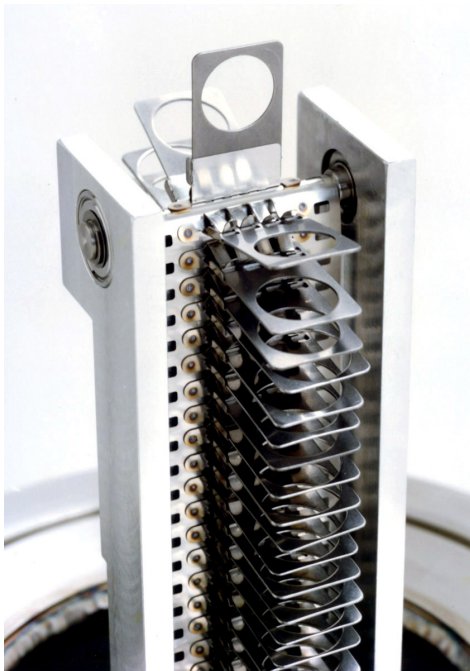




ACCELERATOR COMPONENTS

National Electrostatics Corp.

Foil/Target Changer



The NEC foil/target changer has been in manufacture for over two decades. Its unique design has found wide acceptance in accelerator laboratories throughout the world. At the present time, over 130 units have been shipped. It is ultra-high vacuum compatible with no moving seals. Units with as few as 48 positions and as many as 360 positions have been manufactured.

Applications

The NEC foil changer is ideal for any application that requires the handling of a large number of foil samples in ultra-high vacuum.

The foil changer was designed originally for use in terminals of electrostatic tandem ion beam accelerators. In this case, a carbon foil is moved

into the path of a negative ion beam. As the foils break or thicken, a new foil is moved into position. When equipped with the NEC foil changer controller, the operator can remotely control foil changes with remote readout of foil position.

Design

The target holders are mounted into clips riveted to a stainless steel band. This band is driven by a sprocket wheel that eliminates slippage. There is a small diameter pulley near the target position. As the band passes over this pulley, one target holder is placed in the proper position.

The proper positioning of the target is assured by a geneva drive. The geneva drive mechanism turns the target band by a precise amount, which is insensitive to the stopping position of the drive motor.

The rotary motion from the geneva drive is fed into the vacuum volume via a magnetic coupling. There are no sliding seals. The only organic material is in the ultra-high vacuum grade bearings that support the motion of the stainless steel band. The entire assembly is fully bakeable and has an external pressure rating of 240 psig at 100°C.

The NEC foil changer assembly is equipped with a convenient loading port. This port is located at the opposite end of the assembly from the target position. It allows access to the foil holder clips. Individual targets can be removed or added without removing the foil changer mechanism.

Foil/Target Changer

Options

The overall dimensions of the foil changer and available options are described by the following specification worksheet. NEC has a long history of manufacturing custom foil changers for use on existing accelerator configurations, target chambers and beamlines.

Specifications

Maximum number of target positions:	360
Position accuracy:	$\pm 5^\circ$ from axis
Target changing rate:	10 to 12 seconds
Materials:	Aluminum, stainless steel, UHV grade bearings (fully bakeable, ultra-high vacuum compatible)
Overall Length (item 3):	959mm (360 positions) maximum 207mm (48 positions) minimum
External Pressure Rating:	240 psig (16 atmospheres) at 100°C
Controls:	Motor drive and controller available

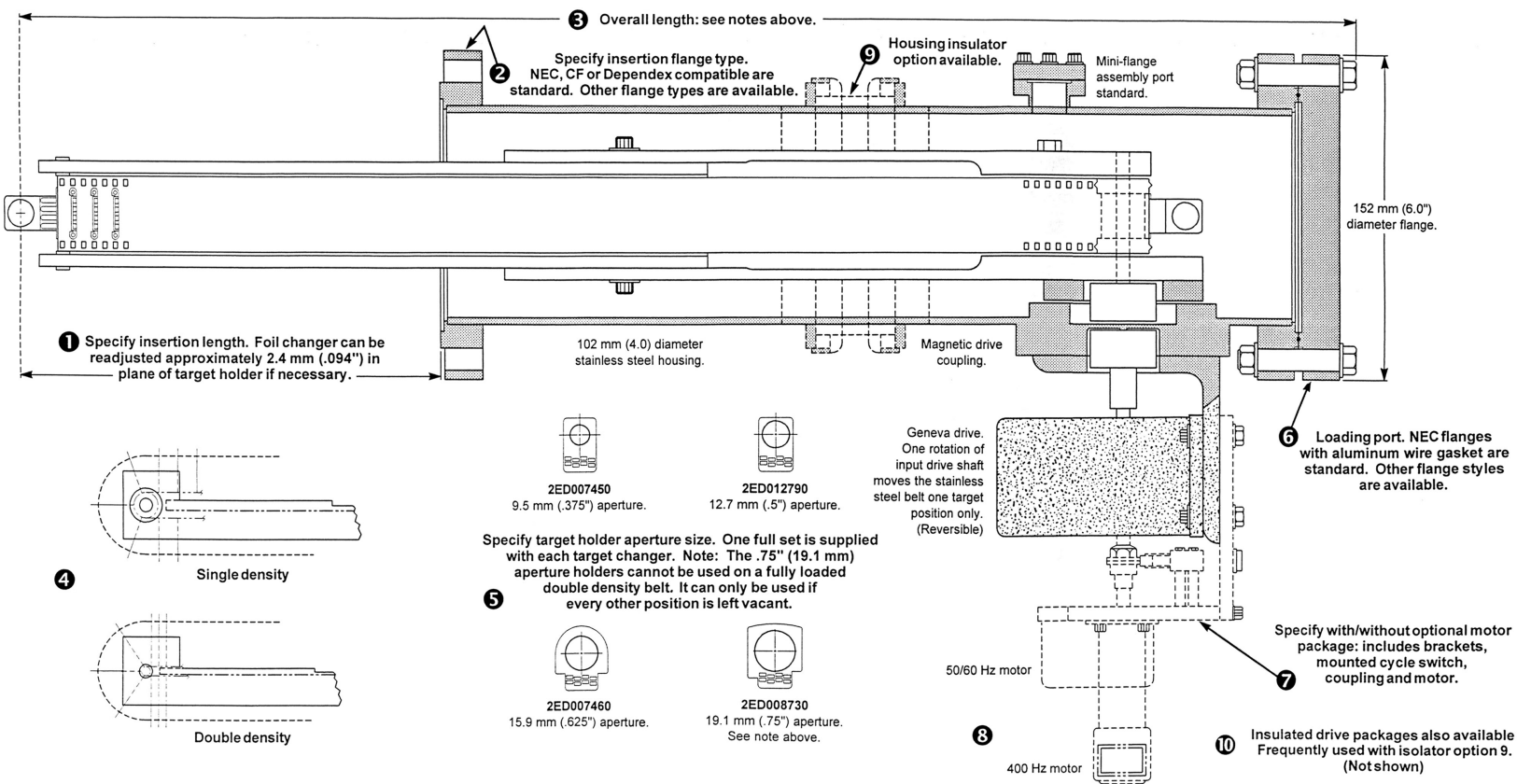


Foil Target Changer Specification Worksheet

This worksheet is designed to show the specifications needed in order for NEC to manufacture a foil/target changer to meet your specific needs. A summary of the required specifications is shown to the right.

The overall length of the target changer assembly depends primarily upon the number of foil positions required. There are two options available for a number of positions per unit length, single density and double density. The overall length for a single density assembly with 115 positions is 25.47" (646.8mm). Add (subtract) 4.8mm for each foil position over (under) 115. A double density unit with 230 positions would have an overall length of 25.53" (648.88mm). Add (subtract) 2.4mm for each position over (under) 230.

① Insertion length:	⑥ Load port type:
② Insertion flange type:	⑦ Optional motor drive:
③ Overall length or number of target positions:	⑧ If item 7 is used, motor frequency:
④ Single or double density:	⑨ Optional housing insulator:
⑤ Target holder aperture size:	⑩ Optional insulated drive assembly:



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