

Liberator™ High-Flow Gas Separators

EXTENDING OPERATING CAPABILITIES IN CHALLENGING GASSY WELL APPLICATIONS

STANDARD AND OPTIONAL MATERIALS

| Component | Standard Materials | Optional Materials |
|---------------------------------------|-----------------------------------|-----------------------------------|
| Head/Base | Carbon Steel AISI 1045/1035 | Stainless Steel 410/416 |
| Housing | Carbon Steel C45 DOM Tube | Stainless Steel 9Cr1Mo/13Cr |
| Shaft | MONEL® K500/UNS N05500 | Inconel® 718/UNS N07718 |
| AR Stage Flanged Sleeves and Bushings | Tungsten Carbide K20/ASTM B276 | Tungsten Carbide K20/ASTM B276 |
| AR Base and Head Bearings | Tungsten Carbide K20/ASTM B276 | Tungsten Carbide K20/ASTM B276 |
| Shaft Key/Retaining Ring | Inconel® 718/UNS N007718 | Inconel® 718/UNS N007718 |
| Inducer | Ni-Resist Type 1 ASTM A436 | Ni-Resist Type 4 ASTM A351 |
| Base Liner | Stainless Steel 304 UNS S30400 | Ni-Resist Type 4 ASTM A351 |
| Compression Liner | Stainless Steel 304 UNS S30400 | Stainless Steel 304 UNS S30400 |
| Impellers/Diffusers | Ni-Resist Type 1 ASTM A436 | Ni-Resist Type 4 ASTM A351 |
| Directional Flow Control | Ni-Resist Type 1 ASTM A436 | Ni-Resist Type 4 ASTM A351 |
| Propeller | Ni-Resist Type 1 ASTM A436 | Ni-Resist Type 4 ASTM A351 |
| O-Rings | EPDM | Aflas® |



Standard and optional materials continued on next page ...

STANDARD AND OPTIONAL MATERIALS (CONTINUED)

| Component | Standard Materials | Optional Materials |
|-----------|--------------------------------|----------------------------|
| Head/Base | Carbon Steel AISI 1045/1035 | Stainless Steel 410/416 |
| O-Rings | EPDM | Aflas® |
| Fasteners | K500 MONEL® UNS N0550 | K500 MONEL® UNS N0550 |
| Coupling | Stainless Steel 304 | R405 MONEL® UNS N04405 |

| Features | Benefits |
|---|---|
| Chromium diffused liners and tungsten carbide (WC) shaft bearings | Resistant to abrasive wear in wells with heavy sand load |
| Large hydraulic flow passages | Allows for maximum total fluid volume throughput |
| Optimized vortex generation and crossover modules | Provides industry-leading separation efficiency for high gas volume fraction (GVF) applications |
| Proprietary directional flow control module | Enhances directional flow management, improving vortex generation |
| New integrated multi-stage charger | Industry-proven charger improves gas slug handling performance |
| Utilizes CFD-optimized separating chambers | System designed using CFD to help ensure ultimate performance |
| Multiple configurations for extreme environments | Standard AR trim available in multiple flow ranges and multiple tandem configurations |

SYSTEM BENEFITS

- » Eliminates gas locking for improved uptime
- » Maximizes drawdown with improved gas management
- » Enhanced design with reduced failure points for improved reliability and performance

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