

e-1510, e-1532, e-1531, e-80 and e-80SC pumps

Stainless Steel Impeller Trimming Guidelines

Safety

- Proper personal protective equipment (PPE), adequate safety guards and proper material lifting equipment are required for all machining and grinding operations.
- Gloves suitable for protection from sharp edges should be used during impeller handling and machining, such as ANSI Cut Level 3 gloves.

Trimming

When it is necessary to reduce the pump flow rate and generated head by trimming the impeller diameter, the following guidelines apply for machining the outer diameter of stainless steel impellers. These same machining procedures can also be used for bronze impellers.

- To select the proper reduced diameter, review the pump hydraulic selection data and consult your local Xylem representative.
- For certain models, as listed in the pump manual, a special Angle Cut is required on the impeller outer diameter. Before trimming the impeller, look for a section in the pump manual titled Angle Cut.
- The recommended lathe is 30 hp (22 kw) or greater, with a minimum of two tool holders and suitable for 13.5 in. (342.9 mm) diameter. A 20 hp lathe can be used, but will result in half the depth of cut during roughing and extended trimming time.
- The impeller must be rigidly held in the lathe, therefore, the use of an arbor is recommended. The arbor can be overhung from the chuck and does not need a tailstock, but if desired, a tailstock can be used. See the pump Replacement Parts List if it is desired to purchase impeller trimming arbors.
- The recommended machining insert for roughing is Sandvik RCMT 20 06 MO 2025 and for the finish cut Sandvik DCMT 3(2.5)2-UM 1115. Both are used without coolant.
- Recommended spindle speed is 460 surface feet per minute (SFM) (76.2 surface meter per minute (SMM)).
 - To calculate the spindle speed (RPM), use the formula $RPM = (SFM * 12) / (3.1416 * \text{diameter of cut, in.})$ ($RPM = (SMM * 39.37) / (3.1416 * \text{diameter of cut, mm} / 25.4)$). This results in the following:

Impeller Max. Diameter	Recommended Spindle Speed (RPM)
7 in. (177.8 mm)	251
9.5 in. (241.3 mm)	185
11 in. (279.4 mm)	160
13.5 in. (342.9 mm)	130

- Recommended rough cut feed rate per revolution is 0.008 in. (0.20 mm) with depth of cut 0.170 in (4.3 mm) per side.
- Recommended single finish cut feed rate per revolution is 0.008 in. (0.20 mm) with depth of cut 0.025 in (0.63 mm) per side.
- For deburring, a high speed air tool is recommended with a ¼" shank and a carbide cone tip grinding burr.