



Aluminum Casing Alignment Tool

The aluminum casing alignment tool is used to repair wellbore casings where the casing string has parted and shifted out of place or where extensive milling operations have cut through casing and left a gap of weak pipe or no casing at all. The tool has a simple, but rugged, design—aluminum blades welded to an aluminum body.

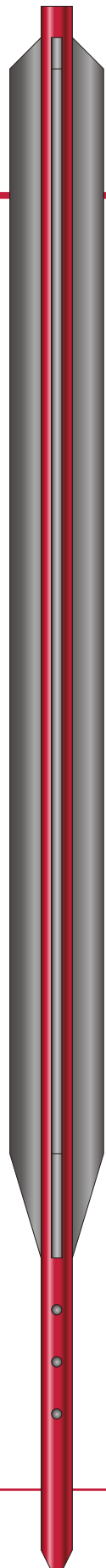
The aluminum casing alignment tool is run on the bottom of a cement retainer; the bladed section of the tool overlaps the damaged section of casing. The cement retainer is set, the cementing operation is completed, a junk mill is used to mill the cement retainer, and a specially dressed rotary shoe is used to wash over the casing alignment tool. An overshot is used to recover any parts of the tool that are not recovered in the washover operation.

Features, Advantages and Benefits

- Rugged, simple construction provides a reliable, durable tool.
- Each section and overlapping blades are welded together for strength.
- The tool can be built and assembled to any size and length to suit job-specific requirements.

Construction

The aluminum casing alignment tool is not carried as a warehouse stock item; rather, it is manufactured in 12-ft (3.7-m) sections and can be built to any size and length for the job. Each section is machined to the drift diameter of the size and weight of the casing in which it will be run. Threaded connections are used to assemble the sections, with the blades of one section overlapping the next section. For strength, each section and overlapping blades are then welded together to complete the finished tool. The standard assembled tool is 24 ft (7.3 m) long, with 18 in. (457 mm) of fishing neck at the top and 18 in. (457 mm) of tapered nose at the bottom. The stabilizing and aligning blades are 21 ft (6.4 m) long.





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Operation

1. Before running the tool, run a full-gauge mill and stiff bottomhole assembly, the same size and length as the tool, into the wellbore to ensure that the tool will have free passage through the damaged section and that realignment of the casing will be possible. If the tool cannot pass freely, some milling may be required so that the alignment tool can be used successfully. In addition, if there are open perforations below the point of repair, a plug may be required to prevent cement from going downhole during the cementing operation.
2. Using a special aluminum ported sub, run the alignment tool on the bottom of a cement retainer, and then run the assembly downhole, on the drillstring, until the bladed section of the tool overlaps the section of casing that is to be repaired. Bladed stabilizer extensions can be run between the cement retainer and the alignment tool if the casing to be repaired is in a long section of perforations.
3. Cement the casing. A running-type squeeze job is recommended because there typically will not be enough cement on the outside of the pipe to hold the casing in place if cement is pumped down and allowed to set or is staged in. If the squeeze job is unsuccessful, displace the cement and allow 2 to 4 hr of setting time; then attempt another cement job. The cement job must hold the casing in place and keep the wellbore aligned after the alignment tool is drilled out.
4. Pull the drillstring out of the cement retainer, and reverse out excess cement.
5. Clean out the wellbore. Use a bladed junk mill to mill the cement retainer until the top of the fishing neck on the alignment tool is reached. Replace the mill with a specially built rotary shoe, dressed with an ID equal to the OD of the center body of the alignment tool. Run the rotary shoe in the wellbore with enough wash pipe to cover the length of the alignment tool that was run and cemented in place.
6. Mill the blades of the alignment tool, along with any cement that is around the tool, until they are past the parted casing or the alignment tool is free to go down the wellbore. Run an overshot to retrieve any parts of the tool that remain in the wellbore.