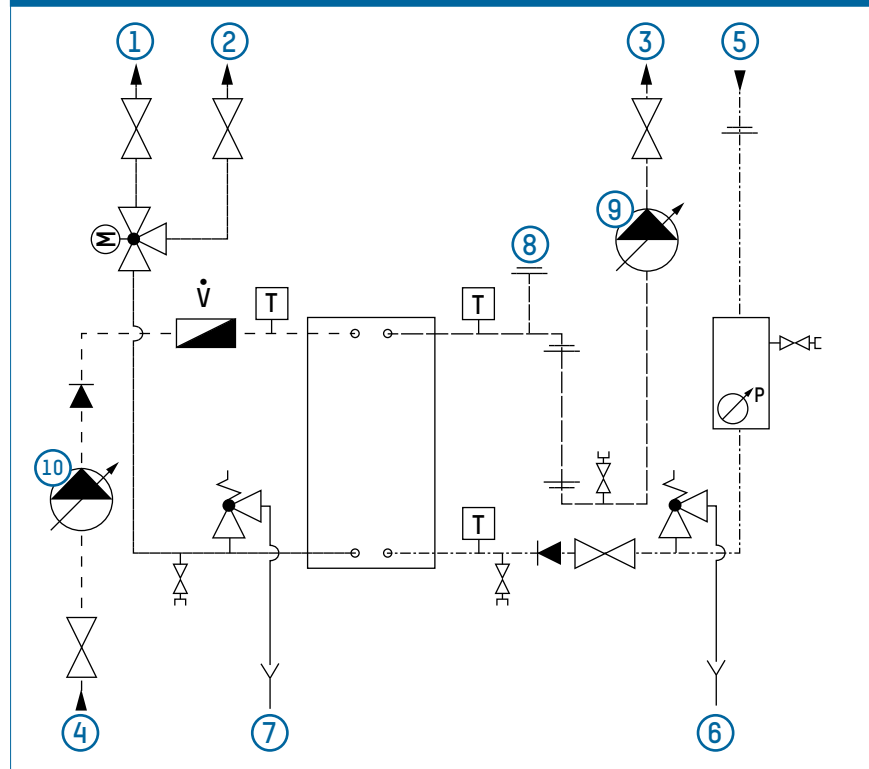
Tacosol Load Exa L | Connection-ready storage loading station, basic version

Order no.	Rp	Collector surface	Thermal insulation
275.5561.000	2"	up to 240 m <sup>2</sup>	no
275.5561.382	2"	up to 240 m <sup>2</sup>	yes

## DIMENSIONAL DRAWING

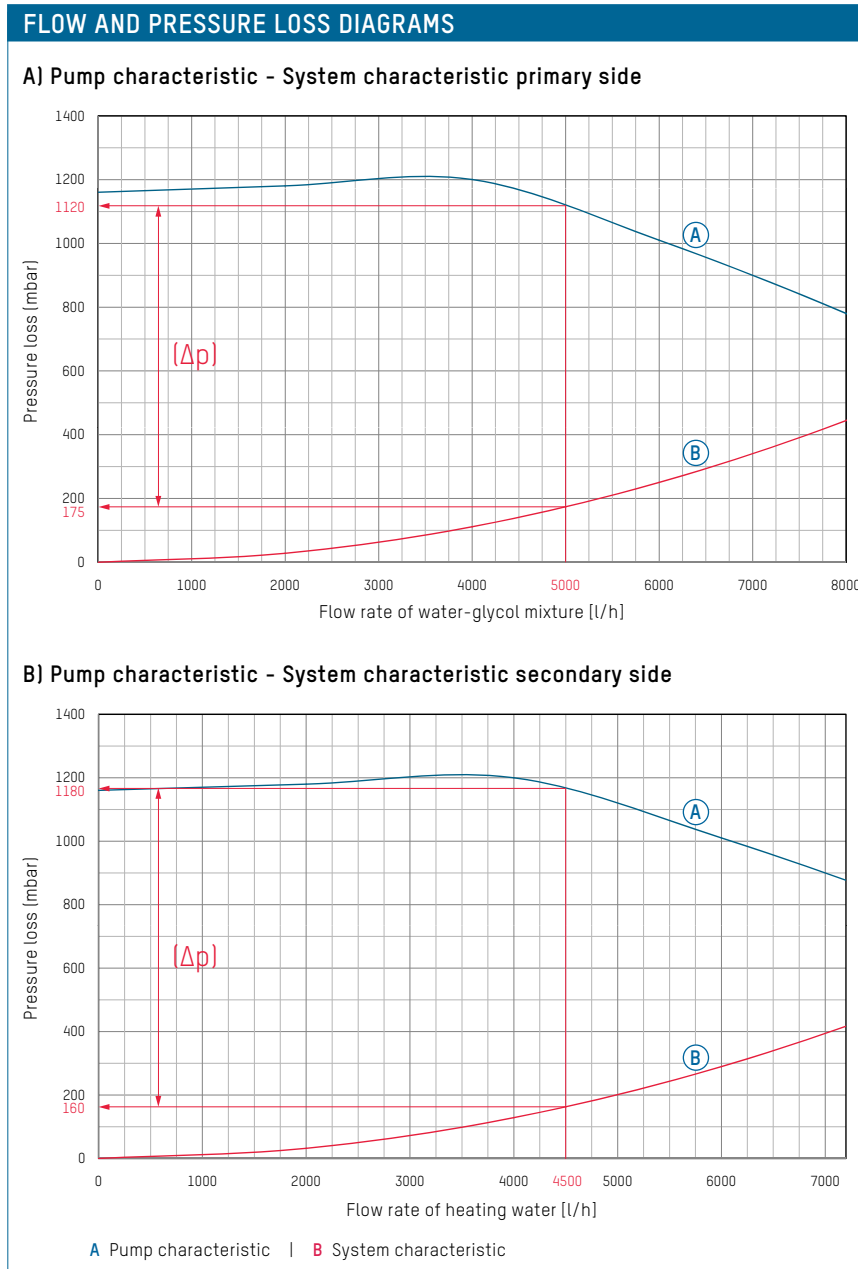


## PRODUCT DIAGRAM



- |                              |                                |
|------------------------------|--------------------------------|
| 1 Secondary storage flow 1   | 7 Secondary safety valve 3 bar |
| 2 Secondary storage flow 2   | 8 MAG                          |
| 3 Primary solar return       | 9 Primary pump                 |
| 4 Secondary storage return   | 10 Secondary pump              |
| 5 Primary solar flow         | 11 Controller                  |
| 6 Primary safety valve 8 bar |                                |

CHARACTERISTIC OF PLATE HEAT EXCHANGER							
BASICS		AVERAGE LOG TEMP DIFFERENCE [LOG DELTA T]					
Calculation values 600 [W/m <sup>2</sup> ]		Spec. flow rate [l/(h*m <sup>2</sup> )]	Collector surface (m <sup>2</sup> )				
			80	120	160	200	240
<b>LEGEND / EXPLANATION</b>		10	6,5	7,0	7,6	8,5	9,0
$\Delta T < 5K$ Efficient operation		25	3,0	3,4	3,7	4,2	4,5
$\Delta T 5-7K$ Reduced yield		35	2,3	2,8	3,1	3,5	
$\Delta T > 7K$ Considerably reduced yield		50	1,7	2,2	2,5		



### EXAMPLE OF INTERPRETING THE DIAGRAMS

**Given**

- Collector surface: 200 m<sup>2</sup>
- Average log temp difference: 4.2
- Spec. flow rate 25 l/h × m<sup>2</sup>

**Sought**

- Residual pump head primary circuit
- Residual pump head secondary circuit

**Approach**

- The primary flow rate of 5,000 l/h is calculated based on:
- Collector surface x Specific flow rate
- In Diagram A) the primary pressure loss at the intersection point of the system characteristic is 175 mbar.
- The residual pump head is 1120 mbar. Discounting the pressure loss this gives rise to a residual pump head of 945 mbar ( $\Delta p$ ).
- Diagram B): There is a secondary flow rate of 4,500 l/min on the vertical line to the calculated primary flow rate of 5,000 l/min. This correction arises from the different thermal capacities of the heating water on the secondary side and the ethylene-glycol mixture on the primary side and was taken into account in the diagram illustration.
- The secondary pressure loss at the intersection of the system characteristic is 160 mbar.
- The pump delivery head at the intersection of the pump characteristic is 1180 mbar. Discounting the system pressure loss this gives rise to a residual pump head of 1020 mbar ( $\Delta p$ ).