



NEOS TECHNOLOGIES

A Gooch & Housego Company

OPERATING MANUAL

41 MHz FLINT GLASS Q-SWITCH

MODEL NUMBER:

34041-1.5-SF10-BNC

34041-1.5-SF10-SMF

DOCUMENT NUMBER: 51A12136A

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TABLE OF CONTENTS

SECTION	TITLE	PAGE
I	INSPECTION	3
II	DESCRIPTION	4
III	SPECIFICATIONS	5
IV	OUTLINE DRAWINGS	6 -7
V	OPERATING PROCEDURE	8
VI.	CLEANING PROCEDURE	9

SECTION I

INSPECTION PROCEDURE

Examine the shipping carton for damage. If the shipping carton or packing material is damaged it should be kept for the carrier's inspection. Notify the carrier and NEOS Technologies of any damage. Check the contents of the shipment for completeness, mechanical damage, and then test the equipment electronically. Operating procedures are contained in Section V. If the contents are incomplete, or the equipment does not pass the electrical testing please notify NEOS Technologies.

If there is any problem with the use of this equipment, or if the equipment fails to function as expected contact NEOS Technologies, do not try to trouble shoot or repair this equipment. Consult with a NEOS service engineer. If the equipment needs repair or replacement, contact NEOS Technologies, Inc for a Return Authorization Number.

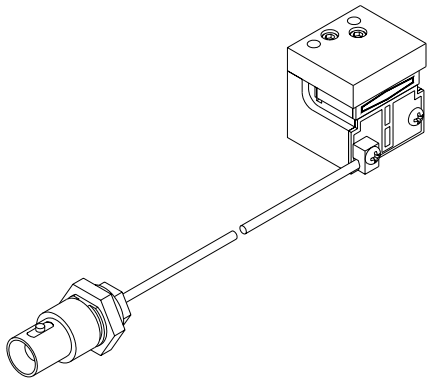
SECTION II
DESCRIPTION

34041-1.5-SF10-BNC

34041-1.5-SF10-SMF

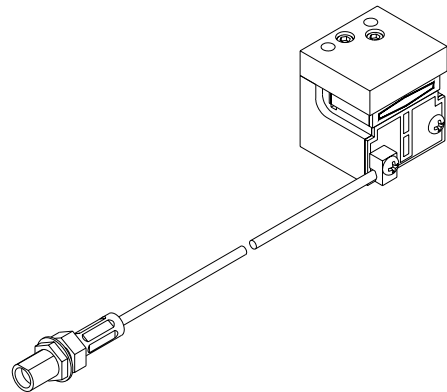
The 34041-1.5-SF10 Q-switch uses a flint glass optical material with a Lithium Niobate transducer. The RF input power should not exceed four watts CW. The input laser beam diameter should be no greater than 1.5 millimeters in diameter. The 34041-1.5-SF10 Q-switch is available with a BNC or a SMC female connector.

The Q-switch assembly should be mounted on a fixture to provide sufficient adjustment to peak the Q-switch's efficiency (horizontal, vertical, and Bragg angle) and to provide a sufficient heatsink to ensure the housing temperature does not exceed 50 °C. The Q-switch can be driven by any good driver with a nominal 50 ohm output of 40.68 MHz and no more than 4 watts RF power, however, it is recommended that a NEOS driver be used to drive this Q-switch to achieve optimum performance. Be extremely careful not to focus the laser beam on the gold bond wires, as they can be burned. NEOS will not warranty any such damage.



53B1493

34041-1.5-SF10-BNC



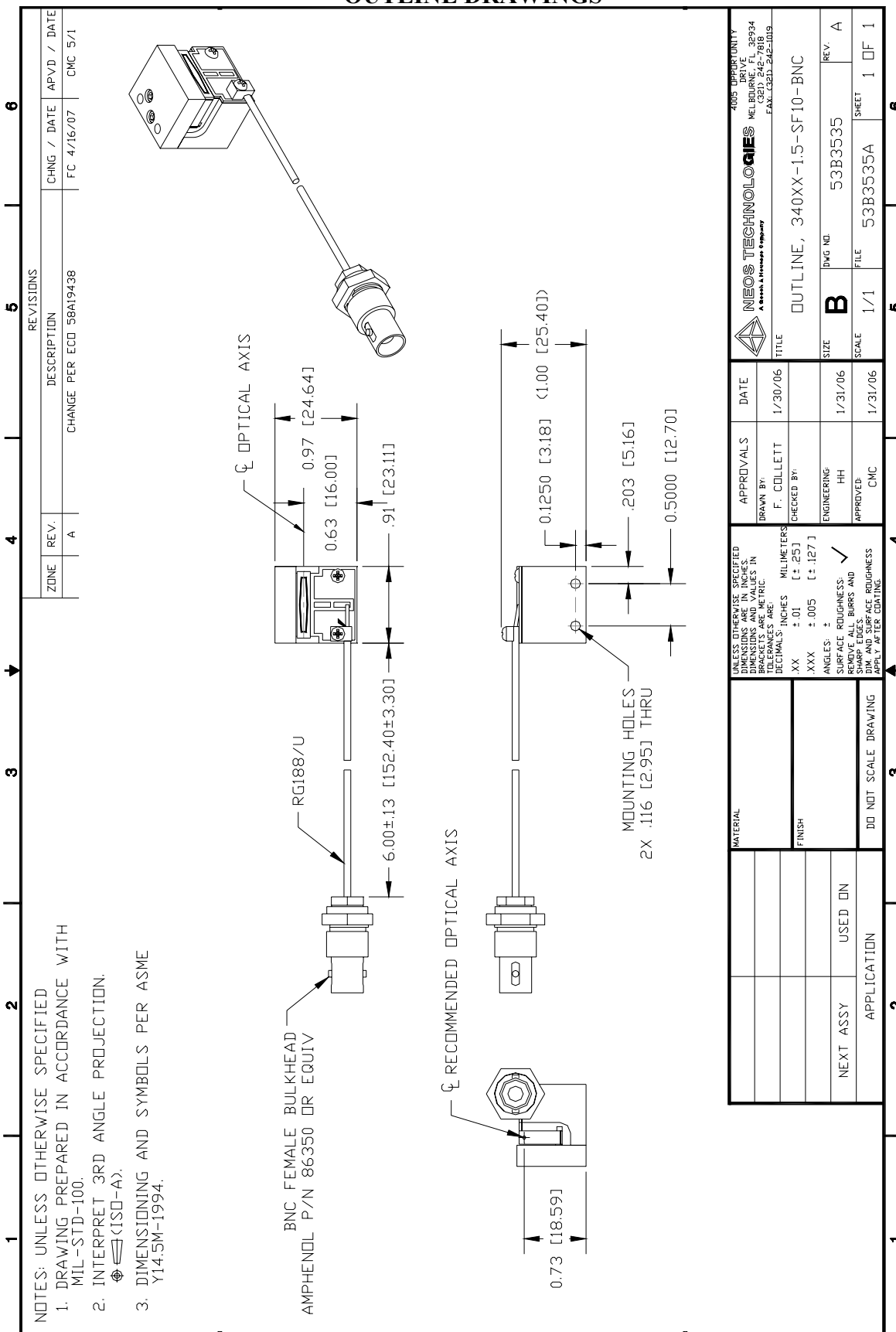
34041-1.5-SF10-SMF

SECTION III
SPECIFICATIONS
34041-1.5-SF10-BNC
34041-1.5-SF10-SMF

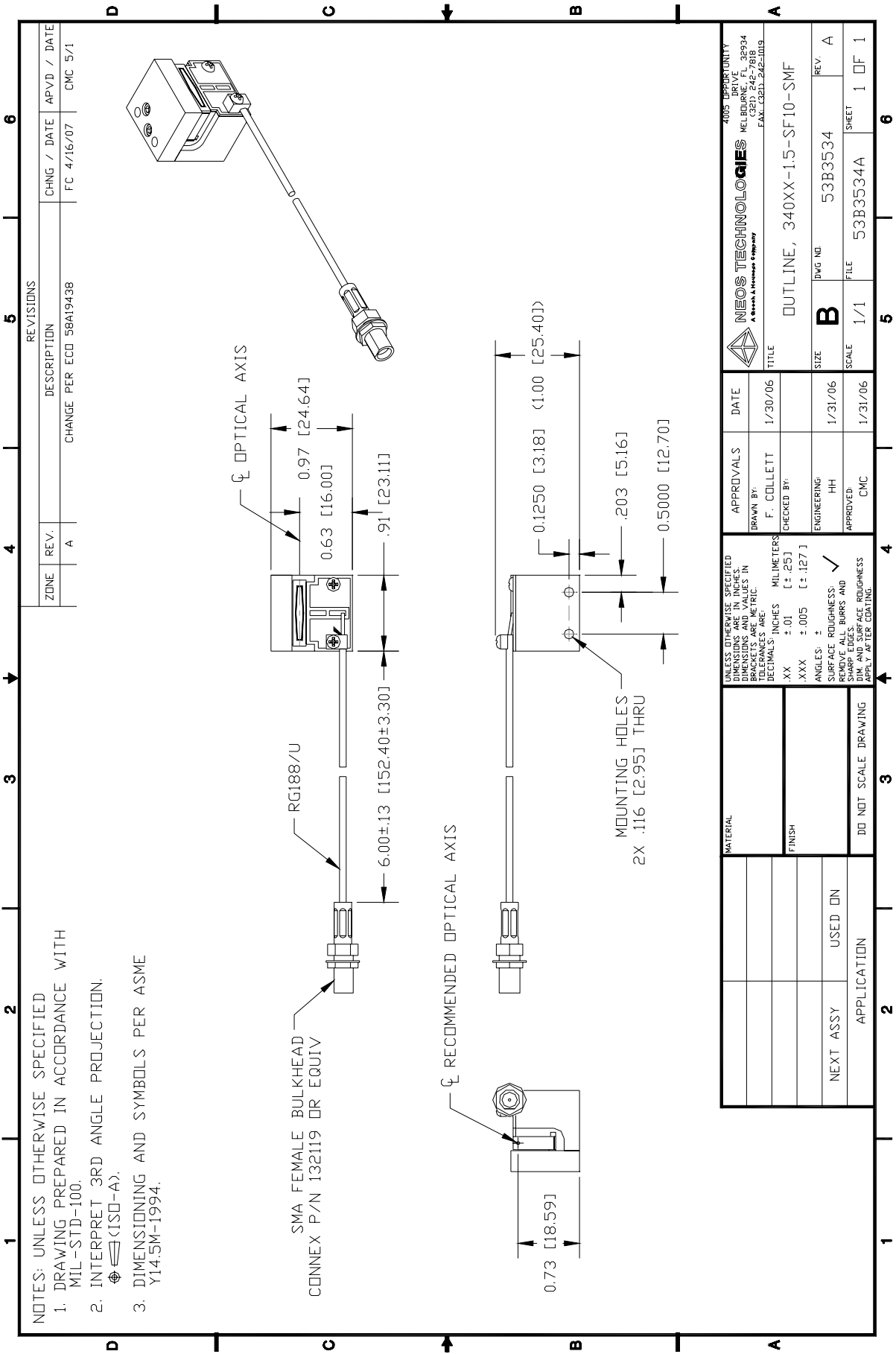
PARAMETER	SPECIFICATION
Interactive Material	SF10
Acoustic Mode	Longitudinal
Operating Wavelength	1064 nm
Window Configuration	AR Coated
Static Transmission	>99 %
Operating Frequency	40.68 MHz
Loss Modulation	>30 % @ 2 watts >60 % @ 4 watts
Light Polarization	Random
Acoustic Aperture Size	1.5 mm
Rise Time	165 nsec / mm beam diameter
Deflection Angle	10.8 mrad
Maximum RF Power Level	4 watts
Impedance	50 ohms
VSWR	<1.2:1 @ 40.68 MHz
Package: BNC	53B3535
SMF	53B3534
Conductive Cooling required: Package must be maintained below 50 ⁰ C.	
Acceptance Test Procedure:	42A14790
Acceptance Test Results form:	52A11836
Recommended Drivers:	
Digital Driver System: 39041-4DS*** or 38041-4DS**	
Digital Driver Module: 39041-4DM*** or 38041-4DM**	
Driver Options:	*** = PPK, FPS, A05, R05 ** = PK, PKPW

SECTION IV

OUTLINE DRAWINGS



MATERIAL		UNLESS OTHERWISE SPECIFIED DIMENSIONS AND VALUES IN BRACKETS ARE METRIC DECIMALS		APPROVALS	DATE	 405 OPPORTUNITY DRIVE MELBOURNE, FL 32934 (321) 242-7818 FAX: (321) 242-1889	
FINISH		INCHES XX ± .01 [± .25] .XXX ± .005 [± .127]		DRAWN BY: F. COLLETT	1/30/06	TITLE OUTLINE, 340XX-1.5-SF10-BNC	
NEXT ASSY	USED ON	ANGLES: ±		CHECKED BY:		SIZE	DWG NO. 53B3535
APPLICATION		SURFACE ROUGHNESS: ✓ REMOVE ALL BURRS AND SHARP EDGES. APPLY AFTER COATING.		ENGINEERING: HH	1/31/06	SCALE	FILE 53B3535A
		DD NDT SCALE DRAWING		APPROVED: CMC	1/31/06	SHEET	1 OF 1



 4085 CORPORATE DRIVE MELBOURNE, FL 32934 TEL: 321.244.7810 FAX: 321.244.8100		DATE: 1/30/06 APPROVALS: F. COLLETT DRAWN BY: F. COLLETT CHECKED BY: [blank] ENGINEERING: HH APPROVED: CMC	TITLE: OUTLINE, 340XX-1.5-SF10-SMF SIZE: B DWG NO: 53B3534 SCALE: 1/1 SHEET: 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DIMENSIONS AND VALUES IN BRACKETS ARE METRIC. DECIMALS: INCHES MILLIMETERS XX ±.01 [±.25] XXX ±.005 [±.127]	ANGLES: ± SURFACE ROUGHNESS: ✓ REMOVE ALL BURRS AND SHARP EDGES. FINISH AND USE ROUGHNESS APPLY TO TEXT COATING	MATERIAL: [blank] FINISH: [blank]	DO NOT SCALE DRAWING
NEXT ASSY	USED ON	APPLICATION	

SECTION V. OPERATING PROCEDURE

The acousto-optic Q-switch can be aligned in the laser as follows:

With the laser shutter closed:

- Mount the Q-switch inside the laser cavity
- Make all connections:
 - Connect the RF cable from the driver to the AO device.
 - Laser Shutter (if specified)
 - Connect the external modulation to the driver. See the driver manual for information on signal levels and connections.

With the laser on and the shutter open:

- With the Q-switch driver off, maximize the output power of the laser for minimum insertion loss by adjusting the cavity mirrors and Q-Switch position.
- Turn on Q-switch driver while monitoring laser output and modulated at the desired pulse rate. Adjust the Bragg angle and position of the Q-Switch and the laser power for maximum hold off.
- See the Q-switch Driver manual for instructions on operating the driver and the signals required to output the laser pulses and the signals to suppress the first pulse.
- Modulate the laser as desired.

SECTION VI

OPTICAL CLEANING

Periodic cleaning of the acousto-optic Q-switch is a normal part of maintaining a laser system. When the Q-switch device is installed in a laser system, make sure that there is access to allow removal of any protective cover and room to clean the device. If removal from the system is necessary, then follow the alignment procedure in this manual to reinstall, realign and, adjust the Q-switch Do Not remove the top heat sink of the device as it is not a cover.

To clean the Q-switch:

- Blow off any visible dust with canned air. Do not use an air gun unless it is filtered and water and oil free!
- Fold (4 times) a new lens tissue into a triangle to make a cleaning tool.
- Dip the tip of the lens tissue into fresh acetone or spray fresh acetone from a squeeze bottle onto it. Then shake excess fluid out of the lens tissue. Do not handle the wet area of the tissue, as your finger oil will be absorbed and contaminate the optical surface of the crystal.
- Wipe (only once) across the crystal in an even motion, starting near the transducer and drawing the tissue across the optical surface toward the other end. Do not damage the bond wires! Do not reuse the tissue as the mounting silver epoxy may be spread onto the window of the crystal.
- Repeat with a new tissue each time and for each surface that needs cleaning.
- Replace any protective cover.
- Realign the device in your system and adjust the Bragg angle for maximum diffraction efficiency.

Notes:

- The lens tissue must be lint free and the best grade available.
- Only use each tissue once, for only one surface. Do not reuse the tissue, as it will redistribute the removed dust or mounting silver epoxy.
- The acetone must be electronic grade. The acetone must be fresh from a new bottle, as the acetone will absorb water from the air and cause streaks. Discard any acetone, which has been exposed to the air for more than 4 hours. If the bottle is half- empty, do not use.