



## A-1 HYDRAULIC™

### INNOVATION REVEALED

The A-1 Hydraulic Setting Tool is utilized to set bridge plugs, composite plugs, packers and cement retainers by converting applied hydraulic pressure into a pull force. The setting tool is deployed into the well by using coiled tubing, tubing or drill pipe.

### Features

- Automatically balances with wellbore fluid
- Hydraulically activated by applied pressure
- No ballistics required
- Redress kits available
- Will couple to most adapter kits
- No wet string pull outs
- Coil tubing, tubing or drill pipe conveyed
- Four stages are standard (Five stages on the 1.750" tool)
- Can withstand high tensile loads
- No rotation required

### OPERATIONS

While running into the well, the tool automatically fills with wellbore fluid and remains balanced. When the setting depth is reached, a ball bearing is released down the work string. A circulation rate can then be established to aid in pumping the ball bearing down into its mating seat inside the setting tool. When the ball bearing is fully seated, a pressure build up will be noted. Slowly continue applying the required pressure to fully stroke the setting tool and set the down hole device. After the tool is fully stroked, circulation will be re-established.

**1.75 SETTING TOOL: BAKER #05 EQUIVALENT**

Piston Area: 0.89 in<sup>2</sup> (575.5mm<sup>2</sup>)/cylinder effective surface area  
 4.46 in<sup>2</sup> (2,877.5mm<sup>2</sup>) with 5 stages  
 Set Screw Shear Value: 4 stage: 275 PSI/screw; 5 stage: 225 PSI/screw  
 Example: Applied PSI (MPa) @ surface X total x-sectional area = shear value Lbs (Kgs) @ tool  
 2,800psi (19.3MPa) X 4.46 in<sup>2</sup> (2,877.5 mm<sup>2</sup>) = 12,488lbs (5,664.6Kg)

**2.50 SETTING TOOL: BAKER #10 EQUIVALENT**

Piston Area: 2.05 in<sup>2</sup> (1,320.0mm<sup>2</sup>)/cylinder effective surface area  
 8.18 in<sup>2</sup> (5,280.0mm<sup>2</sup>) with 4 stages  
 Set Screw Shear Value: 4 stage: 125 PSI/screw; 5 stage: 100 PSI/screw  
 Example: Applied PSI (MPa) @ surface X total x-sectional area = shear value Lbs (Kgs) @ tool  
 4,000psi (27.6MPa) X 8.184 in<sup>2</sup> (5,280.0mm<sup>2</sup>) = 32,736lbs (14,848.8Kg)

**3.13 SETTING TOOL: BAKER #10 EQUIVALENT**

Piston Area: 3.30 in<sup>2</sup> (2,127.7mm<sup>2</sup>)/cylinder effective surface area  
 13.19 in<sup>2</sup> (8,511.0mm<sup>2</sup>) with 4 stages  
 Set Screw Shear Value: 4 stage: 175 PSI/screw; 5 stage: 140 PSI/screw  
 Example: Applied PSI (MPa) @ surface X total x-sectional area = shear value Lbs (Kgs) @ tool  
 2,500psi (17.2MPa) X 13.192 in<sup>2</sup> (8,511.0mm<sup>2</sup>) = 32,980lbs (14,959.5Kg)

**3.13 SETTING TOOL: BAKER #20 EQUIVALENT**

Piston Area: 3.30 in<sup>2</sup> (2,127.7mm<sup>2</sup>)/cylinder effective surface area  
 13.192 in<sup>2</sup> (8,511.0mm<sup>2</sup>) with 4 stages  
 Set Screw Shear Value: 4 stage: 175 PSI/screw; 5 stage: 140 PSI/screw  
 Example: Applied PSI (MPa) @ surface X total x-sectional area = shear value Lbs (Kgs) @ tool  
 3,800psi (26.2MPa) X 13.192 in<sup>2</sup> (8,511.0mm<sup>2</sup>) = 50,130lbs (22,739Kg)

**3.63 SETTING TOOL: BAKER #20 EQUIVALENT**

Piston Area: 5.31 in<sup>2</sup> (3,423.9 mm<sup>2</sup>)/cylinder effective surface area  
 21.23 in<sup>2</sup> (13,694.8 mm<sup>2</sup>) with 4 stages  
 Set Screw Shear Value: 4 stage: 170 PSI/screw; 5 stage: 212 PSI/screw  
 Example: Applied PSI (MPa) @ surface X total x-sectional area = shear value lbs (Kgs) @ tool  
 2,500psi (17.2MPa) X 21.23 in<sup>2</sup> (13,694.8mm<sup>2</sup>) = 53,067lbs (24,071Kg)

**4.75 SETTING TOOL: BAKER #20 EQUIVALENT**

Piston Area: 10.90 in<sup>2</sup> (7011.9 mm<sup>2</sup>)/cylinder effective surface area  
 21.74 in<sup>2</sup> (14,063.7 mm<sup>2</sup>) with 2 stages; 32.605 in<sup>2</sup> (21,035.6 mm<sup>2</sup>) with 3 stages  
 Set Screw Shear Value: 2 stage 125 PSI/screw; 3 stage: 80 PSI/screw  
 Examples: Applied PSI (MPa) @ surface X total x-sectional area = shear value Lbs (Kgs) @ tool  
 2,530 PSI (17.4 MPa) X 21.737 in<sup>2</sup> (14,063.7 mm<sup>2</sup>) = 55,000 Lbs (24,948Kgs)  
 with 2 stages 1,685 PSI (11.6 MPa) X 32.605 in<sup>2</sup> (21,035.6 mm<sup>2</sup>) = 55,000 Lbs (24,948Kgs) with 3 stages

O.D. Size inch (mm)	Standard Connection inch (mm)	Length inch (mm)	Ball Seat inch (mm)	Stroke inch (mm)	Temp Rating
1.75 (44.5)	1.0 (25.4) CS HYDRIL	83 (2,133.6)	0.250 (6.4)	7.0 (177.8)	400 °F (204 °C)
2.50 (63.5)	1-1/2" (52.4) MT	92.50 (2,349.5)	0.44 (11.1)	10.0 (254.0)	400 °F (204 °C)
3.13 (79.4)	2-3/8" (60.3) EU 8RD	84.32 (2,141.7)	0.44 (11.1)	8.75 (222.3)	400 °F (204 °C)
3.63 (92.1)	2-3/8" (60.3) EU 8RD	84.31 (2,141.5)	0.44 (11.1)	9.50 (241.3)	400 °F (204 °C)
4.75 (120.7)	2-7/8" (73.0) EU 8RD	56.50 (1,435.0)	0.75 (19.1)	12.0 (304.9)	400 °F (204 °C)

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