



US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved

OMB No. 2120-0020

For FAA Use Only

Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">Ryan</p>	Model <p style="text-align: center;">Navion B ,</p>
	Serial No. <p style="text-align: center;">NAV-4-2313B</p>	Nationality and Registration Mark <p style="text-align: center;">N5413K</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">Putney, William W III Rodgers, Gail C</p>	Address (As shown on registration certificate) <p style="text-align: center;">5780 Balmoral Drive Oakland, CA 94619</p>

3. For FAA Use Only

The data identified herein complies with the applicable airworthiness requirements and is approved for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43, Section 43.7

05-29-03

DATE

SIGNATURE

OAK-FSDO

4. Unit Identification

5. Type

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	----- (As described in Item 1 above) -----				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
Pierre Borduas 875A Island Dr. #253 Alameda, CA. 94502	<input checked="" type="checkbox"/> U.S. Certificated Mechanic	A.P. 2020552 I.A.
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="font-size: large; font-weight: bold;">6-2-03</p>	Signature of Authorized Individual
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7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector	Manufacturer	<input checked="" type="checkbox"/>	Inspection Authorization	Other (Specify)
	FAA Designee	Repair Station	<input type="checkbox"/>	Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection <p style="font-size: large; font-weight: bold;">6-2-03</p>	Certificate or Designation No. <p style="text-align: center;">A.P. 2020552 I.A.</p>	Signature of Authorized Individual
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NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Description of alteration: This alteration is to replace a previously approved electrical switch panel.

Approved data is provided on an attached FAA Form 8110-3 prepared by Joseph M. Vlad DERT-605608-NM for rocker switch information. Breakers are Klixon PN 7277-2-XX (XX=Amp rating of breaker see attached panel wiring diagram).

Description of work: With the noted exceptions, existing wiring will be used and the panel will be mounted in using the existing mounting. The panel is the same physical size and weight as the panel being replaced (337 dated 1/28/1964). This panel is not a structural component of the aircraft. The panel is located between stations 93.430 and 108.25.

Avionics circuit breakers previously mounted in other locations will be relocated to this panel (GPS/Loran 337 dtd 9/7/1988, panel renovation 337 dates 1/28/1964)

The new panel was fabricated of 6061-T6 aluminum .090" thick. A placard has been placed on the panel in compliance with 23.1301 "Function and installation" (b) adjacent to any device installed in the panel whose function is not clearly marked.

The new panel mounts using the pre-existing mounting points. A new safety enclosure fabricated (6061-T6 .032") and mounted using 9 #6-32 pan head screws and nylon locking nuts. The panel was attached to the safety enclosure by 2 hinges and 2 #8-32 cap head screws. The hinges were riveted to the safety enclosure and attached to the panel by 4 #6-32 flat head screws. Connections to aircraft power comply with 23.1365 "Electrical cables and equipment" (a, d, e) and 23.1357 "Circuit protective devices".

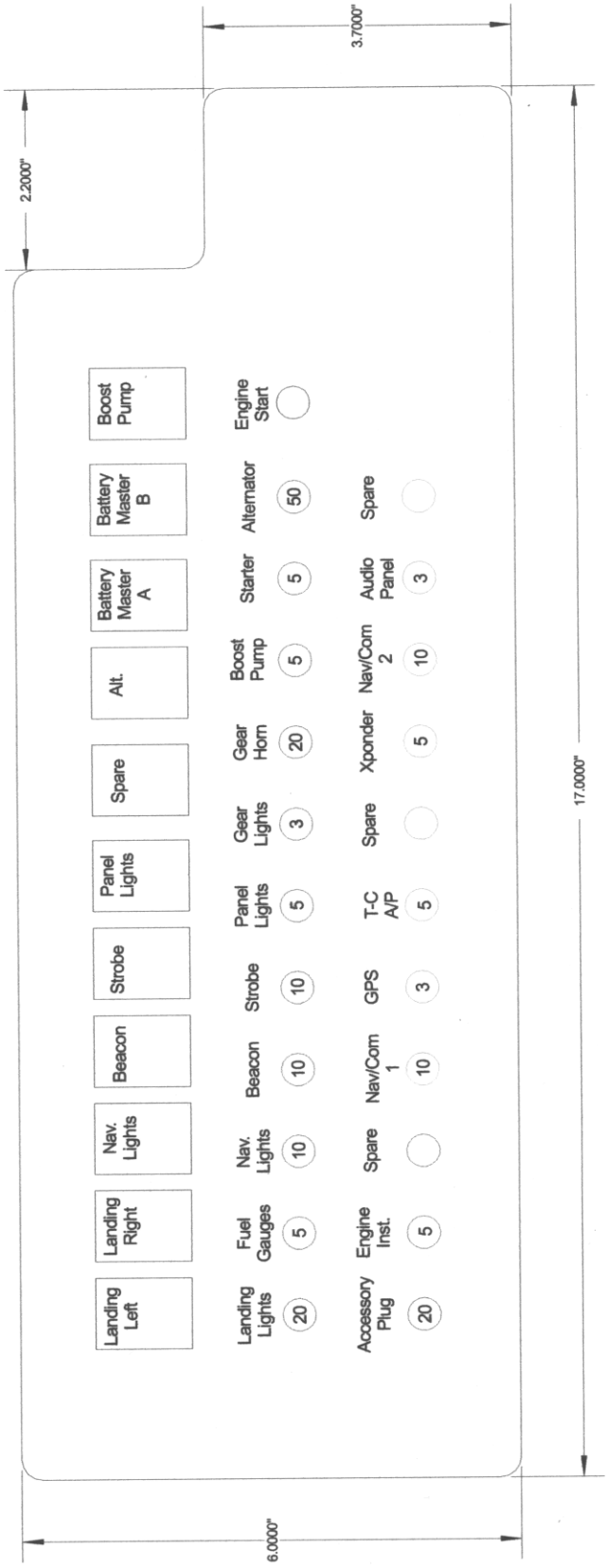
A new weight and balance measurement in accordance with 43.13 chapter 10 has been done which includes this alteration.

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

- 1) **Introduction:** See above (Form 337 section 8).
- 2) **Description:** See above (Form 337 section 8).
- 3) **Control:** Not applicable.
- 4) **Servicing information:** Not applicable.
- 5) **Maintenance Instructions:** Not applicable.
- 6) **Trouble shooting information:** Not applicable.
- 7) **Removal and replacement information:** The panel can be removed from the aircraft by disconnecting or removing the devices installed in it and removing the 2-#8-32 cap head screws and 4-#6-32 pan head screws which secure it to the supporting structure.
- 8) **Diagrams:** Not applicable.
- 9) **Special inspection requirements:** Not applicable.
- 10) **Application of protective treatments:** Not applicable.
- 11) **Data:** No structural fasteners were used in the installation of this unit.
- 12) **List of special tools:** No special tools are required to install or maintain any components associated with this alteration.
- 13) **For commuter category aircraft:** Not applicable.
- 14) **Recommended overhaul periods:** Not applicable.
- 15) **Airworthiness Limitation Section:** Not applicable.
- 16) **Revision:** A letter will be submitted to the local FSDO with a copy of the revised FAA Form 337 and revised ICA. The FAA inspector accepts the change by signing Block 3 of the 337.

1 2 3 4

REVISIONS		
ZONE	REV	DESCRIPTION
	1.0	N5413K - Switch Panel Mechanical Dwg
		DATE: Oct 25, 2002
		APPROVED:



REG: N5413K
N: NAV-4-2313B

Mechanical Diagram - Switch Panel
Ryan Navion N5413K

SIZE	FRSCH NO.	DWG NO.	REV	SHEET
			1.0	1

1 2 3 4

Load	Bus	Switched	Load Type	Continuous Load Current	% of System Generating Capacity	Required Switch Rating (43.13 Table 11-4)	Breaker	Comment
Left Landing Light	Master	Yes	Lamp	7.6		38	20	On for takeoff, final approach and taxi at night. The switches used are rated at 80A inrush.
Right Landing Light	Master	Yes	Lamp	7.6		38	20	On for takeoff and final approach at night. The switches used are rated for 80A inrush.
Nav Lights	Master	Yes	Lamp	6.0		30	10	On at night.
Beacon	Master	Yes	Lamp/motor	3.0		15	10	
Strobe	Master	Yes	Resistive	3.2		3.2	10	
Panel Lights	Master	Yes	Lamp	3.0		15	5	On at night.
Alternator Field Control	Master	Yes	Resistive	1.0		1		
Battery Master Contactor	Master	Yes	Solenoid	1.0		2		
Avionics Contactor	Master	Yes	Solenoid	1.0		2		
Starter Contactor	Master	Yes	Solenoid	0.0		2	5	On during engine cranking.
Electric Boost Pump	Master	Yes	Motor	3.5		7	5	On for takeoff and landing.
Fuel Gauges	Master	Yes	Resistive	3.0		3	5	
Gear/Hydraulic Indicators	Master	Yes	Lamp	1.0		5	3	On while gear is down.
Gear Warning Horn	Master	No	Inductive	0.0			20	On if gear up in landing config.
Accessory Plug	Master	No	Resistive	0.0			15	No permanent designed loads.
Avionics Bus	Master	No	N/A	7.0		11		Switch rating per pole. A and B buses on separate poles. Load is total continuous for both buses.
Total Load (Night Time Landing)				47.9	95.80%			
Total Load (Night Time Cruising)				28.2	56.40%			
Avionics Bus A:								
Nav/Com 1	Avionics	No	Resistive	0.6				7.5A in transmit.
GPS	Avionics	No	Resistive	1.2				
Turn Coordinator/Auto Pilot	Avionics	No	Motor	2				
Avionics Bus B:								
Nav/Com 2	Avionics	No	Resistive	0.8				8A in transmit.
Audio Panel	Avionics	No	Resistive	0.6				1.5A for full rated audio output.
Transponder	Avionics	No	Resistive	1.8				This is included in the master bus load.
Total Load (Com Receive) Included in Master Load				7	14.00%			

SN: NAV-4-2313A
Reg: N5413K

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
MAKE Dreefs	MODEL NO Catalog Number WiXII	TYPE (Airplane, Radio, Helicopter, etc.) Special Use Electrical Switch	NAME OF APPLICANT Mr. Bill Putney

LIST OF DATA	
IDENTIFICATION	TITLE
SUBJECT:	Design and replacement of avionics electric switches in aircraft N5413K.
Enclosure A:	Electrical Diagram – Navion N5413K, Revision 2.0 dated Wednesday, August 28, 2002.
Enclosure B:	Switch Specification 2WiXII Series, one page, dated JUL-17-2002 and Test Results, two pages, File number E47790, dated 4-29-99.

PURPOSE OF DATA
 To show compliance of enclosure A and B to the applicable regulations in support of FAA form 337 intended for aircraft N5413K, Ryan Navion, serial number NAV-4-2313B. DER approval of data to support FAA form 337 has been coordinated with and granted by Mr. Ha Nguyen of the LAACO (562-627-5335).

APPLICABLE REQUIREMENTS (List specific sections)
 14 CFR § 23.1367 (a), (b)
 Note: This design approval does not constitute an installation approval on an aircraft. The following paragraphs are not approved and are reserved for the installation approval:
 14 CFR § 23.1367 (c), (d)

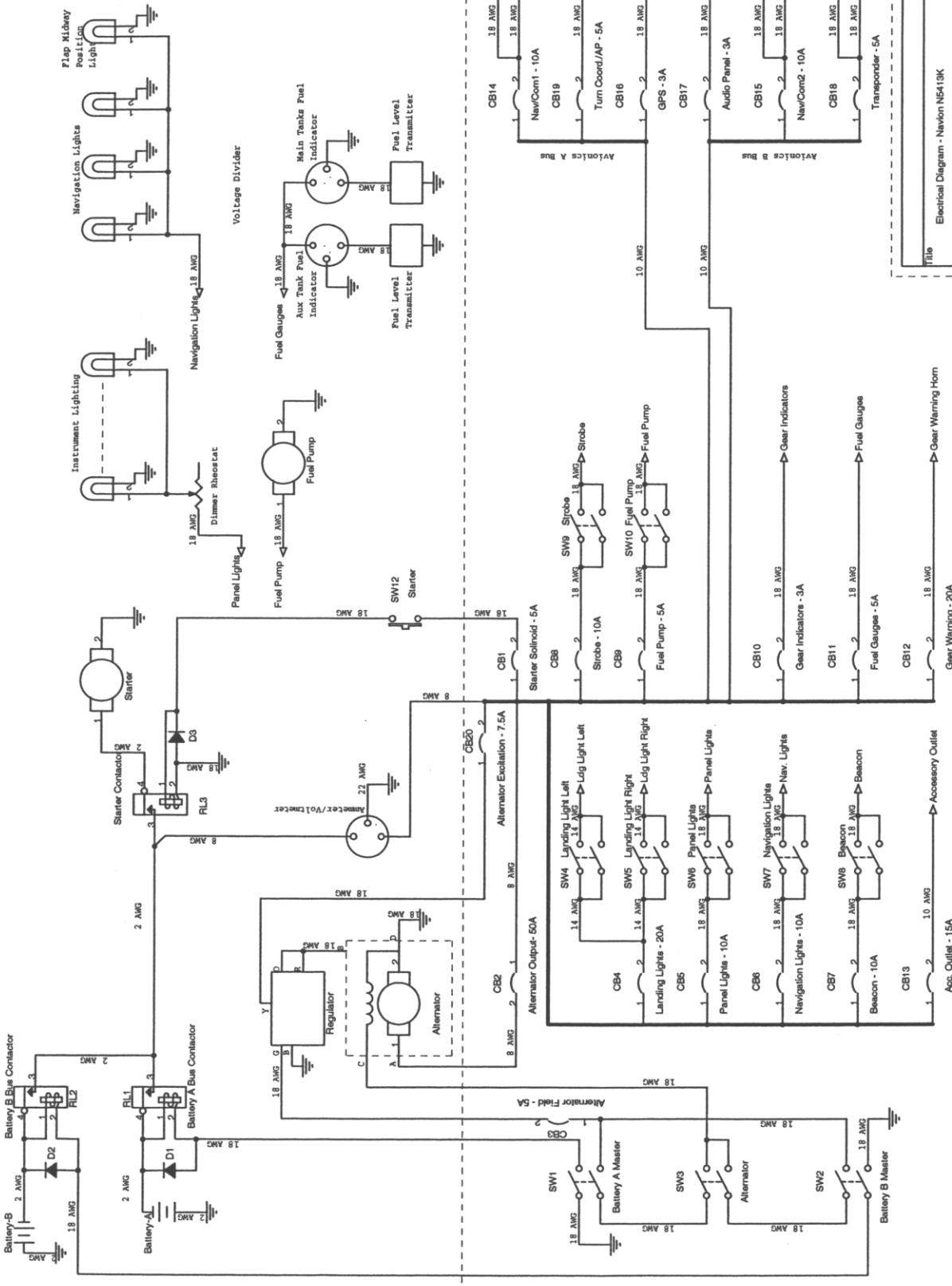
CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered _____ have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

ENCLOSURE A : 1 PAGE
ENCLOSURE B : 3 PAGES

I (We) Therefore Recommend approval of these data
 Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVES	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
Joseph M. Wlad <i>JMWlad 12/12/02</i>	DERT-605608-NM	Systems & Equipment (Software)

SN: NAV-4-2313B
 Req: N5413K



Title	Electrical Diagram - Neron NS419K
Size	B
Document Number	
Date	Tuesday, December 03, 2002
Sheet	1 of 2
Rev	2.0

ENCLOSURE A

SN: NAV-4-23136
 Req: NS413A

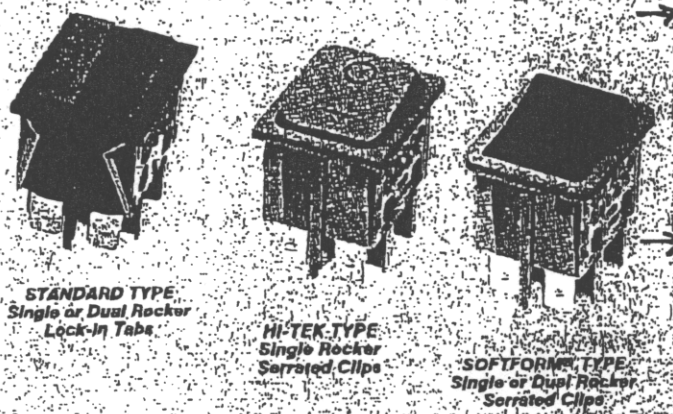
Note: All the parts within the dashed box are new. Original wiring has been reused where possible.

2WiXII Series *Attn: Bill*

DRBBS

SIBER GROUP

510-749-2368



SPECIFICATIONS

- 25A 125Vac INDUCTIVE VA C
See Note 5 for ordering information
- 16A 250Vac INDUCTIVE VA
- 3/4 H.P. @ 250Vac VA
- 16(4)A/250Vac
- 10(2)A/380Vac
- 6A/250Vac H
- Dielectric strength: 2500V RMS (minimum)
- E.S.D. Rating: 16KV (typ)
- Welded solid silver contacts
- Inrush: 80 amperes (typ)
- Contact bounce: 1 msec. (typ)
- Contact gap: 3mm (minimum)
- Over-surface clearance: 4mm (minimum)
- Body material: Nylon Type 6/6
- Temp Rating: 80°C
- Single or dual switches
- Double Pole
- Single or double throw
- Weld-breaking mechanism

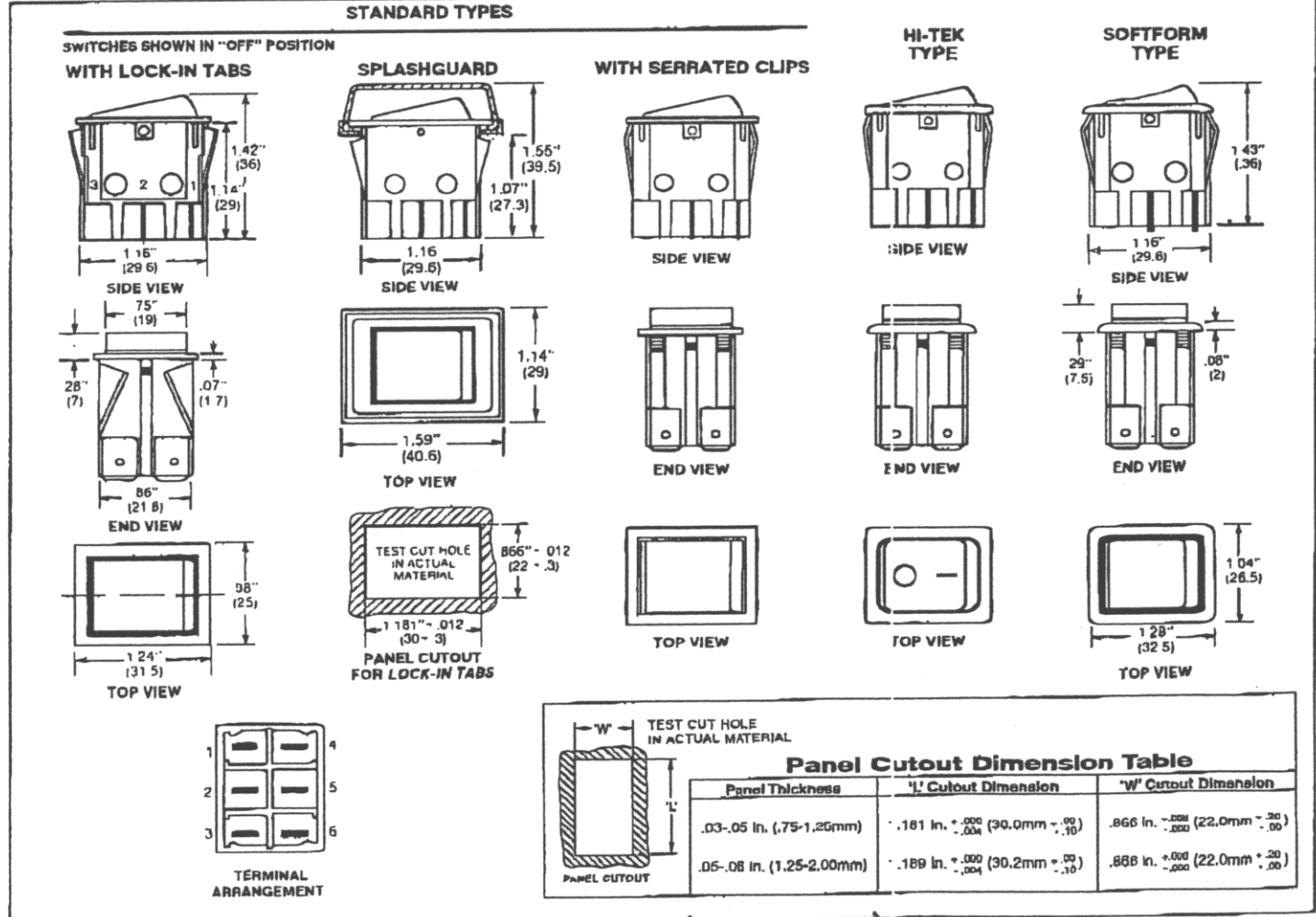
- Maintained or momentary
- .250" Quick-Connect terminals
- Illuminated or non-illuminated
- Splashguard available
- Externally isolated terminals
- Standard housing with Lock-in tabs for positive mounting
- Serrated clips for easy removal
- Snap-in installation
- Matching panel indicator styles
- Wide range of colors available
- High-brightness, long-life neons and incandescents

OPTIONS

- Dry circuit type
- Gold plated contacts
- High inrush - up to 125 amperes (typ)
- .187" Q.C. type terminals
- Special colors
- Custom graphics
- Custom circuits



Dimensions



SW: NAV-4-2313B
Req: N5413K

ENCLOSURE B (3 pages)
6 20°C

DESCRIPTIONPRODUCT COVERED:

USR, CNR, Special-Use Switches, Component

<u>Cat. No.</u>	<u>Electrical Rating</u>	<u>Temp(°C)</u>	<u>POL/THR</u>	<u>PP</u>	<u>ENDUR</u>	<u>SPCOA</u>
WiXII aa ab	16 A, 250 V ac 3/4 hp, 250 V ac 7 A, 125 V ac L 25 A, 1250 V ac	65 (105 for suff 105)	1,2/1,2	PP PP	6K	1,2
*	22 A, 24 V dc					
1WiXII-761	10 A, 250 V ac	65	1,2/1,2	PP	6K	1,2
WiXVI aa ab	16 A, 250 V ac	65 (105 for suff 105)	1,2/1,2	PP	6K	1,2
Wi37	25 A, 125 V ac	65	1,2/1,2	PP	6K	-

ABBREVIATION:

aa = w/wo suff -105. Suffix 105 indicates 105°C temperature.

ab = w/wo prefixes or suffixes

ELECTRICAL

RATING: "L" = AC Tungsten.

POL/THR: # of Poles/# of Throws.

PP: Per Pole, "PP" in this column indicates each pole may carry the rated current (for 2 or more pole switches), with opposite polarity between adjacent poles.

ENDUR: Endurance rating.

SPCOA: Refer to the following pages for corresponding Special Conditions of Acceptability.

STD:
DL 1054 Special Use Switches.

RLS_MEL\84371

SN: NAV-4-23138
Req: N54131K

- A. CAT. NO. 1WIXII (REPRESENTS DOUBLE THROW CONSTRUCTION, 6.35 MM WIDE DISCONNECT TERMINALS AND NONILLUMINATED ROCKER ACTUATOR)
- B. CAT. NO. 2WIXII (REPRESENTS SINGLE THROW ILLUMINATED CONSTRUCTION AND SCREW TERMINALS)
- C. CAT. NO. 2WIXII WITH SOLDER TERMINALS FIG. 1 (M72-07422)

General - Cat. No. WIXII may be made in the single or double throw version, with any of the terminals or any combination of the terminals illustrated, and in the illuminated or nonilluminated versions as shown in Fig. 1.

The body and actuator materials, excluding the clear actuator cover on the illuminated version (Item 1) are nylon, Ultramid A3K (except devices with -105 Suffix) manufactured by Badische Anilin and Soda-Fabrik AG, or Zytel 103, manufactured by Dupont.

The body and actuator materials of catalog numbers with -105 Suffix are *Recognized Component (QMFZ2) Zytel 103HS1-L manufactured by Dupont, Makrolon 3000 manufactured by Bayer AG and Valox 357 manufactured by GE Plastics America's.

The actuator cover (Item 1) on the illuminated version is Makrolon 2800, 2803, 2805, 2807 or 3000 manufactured by Bayer AG.

The resistor for the 250 V illuminated version is: min 25,000 ohms and min 68,000 ohms for the 125 V version.

The quick-disconnect terminals are 6.35 mm wide, 0.8 mm thick. They may also be 4.8 mm wide by 0.8 mm thick.

* Contacts are silver welded or riveted to support arm.

MARKING:

Manufacturer's name or trademark and the above rating marked on the device.

RLS_MEL\84371

SN: NAV-4-2313 B
Req: N5413K

§ 23.1367 Switches.

Each switch must be --

- (a) Able to carry its rated current;
- (b) Constructed with enough distance or insulating material between current carrying parts and the housing so that vibration in flight will not cause shorting;
- (c) Accessible to appropriate flight crewmembers; and
- (d) Labeled as to operation and the circuit controlled.

SN: NAV-4-2313B
Req: NS413K