

DAS SERIES SUBMERSIBLE WASTE WATER AND SEWAGE PUMPS

APPLICATIONS:

- Pumping of domestic and industrial sewage.
- At sewage treatment plants.
- Pumping of chemical and industrial waste water.
- Pumping of rain water
- All kinds of drainage and dewatering work.
- Pumping of difficult liquids of industrial processes.

FLUID TYPES:

- Unscreened sewage and other waste water types with high solids concentration.
- Water with sand content. Maximum grain size (20 – 30 mm). Liquid, sand ratio can be maximum % 6. For higher sand concentration preventive provisions must be taken against wear.
- Maximum allowed fluid temperature is 50°C
- Maximum allowed medium density is 1,2 gr/cm³, maximum allowed medium viscosity is 1,5 x 10⁻⁶ m²/s. Measures must be taken to lower these values.
- DAS series pumps cannot be used for pumping flammable and explosive fluids.

TECHNICAL DETAILS:

SUBMERSIBLE ELECTRIC MOTOR Turbosan DEM type submersible electric motor operates with 3 phase 380 V AC (+/- % 5) power supply. Insulation class of motors is F, protection class is IP 68. H class insulation available upon request.

Motor Cooling : DEM type submersible motors are cooled externally by surrounding medium. In order to have sufficient cooling the motor must be submerged up to the top.

BEARINGS : The rotor is supported by means of two heavy duty ball bearings. Bearings are grease lubricated, no need for maintenance for 2 years of operation time.

SHAFT SEALING: Between the motor and the pumped fluid high quality (Silicon carbide – Silicon carbide) mechanical seal is used, seals operate in the oil chamber. (DIN 2450 / EN 12756)

STR-1 PROTECTION RELAY:


A special relay manufactured by Turbosan is a very important part of submersible pumps and has to be fitted to the control system.

MOTOR OVER HEAT PROTECTION SYSTEM : Stator windings protected against over heat by 120°C thermistors. Over is heat usually caused by dry operation of the pump, excessive start stop frequency, or faulty electrical connection in case of over heating, the pump is tripped by a relay and will not operate.


WATER LEAKAGE WARNING SYSTEM:

Motor does not operate in case water leaks in to the motor.


PUMP IMPELLER:



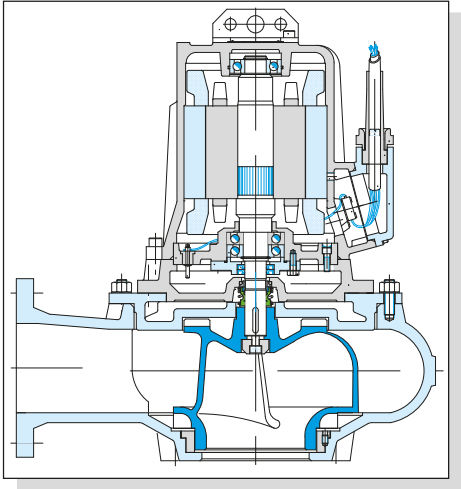
Single vane double angled non clogging impeller: These impellers have large solid passages, high efficiencies and they do not strain motor power at low discharge head values.



Double vane impeller : For discharge head values that cannot attained with single vane impellers. They have smaller solid passages than single vane impellers. In some cases water must be screened.

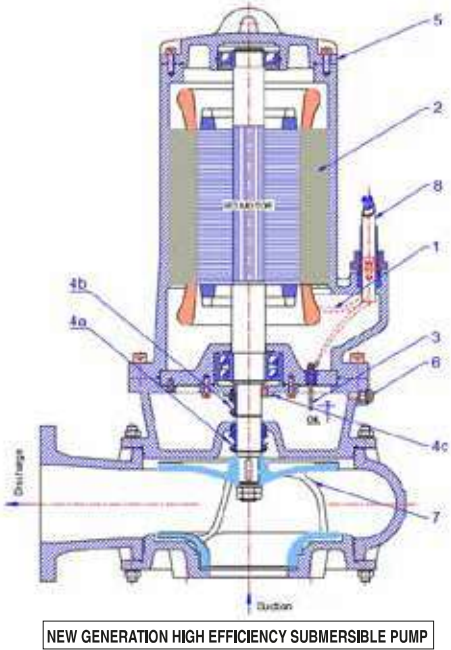


Vortex type impeller : This type of impellers do not have closed channels. Impeller is located deep inside the volute casing. Pumping action is generated by a vortex created within the fluid by rotation of the impeller. With this geometry they can tolerate larger solids than other impeller types more specifically they tolerate fibrous materials in the pumped liquid. The disadvantage of this impeller type is lower efficiencies.



Pump Materials :

Pump component	Material
Motor casing – volute casing	Cast iron GG-20 (EN-JL 1030)
Shaft	AISI 420
Pump impeller	Cast iron GG-25 (EN-JL 1040)
Bolts – Nuts	Stainless steel
Mechanical seal	SIC/SIC – NBR
Cable	H07RN-f
Coating	Coal tar epoxy paint over Epoxy primer



Specification:

- 1- F or H insulated motor winding for winding for overheating safety **Thermistör 155°C**
- 2- High efficiency **IE3** electric motor
- 3- **Water leakage electrode** which generates signals when liquid enters the oil chamber
- 4a- **1. Mechanical seal** which is working in the pumped liquid
- 4b- **2. Mechanical seal** which is working in oil the chamber (optional).
- 4c- Oil seal (standard application).
- 5- Removable motor cover
- 6- Oil filling and control plug
- 7- Specially designed pump **impeller**
- 8- Power cable **H07RN-F**

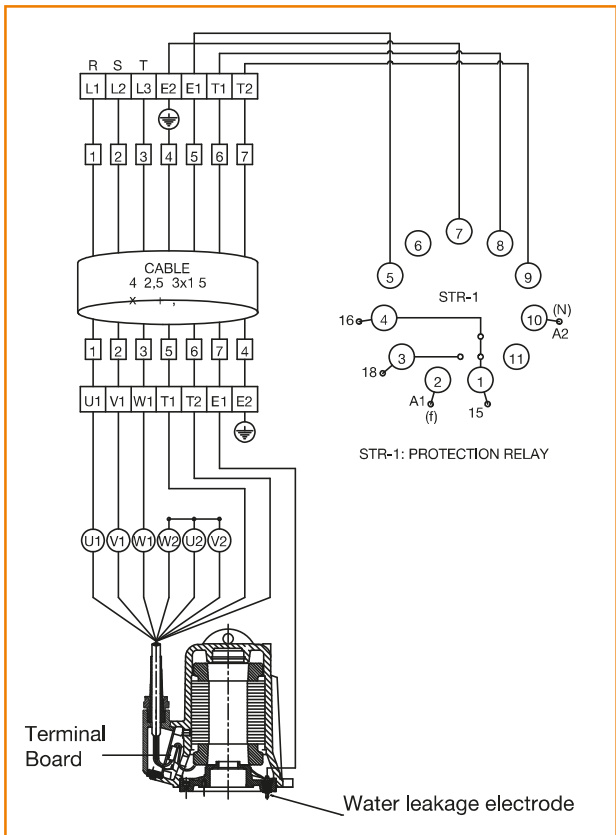
DAS SERIES SUBMERSIBLE SEWAGE PUMPS

DAS SERIES PERFORMANCE AND TECHNICAL DETAILS TABLE

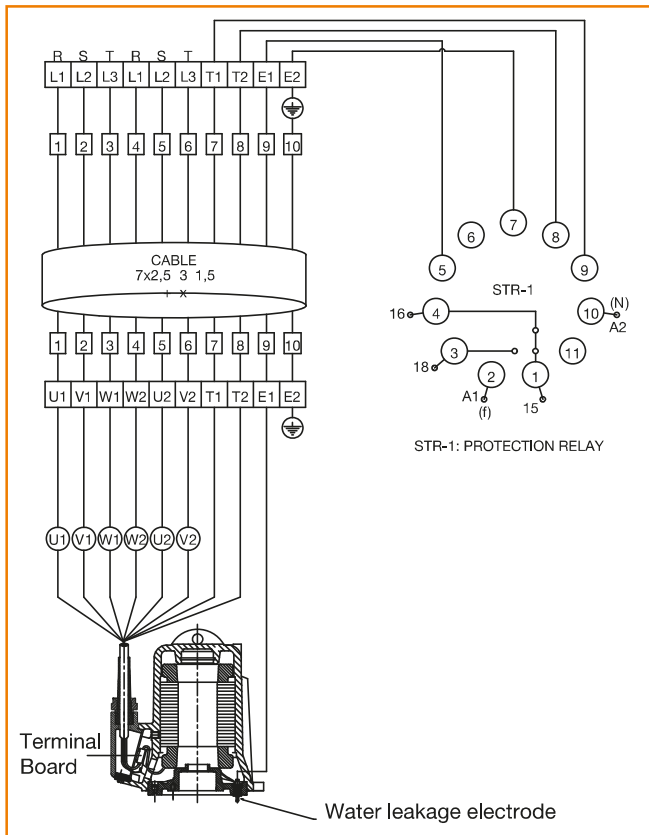
PUMP TYPE	DISCHARGE FLANGE	CURVE NO.	IMPELLER TYPE	Pump Weight kg	Max. Fre Passage	Capacity m³/h (Q)			Manometrik Head mWc (Hm)			POWER kW	SPEED rpm
DAS 50/200V	DN 50 PN-6	1347	Vortex	52	35	10	20	36	11	10	7	1,5	1500
DAS 50/200V		1327	Vortex	62	35	15	28	50	18	16	11	4	3000
DAS 50/200V		1328	Vortex	87	35	15	30	54	23	21	14	5,5	3000
DAS 80/160V	DN 80 PN-10	3226-S	Vortex	95	80	18	40	70	11	9	6	4	3000
DAS 80/160V		3247-S	Vortex	85	80	18	40	75	8,5	7	5	3	1500
DAS 80/160		3223	Single vane	75	42	10	36	60	17	10	5	3	3000
DAS 80/160		3221	Single vane	80	42	10	40	60	24	15	9	4	3000
DAS 80/160		3220	Single vane	90	42	18	40	60	26	20	10	5,5	3000
DAS 80/160V		3226	Vortex	80	48	18	40	60	17	13	9	4	3000
DAS 80/160V		3247	Vortex	75	48	18	40	75	12	10	5	3	1500
DAS 80/250V	DN 80 PN-10	3441 V	Vortex	115	40	36	70	100	11	9	6	5,5	1500
DAS 80/250V		3442 V	Vortex	120	40	36	70	100	18	15	11	7,5	1500
DAS 80/250V		3443 V	Vortex	180	40	36	70	110	24	21	15	11	1500
DAS 80/200N		3321	Double vane	185	35	20	60	100	28	22	15	7,5	3000
DAS 80/200N		3324	Double vane	190	35	20	60	100	34	28	21	11	3000
DAS 80/250		3441	Double vane	125	38	36	70	100	14	10	4	5,5	1500
DAS 80/250		3442	Double vane	125	38	36	70	100	17	14	9	7,5	1500
DAS 80/250		3443	Double vane	185	38	36	70	110	23	18	11	11	1500
DAS 100/200V	DN 100 PN-10	4346-BS	Vortex	145	90	20	65	100	13	10	7	5,5	1500
DAS 100/200V		4346-AS	Vortex	150	90	30	80	120	15	11	7	7,5	1500
DAS 100/200V		4346-S	Vortex	155	90	36	100	140	17	14	10	11	1500
DAS 100/200		4321-B, 4322-B	Double/Single vane	130	35/44	20	60	95	24	15	6	5,5	3000
DAS 100/200		4321-A, 4322-A	Double/Single vane	135	35/44	20	60	110	28	20	8	7,5	3000
DAS 100/200		4321, 4322	Double/Single vane	140	35/44	20	60	110	32	25	12	11	3000
DAS 100/200P		4321-P	Non-clogging	150	40	40	90	120	29	20	13	11	3000
DAS 100/200V		4327-B	Vortex	130	50	20	50	75	17	11	5	5,5	3000
DAS 100/200V		4327-A	Vortex	135	50	20	50	80	21	17	10	7,5	3000
DAS 100/200V		4327	Vortex	140	50	20	50	90	29	23	18	11	3000
DAS 100/200		4340	Double vane	115	35	30	50	90	12	10	5	4	1500
DAS 125/250	DN 125 PN-10	5441	Single vane	150	100	30	80	150	11	8	5	4	1500
DAS 125/250		5442	Single vane	165	100	30	80	150	13	11	7	5,5	1500
DAS 125/300V		5544	Vortex	195	40	70	110	160	12	8	4	7,5	1500
DAS 125/300V		5545	Vortex	205	40	70	150	200	18	12	6	11	1500
DAS 125/300 D		5540-D	Double vane	200	70	70	140	220	12	9	5	7,5	1500
DAS 125/300 D		5542-D	Double vane	210	70	70	140	250	15	13	8	11	1500
DAS 150/250	DN 150 PN-10	6441	Single vane	210	120	70	150	230	9	8	6	7,5	1500
DAS 150/250		6440	Single vane	220	120	70	150	230	13	11	9	11	1500
DAS EFF 150/250P			Non-clogging	250	75	120	200	250	14	11	8	11	1500
*DAS PUMP PRICE INCLUDED 5 M CHAIN, 10 M CABLE, STRI PROTECTION RELAY AND SUCTION BEND.													
*HOSE CONNECTION PORTS FOR VERTICAL HOSE CONNECTION SYSTEM WILLBE PROVIDED ACCORDING TO DEMAND.													


DAS / CABLE CONNECTION DIAGRAMS

DAS – PARPO SERIES PUMPS DIRECT ONLINE STARTING CABLE CONNECTION DIAGRAM (1,5 – 5,5 Kw)




DAS SERIES PUMPS (Y/Δ) STAR / DELTA STARTING CABLE CONNECTION DIAGRAM (7,5 – 11 kW)



CABLE LEAD NO	MAIN CABLE		TERMINAL BOX
1	R	L1	U1
2	S	L2	V1
3	T	L3	W1
4			E2 
5			T1
6			T2
7			E

STR-1 RELAY CONNECTION LEADS	
E	Water leakage
T1	Termistor contacts
T2	
15	Relay contact leads
16	
18	
A1 (F)	Relay coil connections 220V
A2 (N)	

CABLE LEAD NO	MAIN CABLE		TERMINAL BOX
1	R	L1	U1
2	S	L2	V1
3	T	L3	W1
4	R	L1	W2
5	S	L2	U2
6	T	L3	V2
7			E2 
8			T1
9			T2
10			E

CAUTION :

Turbosan warranty is not valid,
if pump operates without being
connected to STR-1 relay

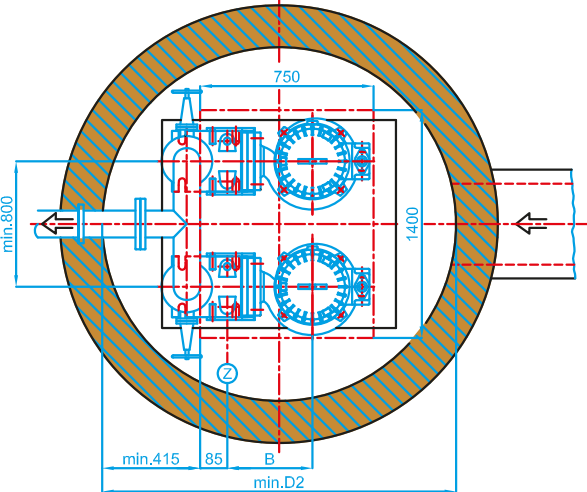


STR-1 PROTECTION RELAY

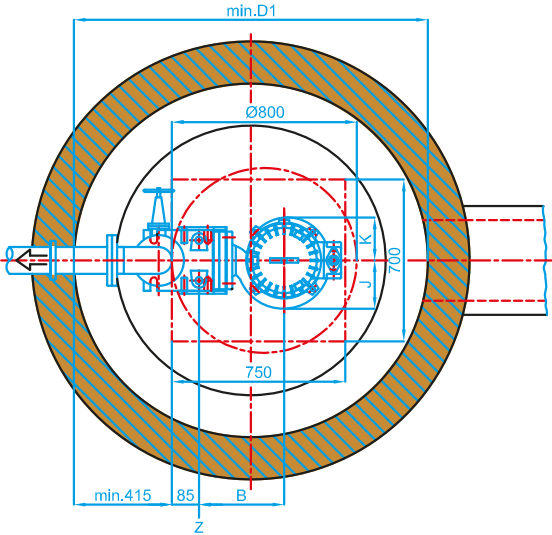
DAS SERIES PUMPS INSTALLATION FORMS

1) AUTOMATIC COUPLING (DUCK FOOT BEND)

It is an economic and practical installation for stationary systems. Automatic coupling system consists of a duck foot bend fixed on sump floor, guide rail (consists of two galvanized pipes connected in parallel) and fixing flange which is fitted to the pump. Automatic coupling set components and discharge piping have to be installed before the sump gets filled with medium. The fixing flange which is fitted to the pump slides through the guide rails and the pump is lowered to the sump by means of a chain. To take the pump out of the sump by pulling pump by chain is enough, no dismantling or bolt removal required. Sealing is done by special gasket.



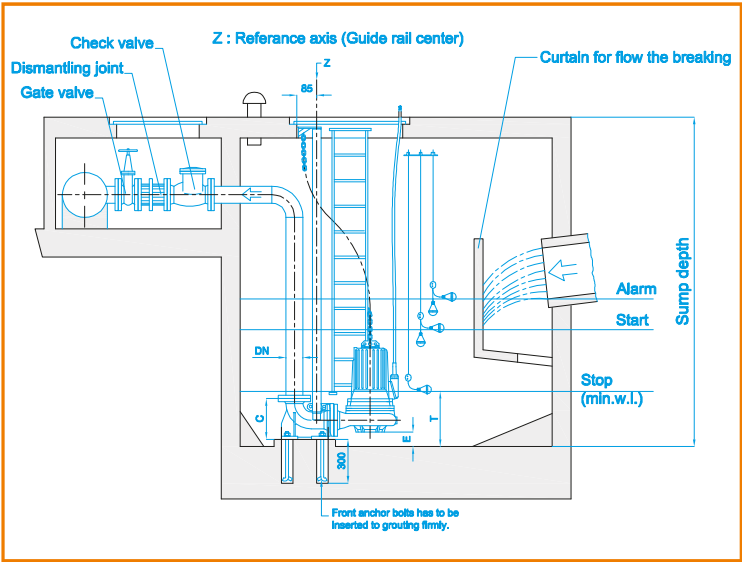
Note: D1 and D2 are minimum well diameters.



2) VERTICAL FREE STANDING HOSE CONNECTION

This installation for is suitable for sumps with smooth and flat floors. Pump must stay on floor freely. Pump can be removed from sump by pulling out by chain.

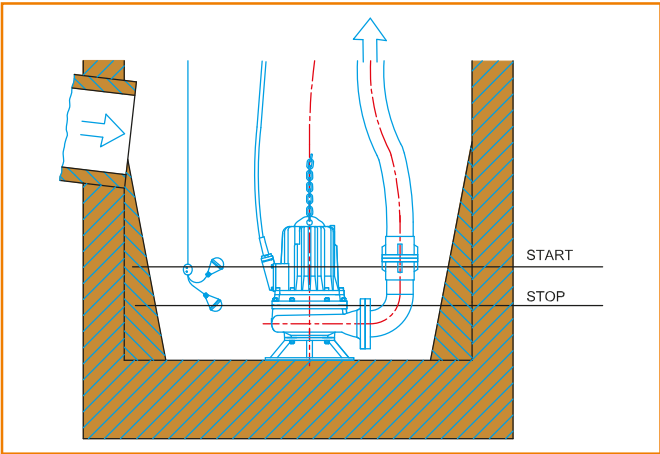
CAUTION :
Pumps should never be pulled from the electric cables.



PUMP MODEL	DIMENSIONS						
	DN mm	B mm	D1 mm	D2 mm	E mm	T mm	C mm
DAS-50/200-V	50	227	1200	1400	100	300	245
DAS-80/160	80	280	1200	1400	100	400	250
DAS-80/250	80	380	1200	1500	100	420	250
DAS-100/200	100	330	1200	1500	120	420	280
DAS-125/250	125	415	1300	1600	140	520	348
DAS-125/300	125	455	1400	1600	140	520	348
DAS-150/250	150	470	1400	1600	150	550	450

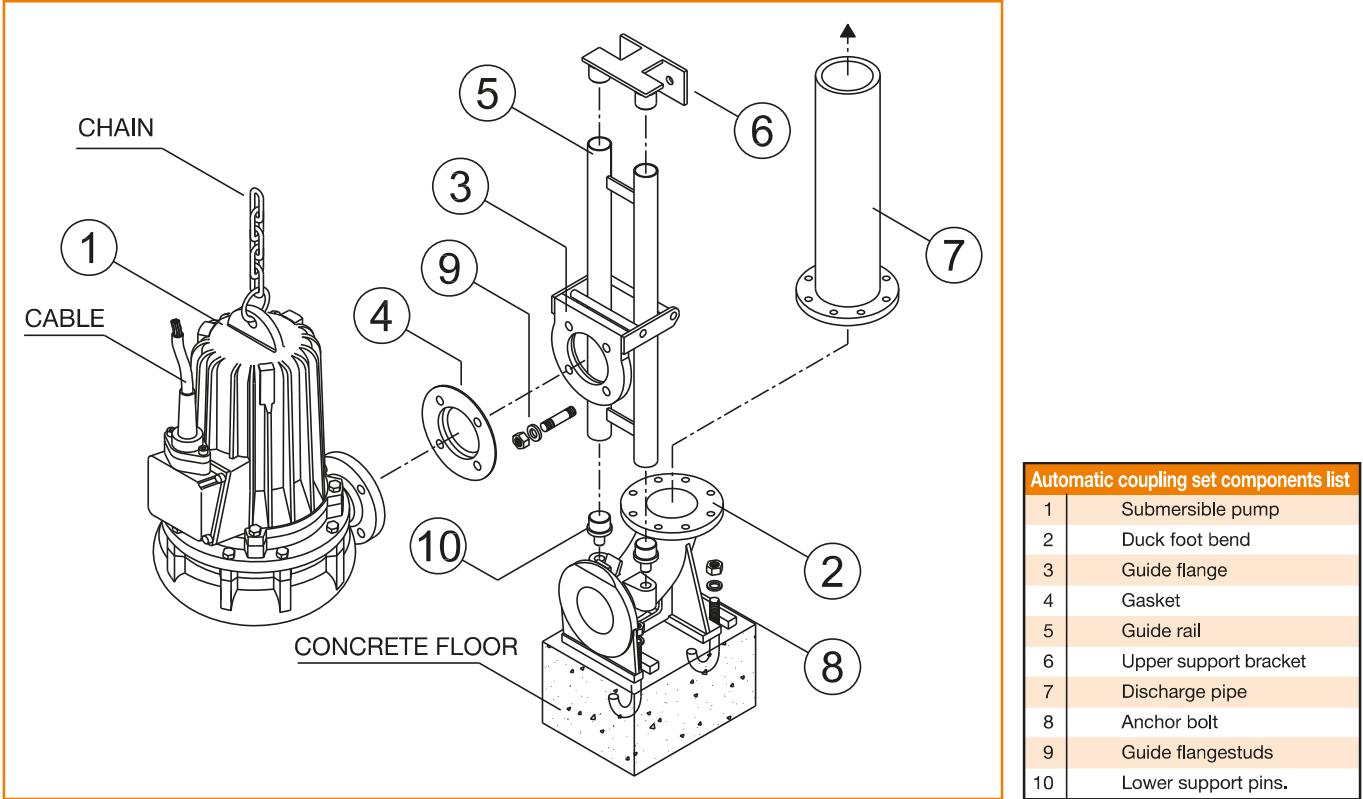
Note: D1 and D2 are minimum well diameters.

CAUTION :
In flow to the well might cause flow and vortex inside the sump this improper suction condition must be prevented.

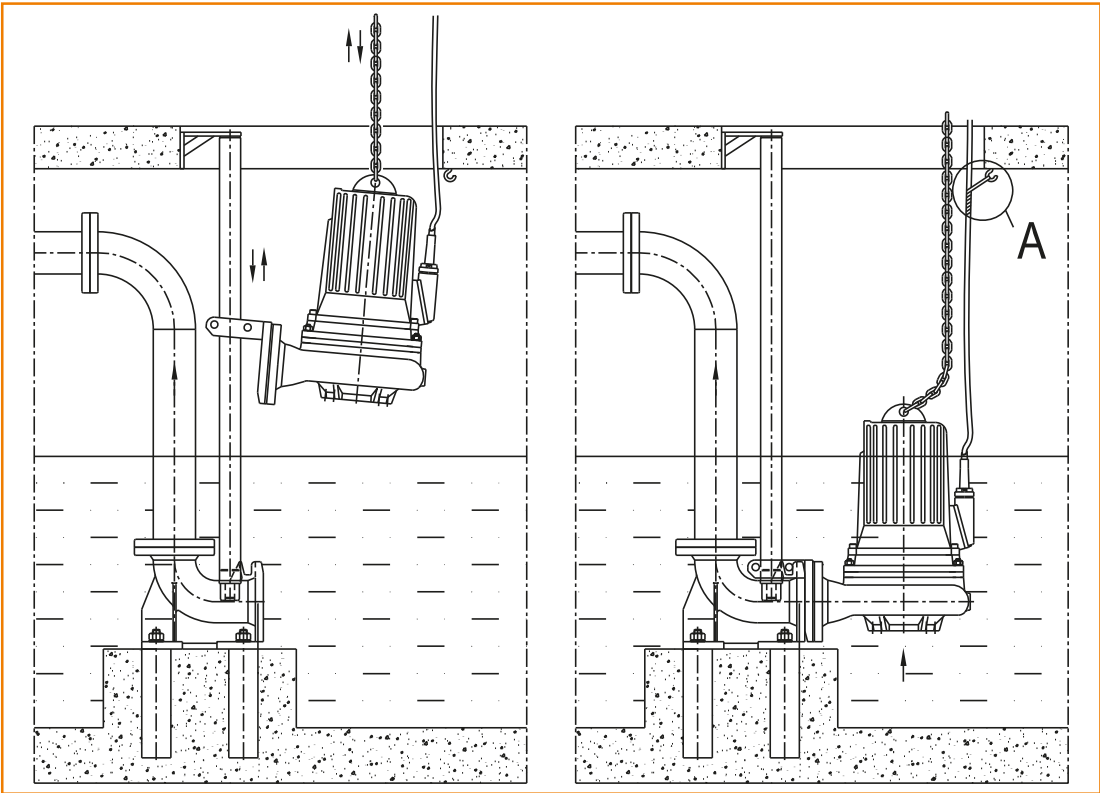


DAS SERIES AUTOMATIC COUPLING SET

AUTOMATIC COUPLING SET COMPONENTS



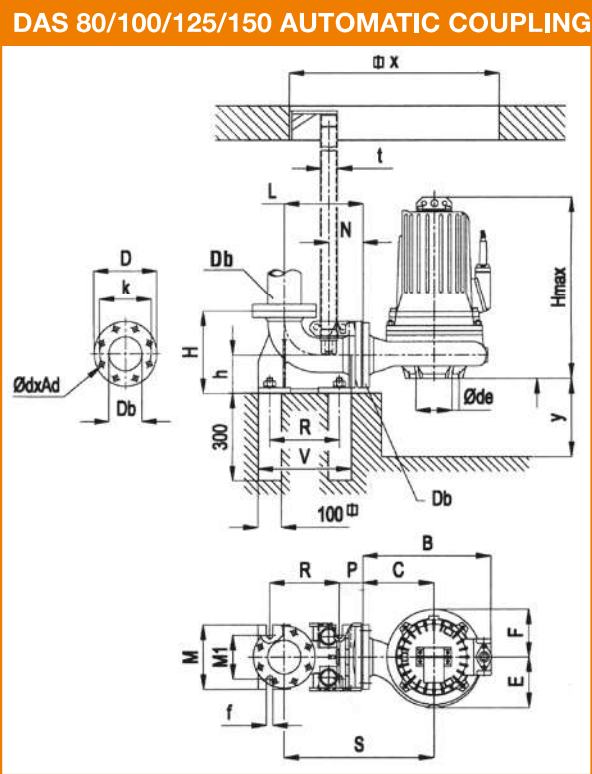
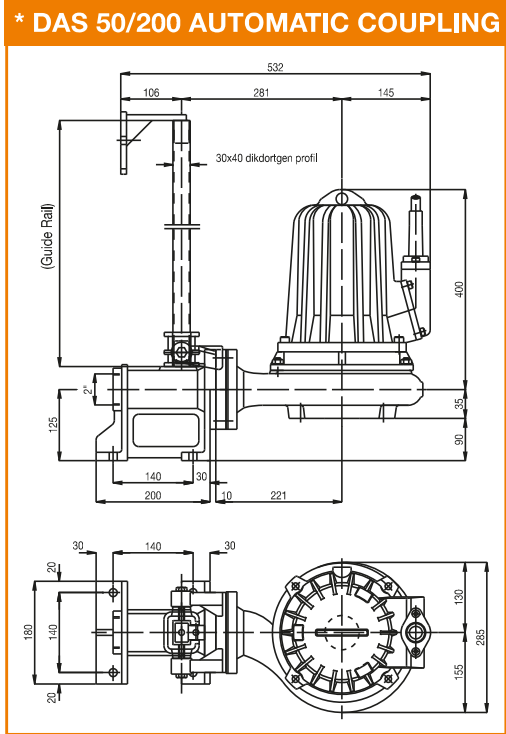
OPERATION OF AUTOMATIC COUPLING SET



CAUTION : Never use cable when lowering or rising the pump. Use chain supplied with pump for this purpose.

DAS SERIES INSTALLATION FORMS

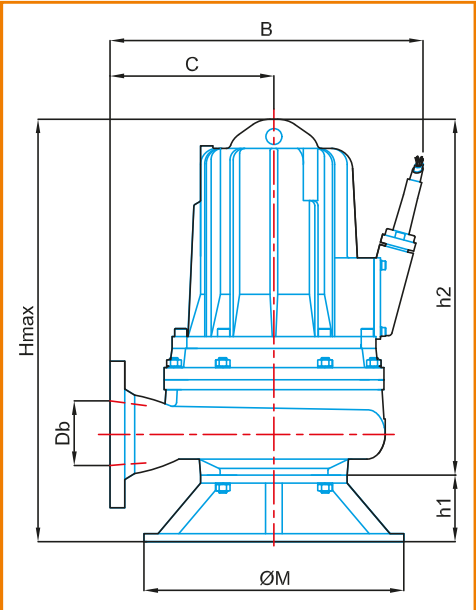
DAS DUCK FOOT BEND & PUMP DIMENSIONS



	DISCHARGE FLANGE				SUCTION FLANGE																					
PUMP MODEL	ØDb	Øk	pcs xØd	ØD	Øde	t	C	B	E	F	S	N	L	P	R	M1	f	Anchor bolt size	V	M	h	H	Hmax	y	Φ X min	
DAS 50/200	50	110	4x14	140	60	30x40		345									14	4xm12x200						435	100	650
DAS 80/160	80	160	8x18	200	80	2"	200	340	152	130	434	99	234	64	220	140	23	4xm20x200	290	210	130	250	514	100	650	
DAS 80/160V-S	80	160	8x18	200	80	2"	200	340	152	130	434	99	234	64	220	140	23	4xm20x200	290	210	130	250	519	100	650	
DAS 80/250	80	160	8x18	200	80	2"	280	500	205	195	515	99	234	64	220	140	23	4xm20x200	290	210	130	250	585	100	720	
DAS 100/200	100	180	8x18	220	100	2"	246	470	173	158	516	117	270	80	240	150	23	4xm20x200	320	220	130	280	589	125	720	
DAS 100/200V-S	100	180	8x18	220	100	2"	246	470	173	158	516	117	270	80	240	150	23	4xm20x200	320	220	130	280	619	125	720	
DAS 125/250	125	210	8x18	250	125	2"	315	540	222	185	608	123	293	80	270	180	25	4xm22x250	352	250	160	348	623	150	850	
DAS 125/300	125	210	8x18	250	150	2"	355	607	265	220	648	123	293	80	270	180	25	4xm22x250	352	250	160	348	698	150	920	
DAS 150/250	150	240	8x23	285	200	2"	355	590	255	205	751	134	396	96	360	240	27	4xm24x250	480	330	206	450	725	200	1000	

PUMP FOOT DIMENSIONS							
PUMP MODEL	$Db \ \Phi$	H_{max}	$h1$	$h2_{max}$	$M \ \Phi$	B	C
DAS 50/200V	50	485	50	435	220	345	200
DAS 80/160	80	614	100	514	390	340	200
DAS 80/160V-S	80	619	100	519	390	340	200
DAS 80/250	80	685	100	585	390	500	280
DAS 100/200	100	689	100	589	390	470	246
DAS 100/200V-S	100	719	100	619	390	470	246
DAS 125/250	125	723	100	623	390	540	315
DAS 125/300	125	798	100	698	390	607	355
DAS 150/250	150	875	150	725	420	590	355

NOTE : DAS 50/200 V Model pump has foot integrated to the volute casing.



Note : Turbosan reserves to make any changes in dimensions without prior notice.

TURBOSAN PACKAGED SEWAGE PUMPING STATIONS

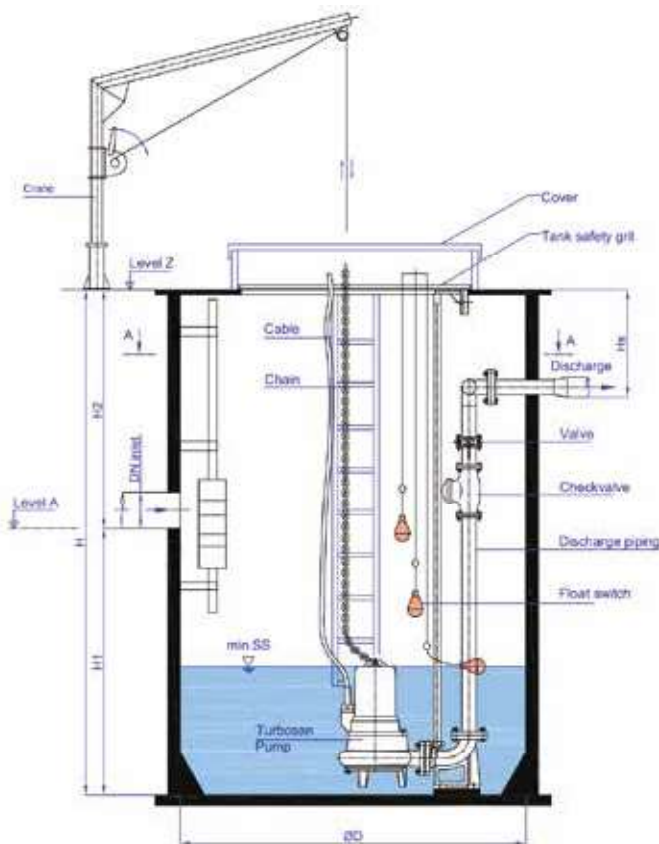
Before pumping them to treatment plant waste and drainage water collected in concrete made storage facilities. For small settlements to avoid large civil work costs, " Packaged sewage pumping stations are used. Using these stations minimizes excavation and construction costs . Stations get manufactured and delivered as a complete single unit along with all necessary accessories. They get manufactured by using high density polyethylene STP, PEHD.

Stations are easy to install, corrosion resistant and leak free.

Available up to 2400 mm diameter and 6 m height can be equipped with 1 – 3 pumps. Lowering pumps into the tanks done by means of guide rail – duck foot bend system. In the centre of station a platform is provided for accessibility to equipment in the station such as pumps, valves, pipes.

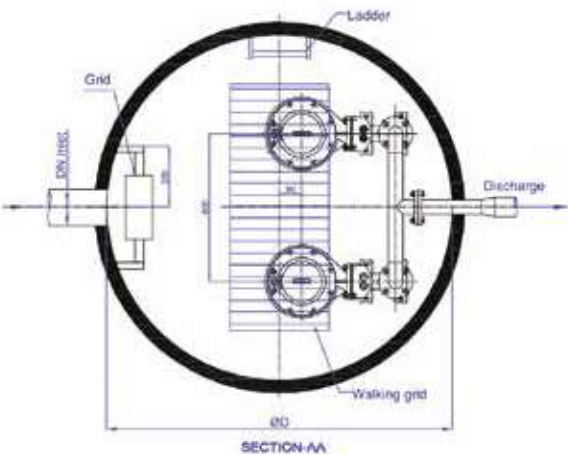
Pumps used in stations are with following specifications :

Capacity : 20 – 400 m3/h Discharge head : 10 – 30 m Discharge diameters : 50 – 150 mm



APPLICATIONS :

- Waste water treatment plants
- Drainage systems
- Rain water surface water collection and discharge



Packaged pump station components :

- | | |
|-------------------------------------------|---------------------|
| 1- Submersible pump | 8- Ladder |
| 2- Discharge bend and guide rails | 9- Tank safety grid |
| 3- Discharge piping | 10- Crane |
| 4- Ball type waste water non return valve | 11- Walking grid |
| 5- Gate valve or Butterfly valve | 12- Control panel |
| 6- Float switch or level transmitter | 13- Grid |
| 7- CTP, PEHD main tank | |