

OPTOFORM[®] 80 - Spindle and Collet Maintenance

The SP-75L (Precitech #A10226) spindle is a high speed, air bearing spindle for contact lens generation.

Air supply:

The spindle requires a clean, dry supply of air at 80 psig, filtered down to 1 micron. The filtration should remove all water, in liquid or aerosol form at line temperature. Oil carryover should not exceed 0.1 mg/m^3 at 21 degrees C.

The use of a refrigerant drier is recommended, which should be set to a pressure dew point of 7 degrees C.

A pressure switch is incorporated in the air supply to the spindle, set to trigger at 4.9 KgF/cm^2 (70 PSIG). The contacts within the pressure switch are linked into the converter circuit so that, in the event of a reduction in bearing supply pressure below the stated figure, the converter will be shut down automatically.

Cooling system:

The spindle incorporates an internal cooling system for the purpose of cooling both the radial air bearing and the integral motor. The rear cover of the spindle provides for connection of incoming and outgoing coolant lines.

Spindle coolant supply:

The spindle is supplied with coolant via a chiller located under the rear of the machine. The coolant itself is a mixture of distilled water and propylene glycol where the ratio is three (3) parts distilled water to one (1) part propylene glycol (see section 7.5 for more detail).

Power supply:

The spindle is fitted with an integral brushless DC motor.

Spindle clamping:

The spindle is held in place with two stainless steel supports. These supports attach the housing mounts the housing to the carriage top. The spindle is aligned by pivoting the housing on a pin located on the side support. Spindle alignment is factory set and should never need adjustment.

Collet system:

The SP-75L Spindle is fitted with a pneumatically operated collet. When air is supplied at 80 psig (5.6 kgf/cm²) to the collet actuating port in the center of the rear face of the spindle, the collet will open. By reducing this pressure to zero, the collet will automatically close to grip the work piece. It is essential that the collet actuating air supply is at atmospheric pressure before the spindle is started.

Collet maintenance:

If it is desired to remove the collet for cleaning purposes, it is essential to first apply full air pressure at the bearing supply port. Full air pressure is then applied to open the collet. The collet is then removed by unscrewing it counterclockwise, as viewed on the face of the collet.

Note 1: At no time should the collet actuating air pressure be reduced to 0 psig if there is no collet in the spindle.

Note 2: At no time should the spindle be run without a collet, a part or a component in the collet jaws.

The collet is lubricated with a molybdenum disulphide grease, marketed under the name Rocol MT-LM, which Precitech can supply.

Prior to replacing the collet it is, of course, essential to thoroughly clean both the shaft bore and the collet. A number of organic solvents are suitable for this purpose, being typified by the cleaner sold under the name Genklene (trichloroethane 111). For collet cleaning, we recommend the use of an ultrasonic cleaning bath.

Once the collet has been cleaned, prior to refitting, the collet must be lubricated lightly in two places using Rocol MT-LM grease:

at the bottom of the shaft for the first 10mm
on the taper

Install the collet, by screwing it clockwise when viewed on the face of the collet. The precise grip of the collet is dependent upon how far the collet is screwed back in. Adjust as necessary to give the required grip.