MULTISTAGE CENTRIFUGAL PUMPS

Gruppo Aturia

MULTISTAGE CENTRIFUGAL PUMPS

TK - TKR - VTK - TKK series

TK-VTK-TKR-TKK are high pressure multistage pumps.
Connection to the driving machine (generally an electrical motor) is through a flexible coupling.

DESIGN

Multistage centrifugal ring section pumps with modular design. The stage elements are in series configuration and are sealed by O-rings tightened by sturdy outer tie bolts.
The supporting feet on delivery side are integrated in the delivery nozzle casing for all sizes.
For sizes up to 65-100 (included), the suction side pump feet are integrated in the first stage casing in order to allow to turn the suction nozzle in steps of 90° (left or right side or top). For larger sizes the pump feet are mounted under the suction nozzle casing, accordingly the position of the suction nozzle has to be defined when ordering.
The axial thrust is balanced by the hydraulic and dynamic balancing of each single impeller.
TK series are horizontally and between bearings mounted. PN16 Suction flange and PN40 Delivery flange. The shaft is supported by two, grease lubricated, antifriction bearings.
VTK series are vertically mounted. Suction flange PN16 and Delivery flange PN40. The shaft on the suction side is led in slide bearing lubricated by the pump liquid, on the delivery side is supported by the motor bearing. Motor and pump are connected by a stool and a rigid coupling.
TKR series are horizontally and between bearings mounted. Suction flange PN16 and Delivery flange PN64. The shaft is supported by two, oil lubricated, antifriction bearings.
Shaft sealing for TK and TKR series is achieved with soft packing and packing gland as standard. On request, mechanical seal can be mounted. Mechanical seal is standard for VTK series.
TKK high pressures series are horizontally and between bearings mounted. PN25 Suction flange and PN100 Delivery flange. Suction and Delivery nozzles are easily turned in 90° steps. Mechanical seal chamber can also accommodate API682 seals. Bearing supports are designed for heavy duty applications and with separate oil chamber.

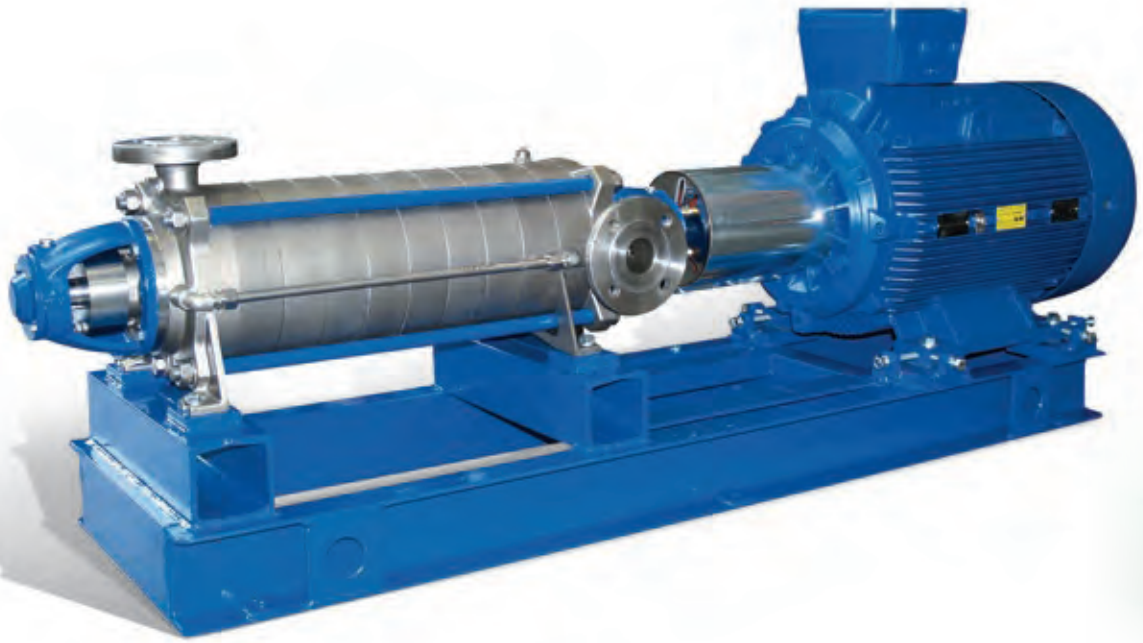
FIELDS OF APPLICATION

TK - VTK Pumps are used for:

- Irrigation and land reclamation plants
- Water supply
- Power plants
- Hot and Cold water circulation
- Condensate transportation
- Snow gun
- Fire-Fighting equipment

TKR-TKK Pumps are used for:

- Boiler feed
- Pressure boosting
- Osmosis and Ultra filtration



MATERIALS

TK / VTK SERIES

DESCRIPTION	STANDARD	OPTION
Pump Casing	Cast Iron (EN-GJL-250)	Stainless Steel (GX6CrNiMo1810)
Radial Impeller	Cast Iron (EN-GJL-250) Bonze (G-CuSn10)	Stainless Steel (GX6CrNiMo1810)
Diffuser	Cast Iron (EN-GJL-250) Bonze (G-CuSn10)	Stainless Steel (GX6CrNiMo1810)
Wear Rings	Bronze (G-CuSn10) for size 125-150 and higher	Bronze (G-CuSn10) Stainless Steel (AISI 316+Hardning)
Suction/Delivery Casing	Cast Iron (EN-GJL-250) (*)	Stainless Steel (GX6CrNiMo1810)
Shaft Sleeves	Chromium Steel (AISI 420B)	Stainless Steel (AISI 316)
Shaft	Chromium Steel (AISI 420B)	Stainless Steel (AISI 316)
Seal: **TK** **VTK**	 Soft Packing (PTFE) Mechanical seal (Ca/Sic/EPDM)	 Mechanical seal Mechanical seal (Sic/Sic/VITON)
Bearings	Grease lubricated	Oil lubricated (only TK series)

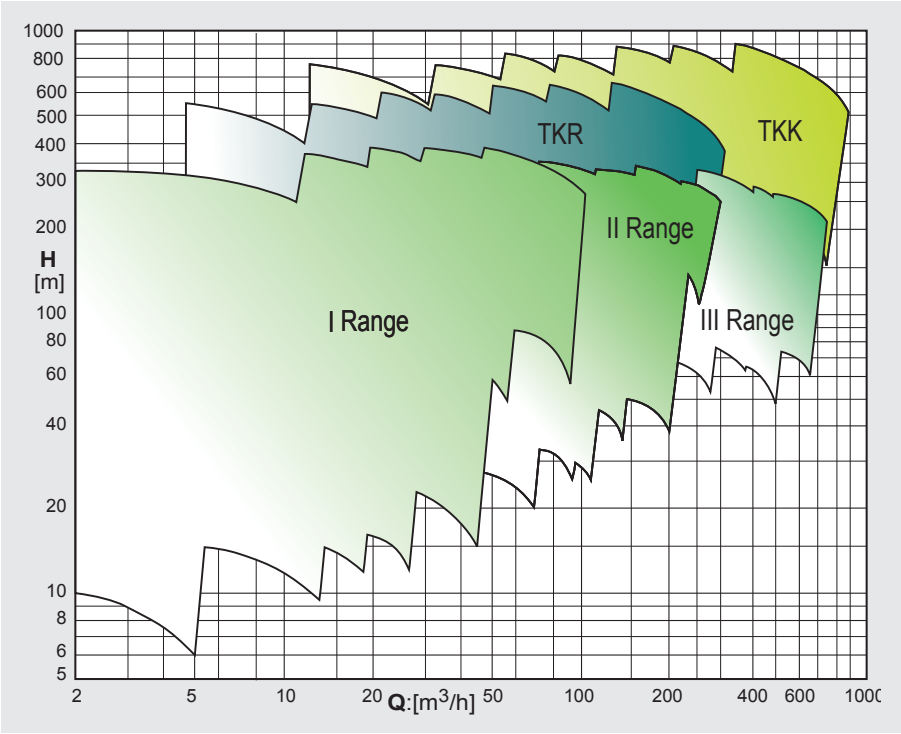
(*) Exceeding 25 bar: Delivery Casing materials, Nodular Cast Iron or Carbon Steel

TKR SERIES

DESCRIPTION	STANDARD	OPTION
Pump Casing	Nodular Cast Iron (EN-GJS-400-15)	Stainless Steel (GX6CrNiMo1810)
Radial Impeller	Cast Iron (EN-GJL-250) Bonze (G-CuSn10)	Stainless Steel (GX6CrNiMo1810)
Diffuser	Cast Iron (EN-GJL-250)	Stainless Steel (GX6CrNiMo1810)
Wear Rings	Bronze (G-CuSn10)	Stainless Steel (AISI 316+Hardning)
Suction Casing	Nodular Cast Iron (EN-GJS-400-15) Carbon Steel (GP240GH)	Stainless Steel (GX6CrNiMo1810)
Delivery Casing	Carbon Steel (GP240GH)	Stainless Steel (GX6CrNiMo1810)
Shaft Sleeves	Chromium Steel (AISI 420B)	Stainless Steel (AISI 316)
Shaft	Chromium Steel (AISI 420B)	Stainless Steel (AISI 316)
Seal	Soft Packing (PTFE)	Mechanical seal
Bearings	Oil lubricated	

PERFORMANCE RANGE

2 – 4 Poles / 50 Hz



The performances included:

I RANGE

TYPE: from TK-VTK 25/40 to TK-VTK 65/100	**WORKING PRESSURE and TEMPERATURE:**	Suction	Delivery	Temperature
CAPACITY: up to 100 m³/h	Soft packing	12 bar	40 bar	-10°C ÷ +105°C
HEAD: up to 400m	Standard mechanical seal (Ca/Sic/EPDM)			-10°C ÷ +120°C
	Special mechanical seal (Sic/Sic/VITON)			-10°C ÷ +120°C
	Maximum admissible casing pressure (suction + shut off head): 40 bar			

II RANGE

TYPE: from TK-VTK 80/125 to TK-VTK 125/150	**WORKING PRESSURE and TEMPERATURE:**	Suction	Delivery	Temperature
CAPACITY: up to 300 m³/h	Soft packing	12 bar	40 bar	-10°C ÷ +105°C
HEAD: up to 350m	Standard mechanical seal (Ca/Sic/EPDM)			-10°C ÷ +120°C
	Special mechanical seal (Sic/Sic/VITON)			-10°C ÷ +120°C
	Maximum admissible casing pressure (suction + shut off head): 40 bar; (125/150 : 30 bar)			

III RANGE

TYPE: from TK 150/200 to TK 250/300	**WORKING PRESSURE and TEMPERATURE:**	Suction	Delivery	Temperature
CAPACITY: up to 800 m³/h	Soft packing	12 bar	25 bar	-10°C ÷ +105°C
HEAD: up to 300m	Standard mechanical seal (Ca/Sic/EPDM)			-10°C ÷ +120°C
	Special mechanical seal (Sic/Sic/VITON)			-10°C ÷ +120°C
	Maximum admissible casing pressure (suction + shut off head): 30 bar			

TKR RANGE

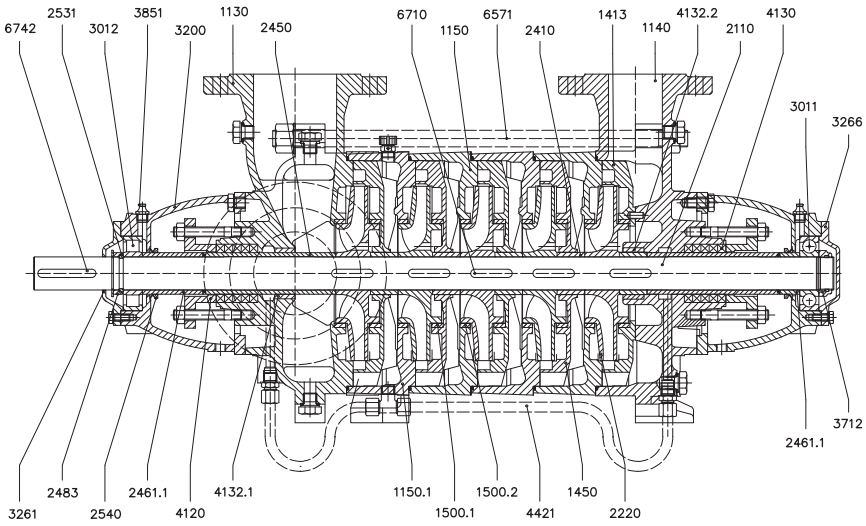
TYPE: from TKR 32/50 to TKR 125/150	**WORKING PRESSURE and TEMPERATURE:**	Suction	Delivery	Temperature
CAPACITY: up to 500 m³/h	Soft packing	12 bar	64 bar	-10°C ÷ +105°C
HEAD: up to 600m	Standard mechanical seal (Ca/Sic/EPDM)			-10°C ÷ +120°C
	Special mechanical seal (Sic/Sic/VITON)			-10°C ÷ +140°C
	Maximum admissible casing pressure (suction + shut off head):64 bar			

TKK RANGE

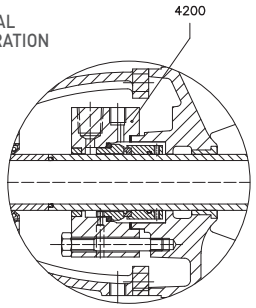
TYPE: from TKK 40/65 to TKK 200/250	**WORKING PRESSURE and TEMPERATURE:**	Suction	Delivery	Temperature
CAPACITY: up to 900 m³/h	Mechanical seal (Ca/Sic/EPDM)	25 bar	100 bar	+160°C
HEAD: up to 900m				

SECTIONAL DRAWINGS

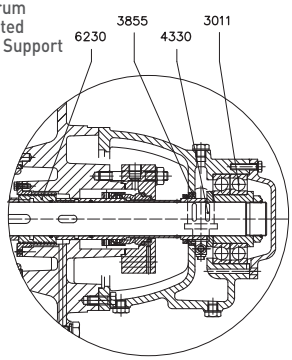
TK SERIES



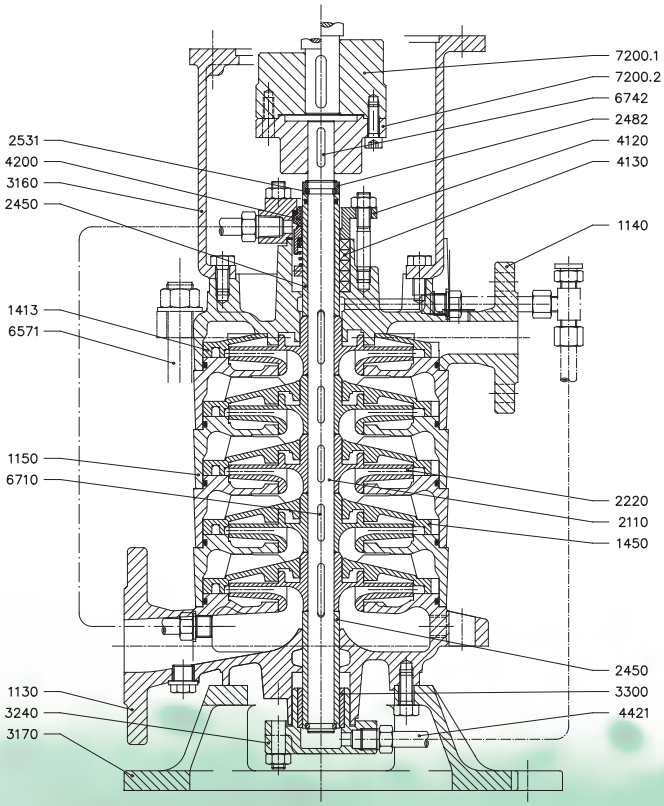
MECHANICAL SEAL CONFIGURATION



TKR CONFIGURATION
- Balance Drum
- Oil Lubricated Reinforced Support



VTK SERIES

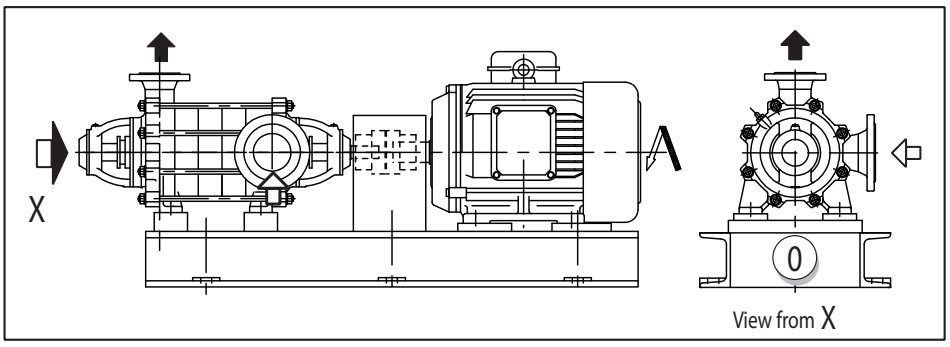


POS.		PARTS NAME	POS.		PARTS NAME
1130		Suction casing	3240	(5)	Bearing carrier
1140		Delivery casing	3261		Bearing cover suction side
1150		Stage casing	3266		Bearing cover delivery side
1150.1	(3)	First stage casing	3300	(5)	Bearing bush
1413		Diffuser last stage	3712		Thrust bearing nut
1450		Diffuser	3851		Grease cup
1500.1	(1)	Casing wear ring, suction side	3855	(4)	Costant level oil
1500.2	(1)	Casing wear ring, delivery side	4120		Packing gland
2110		Pump shaft	4130		Packing seal
2220		Impeller	4130		Packing seal delivery side
2410	(1)	Impeller spacer sleeve	4132.1	(1)	Neck bush suction side
2450		Spacer sleeve, suction side	4132.2	(1-2)	Neck bush delivery side
2461.1/2		Bearing spacer sleeve	4200		Mechanical seal
2483		Locating sleeve	4330	(4)	Labirint ting
2531		Retaining ring split	4421		Shaft seal pipe
2540		Trower	6230	(4)	Balance drum
3011		Thrust ball bearing	6571		Tie bolt
3012		Radial roller bearing	6710		Impeller key
3160	(5)	Motor stool	6742		Coupling key
3170	(5)	Pump stool	7200.1		Half couplin g
3200		Bearing housing	7200.2		Half coupling

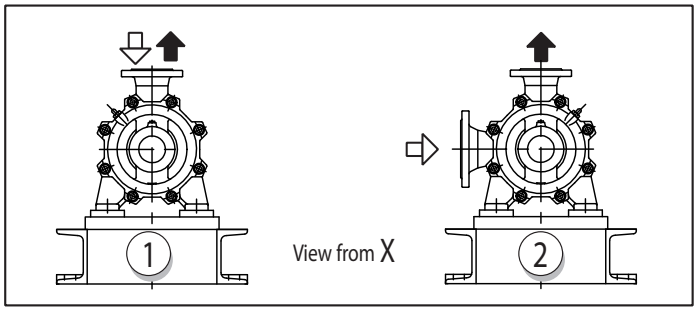
(1) Only for pumps, ≥125-150
(2) Only for pumps, 80-125 and 100-150
(3) Only for pumps, ≤ 65-100
(4) Only for pumps, TKR Pumps
(5) Only for VTK pumps

INSTALLATIONS TYPE

TK – TKR ORIZONTAL INSTALLATION

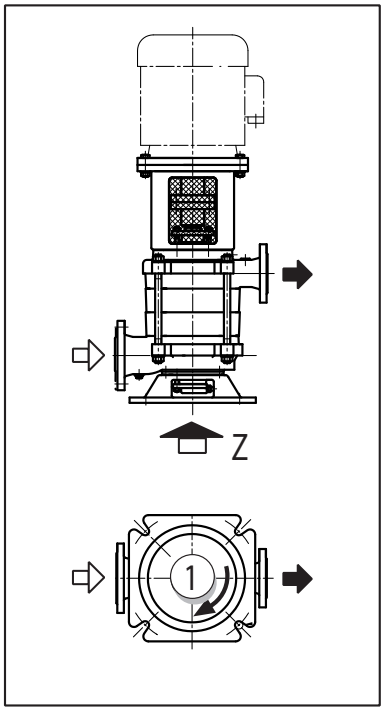


Standard

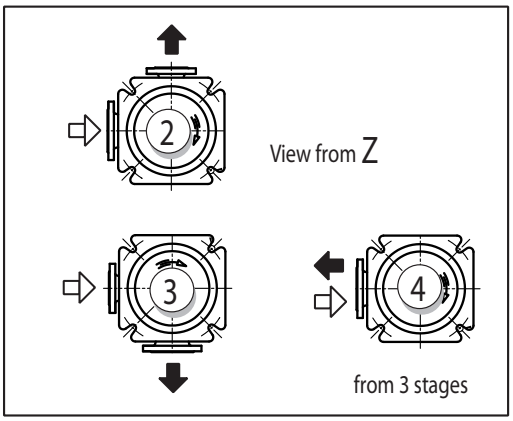


On Request

VTK VERTICAL INSTALLATION



Standard



On Request

SPECIAL EXECUTIONS

IN TANK
TKV VERTICAL PUMP

TKV pumps are vertical, centrifugal multistage pumps connected to the drive (generally an electric motor) by flexible coupling.

Alignment and drive of line shaft is ensured by bush bearing located in pump casing and by the column pipe joints.
Pressure seal at shaft connection is ensured by packing seal.
The impeller is a centrifugal type.

The pump is composed of:
- Pump casing
- Column pipe
- Thrust bearing housing
- Motor stool

Applications:
- Water Distribution
- Underground Service
- Lube Oil Systems

IN BARREL
TKVB VERTICAL PUMP

TKVB pumps are canned centrifugal multistage vertical pumps.

Vertical axis alignment is ensured by special smooth bearings in the pump, in the support and in the guides interposed on connection pipe.
Axial and radial thrusts are borne respectively by two bearing balls 3010 placed in the support housing.
Coupling between pump and motor is created through two half-couplings joined by a spacer.
Shaft sealing is created through mechanical member.

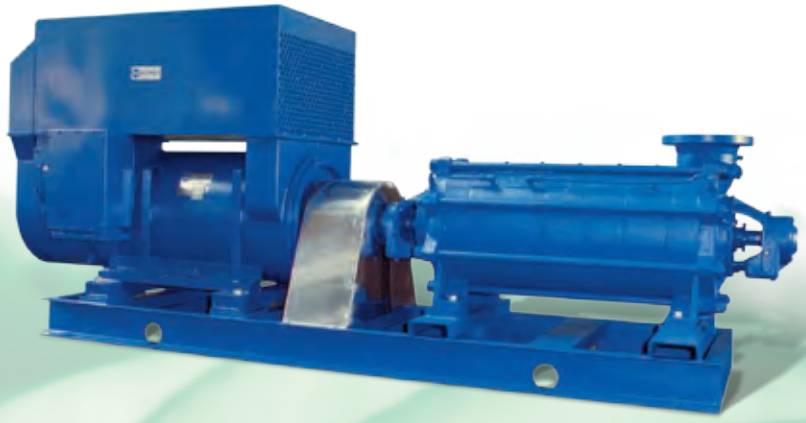
The set is composed of:
- Pump casing
- Connection column
- Casing
- Motor stool
- Barrel containing pump casing

Applications:
- LPG Transfer
- Volatile Chemicals
- Condensate Systems

POWER & PROCESS
TKRC ORIZONTAL MULTISTAGE PUMP

TKRC pumps are centrifugal multistage pumps for high pressures.
Coupling to the drive, generally an electric motor, is ensured by a flexible joint.

Applications:
- Steam boiler power plants
- Thermal energy generating systems
- District heating systems



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