

# M74 Pipe Shaver

for Quick-Lock® adhesive-bonded Pipe Joints in sizes 2 to 16 inch (50 - 400 mm)

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## Introduction

The Bondstrand® pipe shaver is designed to prepare a spigot on the cut end of a Bondstrand pipe as described in the Bondstrand Assembly Instructions. Pipe is shipped from the factory with spigots, but when pipe is cut to length on the job site, a spigot must be shaved for assembly to the bell end of another section of Bondstrand Quick-Lock pipe, or to a Bondstrand Quick-Lock fitting or coupling. Bondstrand Quick-Lock flanges are provided with sockets for mounting to pipe spigots in the same way. Spigots can be prepared on 2-inch through 16-inch pipe of any Bondstrand series with this tool. The M74 Shaving Tool is available as standard in sizes 2 to 12 inch ( 50 to 300 mm). Sizes 14 and 16 inch are available on request.

The pipe shaver is centered and held at the cut end of a pipe by an expanding arbor. There is a separate for each diameter. The arbor slips into the pipe and the O-rings expand to grip the inside pipe surface when the tie bar is tightened. As the frame is rotated around the feed tube, the cutting tools advances and shaves a cylindrical surface (spigot) on the pipe. When adjusted and used as described in these instructions, the shaver prepares an excellent bonding surface with a controlled tolerance on diameter. Arbors are not included and should be ordered separately.

This unit can be rotated by hand or with a portable power drive. A key in the portable power drive engages a keyway in the power drive seat to rotate the unit. The shaver is driven by a portable power drive adapter. The power drive is not included and should be purchased separately.

**Note: The use of this shaving tool is restricted to Bondstrand pipe material only.**



M74 Pipe Shaver

## EG-STATEMENT OF AGREEMENT

According to machinery directive 98/37/EG, appendix II, under a, this shaver

- \* complies with machinery directive 98/37/EG;
- \* complies with the following harmonized European Standards: NEN-EN 1050, NEN-EN 292-1 and NEN-EN 292-2.



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## Safety precautions

### Personal protection and safety

The following personal protection gear must be used when cutting, shaving, sanding and grinding Glassfiber Reinforced Epoxy (GRE) material:

- Safety shoes or boots;
- Work gloves (GRE material can be very sharp and may cause cuts or splinters);
- Proper fitting and buttoned up protective clothing must be worn when operating the shaver;
- A hard hat is to be used, if the situation requires so;
- A hair net must be worn, if applicable, when shaving, cutting, grinding, etc;
- An appropriate dust mask is to be used when cutting, shaving, grinding and sanding.

### Operational safety

For safe operation of the shaving tool, the following rules must be followed:

- Use left hand to hold the grip of power drive and the right hand to operate the power switch;
- Immediately release the power switch when the shaver seizes to avoid injury to self or damage to tooling;
- The optional power drive torque arm must never be used for safety reasons;
- Pipe-shaver assembly must be at ergonomic height to be able to work in the proper posture;
- Ample rest should be taken to avoid excess physical or mental stress;
- Only authorised persons are to be allowed in the shaving area;
- Before starting the power drive, ensure that the shaver will run free from pipe bench, table or support;
- Shaving area must be clearly marked as such;
- Shaving tool shall only be used to prepare spigots on Bondstrand pipe material;
- Pipe shaver shall only be operated by trained persons;
- No other type of power drive shall be used if that works at a higher speed than the Ridgid 700;
- Power drive and shaving tool must be kept in good working order to guarantee proper and safe operation. Defective parts must be exchanged, or repaired by qualified persons only.

Note:

1. On special order, instructions of this shaver are available on CD-Rom, or DVD.
2. The noise level of the shaver and power drive is less than 70 dB (A).

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## Operating instructions

The following procedure should be carefully followed to ensure satisfactory operation of the shaver.

### 1. CHECK YOUR SHAVER

If this is your first use of the pipe shaver, check to see that all parts are included or available. The following parts are included with M74 pipe shaver and case:

- Shaving tool, complete with two cutting tool assemblies plus an additional two for 14-16 inch applications;
- Pipe shaver gauge with 0.015-inch feeler gauge attached;
- Two turning handles and attaching cap screws - not needed if power drive is used;
- Six Allen® wrenches: sizes 3/32, 5/32, 7/32, 3/16, 5/16 and 3/8 inch;
- Arbors, complete with O-rings, are available separately, (see Pipe Shaver Parts Drawing) or as a set in a convenient carrying case.

A wrench, fitting a 1-1/8 inch hex head is required. The use of a portable power drive is not necessary, but it will make the job much easier.

Remove the shaver from the case. Remember, the shaver is a precision tool and must be handled with care.

**Caution: Before handling the shaver, engage knurled slide sleeve (part no. 20) by sliding it fully forward under the power drive seat. Handling of shaver with slide sleeve disengaged may cause injury.**



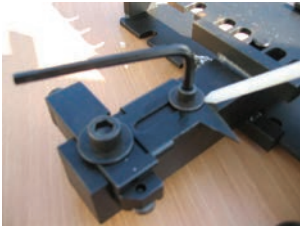
Shaver and cutting tools



Arbor



locate the cutting tool



spigot length indicator



engage slide sleeve



adjust cutting edge



shaver with mounted arbor



mounted shaver ready for use

## 2. LOCATE CUTTING TOOL ASSEMBLIES

Locate the cutting tool assemblies in the appropriate slots in the frame for the desired pipe size, and assemble slide plate (part no. 13), washer (part no. 2) and socket head cap screw (part no. 15) on each assembly, and tighten screws with the 3/8-inch Allen wrench.

## 3. SET SPIGOT LENGTH INDICATOR

- Loosen the socket head cap screw (part no. 3) on one of the tool retainer arms using the 3/16-inch Allen wrench and slide the indicator (part no. 6) so that the outer pointer lines up with the mark for the desired pipe size;
- Retighten screw;
- The inner pointer will show you when the correct spigot length is.

## 4. ADJUST CUTTING EDGES

- Disengage slide sleeve (part no. 20) by sliding it fully out from under the power drive seat and draw tie bar (part no. 8) back so that feed tube (part no. 9) is fully back into frame (part no. 22) and engage slide sleeve (part no. 20);
- Remove nut (part no. 7) from tie bar (part no. 8);
- Remove arbor if one is on tie bar and slip pipe shaver gauge onto feed tube;
- With the 5/16-inch Allen wrench, slightly loosen socket head cap screw (part no. 1) on one cutting tool assembly;
- Adjust form tool (part no. 5) in toward or out from pipe shaver gauge with adjusting screw until cutting insert is separated from pipe shaver gauge by 0.015-inch feeler gauge;
- Lock form tool in place by tightening socket head cap screw;
- Recheck position of cutting insert after the form tool is locked in place, and adjust if necessary;
- Repeat procedure to set second form tool (part no. 5);
- Remove gauge and slip arbor over feed tube (part no. 9);
- Turn nut (part no. 7) onto tie bar (part no. 8) so that key on nut will engage slot in arbor. Note: Nut will be tightened later.

## 5. MOUNT SHAVER IN END OF PIPE

- With your Bondstrand pipe cut to length and firmly held in position (see photos of padded vise in the Bondstrand Assembly Instructions), you are now ready to mount the shaver on the end of the pipe;
- Disengage slide sleeve and slide arbor and feed tube forward, away from frame (part no. 22) and engage slide sleeve (part no. 20);
- Slip arbor into Bondstrand pipe until the end of arbor nearest to frame is flush with end of pipe;
- Now with a 1-1/8-inch wrench, tighten tie bar (looking toward frame, turn hex head clockwise) so that arbor is locked firmly inside the pipe;
- Lift shaver during tightening of tie bar to ensure proper alignment of shaving tool;
- Disengage the slide sleeve, slide frame toward the pipe until cutting inserts are nearly touching end of pipe, and engage the slide sleeve.



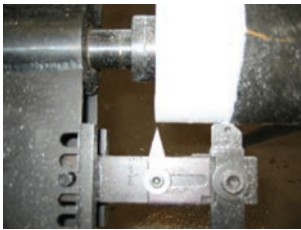
shaving the spigot



using portable power drive



measuring the shaved diameter



spigot length indication

#### 6. SHAVE THE SPIGOT

- If a portable power drive is used to turn the shaver, slide the drive onto the power drive seat;
- Remove turning handles when using power drive;
- If you are going to turn the shaver by hand, attach handles;
- Begin turning shaver frame clockwise (looking toward pipe), and continue turning and shaving pipe surface until inner pointer on indicator (**part no. 6**) is flush with the end of the pipe.

**Caution: Do not reverse power drive to return cutting head to starting position. Do not use power drive to advance cutting head beyond maximum pointer depth (about 3 inches/75 mm). Shaver will jam at end of travel possibly causing injury.**

#### 7. CHECK SHAVED DIAMETER

- After shaving approx. 20 mm of the first spigot, you will need to check the shaved diameter;
- First, disengage the slide sleeve, slide frame away from pipe until cutting inserts are at the starting position, and engage the slide sleeve;
- With the arbor still firmly in place, measure the shaved diameter of the shaved part using a Go-No-Go Pi Tape®;
- When using vernier reading Pi Tape, see Table 1 for tolerance range on spigot diameters;
- Correct spigot length is obtained when the spigot indicator is flush with pipe end;
- If your measured diameter falls well within this tolerance range, you may proceed;
- If the measured diameter was borderline or outside the recommended tolerance range, a slight adjustment of the two form tools is required;
- Loosen socket head cap screw slightly and adjust screw as required on both tools.

**Spigot too small** - Go to Step 8 and cut off and discard shaved spigot. Reposition arbor in pipe end and shave new spigot after adjustment, repeat these steps until the proper diameter is obtained.

**Spigot too large** - After adjustment, repeat Step 7 until proper diameter is obtained.

#### 8. REMOVE SHAVER FROM PIPE

- To remove arbor from pipe, loosen tie bar using a 1-1/8 inch wrench (looking toward frame, turn hex head counterclockwise)
- With slide sleeve engaged, slide arbor out of the pipe.



removing shaver from pipe



#### 9. RECHECK ADJUSTMENT FOR WEAR OR ABUSE

- Once shaver is properly adjusted for a given pipe size, you will usually need to check spigot diameters only at the beginning and middle of each shift, provided the shaver is handled with care at all times, and not dropped, hit or abused in any way that might cause a change in setting. After extensive use, the cutting inserts may get dull or show wear;
- Simply loosen socket head cap screws (**part nos 15-17**) using 3/32-inch Allen wrench and rotate both inserts 90° to obtain a new pair of cutting edges;
- Adjust to obtain correct shaving diameters;
- NOV Fiber Glass Systems stocks replacement cutting inserts for your convenience.

**10. RESET FOR DIFFERENT PIPE DIAMETER**

- You will have to repeat these steps each time a change in pipe diameter is made;
- Minimizing the number of diameter changes made on the shaver will help expedite your project.



removing dust

**11. MAINTENANCE & STORAGE**

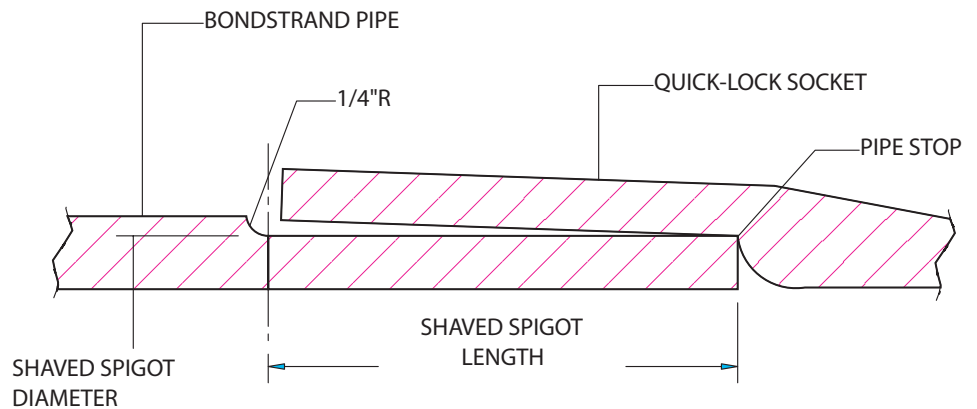
- Store you shaver in a dry location, protected from moisture, as you would any machine tool;
- Do not use oil and/or grease as dust will accumulate on oily surfaces;
- Remove dust and dirt by means of a brush.

**Spigot dimensions**

Table 1: Standard Spigot Dimensions

Nominal Pipe Size	[inch]	Shaved Diameter		Shaved Length (see fig. 1)	
		[inch]	[mm]	[inch]	[mm]
2	50	2.331	2.346	1.929	2.047
3	80	3.449	3.456	1.929	2.047
4	100	4.429	4.445	1.929	2.047
5	125	5.492	5.508	2.323	2.441
6	150	6.543	6.560	2.323	2.441
8	200	8.547	8.563	2.559	2.677
10	250	10.681	10.697	2.796	2.913
12	300	12.685	12.701	3.071	3.189
14	350	13.929	13.945	3.504	3.661
16	400	15.909	15.925	4.055	4.173

Figure 1. Sketch of lap configuration in a typical Bondstrand Quick-Lock joint. (Adhesive is not shown.)



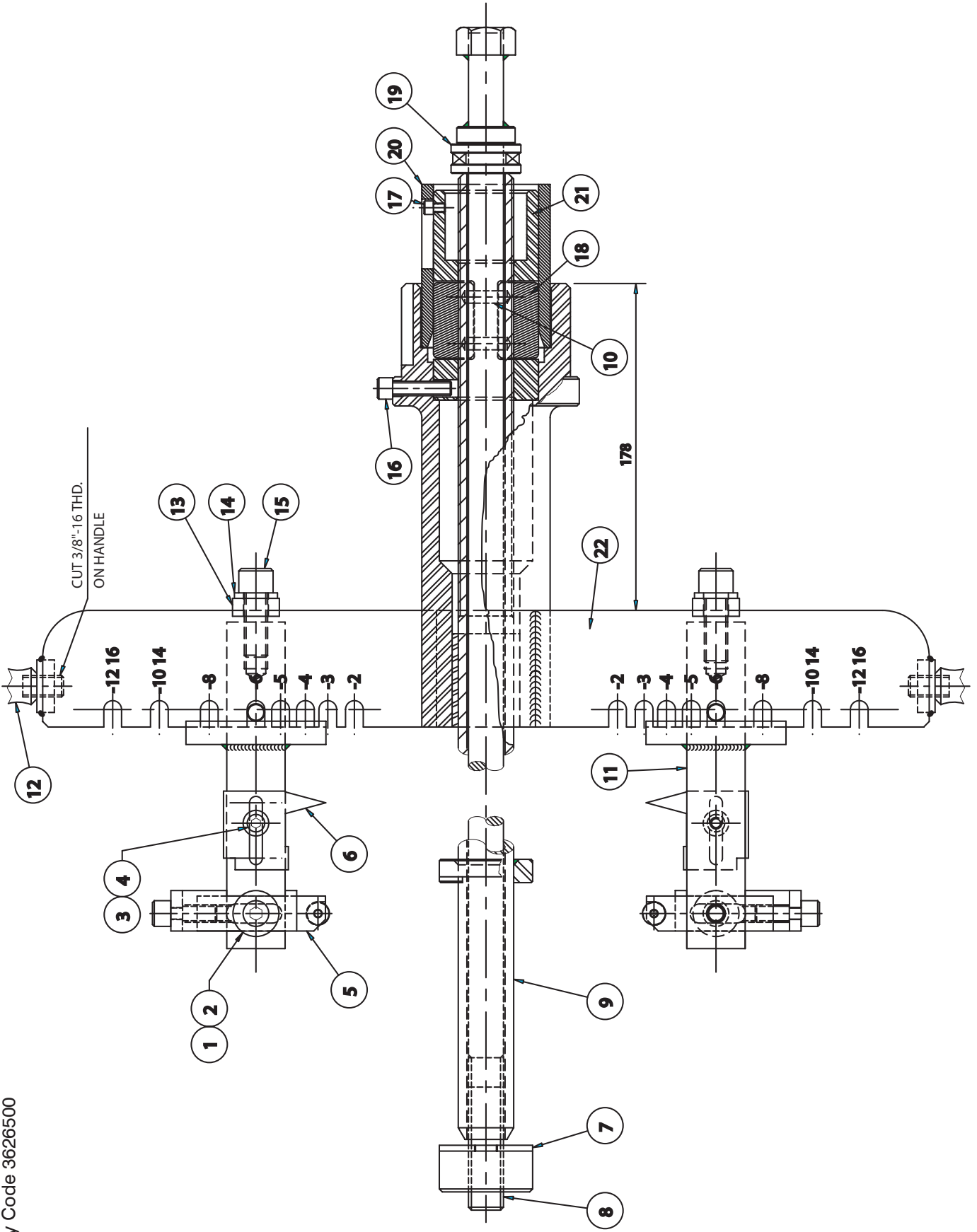
**M74 Bondstrand Pipe Shaver Part List**

Drawing Reference 2D008708 Rev. 2

Part #	Qty	Description	Dimension	Drawing	Material specification
1	2	Allen HD. C.S.	3/8" – 16N.C. x 32LG		STL
2	2	S.A.E. Flat Washer	3/8"		STL
3	1	Socket Head Cap Screw	1/4" – 28 x 12.7LG		STL
4	1	US. Std.Flat Washer	1/4"		STL
5	2	Tool Assembly		2D008705	
6	1	Indicator		2D008706	
7	1	Nut		2D008707	
8	1	Tie Bar		2D008707	
9	1	Feed Tube		2D008707	
10	4	Spring		2D008701	
11	2	Tool Retainer		2D008706	
12	2	Carr Lane Handle			
13	2	Slide Plate		2D008706	
14	2	Washer for Socket Head Cap Screw	1/2"		STL
15	2	Socket Head Cap Screw	1/2" – 20 N.F. x 35LG		STL
16	1	Socket Head Cap Screw	5/16" – 18 N.C. x 32LG		STL
17	1	Socket Head Cap Screw	3/16" – 24 N.C. x 6.35LG		
18	2	Half Nut		2D008701	
19	1	NSK 06411 or equivalent			
20	1	Sleeve		2D008707	
21	1	Nut Retainer		2D008701	
22	1	Frame		2D008703	

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Commodity Code 3626500



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TLS2001 supersedes FP696C - November 2012