





Asahi Diamond Industrial Australia Pty. Ltd.

Down Hole Motors



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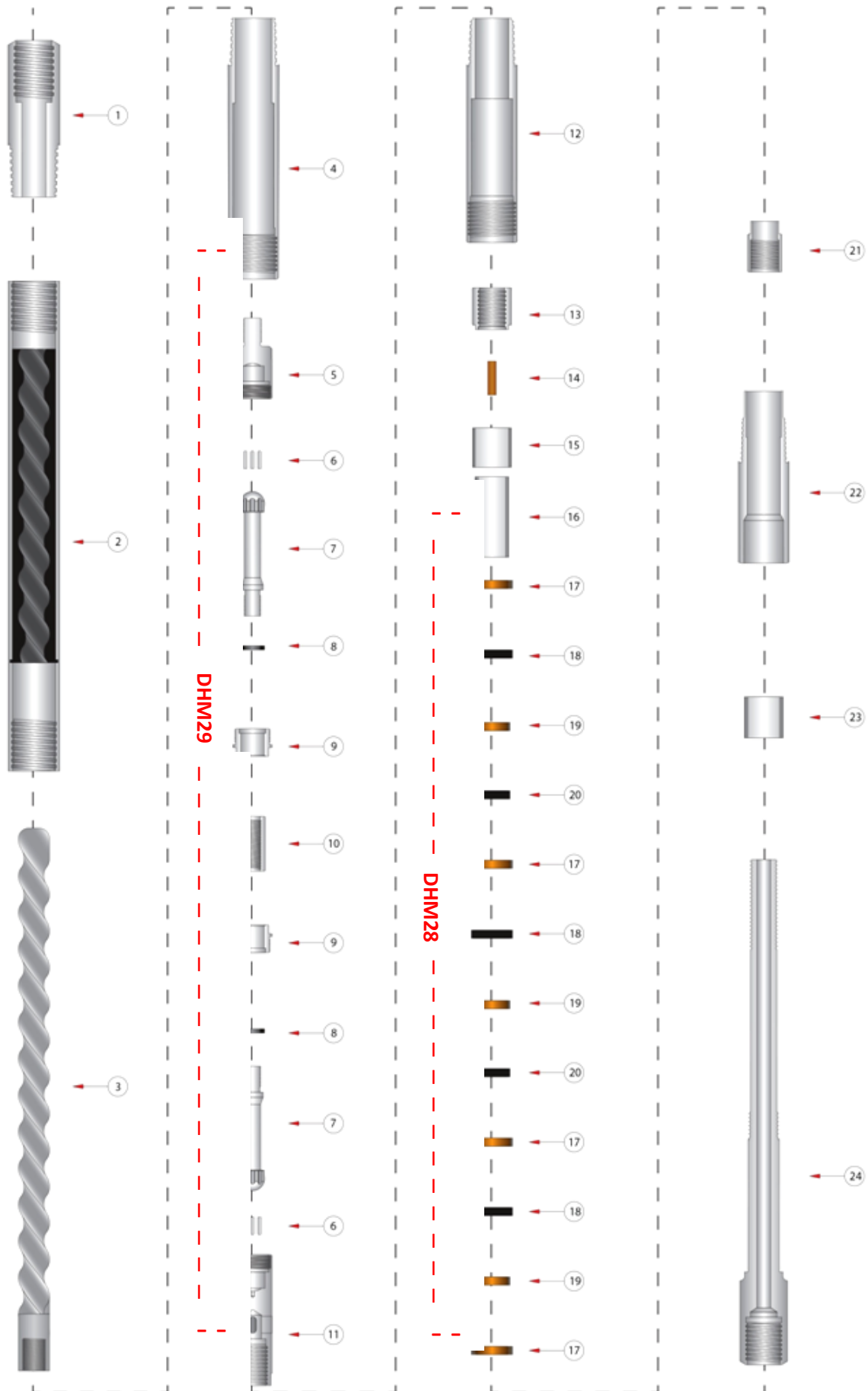
Asahi supplies Down Hole Motors that are commonly used for directional drilling in coal and hard rock mining as well as civil construction. They are also used as an alternative to conventional deflection style drilling where wedges are used.

The Down Hole Motor is driven via fluid pumped into the motor, which then turns it into a mechanical rotary motion through the form of a rotor. This rotary motion is then applied to a Drill Bit (either PCD, Impregnated Diamond) and attached to the end of the motor to cut into the formation being drilled.

The direction of the motor can be determined by a “bent sub”. These subs can be fitted to the DHM to adjust the “angle” of the motor and how fast it can turn within the hole.

Asahi stock bent sub’s in standard angle’s, 1 degree, 1 ½ degree and 1 ¼ degree.

| Tool Sizes | 2 3/8 | 2 7/8 Becu | 2 7/8 Steel |
|-----------------------------------|---------------|------------|-------------|
| Diameter (inches) | 2.375 | 2.875 | 2.875 |
| Lobes | (5-6) | (4-5) | (5-6) |
| Stages | 2.5 | 3 | 4 |
| Length (ft) | 9 | 9.5 | 11 |
| Weight (lbs) | 140 | 160 | 180 |
| Top Connection | BW | NW | NW |
| Bit Connection | BW | NW | NW |
| Make up Torque (ft/lbs) | 600 | 1200 | 1200 |
| Bit Sizes (inches) | 2 7/8 – 3 1/2 | 3 1/4 - 4 | 3 1/4 - 4 |
| Max Weight on Bit | 3500 | 6000 | 6000 |
| Max Bit Pressure Drop (psi) | 200 | 200 | 200 |
| Minimum Flow Rate (gpm) | 25 | 30 | 40 |
| Maximum Flow Rate (gpm) | 50 | 70 | 80 |
| Recommended Flow Rate (gpm) | 42 | 60 | 70 |
| Bit Speed (rpm) | 200 - 375 | 160 - 375 | 250 – 450 |
| Pressure Drop at Max Torque (psi) | 400 | 400 | 495 |
| Max Operating Torque (ft/lbs) | 130 | 190 | 225 |
| Maximum Overpull (lbs) | 12500 | 20000 | 20000 |



Down Hole Motor

| Item No. | Stock Code | Description | No. Req |
|----------|------------|----------------------------|---------|
| 1 | DHM01-4140 | Top Sub | 1 |
| 2 | DHM02 | Stator | 1 |
| 3 | DHM03 | Rotor | 1 |
| 4 | DHM/1.250 | Bent Sub | 1 |
| 5 | DHM06 | U Joint Connector | 1 |
| 6 | DHM07 | U Joint Pins | ? |
| 7 | DHM08 | U Joint Shaft | 2 |
| 8 | DHM09 | U Joint O Ring | 2 |
| 9 | DHM10 | U Joint Shaft Retainer Nut | 2 |
| 10 | DHM11 | U Joint Connector Tube | 1 |
| 11 | DHM12 | U Joint Bonnet | 1 |
| 12 | DHM13 Assy | Upper Bearing Housing | 1 |
| 13 | DHM15 | Upper Retaining Nut | 1 |
| 14 | DHM14 | Key For Drive Shaft | 1 |
| 15 | DHM16 | Upper Radial Bearing | 1 |
| 16 | DHM17 | Thrust Spacer Sleeve | 1 |
| 17 | DHM22 | Outer Thrust Bearing | 4 |
| 18 | DHM20 | Outer Thrust Sleeve | 3 |
| 19 | DHM21 | Inner Thrust Bearing | 3 |
| 20 | DHM23 | Inner Thrust Sleeve | 2 |
| 21 | DHM24 | Lower Retaining Nut | 1 |
| 22 | DHM25 Assy | Lower Bearing Housing | 1 |
| 23 | DHM27 | Lower Radial Bearing | 1 |
| 17-20 | DHM28 | Thrust Bearing Assembly | |
| 24 | DHM26 Assy | Drive Shaft with Bearing | 1 |
| 5-11 | DHM29 | U Joint Assembly Completer | |
| 12-24 | DHM30 | Drive Shaft Assembly | |