FIRST PUMP

SHIJIAZHUANG FIRST PUMP FACTORY CO., LTD.
Website: www.first-pumps.com E-mail: sales@first-pumps.com

Brochure For

FAH HORIZONTAL SLURRY PUMP

(Elastomer or High Chrome Alloy Liner)

FIRST PUMPS

Brochure For

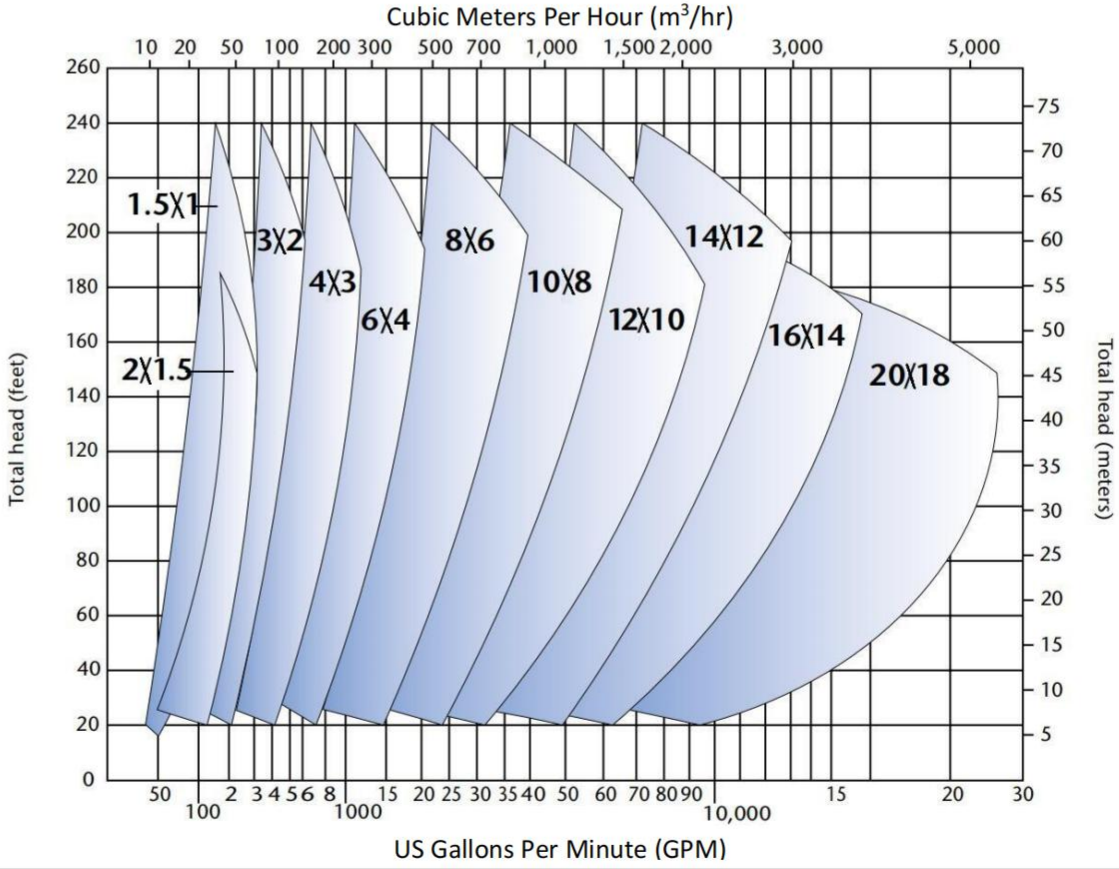
FAH HORIZONTAL SLURRY PUMP

(Elastomer or High Chrome Alloy Liner)

FAH HORIZONTAL SLURRY PUMP
(Elastomer or High Chrome Alloy Lined)

FAH PUMPS are available in high chrome iron and rubber lining configurations designed for continuous pumping of highly abrasive, high density, corrosion slurries with minimal maintenance requirements, the FAH pumps will maintain high efficiencies over the wear life of its components. In virtue of the characters of robust performance, ultra stable and cost-effective, FAH slurry pumps are your best choice for the heaviest mill duties.

FAH HORIZONTGAL SLURRY PUMP QUICK SELECTION CHART



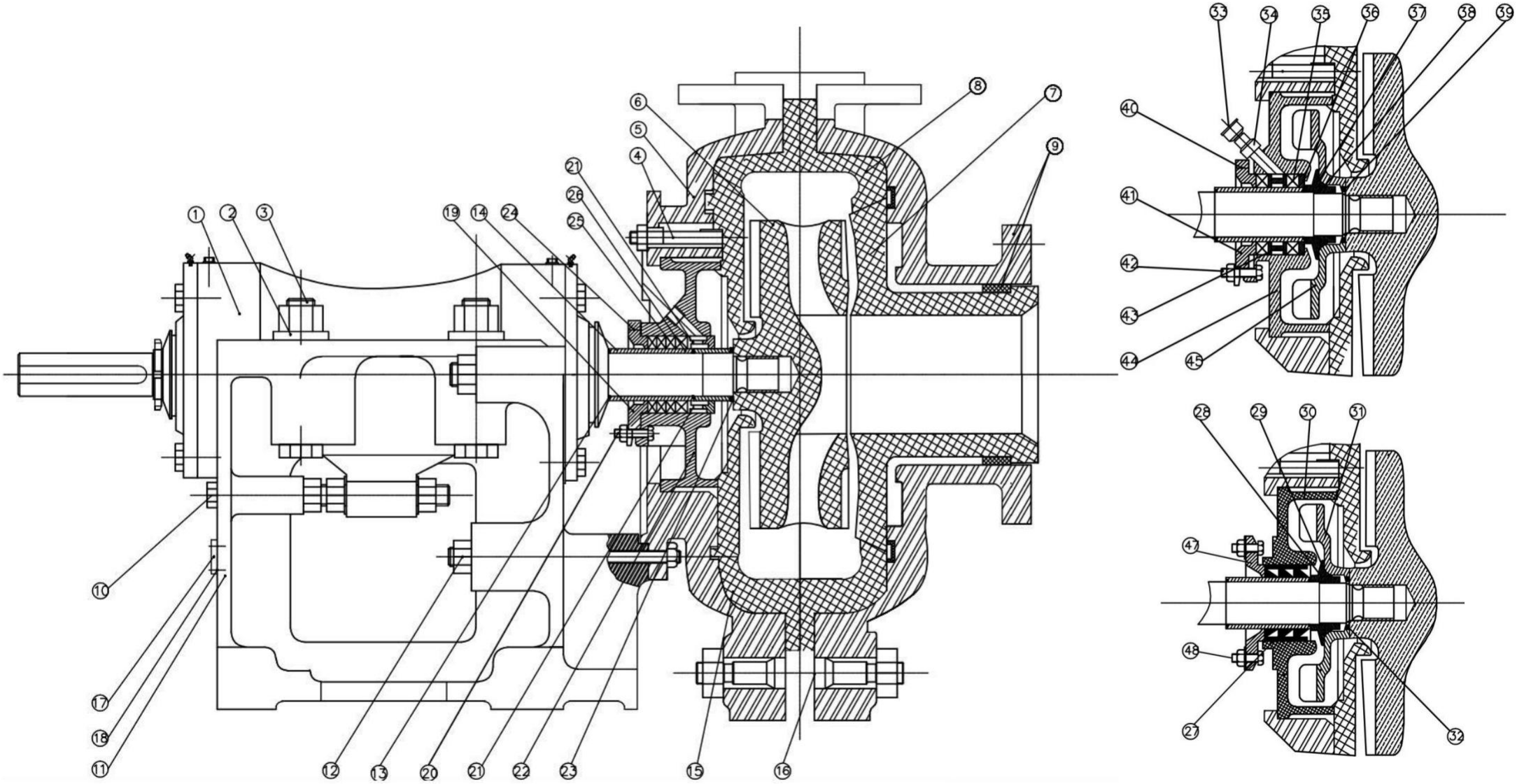
KEY FEATURES

- FAH rubber and high chrome iron lined pumps feature casings which are radially split into two halves. Minimum casing bolts reduce maintenance and minimise downtime.
- Moulded impellers and loose liners are available in various elastomers. Loose metal liners and impellers are also available in abrasive resistant alloys and various corrosion resistant metals.
- Both metal or rubber liners and impellers, or a combination of both, are interchangeable within the same pump to facilitate use in various applications. Outline dimensions are common to both metal and rubber pumps allowing interchangeability without pipeline or civils rework being necessary.
- A removable cartridge type grease lubricated bearing assembly can be replaced with the pump base in-situ, facilitating easy maintenance. Extra heavy duty and oil lubricated bearing assemblies are available on request.
- Pumps are available with an optional centrifugal shaft seal which eliminates the need for gland sealing water. This reduces costs, eliminates product dilution and is suitable where suction conditions permit.
- Configurations of metal and rubber lined pumps of the same frame size use the same base, bearing assembly, stuffing box and shaft sleeve, reducing stockholding to a minimum.
- Polyurethane Rubber, Linatex Premium Rubber, R55 Rubber, Hi-chrome A05 and various hard wearing alloys are available on request.

TYPICAL APPLICATIONS

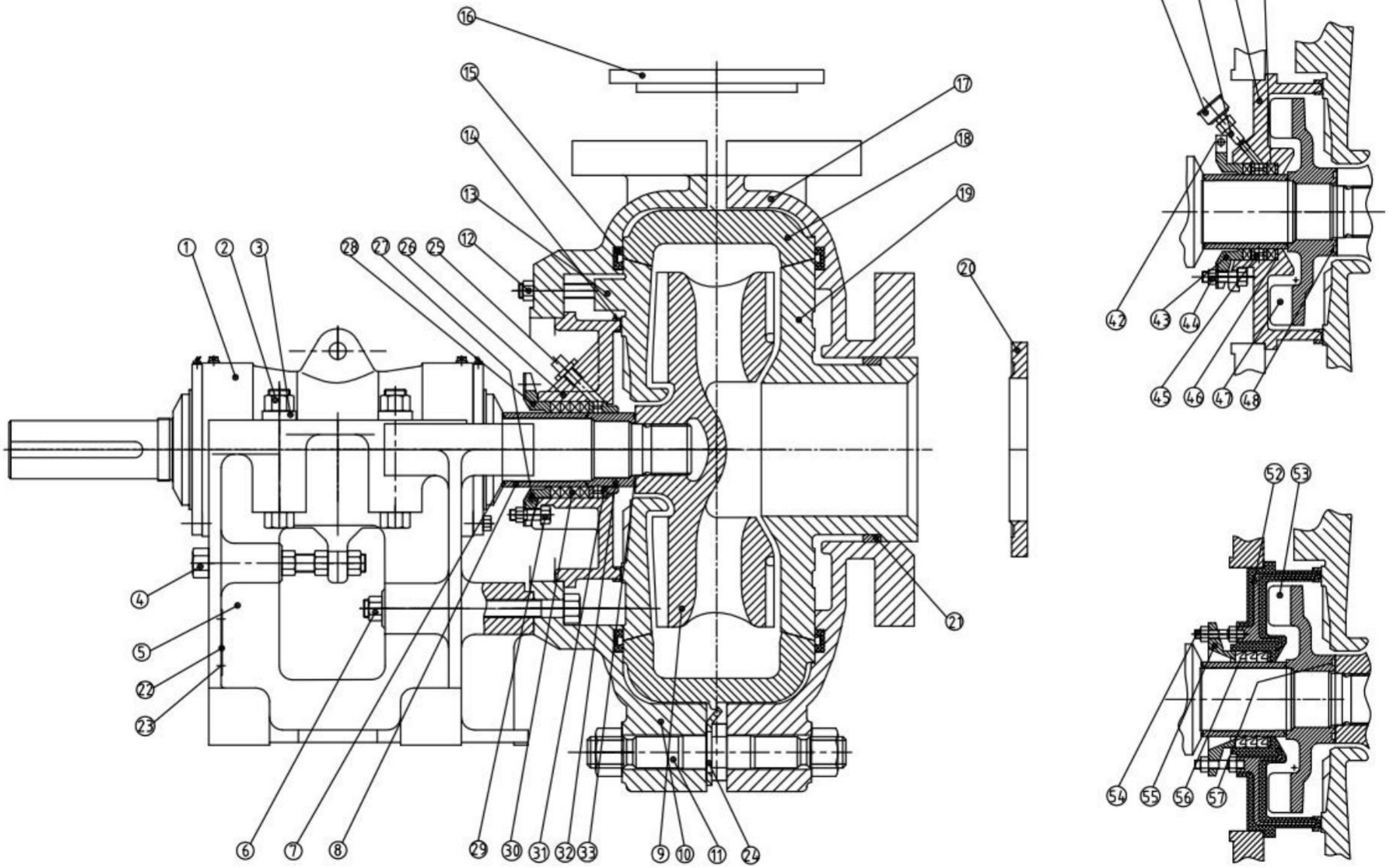
- Dewatering
- Cyclone Feed
- Regrind
- Flotation
- Mill Discharge
- Tailings and Mine Refuse
- Mining and Mineral Processing
- Sugar Beet
- Slag Granulation
- Heavy Minerals
- Paper and Pulp
- Bottom Boiler and Fly Ash
- Power Utilities

FAH RUBBER LINNER SLURRY PUMP PARTS LIST



Item	Part Name	Material	Item	Part Name	Material	Item	Part Name	Material
1	Bearing Assembly		21	Lantern Restrictor	1Cr18Ni9Ti	41	Gland Assembly	HT200
2	Clamp Washer	45 Galvanized	22	Packing Box	HT200	42	Gland Assembly Connection Bolt	
3	Clamp Bolts		23	Impeller O-ring	Buna	43	Lantern Ring	
4	Frame Plate Bolts	D Zn	24	Gland Assembly Connection Bolts		44	Expeller Ring	
5	Frame Plate	HT200	25	Packing	Q05	45	Expeller	
6	Impeller	Rubber	26	Shaft Spacer	3Cr13	46		
7	Cover Plate Liner Insert	Rubber	27	Lip Seal	Buna	47	Lip Seal Gland	
8	Cover Plate Liner	Rubber	28	Shaft Spacer	4Cr13	48	Expeller Ring Bolts	
9	Frame Plate	HT200	29	Shaft O-ring	Buna			
10	Adjusting Screw Assembly		30	Expeller Ring	Natural Rubber +B3			
11	Base	HT200	31	Expeller	HT200 or A05			
12	Frame Plate Bolts		32	Impeller O-Ring	Buna			
13	Shaft O-Ring	Buna	33	Grease Cup	A3			
14	Shaft Sleeve	3Cr13	34	Grease Cup Adaptor	20			
15	Frame Pate	Rubber	35	Packing	Q05			
16	Cover Plate Bolts		36	Neck Ring	1Cr18Ni9Ti			
17	Scutcheon	Brass Sheet	37	Shaft O-Ring	Buna			
18	Rivet	H62	38	Shaft Spacer	4Cr13			
19	Gland Assembly	45 Galvanized	39	Impeller O-Ring	Buna			
20	Gland Assembly Bolts		40	Gland Assembly Connection Bolt				

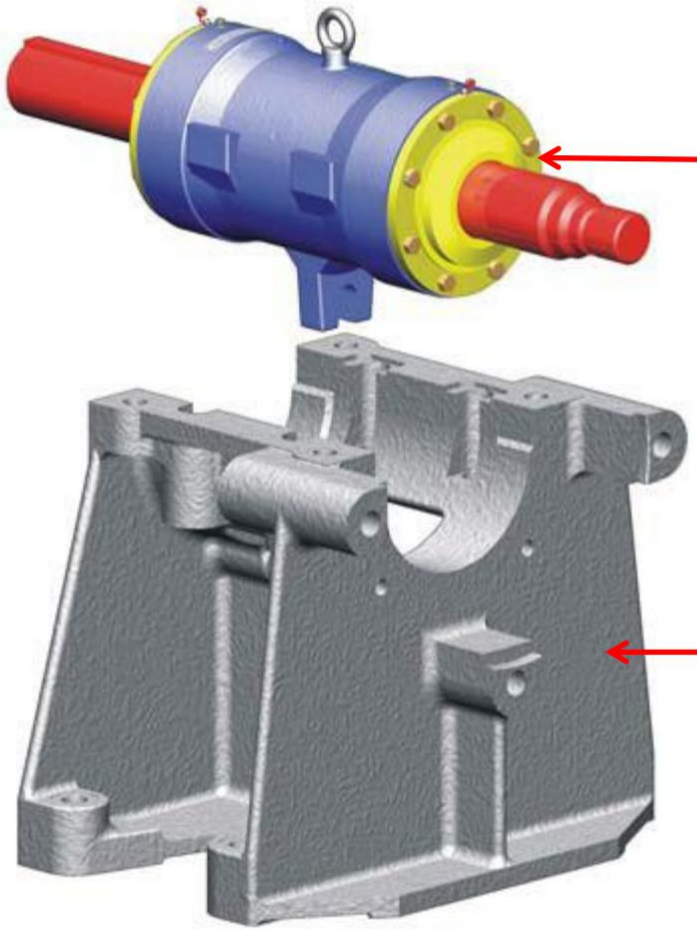
FAH HIGH CHROME IRON LINNER SLURRY PUMP PARTS LIST



Item	Part Name	Material	Item	Part Name	Material	Item	Part Name	Material
1	Bearing Assembly		21	Cotter	25	45	Lantern Restrictor	1Cr18Ni9Ti
2	Clamp Bolt		22	Scutcheon	Brass Sheet	46	Neck Ring	1Cr18Ni9Ti
3	Clamp Washer	45 Galvanized	23	Rivet	H62	47	Expeller	KmTBCr27 or HT200
4	Adjusting Screw Assembly		24	Keeper Plate	20 Galvanized	48	Impeller O-Ring	Buna
5	Base	HT200	25	Pipe Joint (Only for Packing Seal)	Brass	52	Expeller Ring	Nature Rubber+Q235A
6	Frame Plate Bolts		26	Stuffing Box	HT200	53	Expeller	KmTBCr27 or HT200
7	Shaft O-Ring	Buna	27	Gland Assembly Connection Bolts		54	Gland Assembly Bolts	
8	Shaft Sleeve	3Cr13	28	Gland Assembly	HT200	55	Lip Seal Gland	HT200
9	Impeller	KmTBCr27 (A05)	29	Gland Assembly Bolts		56	Lip Seal	Buna
10	Frame Plate	HT200 Or QT500-7	30	Packing	Q05	57	Impeller O-Ring	Buna
11	Cover Plate Bolts		31	Lantern Restrictor	1Cr18Ni9Ti	60	Stuffing Box	HT200
12	Frame Plate Bolts	D Zn	32	Shaft Spacer	3Cr13	61	Mechanical Seal	
13	Frame Plate Liner Insert	KmTBCr27 (A05)	33	Impeller O-Ring	Buna			
14	Seal Ring	Nature Rubber	38	Grease Cup	Q235A			
15	Volute Liner Seal	Nature Rubber	39	Grease Cup Adaptor	20D.Zn			
16	Discharge Joint Ring	Nature Rubber	40	Expeller Ring	KmTBCr27 or HT200			
17	Cover Plate	HT200, Or QT500-7	41	Packing	Buna			
18	Volute Liner	KmTBCr27 (A05)	42	Gland Assembly Connection Bolts				
19	Throatbush	KmTBCr27 (A05)	43	Gland Assembly				
20	Intake Joint	Nature Rubber	44	Gland Assembly Bolts				

DESIGNED FEATURES

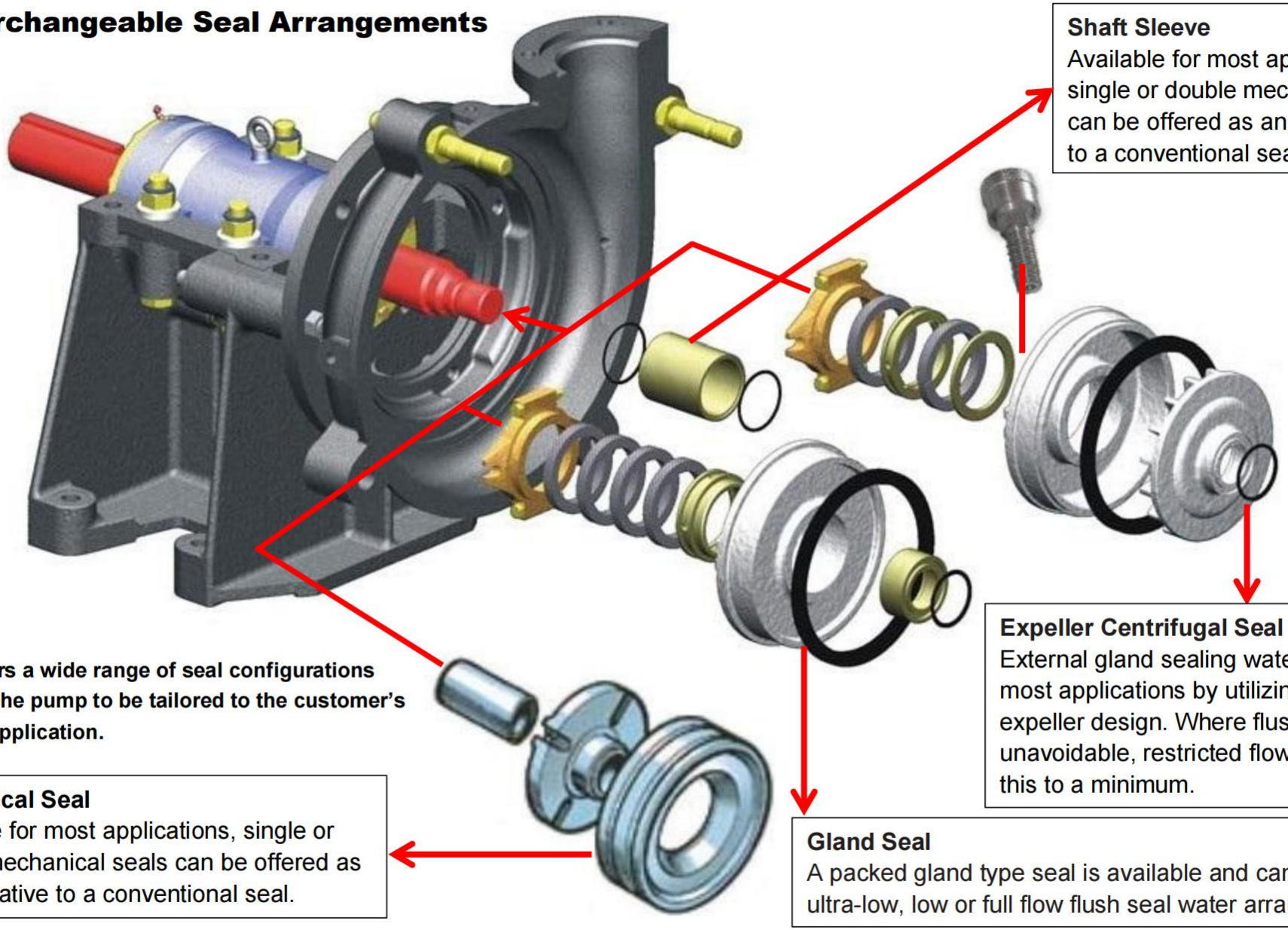
● Frame Assembly



Bearing Cartridge Assembly
A large diameter shaft with a short overhang minimises deflection and vibration. Heavy duty roller bearings are housed in a removable bearing cartridge. Only four through bolts are required to hold the cartridge type housing in the frame.

Pump Base
A very robust one-piece frame cradles the cartridge type bearing and shaft assembly. An external impeller adjustment mechanism is provided below the bearing housing for easy adjustment of impeller clearance.

Interchangeable Seal Arrangements



Shaft Sleeve
Available for most applications, single or double mechanical seals can be offered as an alternative to a conventional seal.

Expeller Centrifugal Seal
External gland sealing water is avoided in most applications by utilizing the “Hi-Seal” expeller design. Where flushing water is unavoidable, restricted flow glands keep this to a minimum.

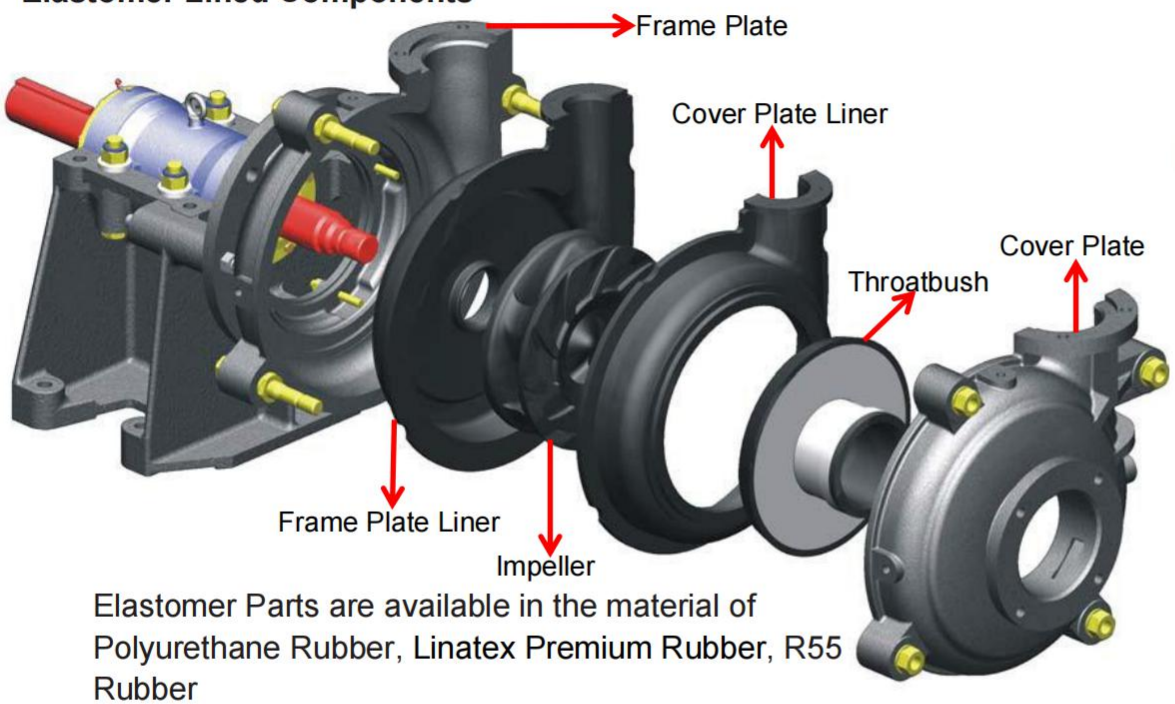
FAH offers a wide range of seal configurations allowing the pump to be tailored to the customer’s specific application.

Mechanical Seal
Available for most applications, single or double mechanical seals can be offered as an alternative to a conventional seal.

Gland Seal
A packed gland type seal is available and can be fitted with ultra-low, low or full flow flush seal water arrangements.

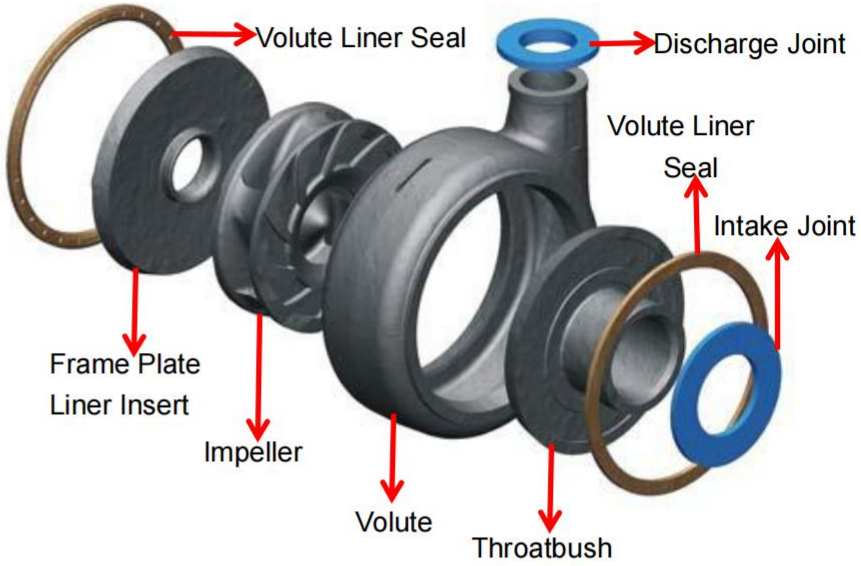
A Wide Range of Liner Configurations Tailored to The Customer's Specific Application.

Elastomer Lined Components



Elastomer Parts are available in the material of Polyurethane Rubber, Linatex Premium Rubber, R55 Rubber

High Chrome Iron Lined Compoents



High Chrome Alloy Parts are in the material of high chrome high-wear resistant Alloy A05 also known as high-chrome 27% or KmTBCr27.

Liner Configurations Design Features

- **Liners** – Easily replaceable liners are bolted, not glued, to the casing for positive attachment and ease of maintenance. Hard metal liners are completely interchangeable with pressure molded elastomers. Elastomer seal rings back all liner joints.
- **Casing** – Casing halves of cast or ductile iron with external reinforcing ribs provide high operating pressure capabilities and an extra measure of safety.
- **Impeller** – Front and rear shrouds have pump out vanes that reduce recirculation and seal contamination. Hard metal and molded elastomer impellers are completely interchangeable. Cast in impeller threads require no inserts or nuts. High efficiency and high head designs are also available.
- **Throatbush & Frame Plate Liner Insert** – Wear is reduced and maintenance simplified by the use of tapered mating faces to allow positive accurate alignment during assembly and simple removal.

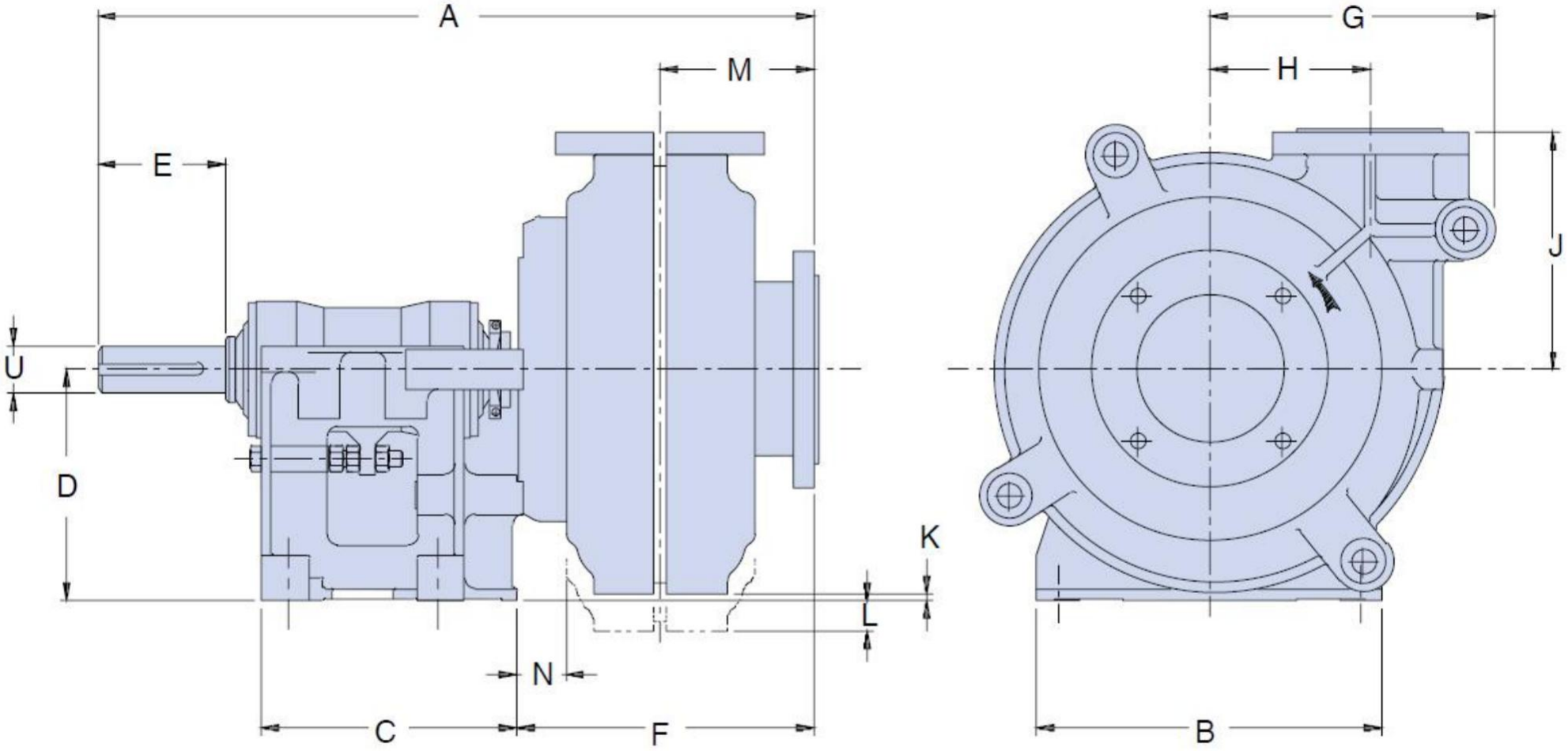
METERIAL A05 ANALYSIS (HIGH CHROME 27%)

A05 also known as High-Chrome 27% or KmTBCr27
Material Type: Erosion Resistant White Iron

General Description
Alloy KmTBCr27 is a wear resistant white iron that offers excellent performance under erosive conditions. The alloy can be effectively used in a wide range of slurry types. The high wear resistance of alloy KmTBCr27 is provided by the presence of hard carbides within its microstructure. Alloy KmTBCr27 is particularly suited to applications where mild corrosion resistance, as well as erosion resistance is required.

- **Physical properties**
  - **Density:** (kg/m3) 7500
  - **Hardness:** (HBW 10/3000) 650
  - **Tensile strength:** (MPa) 780
  - **Young¡fls modulus:** (GPa) 220
  - **Elongation at break:** (%) 0.4
  - **Toughness:** (J) 190
- **Chemical Resistance**
  Alloy KmTBCr27 is generally not suitable for highly corrosive duties. The alloy can be used in mild corrosive duties, with a PH rang of 5 to 12, for silphuric and nitric acids, or sodium hydroxide applications.
- **Parts Availability**
  Most wet-end wear parts can be produced in alloy KmTBCr27. The most common parts are as follows: Impellers, Throatbush, Volute Liners, Frame Plate Liner Insert, Casings.
- **Application Recommendations**
  KmTBCr27 can be used for pumping a wide range of mild corrosive slurries. The alloy gives very excellent wear life for a wide variety of particle sizes and hardness. Usually, KmTBCr27 is most cost effective for particles greater than 100um in size.

FAH PUMP DIMENSIONS



Pump Size	A Inches	B Inches	C Inches	D Inches	U mm	Key Size mm	E Inches	F Inches	G Inches	H Inches	J Inches	K Inches	L Inches	M Inches	N Inches	WT/LBS Metal	WT/LBS Rubber
1.5X1B-FAH	22.95	11.61	9.76	7.76	28	8X7	3.11	8.11	7.13	3.86	6.73	1.81	-	4.17	.74	195	170
1.5X1C-FHH	29.88	15.98	12.24	10.00	42	12X8	4.76	10.59	10.63	7.64	10.00	-	.43	4.76	2.61	700	-
2X1.5B-FAH	23.31	11.61	9.76	7.76	28	8X7	3.11	8.54	7.99	4.49	7.24	1.31	-	4.49	.86	345	260
3X2C-FAH	30.24	15.98	12.24	10.00	42	12X8	4.76	11.02	9.37	5.43	8.27	2.81	-	5.94	1.56	435	340
3X2D-FHH	38.82	19.37	14.33	12.99	65	18X11	6.46	15.28	15.12	10.00	14.29	-	2.00	7.99	3.28	1550	-
3X2Q-FHH	40.16	21.26	18.11	11.81	60	18X11	5.91	15.31	15.12	10.00	14.40	-	3.19	7.99	2.22	1735	-
4X3C-FAH	33.19	15.98	12.24	10.00	42	12X18	4.76	13.90	11.50	5.87	10.31	.93	-	7.36	2.11	550	520
4X3D-FAH	37.13	19.37	14.33	12.99	65	18X11	6.46	13.90	11.50	5.87	10.31	3.94	-	7.36	2.04	700	640
4X3E-FHH	48.82	24.49	17.64	17.99	80	22X14	8.74	19.37	19.37	12.99	17.00	-	-	9.76	3.12	2750	-
4X3R-FHH	50.98	26.77	23.23	13.78	85	22X14	8.46	19.29	19.29	12.99	17.00	-	4.09	9.76	1.83	3090	-
6X4D-FAH	40.20	19.37	14.33	12.99	65	18X11	6.46	16.69	15.98	9.02	13.31	.43	-	8.62	2.57	1475	1000
6X4E-FAH	46.38	24.49	17.64	17.99	80	22X14	8.74	17.05	15.98	9.02	13.31	5.43	-	8.62	2.96	1950	1400
6X4F-FHH	61.26	33.74	24.96	24.02	100	28X16	10.98	23.03	24.25	16.26	21.50	1.00	-	12.01	2.96	5575	-

6X4S-FHH	65.67	36.22	30.71	17.72	120	32X18	11.02	23.15	24.25	16.26	21.50	-	5.28	12.01	3.04	6335	-
8X6E-FAH	51.26	24.49	17.64	17.99	80	22X14	8.74	21.93	21.69	12.52	18.11	-	2.44	11.50	3.23	3300	2165
8X6F-FAH	59.33	33.74	25.00	24.02	100	28X16	10.98	21.22	21.69	12.52	18.11	3.54	-	11.50	2.56	4000	3065
8X6T-FHH	89.57	45.28	40.94	25.59	150	36X20	13.78	33.54	32.87	22.99	32.01	-	6.30	15.51	6.93	14490	-
10X8F-FAH	64.80	39.02	27.76	24.02	100	28X16	10.98	26.89	26.50	16.50	25.00	-	.47	13.11	5.28	7040	5690
10X8ST-FAH	68.82	45.28	30.71	25.29	120	32X18	11.02	27.24	26.50	16.50	25.00	1.06	-	13.11	5.63	8250	6900
12X10F-FAH	67.76	39.02	27.76	24.02	100	28X16	10.98	29.65	29.76	18.27	26.50	-	4.09	15.00	4.25	8290	6190
12X10ST-FAH	71.50	45.28	30.71	25.29	120	32X18	11.02	30.00	29.72	18.27	26.50	-	2.56	15.00	4.60	9500	7400
14X12F-FAH	69.76	39.02	27.76	24.02	100	28X16	10.98	31.61	36.89	24.76	32.76	-	10.35	15.98	4.13	12890	9090
14X12ST-FAH	73.74	45.28	30.71	25.29	120	32X18	11.02	31.97	36.89	24.76	32.76	-	8.82	15.98	4.48	14100	10300
16X14TU-FAH	91.34	57.48	41.34	35.43	150	36X20	13.78	37.52	41.26	25.98	35.00	-	3.31	17.16	6.56	22000	-
20X18TU-FAH	97.44	57.48	41.34	35.43	150		13.78	43.31	55.91	37.13	48.43	-	16.54	-	-	41500	35026

Note: U dimensions and key sizes are in millimeters. All others are in inches.

CAUTION

The following safety information relating to pump operation and maintenance should be carefully observed, and correct procedures followed, to avoid injuries to personnel, and damage to equipment. All statutory requirements relating to this equipment must be complied with at all times.

DO NOT OPERATE THE PUMP WITHOUT SUCTION AND DISCHARGE VALVES OPENNED.

DO NOT APPLY HEAT TO THE IMPELLER HUB OR INLET EYE TO ASSIST IMPELLER REMOVAL. APPLICATION OF HEAT MAY RESULT IN SHATTERING OF THE IMPELLER, RESULTING IN INJURY OR EQUIPMENT DAMAGE.

DO NOT OPERATE THE PUMP FOR AN EXTENDED TIME WITH ZERO OR VERY LOW FLOWRATE. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN OVERHEATING OF THE PUMP, AND VAPORISATION OF THE PUMPED FLUID, WITH GENERATION OF VERY HIGH PRESSURES. SERIOUS INJURY TO PERSONNEL, OR DAMAGE TO EQUIPMENT MAY RESULT FROM SUCH ACTION.

DO NOT FEED VERY HOT OR VERY COLD FLUID INTO A PUMP AT AMBIENT TEMPERATURE. THERMAL SHOCK MAY RESULT IN FRACTURE OF PUMP WET-END PARTS.

FAH SLURRY PUMP MUST BE REGARDED AS BOTH AN ITEM OF ROTATING MACHINERY, AND A RESSURE VESSEL. ALL RELEVANT SAFETY PRECAUTIONS AND PROCEDURES FOR SUCH EQUIPMENT SHOULD BE OBSERVED DURING PUMP INSTALLATION, OPERATION AND MAINTENANCE.

CHECK THE FOLLOWING ITEMS BEOFRE STARTING PUMP

CHECK THE PUMP BASE PLATE. THE PUMP BASE PLATE SHOULD BE CLEAN, FLAT AND ABLE TO SUPPORT ALL FOUR POINTS IN A LEVEL POSITION.

CHECK THE COUPLING ALIGNMENT. GOOD SERVICE LIFE OF THE PUMP/DRIVER DEPENDS ON GOOD ALIGNMENT THROUGHOUT THE COUPLING. POOR ALIGNMENT MAY CAUSE FAILURE OF THE COUPLING, PUMP AND/OR MOTOR BEARING OF EITHER SHAFTE.

CHECK DRIVE MOTOR ROTATION PRIOR TO FITTING OF COUPLINGS. INCORRECT MOTOR ROTATION MAY CAUSE PERSONNEL INJURY OR EQUIPMENT DAMAGE.

PIPING(GENERAL).

- DO NOT CONNECT THE PIPING TO THE PUMP BEFORE THE PUMP HOLD-DOWN BOLTS HAVE BEEN TIGHTENED.
- PIPING SHOULD BE ANCHORED INDEPENDENTLY OF THE PUMP. PIPE COMPANION FLANGES SHOULD LINE UP NATURALLY WITH PUMP FLANGES. **DO NOT DRAW OR PULL THE PIPE TO THE PUMP WITH FLANGE BOLTS.**

PIPING (SUCTION)

- PROPERLY SELECTED AND INSTALLED SUCTION PIPING IS EXTREMEDLY IMPORTANT TO ELIMINATE VIBRATION AND CAVITATION IN THE PUMP. VIBRATION CAN CAUSE ISSUES WITH THE PACKING, MECHANICAL SEAL AND/OR BEARINGS.

- THE CAPACITY OF A CENTRIFUGAL PUMP SHOULD NEVER BE ADJUSTED BY THROTTLING THE SUCTION LINE.
- A POSITIVE SHUT-OFF VALVE (TO CAUSE MINIMUM TURBULENCE) SHOULD BE INSTALLED IN THE SUCTION LINE TO PERMIT THE CLOSING OF THE LINE AND REMOVAL OF THE PUMP FOR INSPECTION AND MAINTENANCE.

- THE SUCTION LINE SHOULD BE DESIGNED TO ELIMINATE ANY POCKETS. THE PIPING SHOULD GRADUALLY SLOPE DOWNWARDS TO THE SOURCE OF SUPPLY TO ELIMINATE AIR POCKETS.

- THE SUCTION LINE SHOULD HAVE A STRAIGHT SECTION INTO THE PUMP OF A LENGTH EQUIVALENT TO AT LEAST TWO TIMES ITS DIAMETER, i.e., FOUR-INCH (4”) SUCTION EIGHT (8”) STRAIGHT SECTION RUN.

- FOR TEMPORARY HOOK-UP WHERE FLEXIBLE HOSE IS USED, A NON-COLLAPSING HOSE IS ESSENTIAL SINCE THE SUCTION LINE PRESSURE IS OFTEN BELOW ATMOSPHERIC PRESSURE. A COLLAPSING SUCTION LINE WILL RESULT IN BELOW AVERAGE OR COMPLETE LOSS OF FLOW.

PIPING (DISCHARGE)

- A POSITIVE SHUT-OFF VALVE SHOULD BE LOCATED IN THE DISCHARGE PIPING TO PERMIT INSPECTION OF THE PUMP.

- ALL PIPING SHOULD BE INDEPENDENTLY SUPPORTED AND ACCURATELY ALIGNED. **THE PUMP MUST NOT SUPPORT THE WEIGHT OF THE PIPE OR COMPENSATE FOR MISALIGNMENT.**

- IF OPERATING CONDITIONS ARE NOT KNOWN WITH SUFFICIENT ACCURACY, IT WILL BE NECESSARY TO PROVIDE A THROTTLE VALVE IN THE DISCARGE LINE TO ENSURE THAT THE PUMP OPERATES AT THE DESIGN POINT.

- IF THE PUMP IS CONNECTED TO A PRESSURE SYSTEM, IT IS IMPORTANT TO INSTALL A CHECK VALVE BETWEEN THE PUMP DISCHARGE AND THE THROTTLING VALVE. THE CHECK VALVE WILL PREVENT BACK FLOW THROUGH THE PUMP. BACK FLOW MAY CAUSE THE IMPELLER TO BECOME LOOSE ON THE SHAFT, WITH WOULD LIKELY RESULT IN MECHANICAL DAMAGE AND FLUID LEAKAGE BENEATH THE SHAFT SLEEVE.

START-UP

- Pump rotates freely by hand
- Coupling is aligned
- Pump’s auto-greaser and trailer’s auto-lube system are installed
- Suction valve is fully open
- Pump and suction line is full of fluid
- Discharge valve is slightly open

OPERATION\PRIMING

- Vent air from suction line and fill with liquid
- Start pump with discharge valve cracked open
- After discharge pressure stabilizes, gradually open discharge valve to required position
- If flow is lost, close discharge valve and wait a few seconds for discharge pressure to build
- Continuous issues with flow indicates an improper selection or installation
- Running the pump too long with improper prime may destroy pump

! CAUTION !
Do not run pump with suction and discharge valves closed.

PUMP RECORDS

Maintain data cards or pump records whenever possible.

1. Pump size and serial number
2. Motor horsepower and speed of operation
3. Service conditions
4. Frequency of operation
5. Record of maintenance, including parts usage and general condition of pump

FAH SLURRY PUMP TROUBLESHOOTING

Causes	Noticing Vibrations	No Flow	Limited Flow	Insufficient Pressure	Excessive Power Required	Intermittent Flow	Short Bearing Life
Pump Not Primed		X	X				
Speed Too Low			X	X			
Speed Too High					X		X

Causes	Noticing Vibrations	No Flow	Limited Flow	Insufficient Pressure	Excessive Power Required	Intermittent Flow	Short Bearing Life
Excessive Discharge Head		X	X				
Insufficient NPSH	X	X	X			X	
Impeller Clogged		X	X			X	
Wrong Direction of Rotation			X	X			
Plugged Suction or Discharge Line	X	X	X				
Foot Valve or Suction Line Not Immersed Deep Enough		X	X			X	
Impeller Damaged		X	X	X			
Shaft Packing / Seal Defective			X	X			
Impeller Too Small			X	X			
Impeller Too Large					X		
Excessive Amount of Air or Gas In Liquid				X		X	X
Total Head Lower Than Design					X		
Specific Gravity or Viscosity Too High		X			X		X
Bent Shaft	X				X		X
Improper Electric Motor Winning or Voltage					X		
Rotating Elements Bind	X				X		X
Leaky Suction Line or Shaft Seal		X	X			X	
Misalignment	X				X		X
Bearing Worn	X						X
Impeller Out of Balance	X						X
Suction or Discharge Piping Not Anchored	X						
Improper Foundation	X						
Insufficient Discharge Head (Excessive Flow)	X			X	X	X	X
Improper Lubricant or Level							X