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APPROVAL REPORT

**NEO-DYN SNAP SWITCH MODELS 057-0760,
057-0761, 057-0762, 057-0763, 057-0770, 057-0771,
057-0772 AND 057-0773
FOR HAZARDOUS (CLASSIFIED) LOCATIONS
(PRODUCT REVISIONS)**

Prepared for:

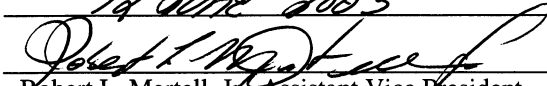
**ITT Aerospace Controls
28150 Industry Drive
Valencia, CA 91355**

Project ID: 3016301

Class: 3615

Date of Approval:

Authorized by:

12 June 2003

Robert L. Martell, Jr., Assistant Vice President

**NEO-DYN SNAP SWITCH MODELS
057-0760, 057-0761, 057-0762, 057-0763,
057-0770, 057-0771, 057-0772 AND 057-0773 FOR
HAZARDOUS (CLASSIFIED) LOCATIONS
(PRODUCT REVISIONS)**

from

**ITT AEROSPACE CONTROLS
28150 INDUSTRY DRIVE
VALENCIA, CA 91355**

I INTRODUCTION

- 1.1 ITT Aerospace Controls (manufacturer) requested Approval of their Neo-Dyn Snap Switch Models 057-0760 through 057-0763 and 057-0770 through 057-0773 as explosionproof for Class I, Division 1, Groups A, B, C and D and dust-ignitionproof for Class II, Division 1, Groups E, F and G hazardous (classified) locations, indoors, with product revisions as described in Section II. CSA International conducted examination and testing of these products under their Project 1248932.
- 1.2 This report supplements FM Approval Report 1R5A9.AE and any subsequent revision reports, which cover Neo-Dyn Snap Switches without a pressure test hole.
- 1.3 This Report may be freely reproduced only in its entirety and without modification.
- 1.4 **Standards**

Title	Class Number	Date
Electrical Equipment for Use in Hazardous (Classified) Locations, General Requirements	3600	1998
Explosionproof Electrical Equipment, General Requirements	3615	1989
Electrical and Electronic Test, Measuring and Process Control Equipment	3810 Supplement #1	1989 1995
Degrees of Protection Provided by Enclosures (IP Code)	IEC 60529	1989

- 1.5 **Listing:** The Snap Switches will appear in the *Approval Guide*, a publication of FM Approvals, as follows:

057-0760, 057-0761, 057-0762, 057-0763, 057-0770, 057-0771, 057-0772 & 057-0773. Neo-Dyn Snap Switches. XP /I /1 /ABCD /T6; DIP /II /1 /EFG /T6 (See Special Conditions) Ta =(See Special Conditions); IP66.

Special conditions of use:

1. *Model 057-0770 has Temperature Classification T5.*
2. *Model 057-0771 has Temperature Classification T4.*
3. *Ambient temperature is based on the model code.*
 - 3.1 *For Models 057-0762, 057-0763, 057-0772 and 057-0773, Ta = 70°C.*
 - 3.2 *For Model 057-0760, Ta = 60°C.*
 - 3.3 *For Model 057-0761, Ta = 45°C.*
 - 3.4 *For Model 057-0770, Ta = 75°C.*
 - 3.5 *For Model 057-0771, Ta = 65°C.*

II DESCRIPTION

The Snap Switch assemblies are hermetically sealed switches used in pressure and temperature switching equipment manufactured by ITT Aerospace Controls. Snap Switch Models 057-0760 through 057-0763 and 057-0770 through 057-0773 incorporate a 0.055” diameter test hole on the hex flat (Dwg. 058-0014, Section C-C) to allow for pressure testing during assembly. After testing, the hole is welded shut to hermetically seal the device. Other than the test hole, the Snap Switches are identical to those described in FM Approval Report 1R5A9.AE. The products with the test hole are identified as stated in Section 1.5.

III EXAMINATIONS AND TESTS

- 3.1 Samples of an empty Series 057 Snap Switch enclosure incorporating the pressure test hole (welded shut) were submitted for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.
- 3.2 The following satisfactory tests conducted under Project 1R5A9.AE are valid for the models described in this report with the pressure test hole (welded shut).
- Acetylene ignition pressure tests to determine highest Group A ignition pressure (174 psi).
 - Hydrogen ignition tests.
 - Factory installed conduit seal ignition tests, material compatibility, and hydrostatic tests.
 - Dust-ignitionproof tests.
 - Dielectric tests at 1350 Vdc.
 - Protective ground.
 - Accessible live parts.
- 3.3 **Temperature Tests**– Temperature tests were waived. CSA International under Project 1248932 accepted temperature ratings consistent with product markings.
- 3.4 **Hydrostatic Test** – The hydrostatic test conducted under the original Project 1R5A9.AE was duplicated to test a sample of the new model Snap Switches incorporating the pressure test hole. The sample Snap Switch was tested at a pressure at least 400% of the maximum ignition pressure of 174 psi. The pressure was increased at the rate of at least 100 psi per minute and held at a test pressure of 700 psi for one minute. No permanent deformation occurred. This is satisfactory.
- 3.5 The Snap Switch assembly is of welded construction with a hermetically sealed NPT ½ x 14 externally threaded opening. The marked ingress protection code of IP66 is appropriate.

IV MARKING

Marking details appear on attached Drawing 058-0157 and include manufacturer's logo, model number, hazardous location ratings, ingress protection code, electrical ratings, temperature classification or range, and FM Approval Mark.

V REMARKS

Installations shall comply with the relevant requirements of the National Electrical Code (ANSI/NFPA 70) and the manufacturer's instructions.

VI FACILITIES AND PROCEDURES AUDIT

The design and manufacturing site in Valencia, CA is subject to follow-up audit inspections. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that examined and tested as described in this report.

VII MANUFACTURERS RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation File, Section VIII of this report. No changes shall be made to the Approved product or service that would affect safety, form, fit, function or FM Approval testing unless written notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 On 100 percent of production the manufacturer shall subject each Snap Switch to a dielectric test. The input leads shall withstand for one minute, with no dielectric breakdown, the application of 1000 Vac, 60 Hz with respect to the protective ground lead. Alternatively, a test potential 20% higher shall be applied for at least one second.

WARNING: The dielectric test required may present a hazard of injury to personnel and/or property and should only be performed under controlled conditions, and by persons knowledgeable of the potential hazards of such testing to minimize the likelihood of shock and/or fire.

7.3 On 100 percent of production, the manufacturer shall conduct routine continuity tests of the protective ground.

VIII DOCUMENTATION

The following drawings describe the Series 057 Snap Switches and are filed under Project 1R5A9.AE. Drawings added as a result of this program are indicated by an asterisk (*). Drawings revised as a result of this program are indicated by a double asterisk (**).

FM APPROVALS
Project ID: 3016301

<u>Drawing No.</u>	<u>Description</u>	<u>Revision</u>
026-0008	TERMINAL	D
026-0010	TERMINAL	F
029-0025	SWITCH	G
*029-0027	SWITCHES	D
036-0047	FITTING, CONDUIT	F
**044-0006	DIAPHRAGM (2 SHEETS)	BP (was BH)
049-0006	PLATE	K
**057-0030	ELECTRICAL ASSY	K (was H)
**057-0057	ELECTRICAL ASSY	E (was C)
**057-0130	ELECTRICAL ASSY	E (was D)
**057-0157	ELECTRICAL ASSY	E (was D)
057-0690	ELECTRICAL ASSY	-
057-0691	ELECTRICAL ASSY	-
057-0692	ELECTRICAL ASSY	-
057-0693	ELECTRICAL ASSY	-
057-0696	ELECTRICAL ASSY	-
057-0697	ELECTRICAL ASSY	-
057-0698	ELECTRICAL ASSY	-
057-0699	ELECTRICAL ASSY	-
*057-0760	ELECTRICAL ASSY	B
*057-0761	ELECTRICAL ASSY	B
*057-0762	ELECTRICAL ASSY M-OPTION	B
*057-0763	ELECTRICAL ASSY M-OPTION	B
*057-0770	ELECTRICAL ASSY	B
*057-0771	ELECTRICAL ASSY	B
*057-0772	ELECTRICAL ASSY M-OPTION	B
*057-0773	ELECTRICAL ASSY M-OPTION	B
058-0014	ELECTRICAL CAP ASSEMBLY	M
*058-0157 (2 SHEETS)	ELECTRICAL CAPS (057-07xx)	E
065-0001	POTTING	H
071-0019	CAM	F
35-0067	NAMEPLATE	P
35-0115	NAMEPLATE	T
35-0184	NAMEPLATE	G
35-0185	NAMEPLATE	H
**35-0878	LABEL	- (was 05/29/93)
35-0961	NAMEPLATES (057-0690 & 057-	A
35-0962	NAMEPLATES (057-0691 & 057-	A
35-0963	NAMEPLATES (057-0692 & 057-	A
35-0964	NAMEPLATES (057-0693 & 057-	A
78001	WIRE, ELECTRICAL	C
**78141	CABLES	A (was -)
**S057-0030	ELECTRICAL ASSY	P (was L)
**S057-0057	ELECTRICAL ASSY	R (was N)
**S057-0130	ELECTRICAL ASSY	G (was B)
**S057-0157	ELECTRICAL ASSY	G (was D)

IX CONCLUSION

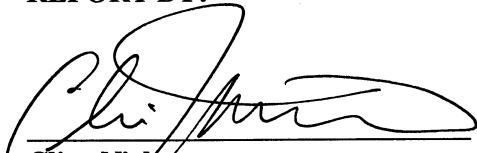
The apparatus described in 1.5 meets FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

EXAMINATION AND TESTING BY: C. Nickerson, C. Mace and C. Burch

ORIGINAL TEST DATA: Project Data Record 3016301 filed under Project 1R5A9.AE

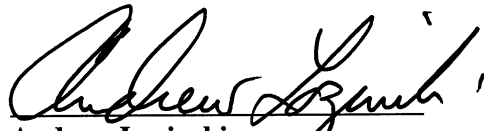
ATTACHMENTS: Drawing 058-0157, Electrical Caps (Marking)

REPORT BY:



Clive Nickerson
Engineer
Hazardous Locations

REPORT REVIEWED BY:

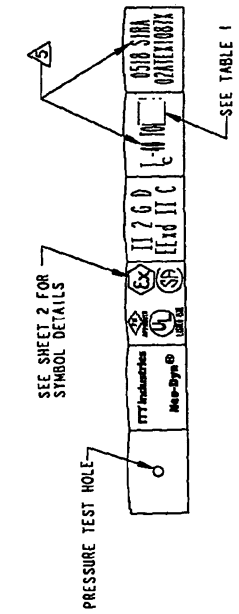


Andrew Lozinski
Technical Team Manager
Hazardous Locations

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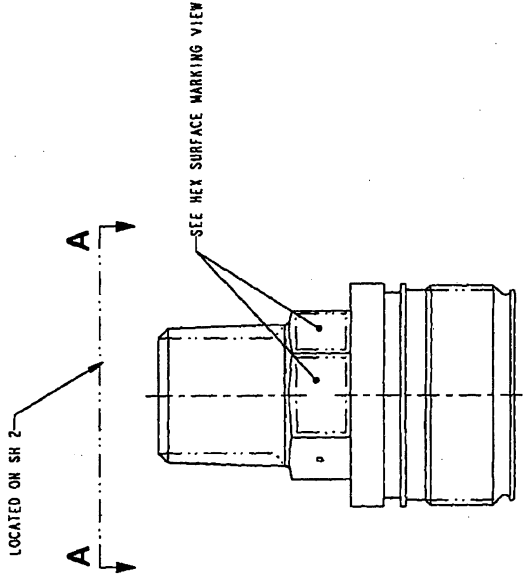
- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET DRAWING PER DOD-STD -100C.
 2. MATERIAL: MAKE -01 THRU -08 FROM 058-0014-01
MAKE -09 THRU -16 FROM 058-0163-01
 3. LASER MARK AS SHOWN PER AC 203.109
 4. LAYOUT OF MARKED TEXT ARE APPROXIMATE AS SHOWN.
- ▲ SIZE TO FIT AS NECESSARY.

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCTION RELEASE	99/11/18	A. FECHSER
A	REVISED PER ECO 85125 CP	00-07-17	G. GLATTENBERG
B	REVISED PER ECO 87475	01-12-05	G. GLATTENBERG
C	REVISED PER ECO 88904 JT	02/08/30	A. FECHSER
D	REVISED PER ECO 89826 GV	03/02/18	A. FECHSER
E	REVISED PER ECO 70182 GV		



HEX SURFACE MARKING VIEW

DASH NO.	MARKING
-01, -09	75°C T5
-02, -10	65°C T4
-03, -11	70°C
-04, -12	70°C
-05, -13	60°C
-06, -14	45°C
-07, -15	70°C
-08, -16	70°C



DATE	BY	DESCRIPTION
99-11-01	CHU, M. RUIZ	REVISED PER ECO 85125 CP
99-11-04	CHU, M. RUIZ	REVISED PER ECO 87475
99-11-04	CHU, M. RUIZ	REVISED PER ECO 88904 JT
99-11-08	CHU, M. RUIZ	REVISED PER ECO 89826 GV
99-11-17	CHU, M. RUIZ	REVISED PER ECO 70182 GV

ITT Industries
11111 VALLEJO AVENUE
VALLEJO, CALIFORNIA 94588

058-0157
ELECTRICAL CAPS

98087
SCALE 2/1
WEIGHT

SHEET 1 OF 2

DATE	BY	DESCRIPTION
99-11-01	CHU, M. RUIZ	REVISED PER ECO 85125 CP
99-11-04	CHU, M. RUIZ	REVISED PER ECO 87475
99-11-04	CHU, M. RUIZ	REVISED PER ECO 88904 JT
99-11-08	CHU, M. RUIZ	REVISED PER ECO 89826 GV
99-11-17	CHU, M. RUIZ	REVISED PER ECO 70182 GV

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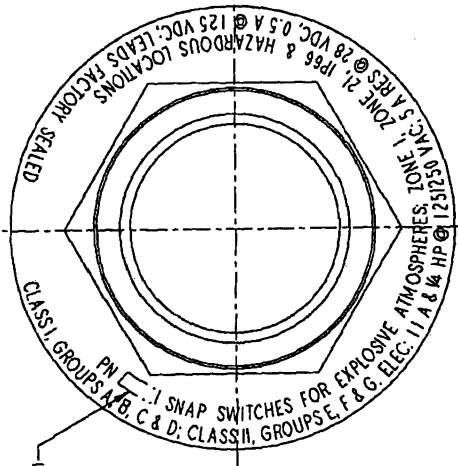
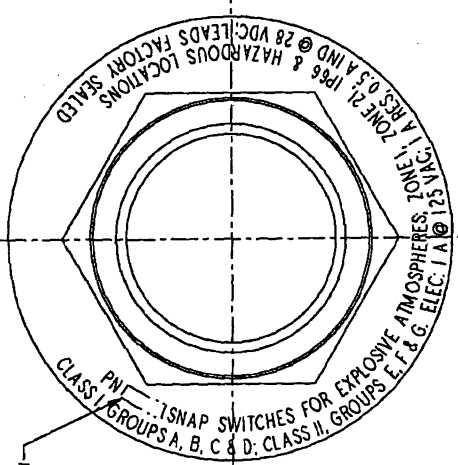
058-0157
ELECTRICAL CAPS

98087
SCALE 2/1
WEIGHT

SHEET 1 OF 2

REV	DESCRIPTION	DATE	APPROVED
SEE SHEET 1			

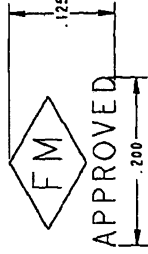
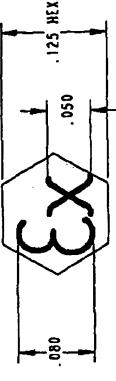
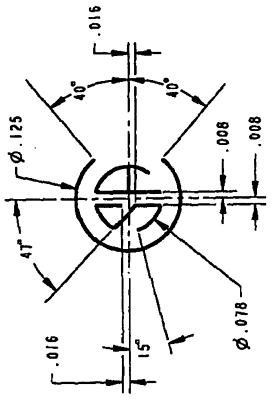
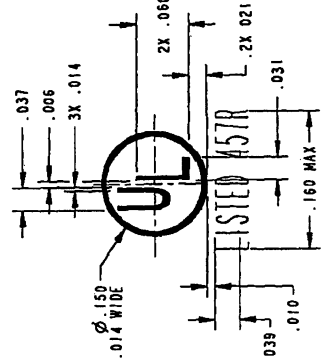
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DASH NO.	MARKING
-01, -09	057-0770
-02, -10	057-0771
-03, -11	057-0772
-04, -12	057-0773
-05, -13	057-0760
-06, -14	057-0761
-07, -15	057-0762
-08, -16	057-0763

- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 16

VIEW A-A
SEE SH 1



SCALE: 10/1

SCALE: 10/1

SCALE: 10/1

SCALE: 10/1

ITT Industries 28150 INDIAN DRIVE VALERIA, CALIFORNIA 91355
 C 98087 058-0157 E
 SCALE 4/1 WEIGHT SHEET 2