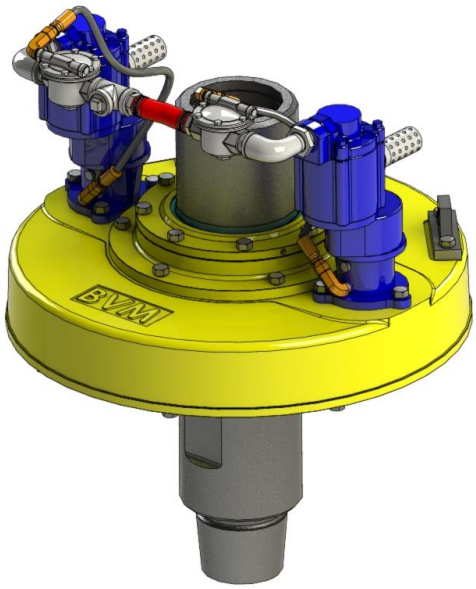
BVM Corporation Maintenance Manual
KELLY SPINNER
Pneumatic or Hydraulic

Part number: _____ **Serial Number: _____**



Safety

CAUTION: Practice safety in the operation and maintenance and use only approved safety methods, materials and tools. Keep hands away from any pinch point or undesignated areas when operating.

WARNING: Only original BVM parts may be used. The Sub Shaft is produced from cast alloy heat treated steel and must not be welded in the field. Improper welding can cause cracks and brittleness in heat-affected areas which can result in dramatic weakening of the part and possible failure. Repairs involving welding and/or machining should be performed only by a BVM authorized repair facility. Using a Kelly Spinner that has been improperly welded or repaired is dangerous.

NOTE: The owner and user together with the manufacturer should jointly develop and update inspection, maintenance, repair and remanufacture procedures consistent with equipment application, loading, work environment, usage and other operational conditions. These factors may change from time to time as a result of new technology, equipment history, product improvements, new maintenance techniques and changes in service conditions.

Confidentiality Statement

Note: Original Instructions are published in English; in the event the end-user may wish to obtain a translation of these in the official language of the country in which the machinery is to be used please contact your local BVM representative or BVM directly. Please note that this service may not be free of charge. Original Instruction can be downloaded from www.bvmcorp.com

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Purpose

This manual contains operation, installation and maintenance instructions for the BVM Kelly Spinner.

Description

The BVM Kelly Spinner replaces the spinning chain and thereby increases the speed and safety of making Kelly connections. Standard units are equipped with two pneumatic motors (ASC 1150 BMP Air Starters) or one hydraulic motor which allow right or left hand rotation. On customer request, units can be equipped with one motor for right hand rotation only.

BVM Kelly Spinners require little maintenance, having only four (4) lubrication points – 2 on top and 2 on bottom sub bearings. Unlike conventional air motors, the air starter requires no lubrication, eliminating potential failure should rig personnel neglect to check oil levels in the central lubricator.

BVM Kelly Spinners are equipped with a 6-5/8” API regular left hand box-up and pin-down connection. The unit is placed in the string between the swivel and Kelly valve. Pad eyes are bolted to link bumper to which turnbuckles act as a torque arrestor and prevent twisting of the blocks when the unit is in operation.

The rig must be equipped with a 1½" air supply standpipe. Main supply hoses and pilot valve control hoses are run from the top of the standpipe to the unit. These hoses are typically secured to the Kelly hose.

Pilot lines are connected from the base of the standpipe to the hand control valve mounted at the driller's console. The BVM Kelly Spinner is fully operational from the valve mounted at the driller's console. The valve is equipped with 3 positions: neutral, right-hand rotation, and left-hand rotation.

Specifications

Load Rating = 250 Tons (500,000 lbs / 226,700 kg)

Model	Thread Connection (pin and box)	Maximum Torque (ft-lbs)	Maximum Speed Free Spin	Weight (lbs)	Dimensions*	Power Requirements Free Spin
200201-1	6-5/8" API Regular Left-Hand	1,300	150 RPM	1100	30" x 30" x 38"	5.5 CFS @ 90-120 PSI
200201H-1		1,300	150 RPM	1048	30" x 33" x 34"	25 GPM @ 2,500 PSI

*Excludes turnbuckles

Optional Kit Part Numbers for rig control:

- **200710-1**: Plastic thread protectors, 1" Filter/Regulator, 70' 1" hose, 2x 180' 1/4" hoses, 10x cinching straps, and lever-operated on-off control valve.
- **200710-2**: Plastic thread protectors, 1" Filter/Regulator, 70' 1" hose, 3x 180' 1/4" hoses, 10x cinching straps, 1" pilot operated regulating valve, and lever-operated variable speed control valve.
- **200710-3**: Steel thread protectors, 1" Filter/Regulator, 70' 1" hose, 2x 180' 1/4" hoses, 10x cinching straps, and lever-operated on-off control valve.
- **200710-4**: Steel thread protectors, 1" Filter/Regulator, 70' 1" hose, 3x 180' 1/4" hoses, 10x cinching straps, 1" pilot operated regulating valve, and lever-operated variable speed control valve.
- Other configurations available on special request

Installation & Operation

See Figure 1 for typical Kelly Spinner installation.

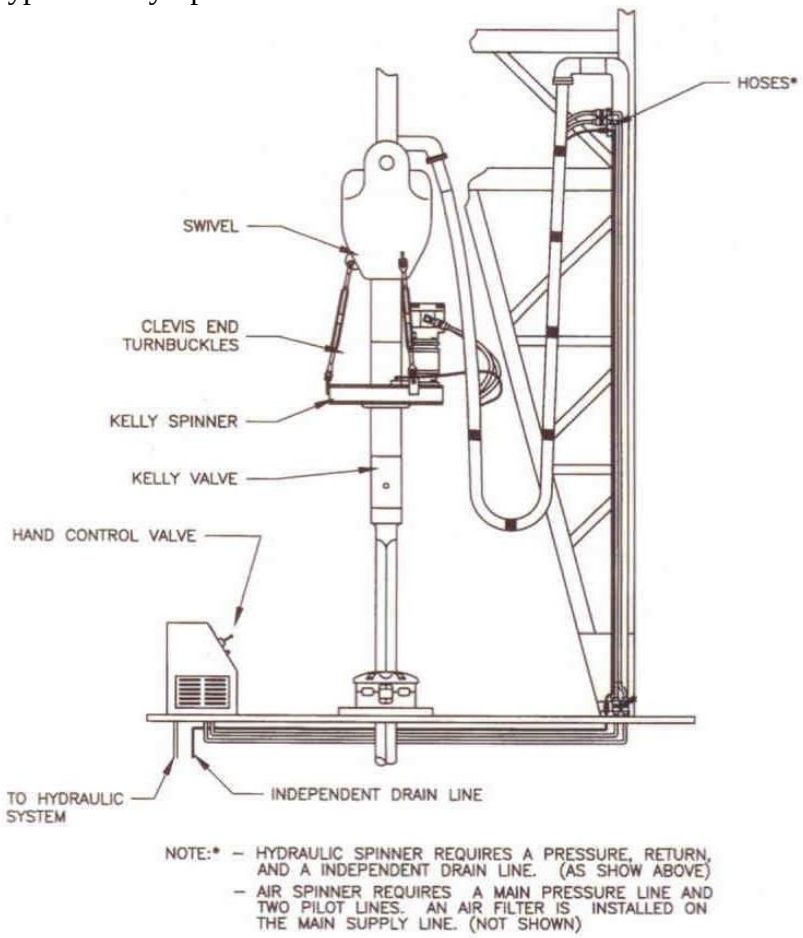

Figure 1: Typical Kelly Spinner Installation

1) Stab and make-up the 6-5/8" pin connection of the swivel into the box connection of the Kelly Spinner. The recommended make-up torque should not exceed 50,000 ft-lbs.

2) Each Kelly Spinner is supplied with two (2) turnbuckles, which should be connected between the link bumper and the pad eyes located on the Kelly Spinner housing.

   ***** NOTE: Turnbuckles should never be tightened more than hand tight. *****

3) The hand control valve should be mounted at the driller's console. The rig control kit includes 2 or 3 ¼" x 170' control lines complete with fittings. Connect one end of one ¼" x 170' hose to the pilot input of air motor #1 and other end to hand control port #1 (#2 on the on-off control valve). Repeat procedure connecting 2nd ¼" x 170' hose between air motor #2 and control valve port #3 (#4 on the on-off control valve).

The hand control valve may need to be rotated to get the proper right/left hand operation of the valve (or hoses switched around).

4) If using the variable speed control valve, connect the pilot operated regulating valve with included nipple to the 1" tee on the Kelly Spinner. Install the 3rd ¼" hose from port 8 on the hand control valve to the pilot input on the pilot operated regulating valve.

5) The installation kit includes 1" x 60' supply line complete with fittings. Connect one end of hose to the Kelly Spinner and the other end of the hose to the top of stand pipe air supply.

6) Secure the ¼" control lines and 1" supply lines to the Kelly hose with straps.

7) Tee off the main air supply line and plumb a ¼" line to the hand control valve port inlet.

8) Install air filter and regulator at base of standpipe.

9) Check performance of Kelly Spinner:
   a. Turn on air supply and check system for leaks.
   b. Check the Kelly Spinner performance by engaging valve at driller's console.

Lubrication

Lubricate the Kelly Spinner regularly during usage and storage to prevent corrosion. Use a high grade multi-purpose lubricant which is compatible with the expected ambient temperature.

1. Lubricate four (4) Grease fittings on the Bearing and Seal Retainers.

Inspection & Maintenance

Safety should be practiced at all times when servicing the equipment always use BVM Corporation, approved safety methods, material and tools. Always wear protective gear for eyes, head and hands.

Weekly Inspection (when in use)

1. Visually inspect the hoses.
2. Check for leaks at hoses and fittings.
3. Check for loose and missing parts.
4. Check for any visible cracks
5. Check for any corrosion

Semi-annual inspection

1. MPI the Sub Shaft.

Magnetic Particle Inspection (MPI)

Carry out MPI according to ASTM E709 or ASME BPVC sub section A, article 7 and subsection B, article 25; determine the type of defects and the degree by comparing defects to ASTM E125 reference photographs to the acceptance criteria.

Only cracks may develop and as such need to be reviewed. All other indication types have been addressed by the manufacturer during production. As such, the Kelly Spinner has left the factory with indication (if at all) which were deemed acceptable. All cracks which have developed in service are relevant and need to be examined.

Evaluation of indications:
Relevant indications: Only those indications with major dimensions greater than 1/16 Inch (1.6mm) and associated with a surface rupture shall be considered relevant. Relevant indications are indications that results from, discontinuities within the test part. Non relevant indications are indications that results from excessive magnetizing current, structural design or permeability variances within the test parts. Any indication believed to be non-relevant shall be regarded as relevant and shall be re-examined to determine whether an actual defect exists. Linear indications shall be considered as those having a length of more than three times the width. Rounded indications shall be considered as those having a length less than three times the width. A lined indication shall be considered as a group of three more indications which touch an imaginary straight line connecting any two of the group.

For equipment certified in accordance with API 8A & 8C PSL 1:

	Maximum Allowable Degree		
Type	**Discontinuity Descriptions**	**Critical Areas**	**Non-critical Areas**
I	Hot tears, cracks	None	Degree 1
II	Shrinkage	Degree 2	Degree 2
III	Inclusions	Degree 2	Degree 2
IV	Internal chills, chaplets	Degree 1	Degree 1
V	Porosity	Degree 1	Degree 2

For equipment certified in accordance with API 8A & 8C PSL 2:

	Maximum Allowable Degree		
Type	**Discontinuity Descriptions**	**Critical Areas**	**Non-critical Areas**
I	Hot tears, cracks	None	None
II	Shrinkage	None	Degree 1
III	Inclusions	Degree 1	Degree 2
IV	Internal chills, chaplets	None	Degree 1
V	Porosity	Degree 1	Degree 2

Note: Only BVM authorized repair facilities are allowed to repair Kelly Spinners with indications outside the acceptance criteria.

Recommended Spares

PN	Description	Qty
940308-1	Grease Fittings	2
200605	Turnbuckles	1
10438	Ø1/4” Hose	2
200685	Relay Valve	1
200688	Ø1” Hose	1
200689	Hose Clamp	2

Critical Area Drawings

The Upper and Lower threads (including thread relief) on the Sub Shaft are critical.

Assembly drawing and List of Parts

See data sheet at www.bvmcorp.com.