

Vertical Ring-section Pump

WKTB

Type Series Booklet



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Type Series Booklet WKTb

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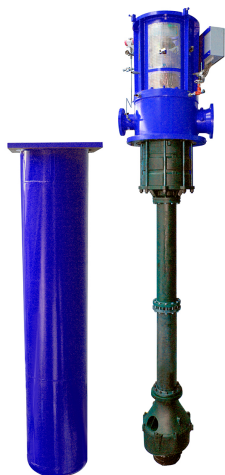
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Energy

Vertical Ring-section Pump

WKTb



Main applications

- Condensate transport

Fluids handled

- Condensate

Operating data

Operating properties

Characteristic		Value	
		50 Hz	60 Hz
Flow rate	Q [m³/h]	≤ 1500	≤ 1800
Head ¹⁾	H [m]	≤ 370	
Fluid temperature	T [°C]	≤ 100	
Pump suction pressure	p _s [bar]	-1 to 4.5 bar	
Pump discharge pressure ²⁾	p _d [bar]	≤ 40	
Speed	n [rpm]	≤ 1500	≤ 1800

Designation

Example: WKTb 7/1+1...n

Designation key

Code	Description
WKTb	Type series
7	Size
1	Suction stage
1...n	Number of subsequent stages

Design details

Design

- Vertical ring-section pump
- Can-type pump design
- Multistage
- Radial hydraulic systems
- Single-entry impellers (subsequent stage(s))
- Double-entry impellers (suction stage)

Balancing device

WKTb 6:

- Axial thrust balancing by balance drum

WKTb 7 to 9:

- Axial thrust balancing by hydraulically balanced impellers of the subsequent stages

Drive

- Electric motor, type of construction V1
- Vertical installation

Shaft seal

- Gland packing
- Single mechanical seal, or double mechanical seal in tandem arrangement (both in cartridge design)
- Barrier fluid line

Coupling

Drive coupling:

- Flexible coupling
- Flexible disc coupling
- Slip clutch
- Gear coupling with grease fill
- Flexible spacer-type coupling

Spacer-type coupling:

- Additional coupling with removable spacer

Bearings

Radial bearings:

- Product-lubricated plain bearing

Combined thrust and radial bearing:

- Rolling element bearing or pivoted segmental thrust bearing
- Oil bath lubrication
- Air-cooled (WKTb 6) / water-cooled (WKTb 7 - 9)

Nozzle position

- Horizontal above the installation floor
- 180° opposite to each other
- Optionally suction nozzle arranged below floor

1) At Q_{min}, ρ = 1000 kg/m³

2) At Q = 0, ρ = 1000 kg/m³

Connections

- Connecting dimensions to DIN EN or ASME

Installation

- The can is arranged in a pit below the installation floor
- The pump set is connected to the structure via its baseplate.

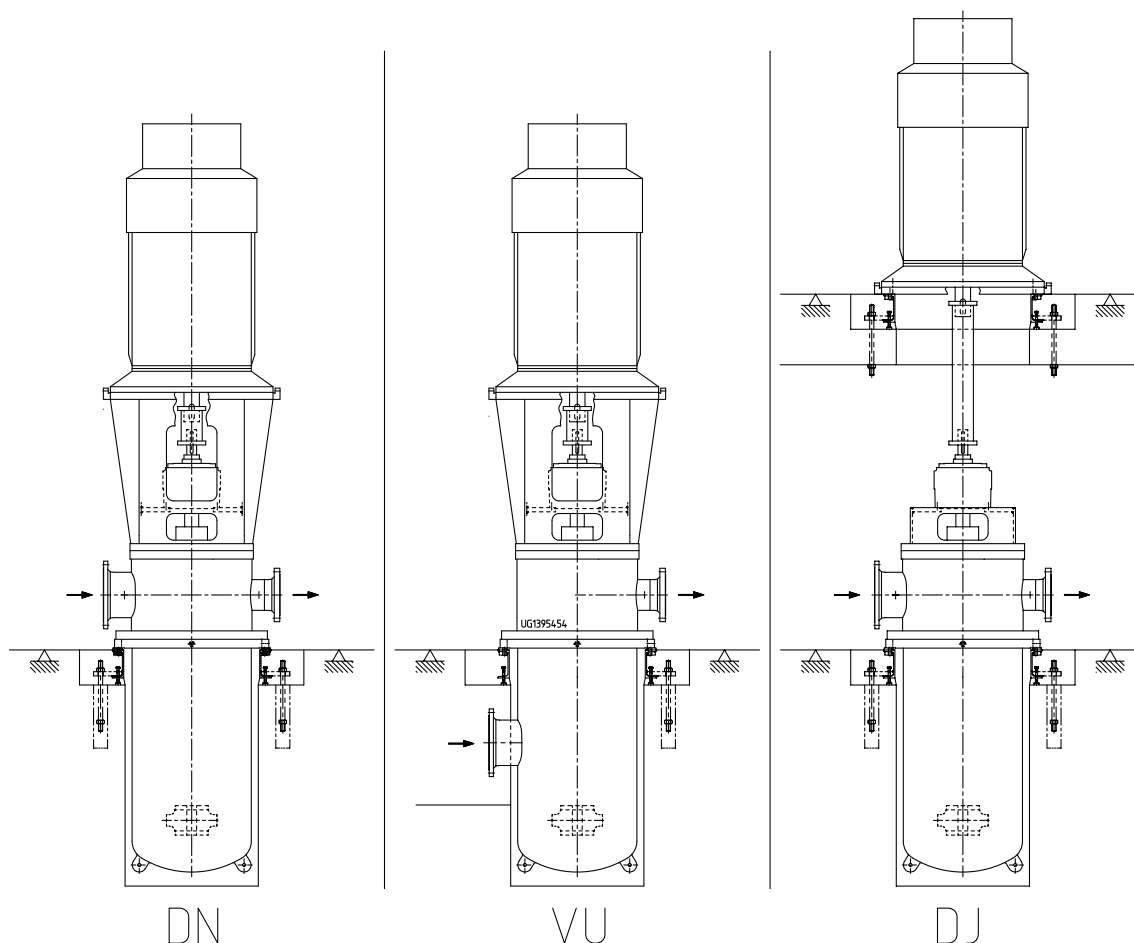


Fig. 1: WKTB installation types

Coating and preservation

Coating

Wetted surfaces:

No coating is applied to wetted surfaces.

Non-wetted surfaces:

Non-wetted surfaces are sand-blasted and then provided with a priming coat, an intermediate coat and a top coat. No coating is applied to the mechanical seal cartridge and to the drive coupling.

Preservation

- Preservation to KSB standard

Product benefits

- Optimum matching to customer requirements with a range of material variants

- Excellent rotordynamic properties by subsequent stages fitted directly at the distributor casing, separate from the suction stage
- High operating reliability by casing wear rings with anti-seizure properties
- Smooth running with low-wear, product-lubricated plain bearings
- Low installation and maintenance costs as cartridge mechanical seals can be replaced without removing the motor.

Acceptance tests / warranty

- Functional test
Every pump undergoes functional testing to KSB standard.
- Tests/inspections to standard QCP checklist
- Warranties
Warranties are given within the scope of the valid terms and conditions of sale and delivery.

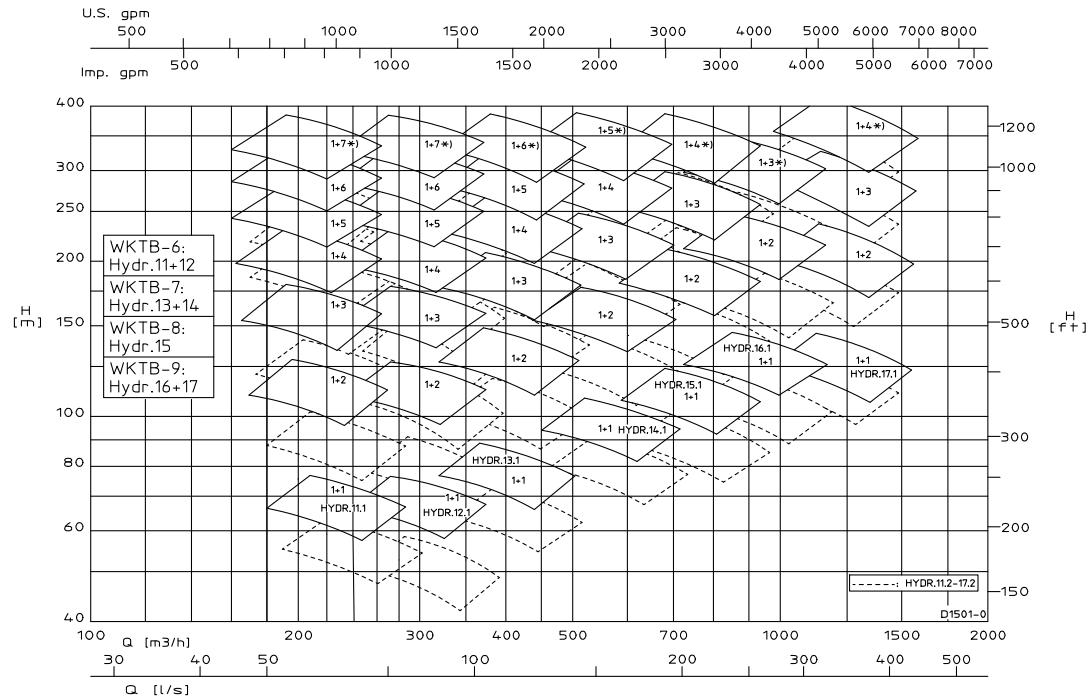
Materials

Overview of available materials

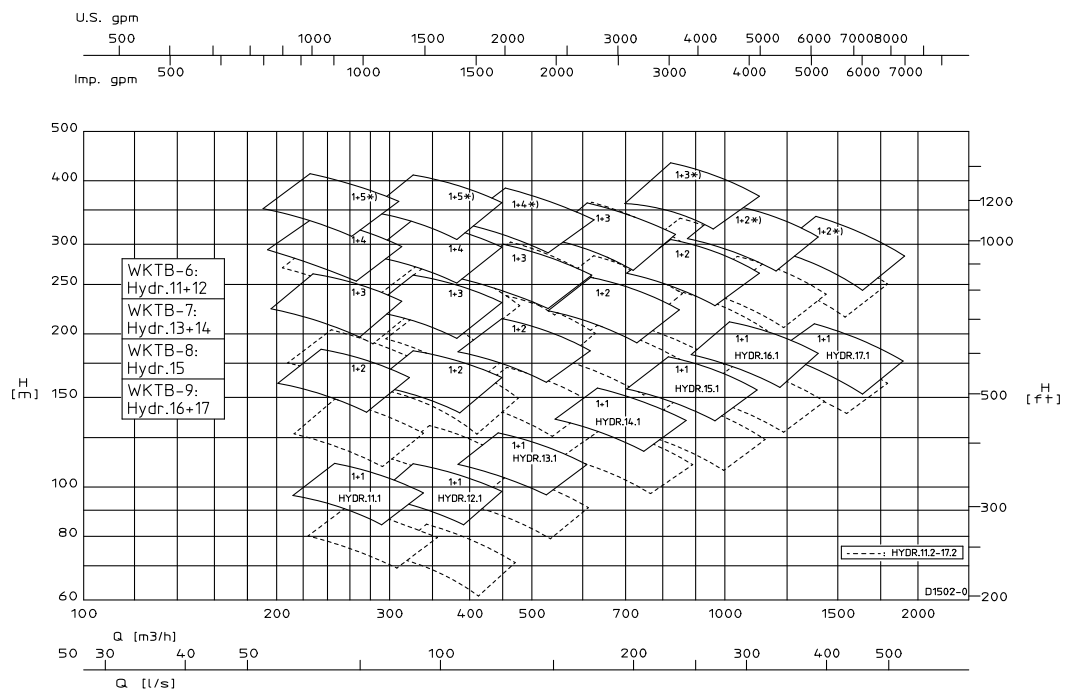
Description	Part No.	Material variant (ASTM)				
		21	22	23	24	25
Distributor casing	10-1	Steel				Chrome steel
Casing, suction stage	10-4	Grey cast iron		Cast steel		Cast chrome steel
	112					
	102					
Casing, subsequent stage	106	Cast steel				Cast chrome steel
	108	Grey cast iron / cast steel		Cast steel		
Can	151	Steel				Chrome steel
Diffuser	171	Grey cast iron	Cast chrome steel	Cast steel	Cast chrome steel	
Shafts	211	Steel	Chrome steel	Steel	Chrome steel	
	212					
	213					
Impeller	230	Grey cast iron / cast steel	Cast chrome steel	Grey cast iron / cast steel	Cast chrome steel	
Double-entry impeller	234	Cast chrome steel				
Motor stool	341	Steel				
Casing wear ring	502	Special grey cast iron	Cast chrome steel			
Shaft sleeve	523	Chrome steel				
Bearing bush	545	Steel/carbon				Chrome steel/ carbon
Column pipe	711	Steel				Chrome steel
Spacer-type coupling	860	Steel	Chrome steel	Steel	Chrome steel	
Tie bolt	905	Steel which is creep-resistant at elevated temperatures				

Selection charts

WKTb, n = 1480 rpm



*) With the maximum number of stages, the head is restricted by the permissible discharge pressure.



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Dimensions

Installation type DN, WKTB 6

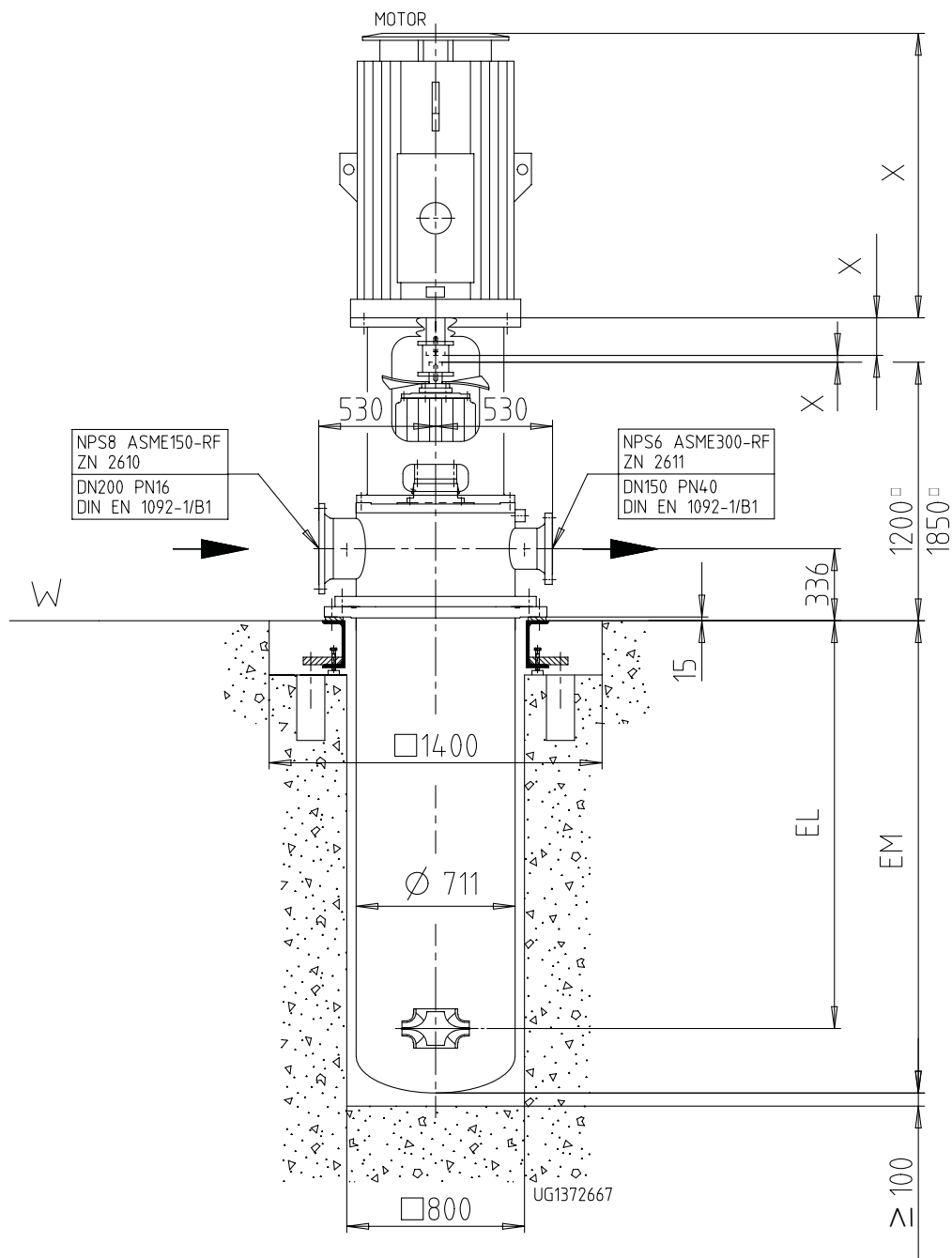


Fig. 2: Installation type DN, WKTB 6

EL	Installation depth of the impeller (suction stage) ³⁾	X	See motor and coupling dimensions
EM	Installation depth of the can ³⁾	①	Dimension for standard design
W	Installation floor	②	Dimension for standard variant spacer-type coupling

3) Lengths will be determined for each order.

Installation type DN, WKTB 7

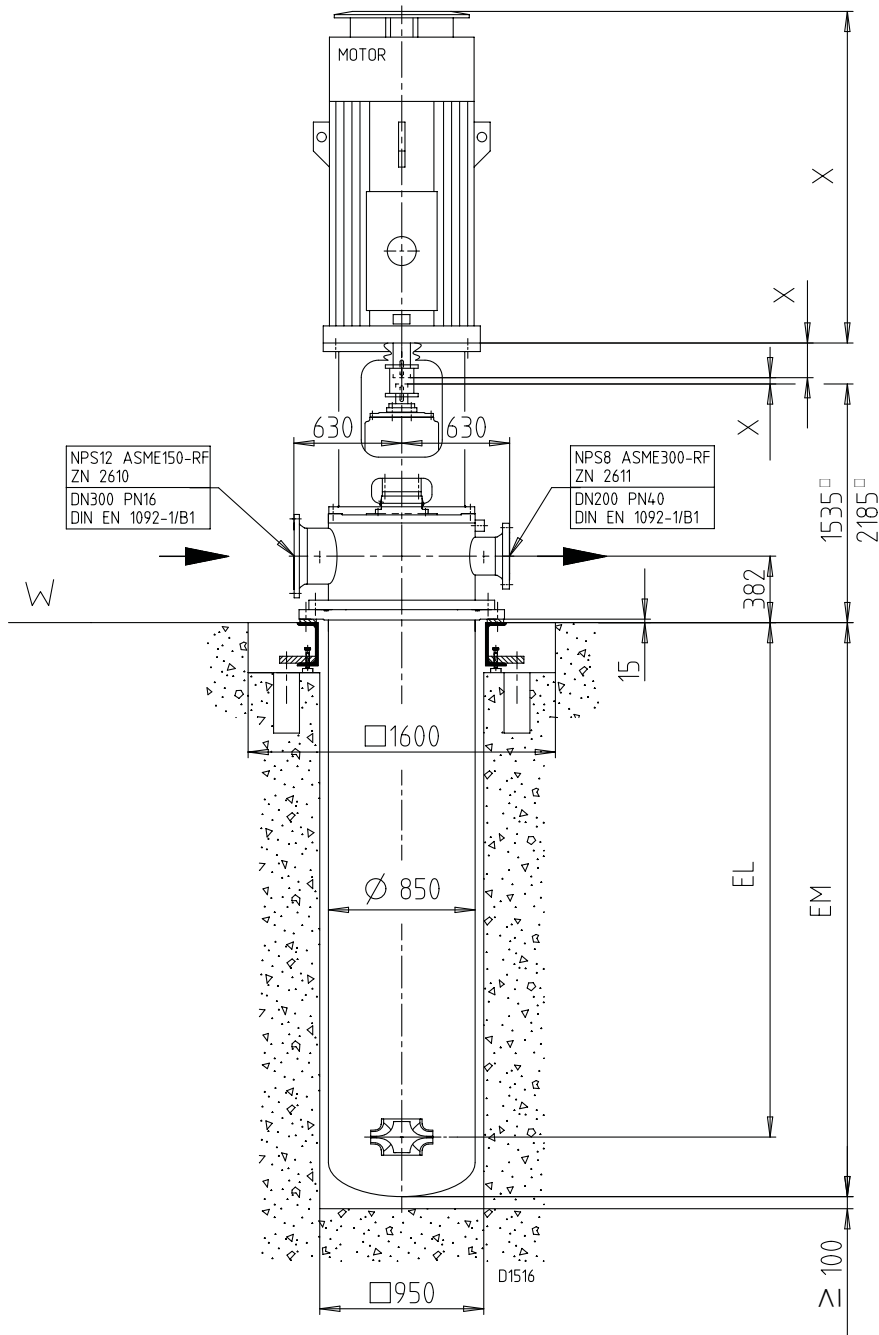


Fig. 3: Installation type DN, WKTB 7

EL	Installation depth of the impeller (suction stage) ⁴⁾	X	See motor and coupling dimensions
EM	Installation depth of the can ⁴⁾	①	Dimension for standard design
W	Installation floor	②	Dimension for standard variant spacer-type coupling

4) Lengths will be determined for each order.

Installation type DN, WKTB 8

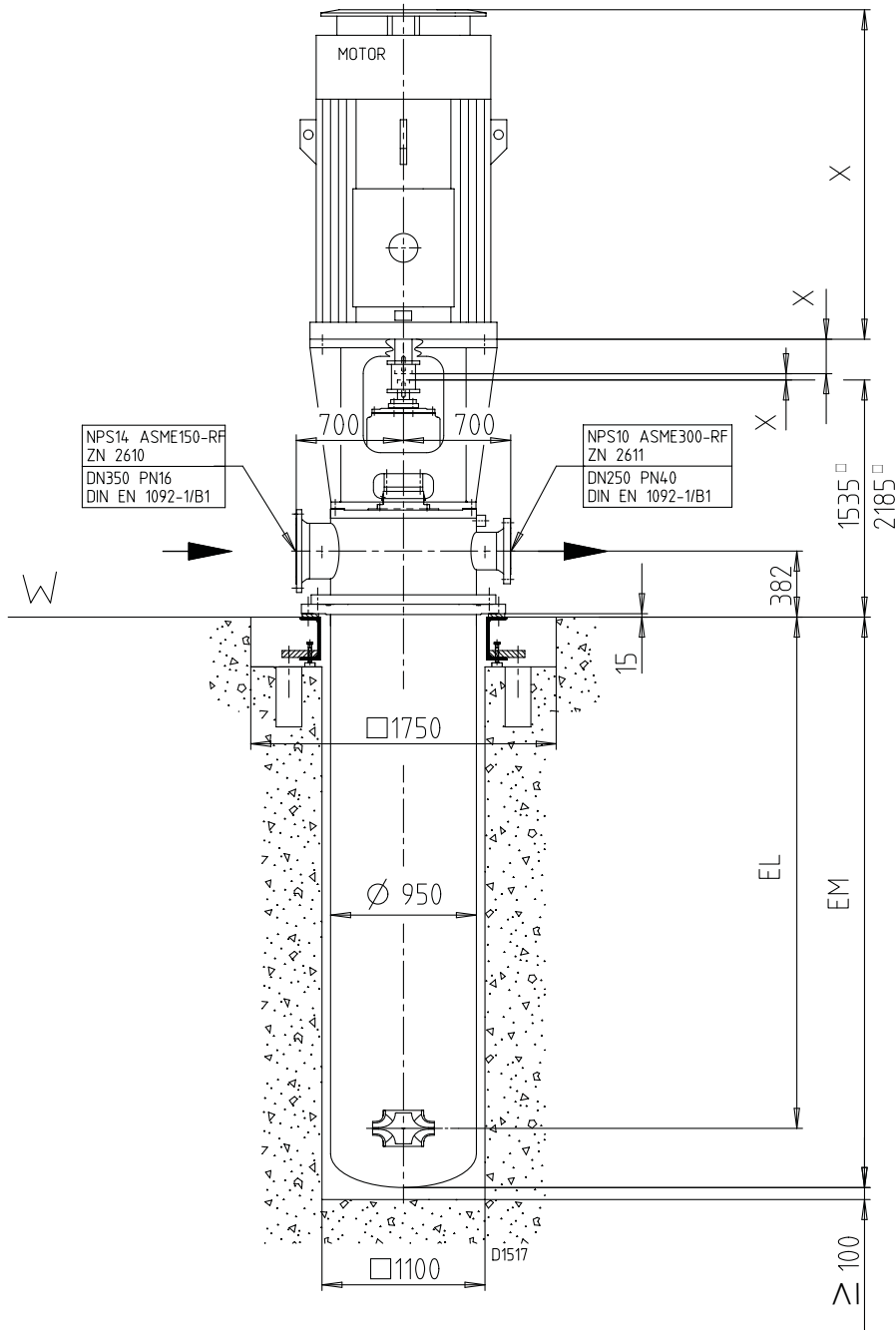


Fig. 4: Installation type DN, WKTB 8

EL	Installation depth of the impeller (suction stage) ⁵⁾	X	See motor and coupling dimensions
EM	Installation depth of the can ⁵⁾	①	Dimension for standard design
W	Installation floor	②	Dimension for standard variant spacer-type coupling

Installation type DN, WKTB 9

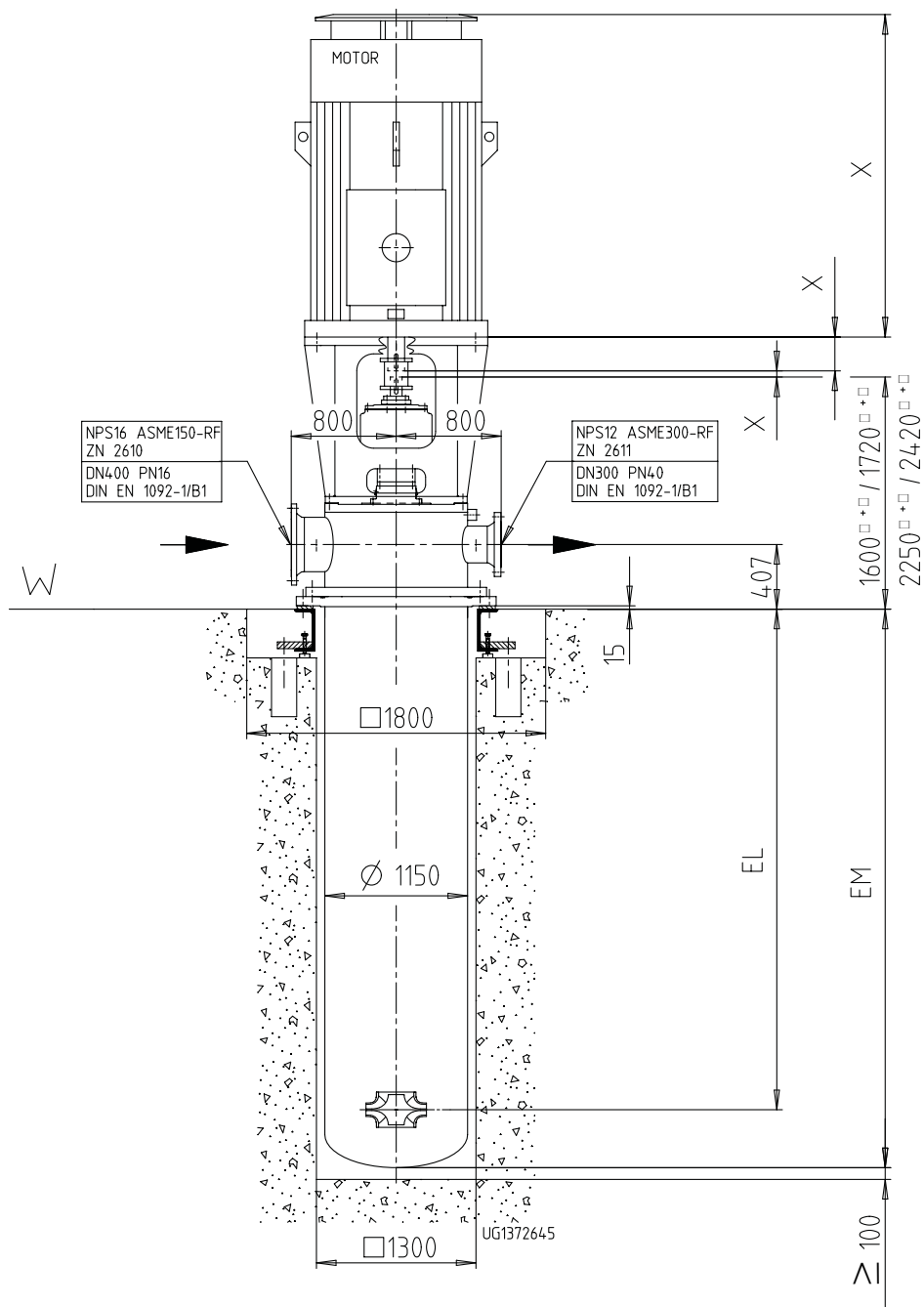


Fig. 5: Installation type DN, WKTB 9

EL	Installation depth of the impeller (suction stage) ⁶⁾	①	Dimension for standard design
EM	Installation depth of the can ⁶⁾	②	Dimension for standard variant spacer-type coupling
W	Installation floor	③	WKTB 9/1+1
X	See motor and coupling dimensions	④	WKTB 9/1+≥2

6) Lengths will be determined for each order.

Installation type VU, WKTb 6

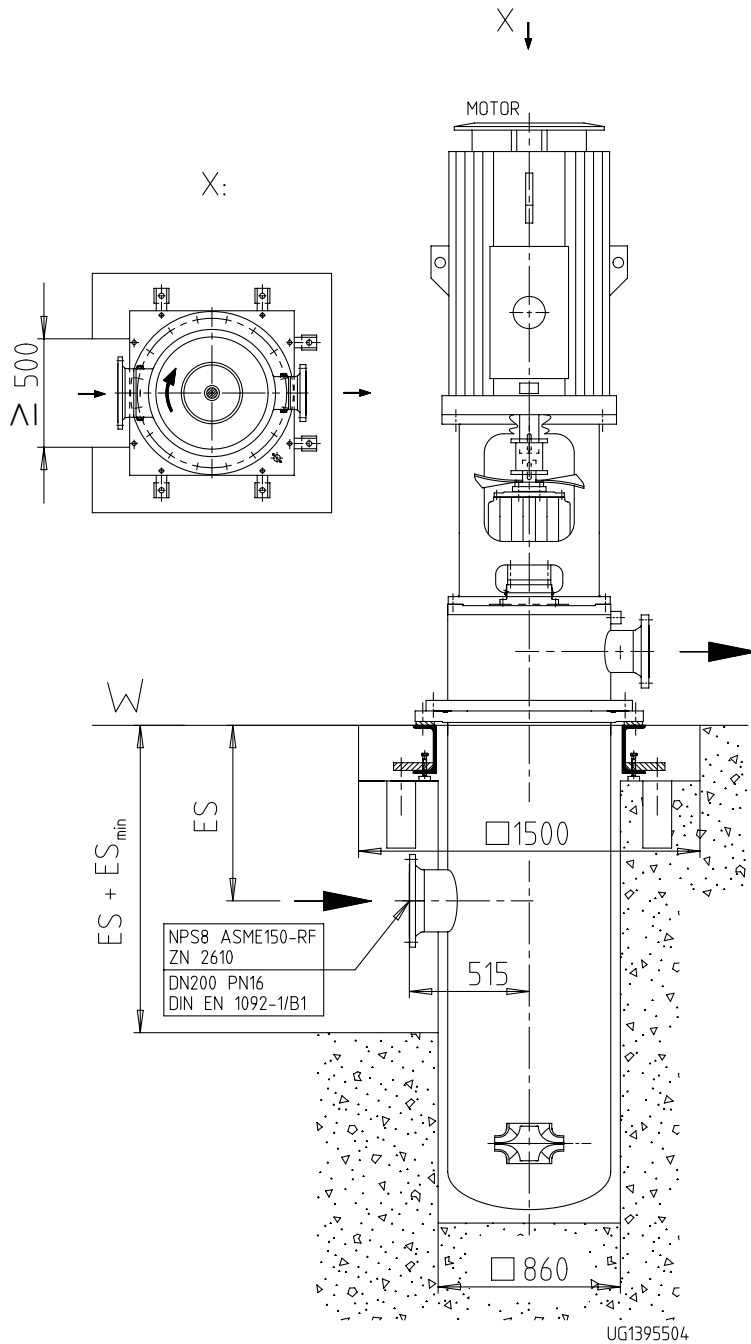


Fig. 6: Installation type VU, WKTb 6

ES	Installation depth of the suction nozzle ⁷⁾	W	Installation floor
ES _{min}	350	For other dimensions refer to installation type DN	
ES _{max}	Installation depth of the can (EM) - 500		

7) This length will be determined for each order.

Installation type VU, WKTb 7 to 9

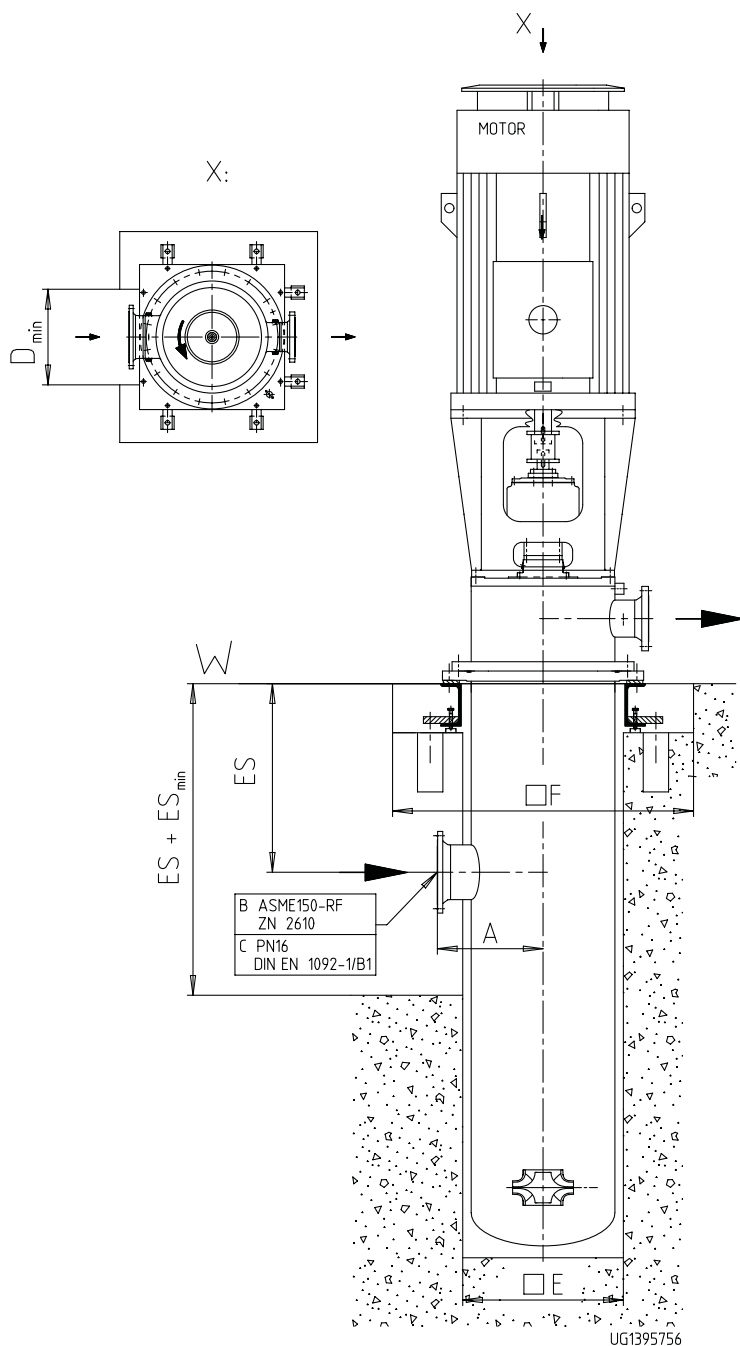


Fig. 7: Installation type VU, WKTb 7 to 9

ES	Installation depth of the suction nozzle ⁸⁾	For other dimensions refer to installation type DN
W	Installation floor	

Installation depths WKTb 7 to 9 [mm]

Size	ES _{min}	ES _{max}	A	B	C	D _{min}	□ E	□ F
7	400	EM - 600	600	NPS12	DN 300	600	1040	1700
8	450	EM - 600	660	NPS14	DN 350	700	1150	1800
9	450	EM - 800	760	NPS16	DN 400	800	1350	1900

8) This length will be determined for each order.

Scope of supply

Depending on the model, the following items are included in the scope of supply:

Standard design

- Pump including motor stool
- Can
- Baseplate with adjusting screws and plates
- Fasteners for pump and base frame
- Special tools required
- Piping up to customer's connection (to installation plan) including valves to P&I diagram

Special variants

E.g.:

- Drive
- Drive coupling
- Strainer in the inlet pipe
- Minimum flow control valve
- Terminal box
- Spare parts
- Instruments



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