

KIRLOSKAR BROTHERS LIMITED

WARRANTY

THIS PUMP IS GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF 18 MONTHS FROM THE DATE OF DEALER'S/SUB DEALER'S INVOICE. (PURCHASE BILL OF THE END-USER).



INSTALLATION & MAINTENANCE OF KIRLOSKAR PUMPS

SPECIAL INSTRUCTION

" Purchasers are cautioned to go through carefully the detailed instructions given for proper installation, use and servicing of the product and genuine spare parts as detailed in company's published literature, manuals, pamphlets or other official publications. Any deviations if made by the customers, will void the warranty obligations and/or manufacturer's liability, if any, for any compensation consequential or otherwise. Use of trained mechanics will get you better results."

SPECIAL NOTE

Our products are meant for pumping water and they do not have any significant effect on environment during their use, if properly selected and used as per instructions given in this manual.

Customers are advised to dispose off unusable Enriching Lives components through appropriate disposal agencies to avoid the harmful impact (if any) on environment



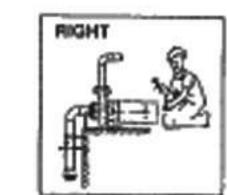
"CONGRATULATIONS...." on your acquiring one of the finest pump in your possession is the result of over half a century of progressive hydraulic engineering. It is scientifically designed and built to give you long and dependable service. Careful selection of materials and manufacturing assures you a satisfactory performance as per the pump rating. This pump will give you years of trouble free performance if it is handled with due care. This pamplet is a step in that direction and maintenance of KRLOSKAR pumps. Please read & comply with the instructions on installation, operation and work pump is bound to serve you well. While reporting the damages or missing part/parts always quote name plate details including its Sr.No. Features: • Efficiency at par with internationally available pumps. • Efficiency over the entire operating range from 180V to 240V (Single-phase) Voltage range from 300V to 440V (Three-phase) • Nonoverloading power characteristic. • Replaceable wearing parts and hence longer life. • Dynamically balanced rotating parts. • Grease lubricated deep groove ball bearing. • Easy maintenance and spares availability. • Designed for automatic air release during priming. • Suction lift upto 7.5 meters.

INSTALLATION

LOCATION: The pump should be located as near the water source as possible. This will minimize the suction lift and pump will give better performance. Ample space should be provided on all sides for ease in inspection, operation and maintenance.

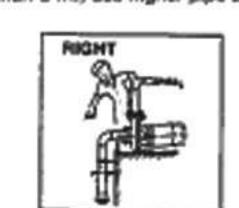
GROUTING: After the installation is completed, the foundation bolts should be tightened evenly and grouting may be completed. Allow about 48 hours for setting and sessoning of the foundation.

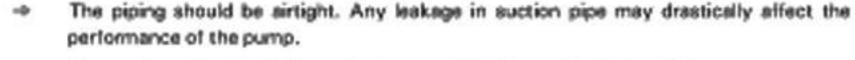




Pipe size should be as per the flange size to get higher discharge. It is not recommended to reduce the pipe size. If length of delivery pipe is more than 3 m., use higher pipe size.

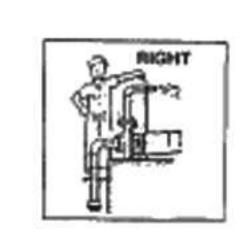






- The suction pipe should be as short as possible for getting better discharge.
- No. of bends and other fittings should be as minimum as possible to reduce frictional losses.





Adequate supports should be provided to pipes so that its dead weight should not fall on delivery casing completely.





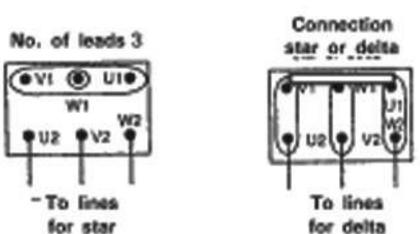
- The horizontal length of the suction pipe should be straight to avoid air trapping in pipe. It should not be inclined towards the pumps.
- For delivery pressure more than 20 meters, it is recommended to install a check (non-return). valve in the discharge line. The check valve placed near the pump is to protect the pump from excessive back-pressure to prevent the water running back through the pump in case of sudden failure of prime mover.
- It is recommended to use KIRLOSKAR low friction foot valve having "K" factor less than 0.8 for better discharge.

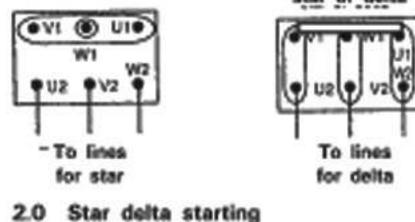
ELECTRICAL CONNECTIONS:

- Proper earthing connection should be made at the bolts provided for earthing.
- Proper size of cable should be used between supply and motor terminals to minimise voltage drop and to carry full load current (FLC) as well as the maximum current in the operating voltage range specified.
- Nuts at terminal should be tightened properly.
- No. of joints in cable should be as minimum as possible, preferably joints should be avoided.
- Wires and connections should be properly insulated. If not it may lead to fatal shock.
- Proper backup protection (reputed make starter, main switch and fuse) should be used.

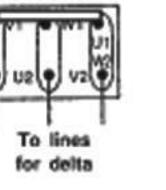
CONNECTION DIAGRAM

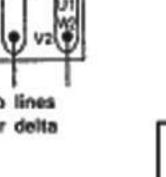
1.0 DOL or Auto transformer with 3 leads or 6 leads

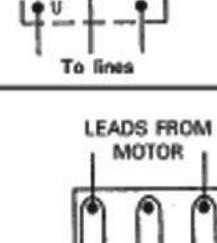




Connection







Figure

 Ψ Ψ PHASE NEUTRAL SINGLE PHASE 50 HARTZ SUPPLY

CONNECTION DIAGRAM OF 1 PHASE MOTORS

ELECTRICAL DETAILS FOR 2- POLE AND 4 POLE CENTRIFUGAL PUMPS

MAX. CUFFENT FOR

MOTOR RATING N WW.H.P	POLES	NO. OF PHASES	RATED VOLTAGE (VOLTS)	CURRENT (AMPS)	OPERATING CURRENT (AMPS)	RELAY SELECTION (AMPS)	TYPE OF STARTING	VOLTAGE RANGE
0.75/1.0	2	- 1	210	6.50	7.6	7.6	DOL	180-240
1.10/1.5	2	1	210	8.80	11.0	11.0	DOL	180-240
1.50/2.0	2	1.	230	9.50	13.5	13.5	DOL	180-240
2.20/3.0	2	1	230	14.0	17.5	17.5	DOL	170-240
3.70/5.0	2	1	230	23.0	27.0	27.0	DOL	170-240
0.75/1.0	2	3	415	2.50	2.50	2.50	DOL	300-440
1.10/1.5	2	3	415	2.90	3.20	3.20	DOL	300-440
1.50/2.0	2	3	415	3.90	3.90	3.90	DOL	300-440
2.20/3.0	2	3	415	4.70	5.10	5.10	DOL	300-440
2.705.0	2	3	400	8.00	8.50	8.60	DOL	300-440
5.5077.5	2	3	400	11.40	14.20	8.20	STAR-DELTA	300-440
7.50(10.0	2	3	415	15.00	17.0	2.80	STAR-DELTA	300-440
9.30/12/5	2	3	415	18.90	19.00	11.00	STAR-DELTA	300-440
11.0(15.0	2	3	415	21.50	23.0	13.3	STAR-DELTA	300-440
15.0/20.0	2	3	415	29.00	29.00	16.90	STAR-DELTA	300-440
2.20,0.0	4	3	415	4.90	5.20	5.20	bot	300-440
3.70.5.0	٤	3	415	8.40	8.50	8.50	DOL	300-440
3.50/7.5	4	3	400	11.90	13.00	7.50	STAR-DELTA	300-440
7.50/10.0	4	3	400	16.00	17.00	9.8	STAR-DELTA	300-440

OPERATIONAL INSTRUCTION:

- Check following before starting the pump:
- The shaft rotates freely by hand.
- The stuffing box (gland) is properly tightened (in case of gland packed pump). The pump is primed.
- If there is any valve in delivery branch, it is open.
- Check following during running condition:
- The direction of rotation is correct.
- The pump is running smoothly. See that the prime mover is not overloaded.
- Leakage through stuffing box is normal, i.e. 50 to 60 drops per minute in gland packed pumps.
- There is no leakage from mechanical seal.
- The ball bearings do not get excessively hot.
- Avoid idle running on operation against closed discharge valve for a longer period of time.

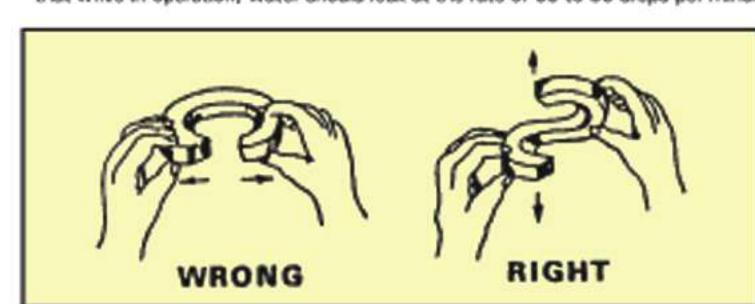
Before starting, usually, the centrifugal pumps are completely filled with the liquid to be pumped. When so filled with liquid, all the air contained in the pump has been allowed to escape, the pump is said to be primed.

Pumps operated with a suction-lift may be primed in any of the several ways. A relative inexpensive method is to install a foot -valve, at the inlet end of the suction pipe and prime the pump by filling the liquid to be pumped.

MAINTENANCE

PROCEDURE FOR FILLING GLAND PACKING IN CASE OF GLAND PACKED ARRANGEMENT:

- Spin the shaft by hand to see that there is no jamming. Rub a thin film of oil on the shaft and in the stuffing box.
- Insert the required number of gland packing before the lantern ring, staggering the joints by 180°.
- While inserting the lantem ring, see that it matches with the hole for water / grease
- Insert the remaining packing staggerating the gland plate tight and then loosen off so that while in operation, water should leak at the rate of 50 to 60 drops per minute.



PROCEDURE FOR FITTING THE MECHANICAL SEAL IN CASE OF MECHANICAL SEAL ARRANGEMENT:

Apply soap solution on rubber cap of stationary part.

CONNECTION DIAGRAM OF 3 PHASE

MOTORS

- Insert the stationary part of mechanical seal and press it up to the bore face of the mounting
- · Insert upper part of mechanical seal (i.e. rotating part) on the shaft.
- Insert the spacer.

RECOMMENDED SPARES FOR TWO YEARS OF NORMAL WORKING:

- Impelier.
- Ball bearings.

vi) wil ui

To starter

- Mechanical seal (In case of mechanical seal pumps) Gland packing (In case of gland packed pumps)
- Shaft sleeve (in case of gland packed pumps).
- Bush bearing (If provided).
- 7. Wearing ring (If provided).
- Capacitors (In case of single phase monobloc pumps). Water deflector.
- Paper packing.

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OPERATIONAL PROBLEMS AND CAUSES

TYPE OF THE FAILURE	Felure to deliver water	Pump does not deliver rated discharge	does	Pump loans water after start	Pump everloads primemover	Väradon	Stuffing Box overheers	Bearing evertheat	Bearing weer rapidly	Motor heading up	Seized pump	Imaguler delivery	Pump does not prime	Noisy Pump
REASON FOR FAILURE														
Wrang direction of rotation	~		~								*			
Pump not primed or filled with liquid	~					~					*		~	~
Suction line not filled with liquid	~			~										~
Air or vapour packet in section line	~	~		~		~						~		~
Inlet or section pipe insufficiently submerged	~	~		~		~								~
NPSH analable too low	~	~		~		~						~		~
Pump nat upto nated speed	~	~	~											
Air leaks in section line or stuffing box	~			~								~	*	~
Foot valve too servill		~												
Feat value dagged		~												
Viscosity greater than rated		~	~											~
Wear rings overs		~	~		~									
Impoler damaged		~	*		~									
Internal leakage (gas/ost)		~			~									
Prinning air/west valves open		~	*	~	~									
Cas or vapour in liquid			~	~			~					~	~	

TYPE OF THE FAILURE	Failure to defiver water	Pump does not deliver rated discharge	Pump does not deliver rated head	Pump loses water after start	Pump overloads primemover	Vibration	Stuffing Box overheats	Bearing overheat	Bearing wear repidly	Motor heating up	Seized pump	Imagular delivery	Pump does not prime	Noisy Pump
REASON FOR FAILURE														
Speed too high														
Total hand loover than recommended														
Viscosity and / or specific gravity higher than rated														
Starved suction				*		*						*		*
Warn or loose bearings						*								*
Retor out of balance														
Impeller blocked or damaged						•								
Berd shaft						*			٧					*
Foundation not rigid or poor releture						*								*
Gland packing too tight					*		4							
Gland packing not Aubricated							~							
Wrong grade of gland packing							*							
Insufficient cooling water							*	•						
Stuffing box backy packed							~						•	
Nitrong grade of Grease								•						
Dirt in bewings								*	*					

														_
TYPE OF THE PARUME	Falure to deliver water	Pump does not defeer rated discharge	Pump does not definer roted head	Pump loses water after start	Purrp overloads primemover	Vibration	Stuffing Box overheats	Bearing overheat	Bearing wear rapidly	Motor heating up	Seized pump	Irregular delivery	Pump does not prime	Moley Pump
REASON FOR FAILURE														
Visisture in Aubricant								*	*					
Failure of lubricating system								*	*					
Bearings too tight					~			*						
Excessive thrust								*	*					
Lack of lubrication								*	*					
Bearings badly installed						*		*	*					
Too reuch-grease in bearings								~						
Pump does not deliver rated capacity	-		~								~		*	
Pipos exert forces on pump					~	*	*	*	*		~			
Vibration	V								*	*				*
Foreign matter in pure											~			
Viscosity lower than rated		*												
Epeed too low	-		~											
Foundation botts loose, metaclpumpitalts lesse							*	*	*					*
Leak in delivery pipe-work					*									
Vechanical seal fault														

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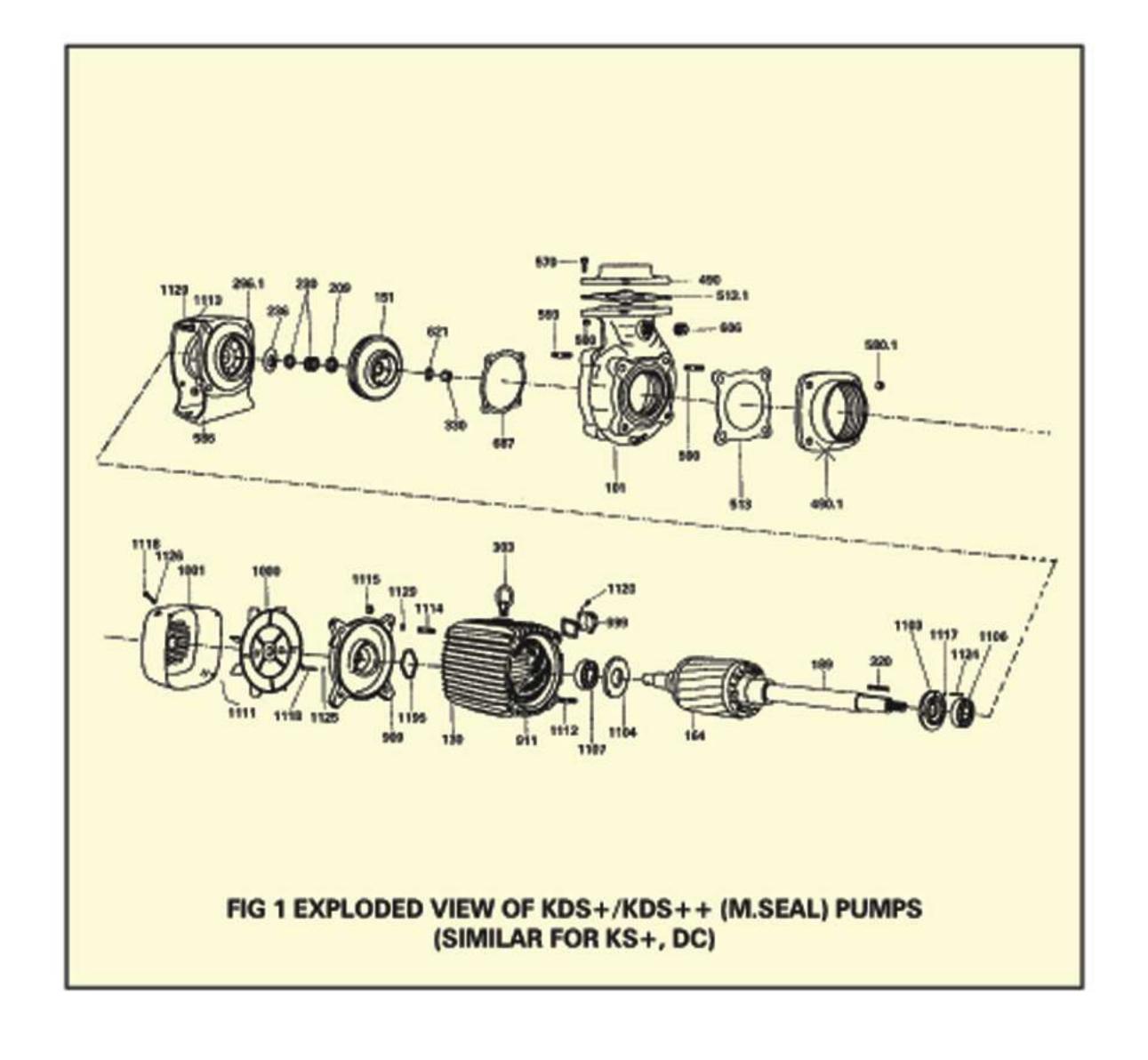
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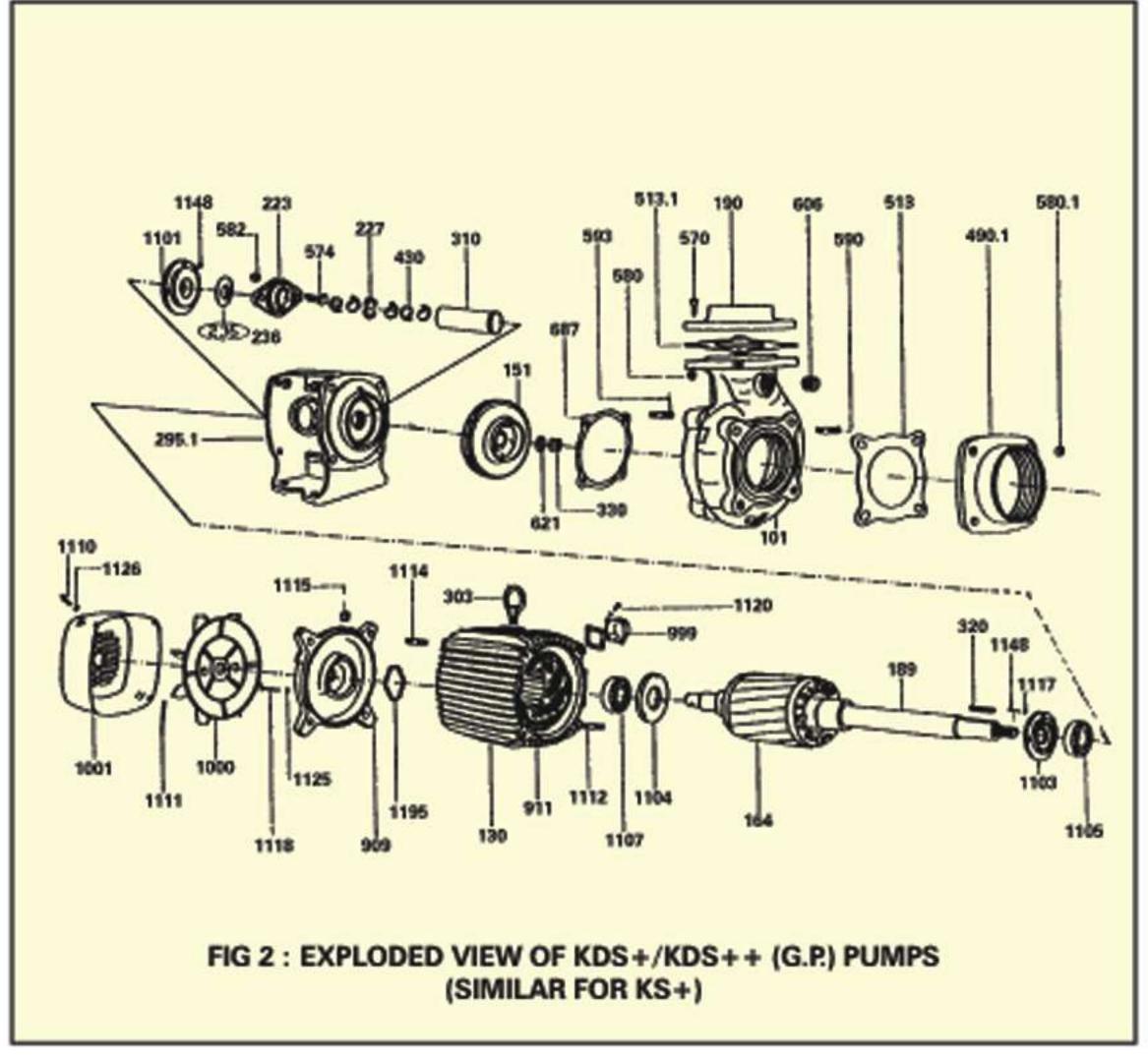
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EXPLODED VIEWS OF KDT+/KS+/KDS+/KDS++







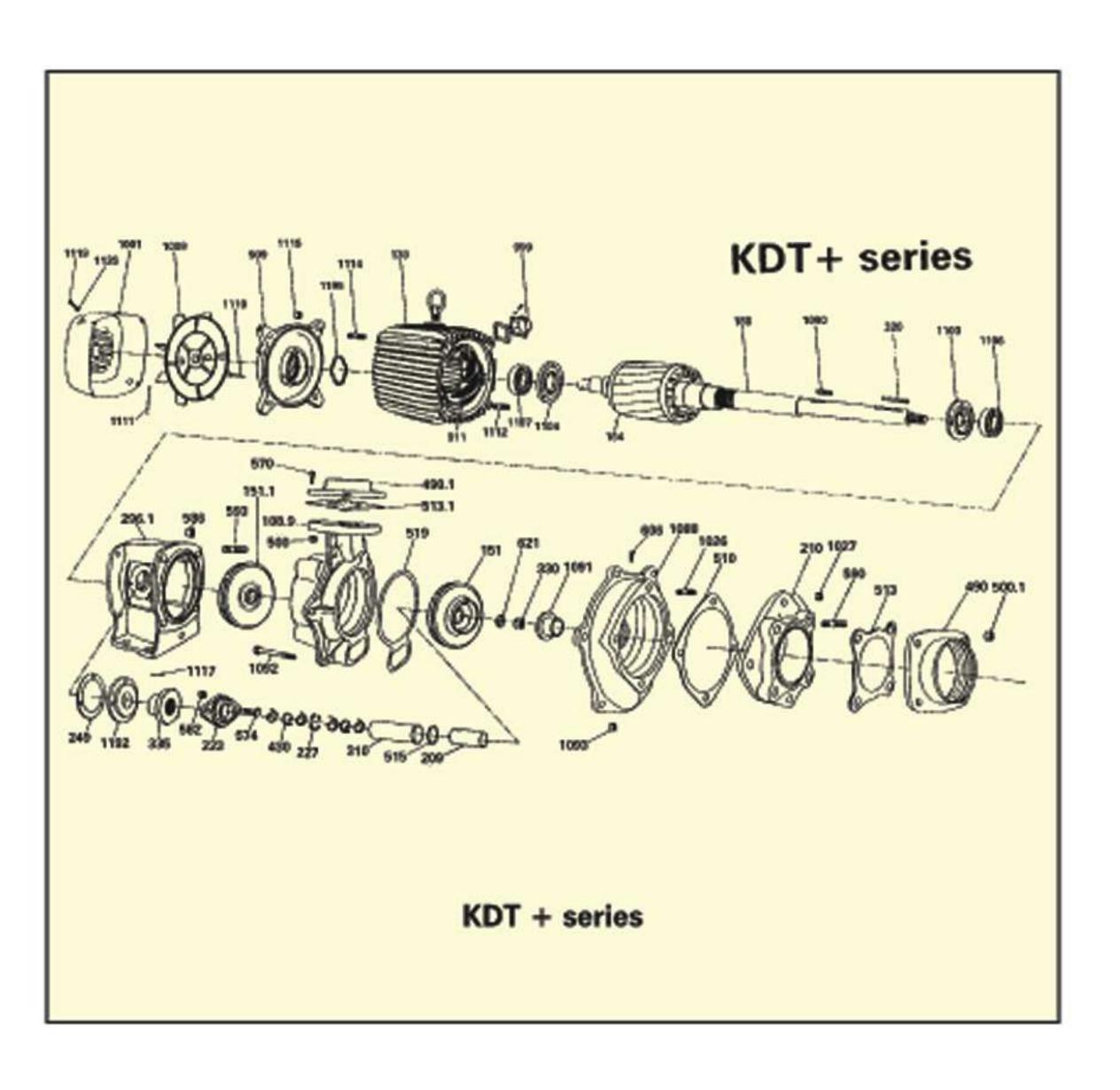


MAINTENANCE MANUAL FOR MONOBLOC TYPES KDT+/KS+/KDS+/KDS++

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CM 0103



PART NO.	PART DESCRIPTION	
101	Delivery Casing	
130	Motor Body	
151	Impeller	
164	Rotor	
189	Shaft	
209	Spacer	
223	Gland	
227	Lantern Ring	
230	Mechanical Seal	
236	Water Deflector	
296.1	Mounting Casing	
310	Sleeve	
320	Key (Impeller)	
330	Nut (Impeller)	
430	Gland Packings	
490	Delivery Flange	
490.1	Suction Flange	
513	Gasket (Suction Flange)	
513.1	Gasket (Delivery Flange)	
570	Bolt (Delivery Flange)	
580	Nut (Delivery Flange)	
581	Nut (Suction Flange)	
586	Nut (Delivery Casing & Mounting Casing)	

PART-LIST (GENERAL) FOR MONOBLOC PUMPS (Cont.)						
PART NO.	PART DESCRIPTION					
590	Stud (Delivery Casing & Suction Flange)					
593	Stud (Delivery Casing & Mounting Casing)					
606	Priming Plug					
621	Washer (Impeller Nut)					
687	Gasket (Mounting Casing & Delivery Casing)					
909	Cover (NDE)					
911	Stator					
912	Terminal Board					
999	Terminal Box					
1000	External Fan					
1001	Fan Cover					
1002	Lead Bush/Bush for Capacitor					
1022.1	Run Capacitor					
1106	Ball Bearing (D.E.)					
1107	Ball Bearing (N.D.E.)					
1111	Split Cotter Pin					
1119	Stot Cheese Head/Hexagonal Head					
	Screw (Fan Cover)					
1120	Stot Cheese Head Screw (Therminal Box and Body)					
1126	Spring/Brass Washer (Fan Cover Cover NDE)					
1195	Wavy Washer					
3049	Stator Fitted Motor Body					
3050	Rotor Fitted Shaft					