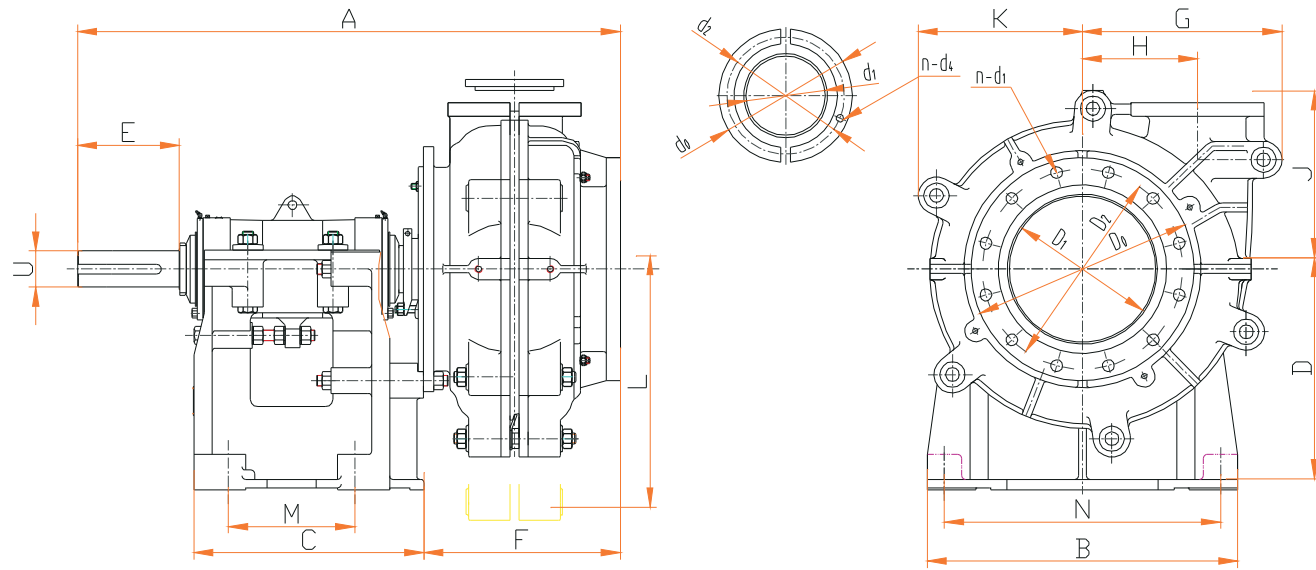


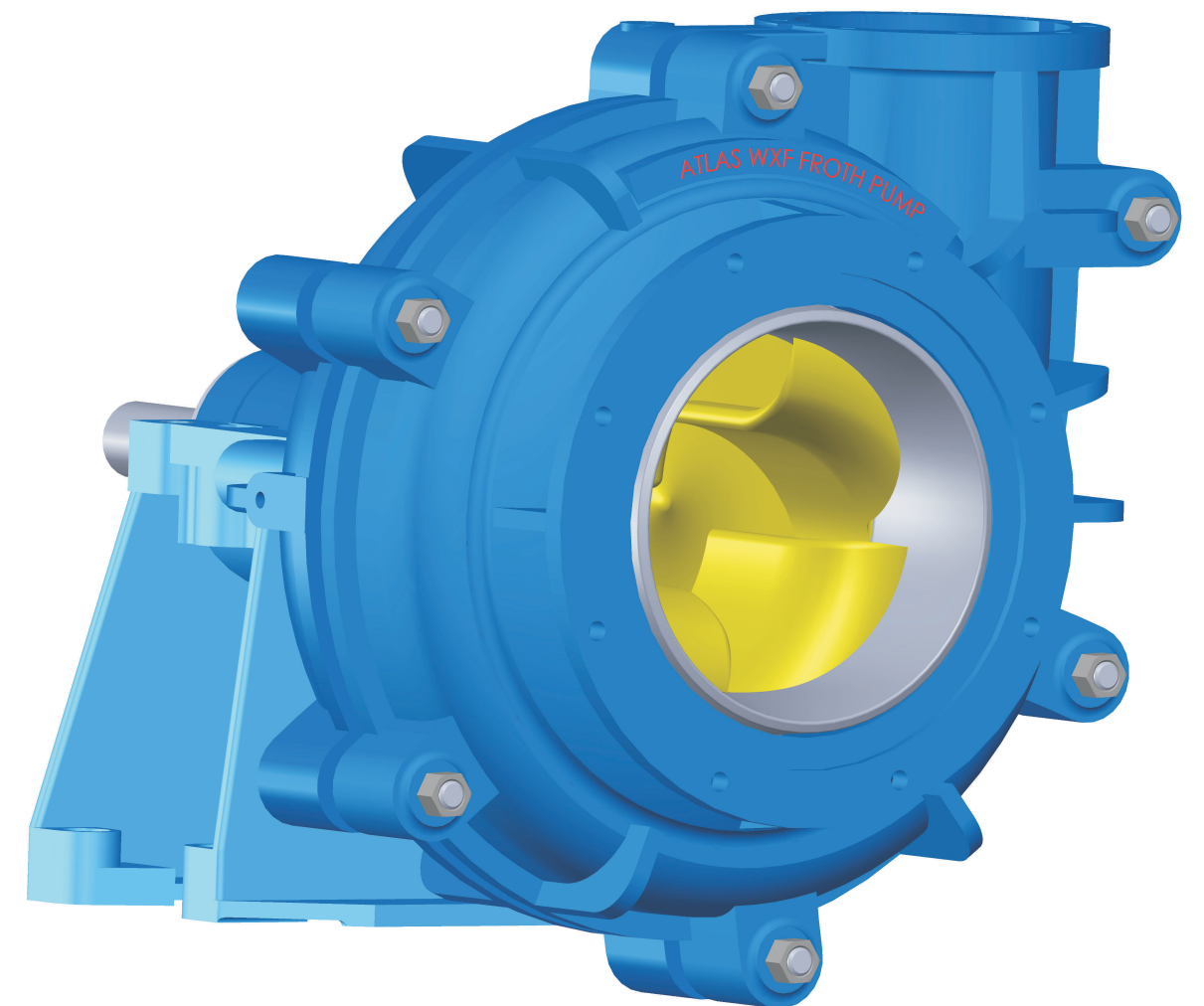
## OUTLINE DIMENSIONS



Pump	A	B	C	D	U	E	F	G	H	J	K	L	M	N	Suction				Discharge				WT. (Kg)
															D0	D1	D2	N-d1	d0	d1	d2	n-d4	
2 WXF	768	406	311	254	42	121	281	238	138	210	185	183	175	356	309	137	260	4-Φ22	184	51	146	4-Φ19	185
3 WXF	843	406	311	254	42	121	354	292	149	262	235	230	175	356	380	186	330	4-Φ22	229	76	191	4-Φ22	255
4 WXF	1021	492	364	330	65	164	421	406	229	338	329	318	213	432	500	289	438	8-Φ27	279	102	235	4-Φ22	607
6 WXF	1302	622	448	457	80	222	557	551	318	460	454	519	257	546	616	358	552	12-Φ33	368	152	324	8-Φ22	1428
8 WXF	1748	1150	780	650	120	280	692	673	419	635	609	622	620	900	715	455	650	12-Φ33	432	203	375	8-Φ29	3637
10 WXF	1816	1150	780	650	120	280	762	755	464	674	689	714	620	900	785	508	715	16-Φ36	527	254	470	12-Φ25	4188
12 WXF	1873	1150	780	650	120	280	812	937	629	832	842	874	620	900	840	559	770	16-Φ36	552	305	495	12-Φ25	6216
14 WXF	2320	1460	1050	900	150	350	953	1048	660	889	946	984	860	1200	1040	760	980	20-Φ39	674	356	610	12-Φ28	9700
200 WLF	1343	622	448	457	80	220	592	613	381	401	451	540	257	546	630	375	570	12-Φ33	432	200	375	8-Φ29	1576
250 WLF	1549	857	636	610	100	280	591	696	438	470	476	603	349	762	670	405	600	12-Φ33	482	250	425	8-Φ32	1938
300 WLF	1720	920	780	450	120	280	646	740	475	570	599	634	640	760	715	450	650	12-Φ33	530	300	470	12-Φ26	2200
350 WLF	1776	920	780	450	120	280	696	825	530	620	643	691	640	760	785	515	715	16-Φ36	590	350	530	12-Φ26	3520
400 WLF	1840	1150	780	650	120	280	777	942	600	740	747	809	620	900	880	610	800	16-Φ36	685	400	615	12-Φ33	4083
450 WLF	1875	1150	780	650	120	280	822	1040	660	800	814	872	620	900	950	670	880	20-Φ36	740	450	670	12-Φ33	5428

**TEEC**  
**ATLAS PUMP INDUX®**  
 Slurry pumping solutions

**WXF(R)**  
**WLF(R)**  
**FROTH PUMP**  
 Mineral - Flotation Process



## ATLAS EQUIPMENT MANUFACTURING LTD., HEBEI, CHINA

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Tel: 86-311-85832212

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Email: [marketing@atlas-pump.com](mailto:marketing@atlas-pump.com)



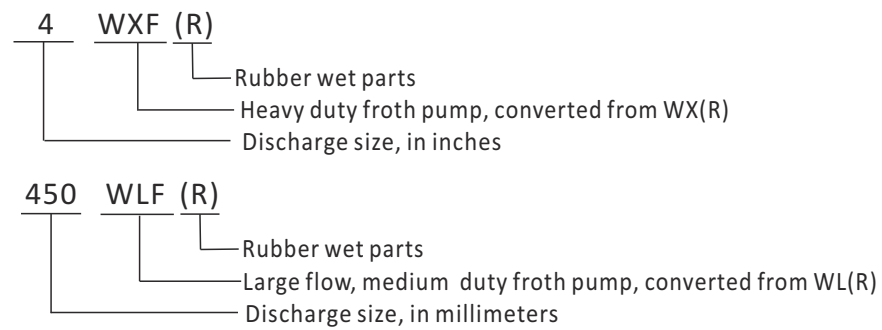
## WXF(R)/WLF(R) FROTH PUMP

The WXF(R)/WLF(R) Slurry Pump series are particularly designed to handle froth and high viscosity slurry in non-ferrous metal extraction where flotation process is utilized, the slurry which contains fine particles and fine dispersion of air bubbles need to be pumped from one flotation cell to another or to the next process, in these conditions the froth pumps are needed.

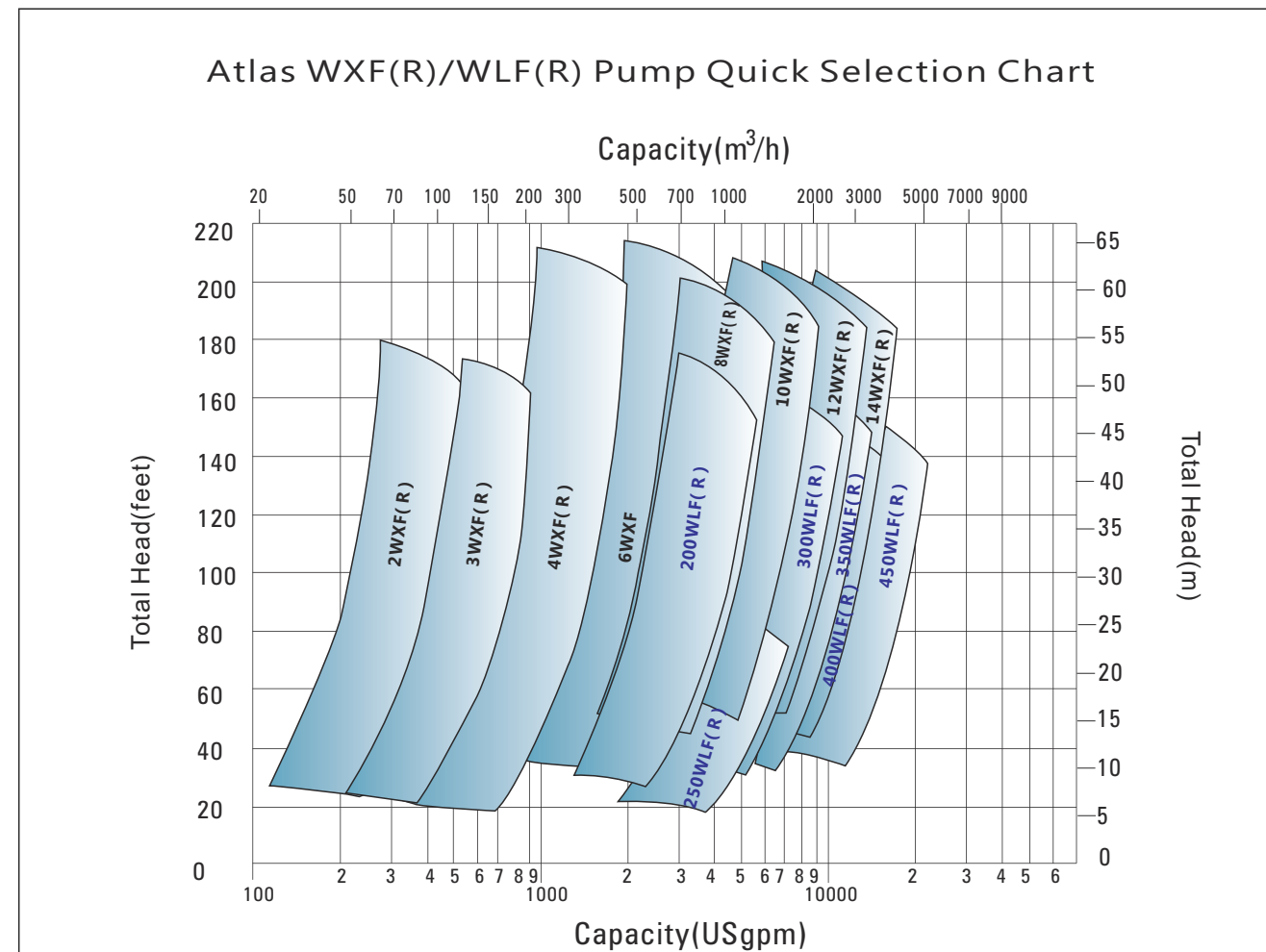
Wear-resistance high chrome white irons or various elastomer molded wet parts are optional for different slurries.

WXF pumps are converted from WX(R) pumps, WLF pumps are converted from WL(R) pumps.

### MODEL DESCRIPTIONS



### QUICK SELECTION CHART



## TYPICAL APPLICATIONS

### Mineral Processing

WXF(R)/WLF(R) pumps are especially made for pumping the slurries of flotation process in non-ferrous metal extraction, the slurries contain bubbles which are very hard to be got into impeller eye in normal slurry pumps such as WX(R) and WL(R) pumps.

WXF(R) and WLF(R) pumps are converted from WX(R) and WL(R) pumps with several parts modification, the enlarged inlet of throat bush, the blade shape of open impeller and venting pipe in suction pipe help to get as more as froth or viscous slurries into the pump, minimize the pump size and increase efficiency.

Hard Metal or elastomer liners are optional, to obtain longer wear life and reduce Total Cost of Ownership.

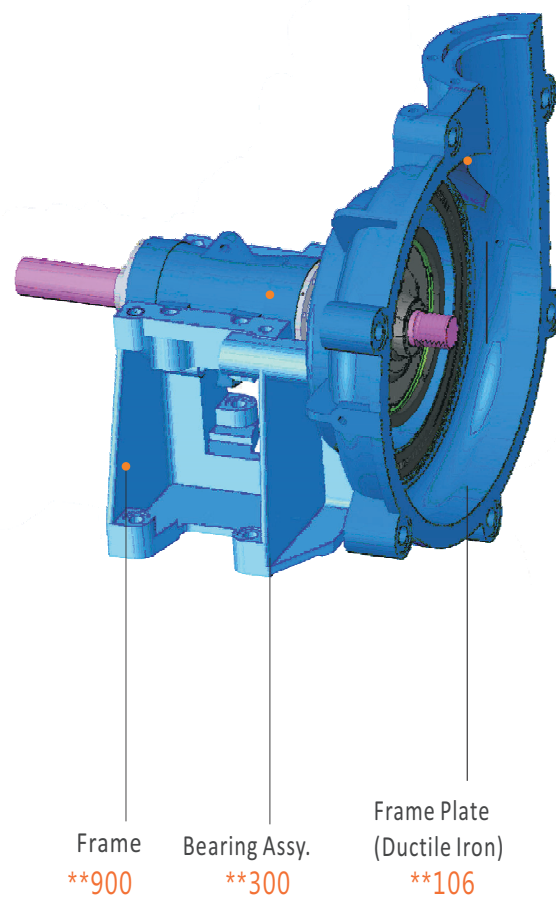
- Discharge size: 50mm(2")-450mm
- Capacity to: 5000m<sup>3</sup>/h
- Head to: 65m

### CLEAR WATER PERFORMANCE

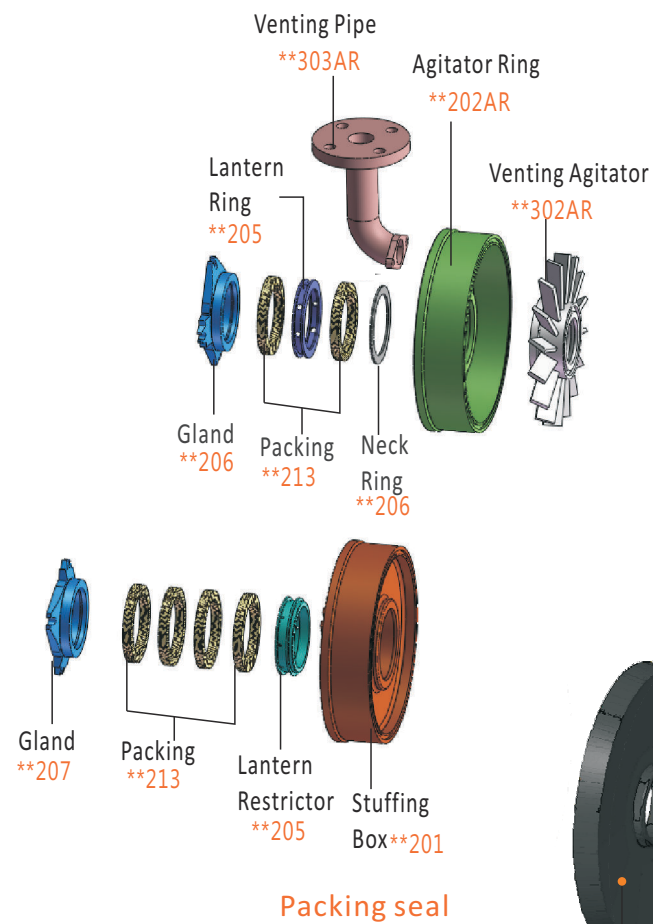
WXF(R) WLF(R) Clear Water Performance							
Model	Max. Power Kw	Capacity		Head H(m)	Pump speed n(r/min)	Eff. η%	NPSHr (m)
		(m <sup>3</sup> /hr)	(l/s)				
2 - WXF	55	30.2~129.6	8.4~36	7~55	1000~2600	56.5	2~6
3 - WXF	110	50~220	13.9~61.1	7~52	800~2200	62	2~4.5
4 - WXF	225	80~480	22.2~133.3	6~63	500~1600	66	2~4.5
6 - WXF	425	200~1152	55.6~320	10~62	400~1100	63.5	2~4.5
8 - WXF	1200	400~1500	111.1~416.7	14~60	400~800	71.5	2~10
10 - WXF	1200	700~2000	194.4~555.6	15~65	400~800	78	3~8
12 - WXF	1200	715~3000	198.6~833.3	16~64	300~600	77	3.5~5.5
14 - WXF	1400	850~4000	236.1~1111.1	15~63	250~600	77	3~6
200 - WLF	425	350~1250	97.2~347.2	10~53	600~1000	73	3~10
250 - WLF	425	450~1500	125~416.7	8~25	500~800	70	5~8
300 - WLF	560	750~2500	208.3~694.4	16~46	400~800	79	2~8
350 - WLF	560	700~3500	194.4~972.2	10~46	400~800	81.5	3~8
400 - WLF	600	720~4000	200~1111.1	12~42	300~600	73.4	2~7
450 - WLF	600	720~5000	200~1388.9	12~45	300~600	69.3	2~5

## STRUCTURE & FEATURES

- WXF(R) /WLF(R) pumps are converted from WX(R) and WL(R) pumps separately, use the same driving and mounting parts.
- The enlarged inlet of throat bush reduces NPSHr.
- The blade shape of open impeller and venting pipe in suction pipe help to get as more as froth or viscous slurries into the pump, minimize the pump size and increase efficiency.
- Hard metal Impellers and Elastomer molded/ hard metal Liners are used to handle corrosive/abrasive froth slurries.
- Venting pipe helps to relief air from system, promotes the movement of the froth slurry into the impeller eye.
- When froth factor is over 1.8, we adopt Gland seal with venting system to help release air from the pump.  
so 3 seal methods are optional:  
Gland seal, Gland seal with venting system, and Mechanical seal.



### Gland seal with Venting system



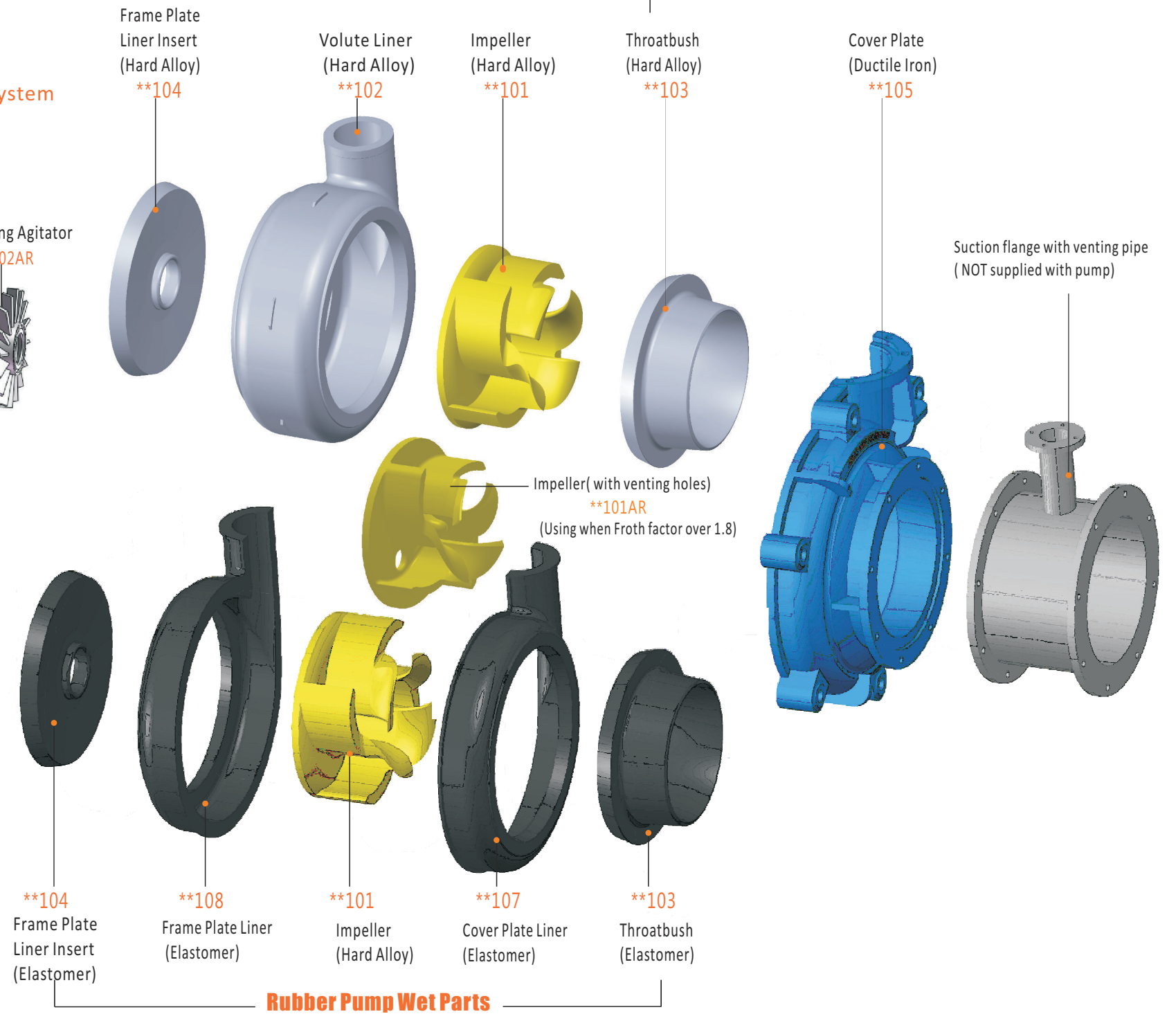
### Packing seal

## Comparison Of Vertical And Horizontal Pumps

Vertical shaft froth pump was replaced by horizontal froth pump due to its longer shaft ( apt to vibrate) and larger space requirement,

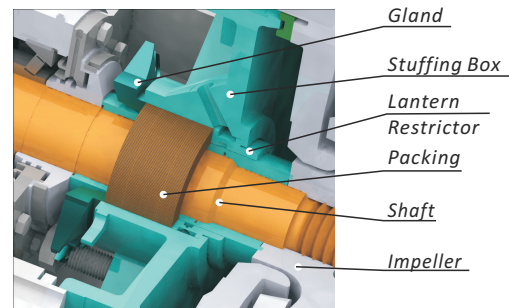
WXF/WLF horizontal pumps need less space and could pump more froth slurries than vertical pumps, easy to maintain and cost less.

### Metal Pump Wet Parts

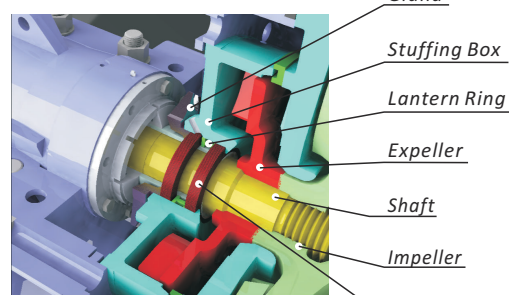


### Rubber Pump Wet Parts

## SHAFT SEALS



Packing Seal



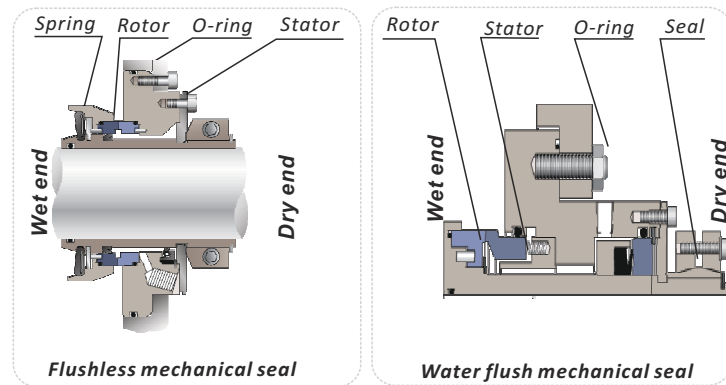
Expeller Seal

For more details, please consult Atlas.

**Packing seal** – Most popular type of seal. Clean water at a certain pressure being injected into the packing through the lantern restrictor, preventing leakage from casing. Simple structure, easy maintenance and low cost.

**Expeller seal** – The expeller generate a reverse centrifugal force to prevent the leakage. It can be used for single-stage pump or the first pump of multiple pumps in series when the positive pressure at suction side is larger than that at discharge side by no more than 10%. No gland water is needed.

**Mechanical seal** – Suitable for applications where no extra substance is allowed to mix with the fluid being pumped, such as chemical or food industry.



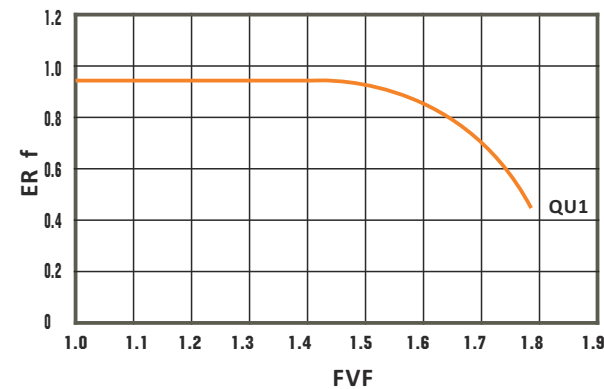
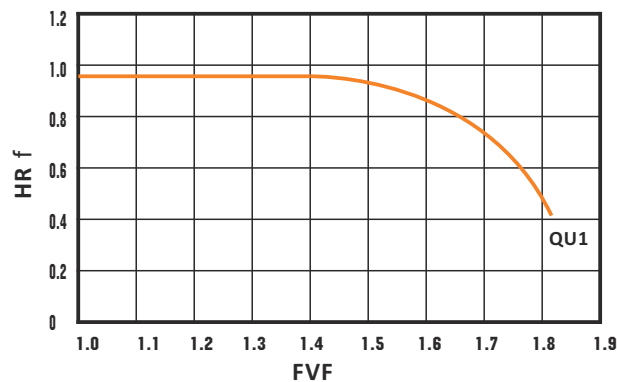
Flushless mechanical seal

Water flush mechanical seal

Water flush seals are preferential unless field condition are inapplicable

## PUMP SELECTION PROCEDURE

Steps	Items	Code	Calculation	Unit
1	Froth Volume Factor	FVF	For brittle froth, FVF=1.1~1.2 For tough froth, FVF=1.5~1.8	
2	Froth Flow	Qf	FVF*Qs( Qs is slurry flow rate)	L/s
3	Water Head	Hw	Hf/HRf, see below figure for HRf.	m
4	Water Efficiency (determine pump)	Ew	Select a pump that Froth duty point located to the left of the Best Efficiency line but no less than 25% of the Q <sub>bep</sub> Flow.	
5	Froth Efficiency	Ef	Ew*ERf, see below figure for ERf	%
6	Froth Density	Sf	Sm/FVF	
7	Froth Power	Pf	(Qf*Hf*SfX0.98)*1.2/Ef	kW



Please contact Atlas if FVF exceeds 2.0

## MATERIAL OPTIONS

### Hard Metals

Material Code	Material Description	Performance Comparison				Applicable Parts		Applications
		Hardness HRC	Anti-Brush	PH Value	Max. Particle Size	Impeller	Liner	
AT01	Medium-Cr Martensitic White Iron	≥55	0.9	3 7 12		●	●	Mud & slag applications.
AT03	Ni-Martensitic White Iron	≥56	0.8			●	●	Neutral water-sand slurry or lower impact load.
AT05	27% Cr White Iron	≥56	1.0 (Datum)			●	●	High impact load abrasion PH rate ranging from 5 to 12.
AT07	Chromium/Molybdenum	≥58	1.2			●	●	High impact load abrasion.
AT08	27% Cr White Iron	≥56	1.0			●	●	Same as AT05, suit for thick wall parts.
AT11	Low Alloy With Iron	38-42	0.7			●	●	Fine particles ,light abrasion.
AT12	30% Cr Hyper eutectic Chromium White Iron	≥62	1.5			●		Highly abrasive ,fine particles.
AT33	33% Cr Erosions & Corrosion Resistance White Iron	≥43	0.7			●	●	Acidic slurries like Phosphoric.
AT49	28% Cr Low Carbon White Iron	≥45	0.7			●	●	FGD process in power plant
AT530	Super high-Cr White Iron	63-68	1.8			●		Severe abrasive ,fine particles.

### Rubbers

Material Code	Polymer	Applications
RT08	Natural Rubber	Black medium hardness rubber mainly used in impellers for fine slurry applications where cutting and chunking resistant is required. Due to its hardness, it is less prone to deformation during running. Formulated with excellent protection against the environment for maximum storage stability.
RT26	Natural Rubber	A soft black natural rubber with good protection against the environment for storage stability and ageing properties. High resilience and good physical properties, suitable for fine slurry applications.
RT55	Natural Rubber	Black medium hardness rubber with excellent resistance against the environment for maximum storage stability. General purpose grade for fine to medium slurry applications. Good erosion resistance and physical properties.
RT66	Natural Rubber	Black medium hardness rubber used mainly in impellers, suitable for application where chunking and cutting resistant is required. Specially formulated to give excellent erosion resistance for medium to coarse aggregates. Well protected against weather and ageing for maximum storage stability.
ST01	EPDM	Medium hardness rubber for seal application.
ST02	EPDM	Soft to medium hardness rubber for seal application.
ST12	NBR	Black synthetic rubber with moderate wear resistance. Suitable for applications where organic oils and fats resistance is required. Formulated with good protection against the environment for good storage properties.
ST21	Butyl	Black synthetic rubber with moderate wear resistance, suitable for applications where weak acid or alkali are presence. Suitable for working temperature exceeding 100°C.
ST31	Hypalon	Black synthetic rubber, for weather, heat and chemical resistance applications. Moderate wear properties, however excellent performance for strong acid applications.
ST42	Polychloroprene	Black synthetic rubber for impellers and liners with good resistance against mineral oils. Excellent performance in oil and gas application.
ST51	Fluoroelastomer	Black synthetic rubber with exceptional resistance to chemicals and oil at high temperature.

## DRIVE ARRANGEMENTS

