

EASY | COST-EFFECTIVE | RELIABLE



GRAVEL PUMPS

## Design Considerations

**BATTLEMAX Gravel pumps are designed for long life, efficient operation and ease of maintenance.**

Gravel pumps have high-chrome wet ends with expeller or stuffing box seal arrangements.

### APPLICATION FEATURES

#### Bearing assembly and shaft

- The shaft is designed with a short overhang to:
  - Reduce shaft deflection
  - Minimise vibration
- Provided with hardened shaft sleeve to protect the shaft
- Bearing assembly is retained on a one piece frame
- Grease-purged piston rings to help seal contaminants out of bearing housing

#### Impeller

- Enclosed impellers to maximise efficiency
- Pump-out vanes on both shrouds
  - Minimises re-circulation
  - Reduces stuffing box pressure
- High chrome liquid ends
- Interchangeable hard metal impellers
- Impeller clearance is set by moving the bearing assembly
- High efficiency impeller optional

#### Single casing with assembly clamps

- Easy assembly and disassembly of liquid end
- Clamp design facilitates rotation of volute
- Large volute reduces friction and wear
- Minimal parts + simple design

#### Centrifugal seal option

- Reduces or eliminates need for gland service water
- Reduces sleeve wear and possible bearing contamination

An optional heavy duty bearing assembly is available for Battlemax Pumps for applications where additional power or bearing loading is required.

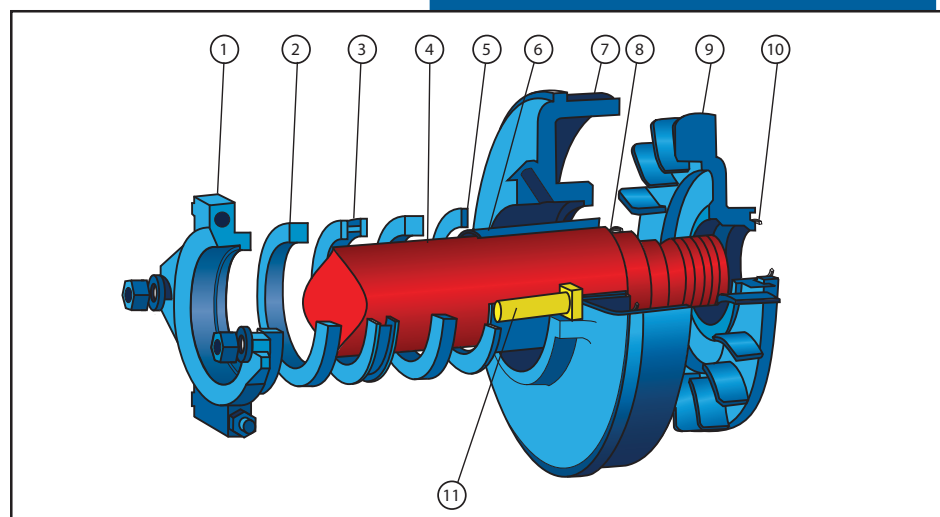
STD. BEARING ASSy		HD. BEARING ASSy	
Size	kW Max	Size	kW Max
C	30	CC	55
D	60	DD	110
E	120	EE	225
F	260	FF	425

### Construction and Materials options

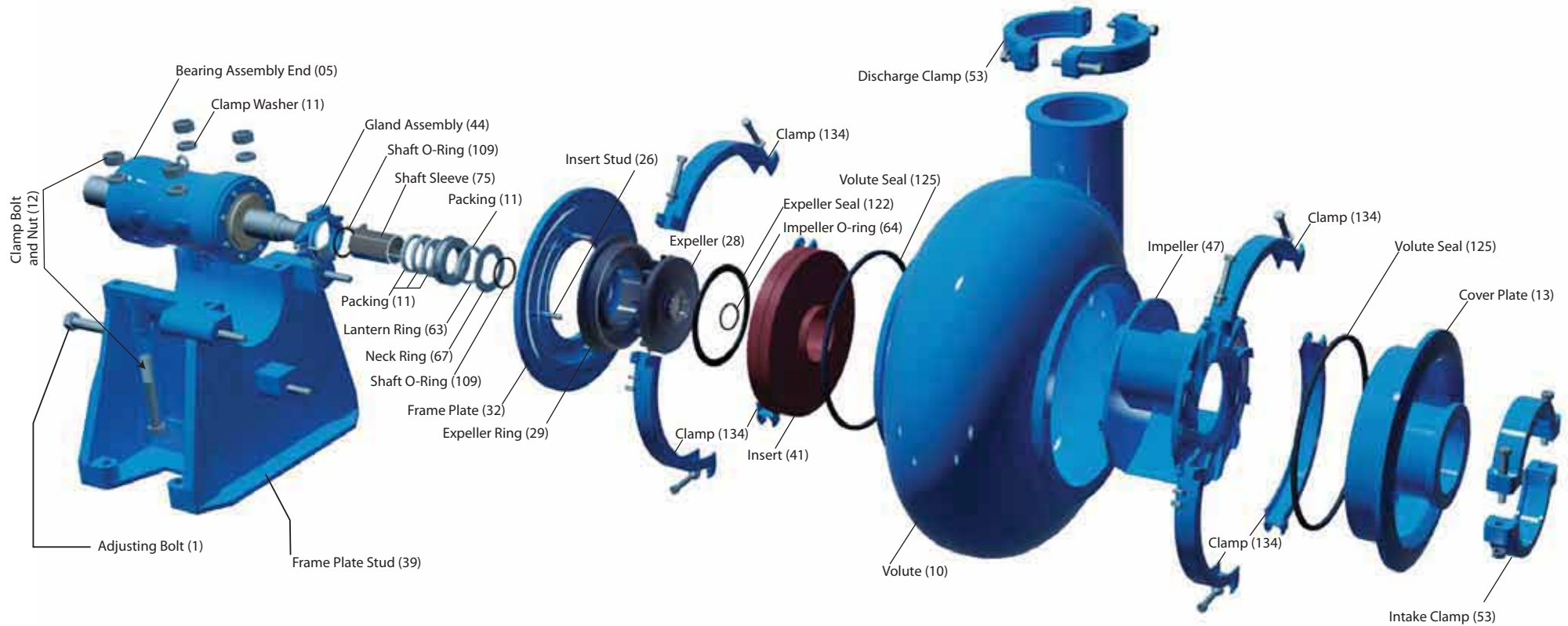
	STANDARD	OPTIONAL
<b>LINERS</b>	High chrome	Ultra chrome
<b>IMPELLERS</b>	High chrome Natural rubber	Ultra chrome, special pH alloy urethane, ceramic
<b>GLAND</b>	Stainless Steel	
<b>SHAFT SEAL</b>	Packed gland stuffing box or expeller seal	Mechanical seal

### EXPELLER SEAL ARRANGEMENT

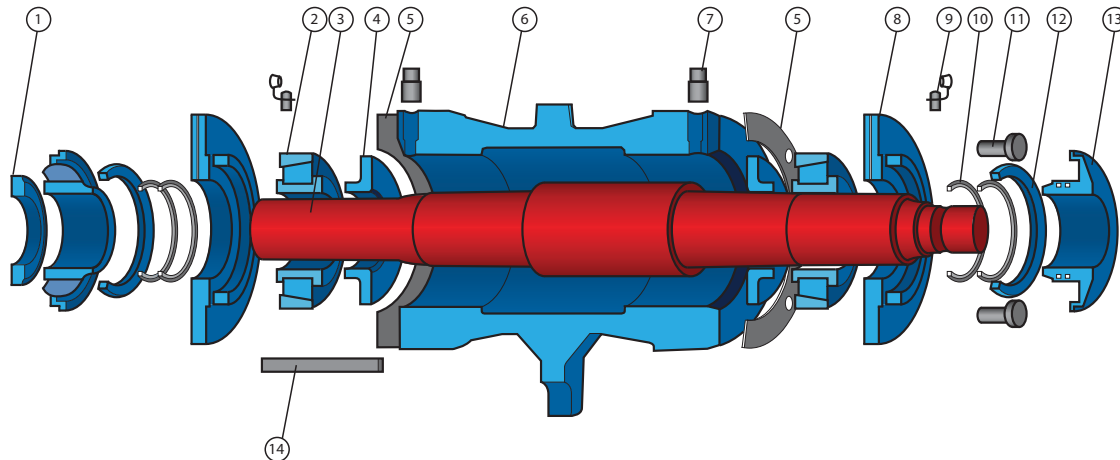
- 1 GLAND ASSEMBLY (44)
- 2 PACKING (11)
- 3 LANTERN RING (63)
- 4 SHAFT (73)
- 5 NECK RING (67)
- 6 SHAFT SLEEVE (75)
- 7 EXPELLER RING (29)
- 8 SHAFT O-RING (109)
- 9 EXPELLER (28)
- 10 IMPELLER O-RING (64)
- 11 GLAND BOLT (45)



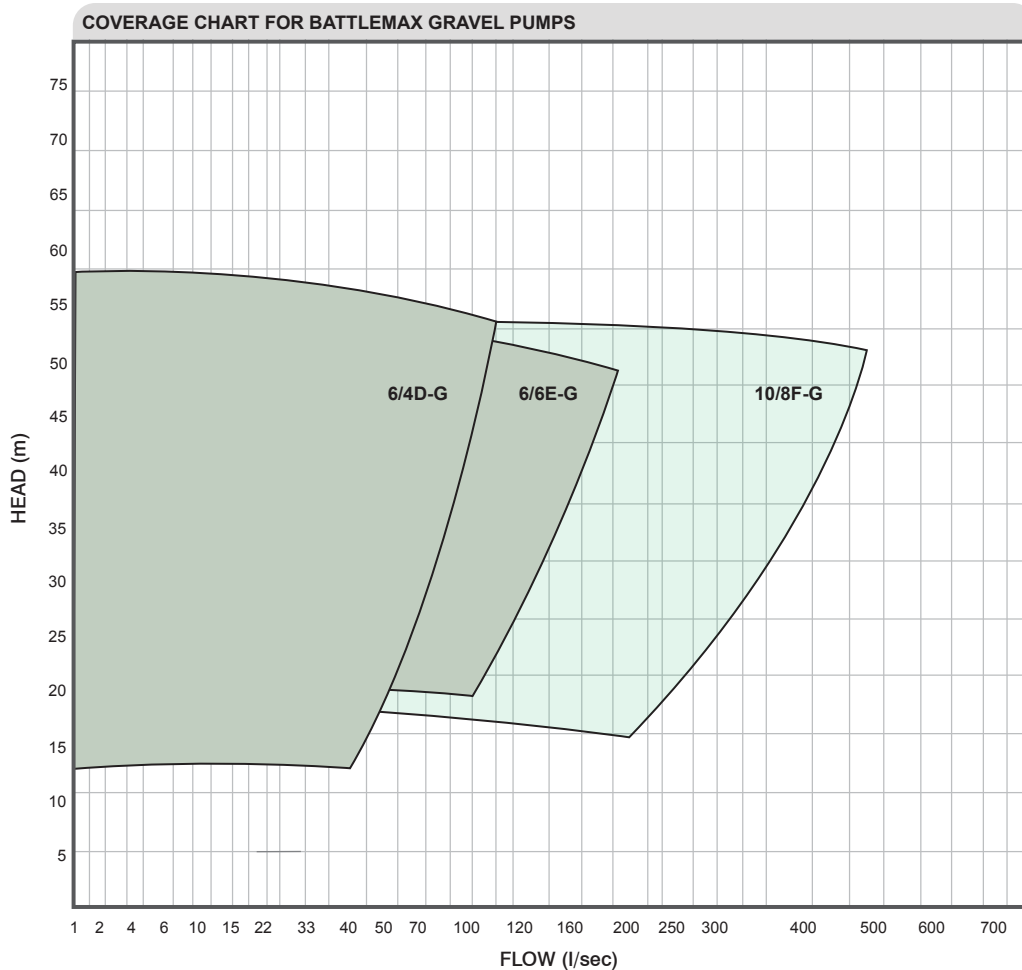
# Exploded view Gravel Pump



- 1 LABYRINTH LOCKNUT (61)
- 2 BEARING - DRIVE END (09)
- 3 SHAFT (73)
- 4 GREASE RETAINER
- 5 SHIM SET (25)
- 6 BEARING HOUSING (04)
- 7 PLUG (-)
- 8 END COVER (24)
- 9 GREASE NIPPLE (-)
- 10 PISTON RING (08)
- 11 END COVER SET SCREW (27)
- 12 BEARING SEAL (89)
- 13 LABYRINTH PUMP END (62)
- 14 SHAFT KEY (70)



**BATTLEMAX STANDARD BEARING ASSEMBLY**



For conventional packed stuffing box and lantern restrictor construction, gland service water must be provided at a minimum of 100 kPa above discharge pressure to ensure positive flow.

Where suction conditions allow, the Battlemax expeller seal can eliminate the need to supply water to the stuffing box. Where high suction pressures or series pumping is required other methods of sealing must be utilised.

Expeller and expeller ring are constructed of Hi-Chrome material. Shaft sleeve material is 14% chrome hardened to protect the shaft from wear.

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