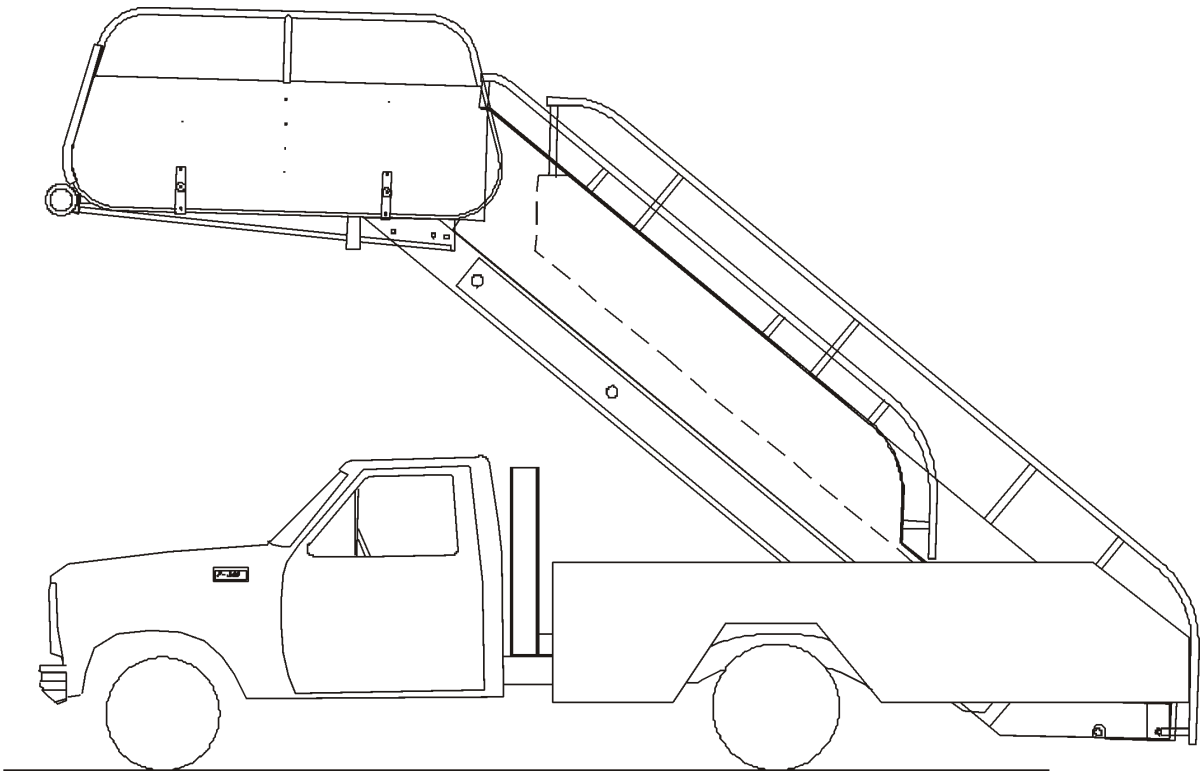
TRUCK MOUNTED PASSENGER STAIR

TO: 35A3-25-1

OPERATION, MAINTENANCE AND PARTS MANUAL



Model TMPS-200

Effective Starting S/N1378

NMC-Wollard, Inc.
2021 Truax Blvd.
Eau Claire, WI 54703
715-835-3151
FAX 715-835-6625
Web Site: nmc-wollard.com
General Email: nmc-wollard@nmc-wollard.com

INTRODUCTION

Congratulations on the purchase of your new Truck Mounted Passenger Stair TMPS-200 from NMC-Wollard, Inc. with its optional equipment this is the simplest, most flexible system on the market today. With proper operation and preventative maintenance it will last for years.

 This SAFETY ALERT SYMBOL indicates important safety messages in the manual. When you see this symbol, be alert to the possibility of PERSONAL INJURY and carefully read the message that follows.

⚠WARNING Never operate without all covers, shields and guards in place. Body, hair or clothing can become entangled in exposed, moving parts and can cause serious injury or death.

Some covers and guards have been removed for illustrative/photographic purposes only in this manual.

The Warranty appears in the front of this book. The order number and serial number are recorded on page 24 of this section. These numbers are for your reference and for proper identification of your machine by NMC-Wollard, Inc.

For information on ordering repair parts, refer to the Repair Parts chapter at the back of this book.

You are urged to study this manual and follow the instructions carefully. Your efforts will be repaid in better operation and service as well as a savings in time and repair expense. Failure to read and understand the machine or the system could lead to serious injury. If you do not understand the instructions in this manual contact the manufacturer.

This supercedes all previous published instructions.

When reading this manual, if a figure or paragraph outside the current section is referred to, it will be identified by Chapter-Section-Figure Number or Chapter-Section-Paragraph.

Example:	
Figure 2-2-4	Chapter 2-Section 2-Figure 4
2-2-1.4	Chapter 2-Section2-Paragraph 1.4

If figures or paragraphs from the current section are referred, the chapter and section may not be referenced.

This manual is available on CD-ROM P/N 307559CD.

Keep a copy of your NMC-Wollard, Inc. manuals on your computer or CD-ROM! You will be able to print and read pages. These manuals contain linked book marks and hypertext links on the tables of contents. By mouse-clicking on a book mark or table of contents entry, the page containing that item will automatically be displayed.

Requirements (minimum): PC with Windows 98 or newer, 486 processor (586 recommended), 8MB RAM, VGA monitor, mouse.

For availability and pricing, contact NMC-Wollard, Inc. customer service at:
Phone (715) 835-3151
Fax (715) 835-6625
Email custserv@nmc-wollard.com

1 YEAR LIMITED WARRANTY

NMC-Wollard, Inc.

NMC-Wollard, Inc. warrants to the original owner that all components of the equipment are free from defects in material and workmanship under normal use and service for 12 months or 1,000 hours, whichever comes first, from the date of shipment.

This warranty provides for NMC-Wollard, Inc. equipment components that fail because of defects in material or workmanship during the warranty period, without charge to the owner for parts or labor. The owner must provide prompt notice of the defect and allow a reasonable time for replacement or repair.

This warranty applies only to parts manufactured by NMC-Wollard, Inc. Components installed on NMC-Wollard, Inc. equipment but not manufactured by NMC-Wollard, Inc. shall be covered under the original manufacturer's warranty. NMC-Wollard, Inc. will assist in administering all such warranties, with the exception of tires, battery, and other expendable parts, for which the owner will be required to deal directly with the original manufacturer for warranty service. Neither tune-ups, normal maintenance and repair or replacement of expendable parts (such as oil, lubricants, belts, filters, tires, battery, etc.) are covered by this warranty.

This warranty does not cover damage resulting from carelessness or neglect; accidents, fire, or other casualties; improper repair, operation, transportation, or storage; or failure to provide necessary or appropriate maintenance. This warranty does not cover deterioration or failure caused by chemicals, falling objects, dirt and sand, or excessive heat or moisture. The NMC-Wollard, Inc. equipment must be maintained according to the instructions provided with it or this warranty may be considered void. Warranted components must be replaced with parts manufactured or approved by NMC-Wollard, Inc. Warranty determination will be made after NMC-Wollard, Inc. inspects the failed part.

NMC-Wollard, Inc. is not liable for damage or injury resulting from improper installation, use, abuse, inability to use or misapplication of NMC-Wollard, Inc. equipment, nor is NMC-Wollard, Inc. liable for damage resulting from equipment repaired or modified by persons not authorized by NMC-Wollard, Inc. NMC-Wollard, Inc. does not warrant any part or product to meet local, municipal, state, provincial, or national laws or regulations.

This Limited Warranty is in lieu of all other warranties, whether express, implied, or statutory. No other express warranty is given or authorized by NMC-Wollard, Inc. NMC-Wollard, Inc. expressly disclaims any implied warranty of merchantability or

fitness for a particular purpose or otherwise. NMC-Wollard, Inc. shall not be liable for loss of use of equipment, loss of time, loss of business, or for any other incidental, or consequential damages. No authorized NMC-Wollard, Inc. representative has the right to change or modify this warranty in any respect.

This warranty is non-transferable.

TO OBTAIN WARRANTY SERVICE

Warranty can be obtained by contacting NMC-Wollard, Inc., 2021 Truax Blvd., Eau Claire, WI. 54703, (Phone 715 835-3151) (Fax 715 835-6625).

What should you do when you receive a new unit?

Check that you have received all the equipment ordered. Check inside the product manual for engine warranties. Some OEM manufacturers supply a registration card that must be filled out and returned immediately to initiate the warranty. If a survey card or delivery checklist is enclosed from NMC-Wollard, Inc. please return it.

What should you do when you discover a possible warranty problem?

Call NMC-Wollard, Inc. (715-835-3151). We will require the serial number, number of hours on the unit, and a description of the problem. You will be given a warranty authorization number and assistance in troubleshooting.

IMPORTANT!
Clear and immediate communication with the factory is the key to obtaining a satisfactory and timely resolution of your warranty problem.

Every warranty situation is different and so there are no hard rules. We will work with your maintenance personnel and service managers to equitably resolve all claims.

What should you do after warranty problem has been resolved?

Complete and return the warranty claim form within 10 days. Place the assigned warranty authorization number we gave you when you first called us with the problem on your claim.

Return defective parts immediately. Your claim cannot be processed until all defective parts have been returned to NMC-Wollard, Inc. Identify returned parts with the assigned warranty authorization number.

What should you use for labor rate and labor time?

Labor rate are reviewed annually, if you do not have an established rate, call NMC-Wollard, Inc. We do not publish a rate book; instead, we have accumulated average times for repairs. We will authorize repair time once we have approved the repair. If unforeseen circumstances cause a significantly greater repair time than originally approved, please contact us before submitting your claim.

TABLE OF CONTENTS

CHAPTER 1 GENERAL INFORMATION & OPERATION INSTRUCTIONS

TABLE OF CONTENTS

CHAPTER 2 MAINTENANCE

TABLE OF CONTENTS

CHAPTER 3 OVERHAUL/MAJOR REPAIR

TABLE OF CONTENTS

CHAPTER 4 REPAIR PARTS

TABLE OF CONTENTS

CHAPTER 5 MANUFACTURERS' INFORMATION

TABLE OF CONTENTS

REVISION RECORD

Rev. No.	Issue Date	Date Inserted	Initial
0	8/31/05	8/31/05	NMC-Wollard, Inc.
1	3/31/06	3/31/06	NMC-Wollard, Inc
2	10/31/06	10/31/06	NMC-Wollard, Inc
3	03/31/07	03/31/07	NMC-Wollard, Inc
4	03/31/08	03/31/08	NMC-Wollard
5	09/30/08	09/30/08	NMC-Wollard
6	03/31/09	03/31/09	NMC-Wollard
7	01/31/14	01/31/14	NMC-Wollard

Rev. No.	Issue Date	Date Inserted	Initial

REVISION HIGHLIGHTS

TO: HOLDERS OF NMC-Wollard, Inc. OPERATION AND MAINTENANCE MANUAL NO. 307559, Truck Mounted Passenger Stair.

Pages that have been revised are outlined below, together with highlights of the revision. Please delete and replace the affected pages and enter Revision No. And date to the Revision Record page 16.

REVISION NO. 0 DATED 8/31/05

Chapter/Section And Page No.	Description of Changes	Eff
All	New manual for units starting with electrically controlled hydraulics	1378+

REVISION NO. 1 DATED 3/31/06

Chapter/Section And Page No.	Description of Changes	Eff
Intro/11-12.16-20.	Added Rev 1. Update pg eff.	All
2/2/14-15.	Update Schem 307556	All

REVISION NO. 2 DATED 10/31/06

Chapter/Section And Page No.	Description of Changes	Eff
Intro/7-10.11-12.	Update TOC. Added Rev 2.	All
1/TOC	Updated	All
1/1/2-3.4-5	Add 562A439,304272,304327,304335,305732. Updated switch descriptions.	All
1/2/2-8	Updated aircraft servicing procedures, added emergency pump operation. Daily chklst added	All
1/4/5	Added record a/c servicing data	All
2/1/2	Bolt Chart Updated	All
2/2/6-7.	Update 307556.	
4/TOC	Updated	All
4/3/1-4	Updated	All
4/4/29.34-35.38-43. 46-47.62-106.	Chng 304271 to 307719, update fig no's.Chng SN from 1381 to 1379, update fig number.Update Elec Assy.Add 308379. Update Figure Numbers.	All
4/4/51.100-103.104-105	Add 308425. Add 305216 & 308380.Add 308433.	Opt

REVISION NO. 3 DATED 03/31/07

Chapter/Section And Page No.	Description of Changes	Eff
Intro/11,13,16,17,21	Rev Record/pg eff updated, Rev 3 added, SN eff added.	SN 1378+
2/2/7,10	Solenoid detail added to 307556-3. Updated 307612.	SN 1378+
4/4/11	208647 added	SN 1378+
4/4/13	302999, qty changed to 1	SN 1385+
4/4/28-31,33	Hydraulic components arranged to reflect modular BOM	SN 1378+

REVISION NO. 4 DATED 03/31/08

Chapter/Section And Page No.	Description of Changes	Eff
Intro/9-10.11,13. 16-18	Update Chap 4 TOC. Rev 3 added. Pg eff updated.	All
1/4/1.3.	Remove Tire Press. Update Rear Spring Procedure.	All
2/2/11-12.	Add 307575 Schem.	All
4/4/36-37. 46-47. 38-106	307575 parts breakdown added. Update Solenoid Assy. Pages Renumber	All

REVISION NO. 5 DATED 09/30/08

Chapter/Section And Page No.	Description of Changes	Eff
Intro/all pages	Updated for Ansi Z535.6 format	All
1/all pages	Updated for Ansi Z535.6 format	All
2/all pages	Updated for Ansi Z535.6 format	All
2/3/22	DewEze, Ford 5.4L, 2005+ Clutch Pump Installation added.	2007+
3/all pages	Updated for Ansi Z535.6 format	All
4/TOC	Updated	All
4/3/1-4	Updated	All
4/4/37. 108-111.	F002547 + 308707 truck prep added.	2007+
5/1. 9-12	Update TOC.DewEze, Ford 5.4L, 2007+ Clutch Pump Installation added.	2007+

Revision No. 6 Dated 03-31-09

Chapter/Section And Page No.	Description of Changes	Eff
Intro/16,19,21	Rev 6 added, pg effectivity updated.	all
2/1/4	Error corrected, 57 liters was 34.	all

Revision No. 7 Dated 01-31-14

Chapter/Section And Page No.	Description of Changes	Eff
Intro/8,13,14	TOC Updated	all
Intro/16,19,21-23, 25,26	Rev 7 added, pg effectivity updated, page 26 S/N 1378 was 1377, 309735 added to page 25	all
1/1/1,6	Controls and Instruments moved to 1/2/1-3	all
1/2/1-3	Added Controls and Instruments Section	all
4/3/1-4	Index changed	all
4/4/33	307601 deleted, 307591 added, 1.3712 filter added	all
4/4/80,81	Added 303814 HD bumper Option F350,1999-2000	all
4/4/82,83	Added 2000-2008 to Fig. 33 heading	all
4/4/84,85	Added 303814 HD bumper Option F350,2009	all
4/4/86,87	Added 309735 HD bumper option 309735	all

THIS PAGE INTENTIONALLY BLANK

PAGE EFFECTIVITY

Chapter/Section	Page	Date
Cover	1	09/30/08
Introduction	2	09/30/08
Introduction	3	09/30/08
Limited Warranty	4	09/30/08
Limited Warranty	5	09/30/08
Limited Warranty	6	09/30/08
Table of Contents	7	09/30/08
Table of Contents	8	01/31/14
Table of Contents	9	09/30/08
Table of Contents	10	09/30/08
Table of Contents	11	09/30/08
Table of Contents	12	09/30/08
Table of Contents	13	01/31/14
Table of Contents	14	01/31/14
Table of Contents	15	09/30/08
Revision Record	16	03/31/09
Revision Highlights	17	09/30/08
Revision Highlights	18	09/30/08
Revision Highlights	19	01/31/14
Revision Highlights	20	09/30/08
Page Effectivity	21	01/31/14
Page Effectivity	22	01/31/14
Page Effectivity	23	01/31/14
Configuration	24	09/30/08
Configuration	25	01/31/14
Effectivity Code	26	09/30/08
1-TOC	1	01/31/14
1-TOC	2	09/30/08
1-1	1	09/30/08
1-1	2	09/30/08
1-1	3	09/30/08
1-1	4	09/30/08
1-1	5	09/30/08
1-1	6	01/31/14
1-1	7	09/30/08
1-1	8	09/30/08
1-1	9	09/30/08
1-1	10	09/30/08
1-1	11	09/30/08
1-1	12	09/30/08
1-2	1	01/31/14
1-2	2	01/31/14
1-2	3	01/31/14
1-2	4	09/30/08
1-2	5	09/30/08
1-2	6	09/30/08
1-2	7	09/30/08
1-2	8	09/30/08
1-2	9	09/30/08
1-2	10	09/30/08
1-3	1	09/30/08
1-3	2	09/30/08
1-3	3	09/30/08
1-3	4	09/30/08
1-4	1	09/30/08
1-4	2	09/30/08
1-4	3	09/30/08
1-4	4	09/30/08
1-4	5	09/30/08
1-4	6	09/30/08
2-TOC	1	09/30/08
2-TOC	2	09/30/08
2-1	1	09/30/08
2-1	2	09/30/08
2-1	3	09/30/08
2-1	4	03/31/09
2-1	5	09/30/08
2-1	6	09/30/08
2-2	1	09/30/08
2-2	2	09/30/08
2-2	3	09/30/08
2-2	4	09/30/08
2-2	5	09/30/08
2-2	6	09/30/08
2-2	7	09/30/08
2-2	8	09/30/08
2-2	9	09/30/08
2-2	10	09/30/08
2-2	11	09/30/08
2-2	12	09/30/08
2-3	1	09/30/08
2-3	2	09/30/08
2-3	3	09/30/08
2-3	4	09/30/08
2-3	5	09/30/08
2-3	6	09/30/08
2-3	7	09/30/08
2-3	8	09/30/08
2-3	9	09/30/08
2-3	10	09/30/08
2-3	11	09/30/08
2-3	12	09/30/08
2-3	13	09/30/08
2-3	14	09/30/08
2-3	15	09/30/08
2-3	16	09/30/08

Chapter/Section	Page	Date
2-3	17	09/30/08
2-3	18	09/30/08
2-3	19	09/30/08
2-3	20	09/30/08
2-3	21	09/30/08
2-2	22	09/30/08
2-4	1	09/30/08
2-4	2	09/30/08
3-TOC	1	09/30/08
3-TOC	2	09/30/08
3-1	1	09/30/08
3-1	2	09/30/08
4-TOC	1	01/31/14
4-TOC	2	01/31/14
4-1	1	08/31/05
4-1	2	08/31/05
4-2	1	08/31/05
4-2	2	08/31/05
4-3	1	01/31/14
4-3	2	01/31/14
4-3	3	01/31/14
4-3	4	01/31/14
4-4	1	08/31/05
4-4	2	08/31/05
4-4	3	08/31/05
4-4	4	08/31/05
4-4	5	08/31/05
4-4	6	08/31/05
4-4	7	08/31/05
4-4	8	08/31/05
4-4	9	08/31/05
4-4	10	08/31/05
4-4	11	03/31/07
4-4	12	08/31/05
4-4	13	03/31/07
4-4	14	08/31/05
4-4	15	08/31/05
4-4	16	08/31/05
4-4	17	08/31/05
4-4	18	08/31/05
4-4	19	08/31/05
4-4	20	08/31/05
4-4	21	08/31/05
4-4	22	08/31/05
4-4	23	08/31/05
4-4	24	08/31/05
4-4	25	08/31/05
4-4	26	08/31/05
4-4	27	08/31/05
4-4	28	03/31/07
4-4	29	03/31/07
4-4	30	03/31/07
4-4	31	03/31/07
4-4	32	08/31/05
4-4	33	03/31/07
4-4	34	10/31/06
4-4	35	10/31/06
4-4	36	08/31/05
4-4	37	09/30/08
4-4	38	03/31/08
4-4	39	03/31/08
4-4	40	03/31/08
4-4	41	03/31/08
4-4	42	03/31/08
4-4	43	03/31/08
4-4	44	03/31/08
4-4	45	03/31/08
4-4	46	03/31/08
4-4	47	03/31/08
4-4	48	03/31/08
4-4	49	03/31/08
4-4	50	03/31/08
4-4	51	03/31/08
4-4	52	03/31/08
4-4	53	03/31/08
4-4	54	03/31/08
4-4	55	03/31/08
4-4	56	03/31/08
4-4	57	03/31/08
4-4	58	03/31/08
4-4	59	03/31/08
4-4	60	03/31/08
4-4	61	03/31/08
4-4	62	03/31/08
4-4	63	03/31/08
4-4	64	03/31/08
4-4	65	03/31/08
4-4	66	03/31/08
4-4	67	03/31/08
4-4	68	03/31/08
4-4	69	03/31/08
4-4	70	03/31/08
4-4	71	03/31/08
4-4	72	03/31/08
4-4	73	03/31/08
4-4	74	03/31/08
4-4	75	03/31/08
4-4	76	03/31/08
4-4	77	03/31/08
4-4	78	03/31/08

Chapter/Section	Page	Date
4-4	79	03/31/08
4-4	80	01/31/14
4-4	81	01/31/14
4-4	82	01/31/14
4-4	83	01/31/14
4-4	84	01/31/14
4-4	85	01/31/14
4-4	86	01/31/14
4-4	87	01/31/14
4-4	88	03/31/08
4-4	89	03/31/08
4-4	90	03/31/08
4-4	91	03/31/08
4-4	92	03/31/08
4-4	93	03/31/08
4-4	94	03/31/08
4-4	95	03/31/08
4-4	96	03/31/08
4-4	97	03/31/08
4-4	98	03/31/08
4-4	99	03/31/08
4-4	100	03/31/08
4-4	101	03/31/08
4-4	102	03/31/08
4-4	103	03/31/08
4-4	104	03/31/08
4-4	105	03/31/08
4-4	106	03/31/08
4-4	107	03/31/08
4-4	108	09/30/08
4-4	109	09/30/08
4-4	110	09/30/08
4-4	111	09/30/08
4-4	112	09/30/08
5-TOC	1	09/30/08
5-TOC	2	08/31/06
5-1	3	08/31/05
5-1	4	08/31/05
5-1	5	08/31/05
5-1	6	08/31/05
5-1	7	08/31/05
5-1	8	08/31/05
5-1	9	09/30/08
5-1	10	09/30/08
5-1	11	09/30/08
5-1	12	09/30/08

Chapter/Section	Page	Date

CONFIGURATION

The NMC-Wollard, Inc. sales order number for this unit is

_____

A serial number placard is fixed to this unit. Locate the placard and record the serial number (or range of numbers for multiple orders) below.

Serial Number(s)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Both the sales order and serial numbers are required for proper identification by NMC-Wollard, Inc. whenever you call for service parts or other technical support.

The unit shipped with this operator's manual was equipped with the items indicated on the following available options listing.

- ☐ 1.5943 Option, Morse Transmission Control
- ☐ 10099 Option, Pole-Mounted Amber Warning Light
- ☐ 16391 Option, Protect O Seal Gas Cap
- ☐ 16493 Option, Heated Tank
- ☐ 16499 Option, Backup Alarm
- ☐ 17406 Option, Rubber Stair and Deck Thread
- ☐ 18318 Option, Stair/Stabilizer Warning Lights and Backup Alarm
- ☐ 18359 Option, Backup Flood Lights
- ☐ 18360 Option, Battery Jumper System
- ☐ 300818 Option, Heavy Duty Bumper
- ☐ 300857 Option, Hourmeter Installation
- ☐ 300865 Option, Canopy Assembly
- ☐ 301160 Option, Extended Stair
- ☐ 301298 Option, Low Oil Pressure Shutdown
- ☐ 302744 Option, Special Placards

- ☐ 303044 Option, 3 Position Gate Plate
- ☐ 303106 Option, 3 Meter Platform
- ☐ 303794 Option, Tow Hooks, Front
- ☐ 303809 Option, Parking Brake
- ☐ 304845 Option, Canopy, Vinyl, No Sides
- ☐ 304990 Option, Canadian Running Lights
- ☐ 305213 Option, High Water Temp Shutdown w/Low Oil Shutdown Diesel, F350/F450, 1999 & Later
- ☐ 309735 Option Bumper HD, F350 2010+
- ☐ 8807 Option, Rotating Beacon

EFFECTIVITY CODE

This manual is effective on units having the following serial numbers 1378+ (August, 2005+) and as follows:

Effectivity Code	Serial Numbers
A	1378 and 1379
B	1378 thru 1381
C	1381+
D	1382+
E	1384-
F	1385+
G	1378 thru 1380
H	1400+

CHAPTER 1 GENERAL INFORMATION & OPERATION INSTRUCTIONS

Table of Contents

Chapter 1 general information & operation instructions

1 DESCRIPTION

1.1 PRODUCT SAFETY

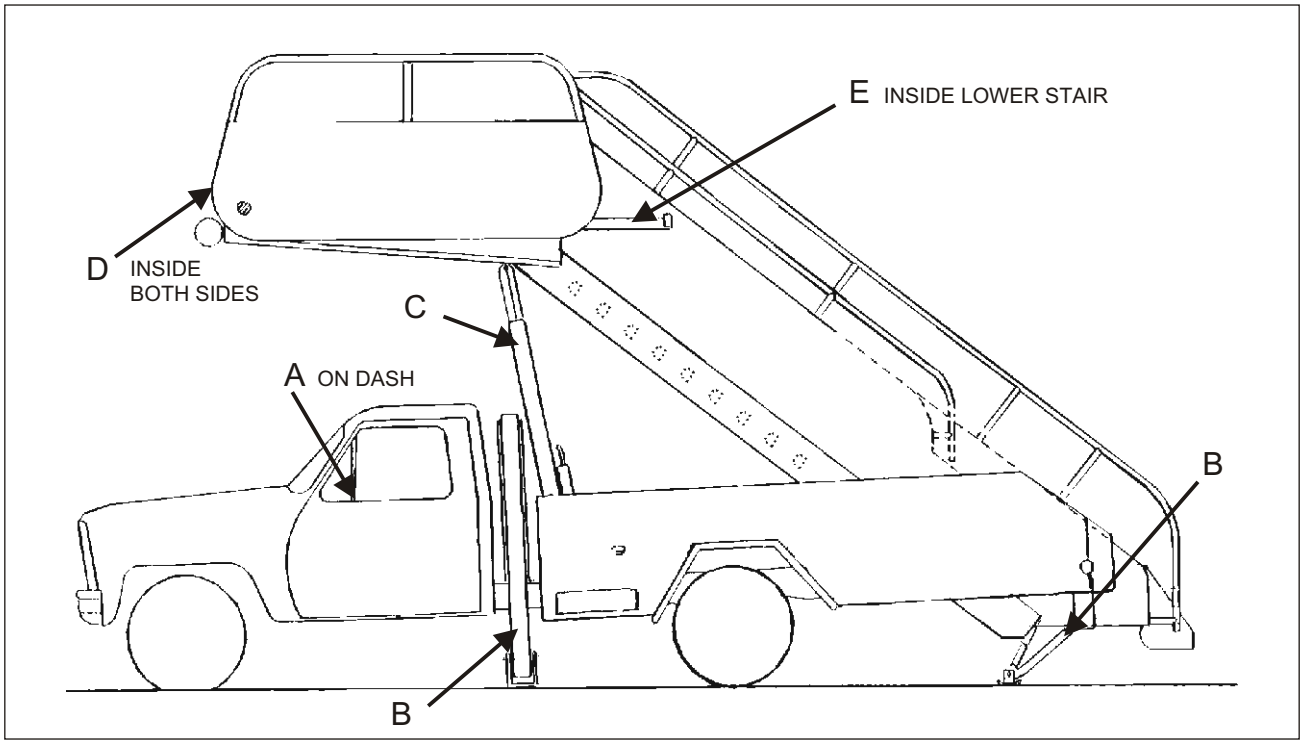
A brief definition of signal words that may be used in this manual:

⚠DANGER Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE! Used to address practices not related to personal injury.



⚠CAUTION For your protection, read all safety decals on the machine and in this manual. Replace any missing or illegible decals by ordering the part numbers shown on the safety decals page.

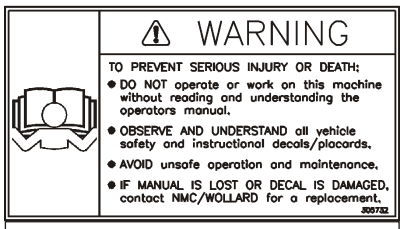
1.2 SAFETY DECALS

1.2.1 Safety Sign Care

- Keep Safety Signs Clean And Legible At All Times.
- Replace Safety Signs That Are Missing Or Have Become Illegible.
- Replaced Parts That Displayed A Safety Sign Should Also Display The Current Sign.
- Safety Signs Are Available From The Manufacturer.

1.2.2 How to Install Safety Signs

- Be Sure That The Installation Area Is Clean And Dry.
- Remove The Smallest Portion Of The Split Backing Paper.
- Align The Decal Over The Specified Area And Carefully Press The Small Portion With The Exposed Adhesive Backing In Place.
- Remove Second Backing And Press Remaining Decal In Place.



DECAL A.
PART NO. 305732

DECAL B.
PART NO. 562A439

DECAL C.
PART NO. 304272

DECAL D.
PART NO. 304327

DECAL E.
PART NO. 304335

1.3 GENERAL SAFETY PRECAUTION

All personnel who will handle, install, use or service this machine are required to read and understand the recommended practices and safety precautions in this manual. If there is a question that can not be answered satisfactorily by a supervisor, contact the Customer Service Department at NMC-Wollard, Inc.

There are inherent hazards associated with the operation and servicing of this machine. For your protection please read and understand the following precautions before operating or servicing this machine.

⚠DANGER

- Never approach overhead power lines or cables with any part of your machine. Contact with or getting close to any power lines or cables can result in electrocution.
- Fuel vapors create fire and explosion hazards. Do not allow any open flame, smoking materials or other potential ignition sources near fuel or the fuel system.

⚠WARNING

- Never operate without all covers, shields and guards in place. Body, hair or clothing can become entangled in exposed, moving parts and can cause serious injury or death.
- Keep hands, loose clothing, long hair and loose jewelry away from moving parts. You may become entangled in moving parts that can cause serious injury or death.
- Perform lockout/tagout procedures before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could cause serious injury or death.
- Use seat belts, approved headgear, eye protection and other protective equipment as required by federal, state, local or employer regulations.
- Do not operate or service this machine while under the influence of any drugs or alcohol.
- Do not indulge in stunt driving or other reckless operation.
- Limit travel speed. Ground conditions, congestion, slope, location of personnel and other factors increase risk of collision or injury to personnel.
- Operator must be present while this machine is in use.
- California Proposition 65 Warning: Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

- To minimize risk of serious injury or death, follow these hydraulic servicing precautions:
    - Follow all necessary lockout/tagout procedures.
    - Hydraulic systems have residual, stored pressure. Relieve all pressure from the hydraulic system before servicing.
    - Allow fluid to cool before working on system.
    - Hydraulic fluid escaping under pressure can have sufficient force to enter eyes and penetrate skin. If fluid gets in eyes or skin, flush with large quantities of water and seek medical attention.
    - Wear eye protection when servicing hydraulic components or systems.
    - Keep all hoses and connections in good serviceable condition. Check before start-up and periodically during operation.
    - Do not investigate for leaks with hands. Use a large piece of cardboard.
- To minimize risk of fire or explosion, follow these battery servicing safety precautions:
    - Sulfuric battery acid is poisonous. Avoid breathing battery fumes.
    - Battery acid is strong enough to burn skin and cause blindness if splashed into the eyes. Protect eyes and skin from contact. In the event of contact with battery acid, immediately rinse in large amounts of water. Obtain medical care if the eyes are burned.
    - Battery gas can explode. Keep sparks and flame away from battery.
    - Never check battery charge by placing a metal object across the battery posts. A spark will occur and cause possible explosion. Use a voltmeter or hydrometer.
- To avoid falls and injury, stand only on areas constructed with “gripstrut” or another skid resistant surface. Keep these surfaces in serviceable condition.
- Never make any alterations or modifications to this equipment including disabling safety devices or interlocks.

⚠CAUTION

- Before starting repairs which do not require battery power, always turn off the key switch, then disconnect the battery connector from the battery to prevent accidental short circuit.
- Be certain area is clear of people and other equipment before starting operation.
- Keep machine clear of foreign objects and clean of grease/oil and other lubricants.

Failure to heed could result in serious personal injury or death.

In addition to these general safety precautions you will find specific safety messages embedded in the Operating and Maintenance Chapters of this manual. Please review them for your protection.

1.4 EQUIPMENT DESCRIPTION

1.4.1 Intended Usage

The Wollard Model TMPS-200 is a mobile aircraft boarding facility for large transport-type aircraft. The height of the stair is hydraulically adjustable and will accommodate aircraft having door thresholds ranging from approximately 101-200 inches (256 cm to 508 cm) above the ground.

The design is not intended to service any other type of vehicle or any type of structure.

1.4.2 Description of the Passenger Stair

The entire stair assembly is mounted on a heavy-duty commercial chassis with dual rear wheels. Special equipment, steel supporting structures, electrical and hydraulic components have been installed on the basic vehicle. Some minor alterations have also been made to the vehicle's chassis and body.

The passenger stair consists of these major components: a truck section, a main stair section (the stationary unit), and a main support frame which supports the main stair section. The main support frame is equipped with a hydraulically actuated upper section. An independent hydraulic system supplies hydraulic power to operate the adjustable stair unit and stabilizers. The hydraulic functions are controlled by electrical switches installed in the truck cab.

1.4.3 Reserved For Future Use

1.4.4 Hydraulic Hand Pump

Operates stabilizers when there is no power to drive main hydraulic pump.

1.4.5 Truck Section

The truck section consists of a heavy-duty commercial truck chassis having a gross vehicle weight of 11,000 pounds (4,990 kg). An automatic transmission is standard equipment (a 5-speed manual transmission is optional). A hydraulic pump with a magnetic clutch controlled by the master switch is mounted in the engine compartment and is driven by the engine serpentine belt.

1.4.6 Lighting

For night operation, the following lighting is provided:

- lighting in the inner panel at each stair tread
- illumination of the bottom step

- ground illumination in vicinity of bottom step
- ground illumination on each main stabilizer
- top platform light in the platform end skin of the adjustable section.

Stair lighting is controlled by a switch located on the dash in the truck cab. Stabilizer illumination lights are controlled by a single proximity switch actuated by the left forward stabilizer.

Stabilizer illumination lights (one at each forward stabilizer) are controlled by a single proximity switch actuated by the left forward stabilizer.

1.4.7 Stabilizers

Two heavy-duty hydraulically actuated stabilizers are attached to the frame stair support immediately behind the cab. Smaller extendible stabilizers are mounted under the stairs at the rear. Both sets of stabilizers are actuated by double-acting hydraulic cylinders and are controlled by a single lever on the cab control console.

NOTICE! When the “STABILIZERS NOT RETRACTED” indicator is ON, the stabilizers are not fully retracted and the stair can not be driven.

If the stabilizers are in the down position the engine will shutdown if movement is attempted.

1.4.8 Main Support Frame

The main supporting frame is constructed of welded steel members and is fastened to the truck chassis. This frame extends from behind the cab to the rear of the chassis.

1.4.9 Forward Support Frame (A-Frame)

The forward support frame is mounted vertically on the main support frame and supports the upper end of the main stair section. The frame is a welded tubular structure. The upper section is a telescoping structure capable of extending the height of the support frame. Extension and lowering is provided by a hydraulic cylinder. A solenoid-actuated lock lever fitted into a ratchet rack provides positive locking of the telescoping structure.

1.4.10 Stair Section

The stair section is composed of a main section (stationary unit) and an adjustable section (telescoping unit). Both are similar in construction and are made of riveted aluminum alloy sheet on welded steel frames. On standard

models, the stair treads, intermediate platform, and upper platform are surfaced with aluminum alloy diamond-plate treads. Rubber treads over aluminum alloy surfaces can be supplied as an alternate to the diamond plate.

1.4.11 Main Section (Stationary Unit)

The main stair unit is built on a frame of structural steel channels. Side panels of fabricated sheet aluminum are riveted to this frame. Two wheels are attached on each side of the upper part of the frame. The adjustable section's main longitudinal support channels ride over these wheels to provide the telescoping feature.

The lowest step (flip step) is mounted on pivots between the side panels. This step may be flipped up between the side panels to allow sufficient ground clearance when moving the stair. There are fourteen step treads in the main section. The uppermost tread plate is deeper and serves as an intermediate platform between the main section and the adjustable section.

Installed within the main section is a positive-displacement single-acting hydraulic cylinder. This cylinder is attached to a cross member at its lower end, and the upper end attaches to the adjustable section. This is the lift cylinder that hydraulically adjusts the stair section.

1.4.12 Adjustable Section (Telescoping Unit)

The adjustable stair unit is built on a welded-steel frame composed of two parallel/longitudinal channel members. The open sides of the channels oppose each other and telescope over the four support wheels attached to the main section. Steel angles welded to the underside of the channels are notched in such a way that when solenoid-actuated latches are engaged in the notches, the section is precisely positioned for any of ten stair heights (See operation instruction). There are ten steps.

The top platform is a riveted assembly of aluminum alloy components. It is supported by two fabricated channel members installed longitudinally. On the aft end of the platform, a steel cross member is attached to these supports. This cross member has a lug on its aft side to which the upper end of the hydraulic lift cylinder is attached. When hydraulic power is applied to the cylinder, a piston extends the adjustable stair section. A neoprene rubber bumper is attached to the forward edge of the platform to protect aircraft.

Movable handrails are on either side of the top platform. These are adjustable fore and aft and can be locked in position. The forward edges of these panels are padded to protect aircraft.

1.4.13 Hydraulic Reservoir

The hydraulic reservoir (tank) is installed within the main frame under the main stair section near the forward end. Capacity is 15 U.S. gallons (57 liters). A sight gauge is provided to check the oil level.

1.4.14 Side Panels

Steel side panels cover each side of the unit aft of the cab. The side panels have fenders for the dual rear wheels and provide protection for the stair structure.

1.4.15 Canopy

An optional canopy is available for the protection of boarding or disembarking passengers.

1.4.16 Other Features

Other features of the truck section include an automatic transmission, a safety plate glass window mounted in the cab roof over the operator's seat, and a spotlight under the upper platform for night operation.

Index numbers are at each step position to enable the operator to pre-position the stair section prior to final positioning to aircraft door threshold. The index numbers are also lighted for night operation.

2 OPERATION

⚠WARNING Read and understand the Owner's Manual before operating this machine. Failure to follow the safety instructions could result in serious injury or death.

⚠WARNING Limit travel speed. Ground conditions, congestion, slope, location of personnel and other factors increase risk of collision or injury to personnel.

⚠WARNING To prevent serious injury, all riders must ride in a passenger seat with the safety belt fastened.

⚠CAUTION Always approach turns slowly and carefully. When approaching blind corners or steering around obstructions, reduce speed and proceed cautiously.

⚠CAUTION Be extremely alert during hazardous operating conditions. Operating conditions can change as work progresses and as weather changes.

2.1 PRE-OPERATION

All controls are in the truck cab and are clearly marked. The following procedures are recommended for operating the unit. First become familiar with the controls and switches described in Section 1 of this chapter. No instructions are given for operation of the basic truck because this is covered in the owner's handbook supplied by the truck manufacturer (Ford).

All electrical switches for operating the stair are on the truck dash as shown in Figure 1 and are discussed below. A window installed in the cab roof allows overhead viewing of the stair.

① **MASTER SWITCH** - controls power to all electrical control circuits; specifically, the hydraulic pump magnetic clutch, the A-Frame Release, Stair Release, Stair Lights, A-Frame Up/Down, Stair Extend/Retract and Stabilizers Up/Down. Placing the master switch to "OFF" removes power from the stair and A-Frame release solenoids, preventing the corresponding lock levers from being energized to the unlocked condition. With master switch Off, the stair and A-frame remain locked by lock levers and will not lower or retract even if the Stair Retract or A-Frame Down switches are actuated.

NOTE: Turn the MASTER SWITCH "on" to enable lock lever (pawl) circuit and stair lighting when required.

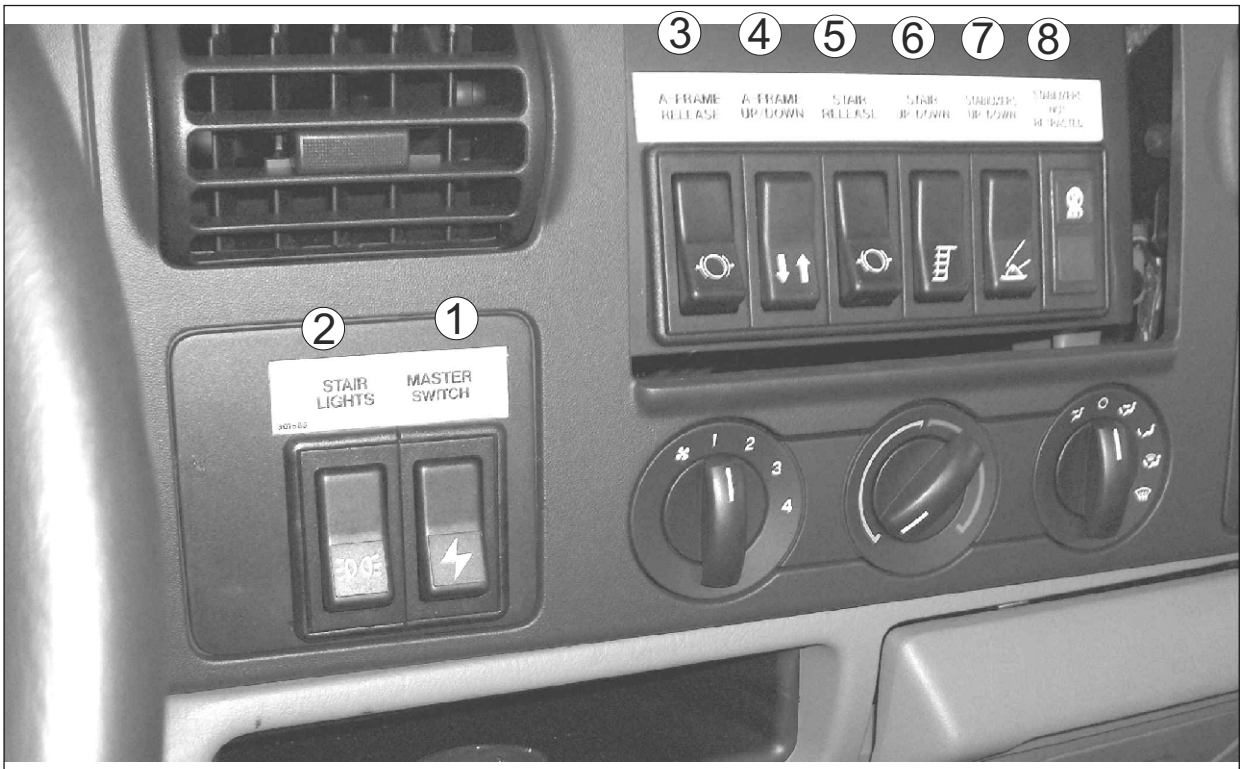


FIGURE 1. IN CAB CONTROL SWITCHES

② **STAIR LIGHTS** switch - operates tread lights and spotlight.

③ **A-FRAME RELEASE** switch - release A-Frame lock lever while lowering A-Frame.

④ **A-FRAME UP/DOWN switch -** operates A-frame hydraulic valve to control hydraulic cylinder for precise positioning of the platform.

⑤ **STAIR RELEASE** switch - release stair lock lever while lowering stair.

⑥ **STAIR EXTEND/RETRACT** switch - operates hydraulic control valve to control flow of hydraulic oil to stair extend/retract hydraulic cylinder.

⑦ **STABILIZER UP/DOWN** switch - operates hydraulic valve to control flow of hydraulic oil for stabilizer up and down operation.

NOTE: All hydraulic stair functions are manually activated by switches in the cab which control hydraulic solenoid valves.

IMPORTANT: The stabilizers are interlocked to prevent moving the unit if the stabilizers are in the down position. The engine will shutdown if shifted out of park or neutral.

⑧ There is a flashing **"STABILIZER NOT RETRACTED"** indicator lamp to alert the operator movement can not be attempted until they are retracted.

NOTICE! When the "STABILIZERS NOT RETRACTED" indicator is ON, the stabilizers are not fully retracted and the stair can not be driven.

⑨ **Shifter** - optional floor mounted shifter with P-R-N-D to shift transmission. See figure 2.

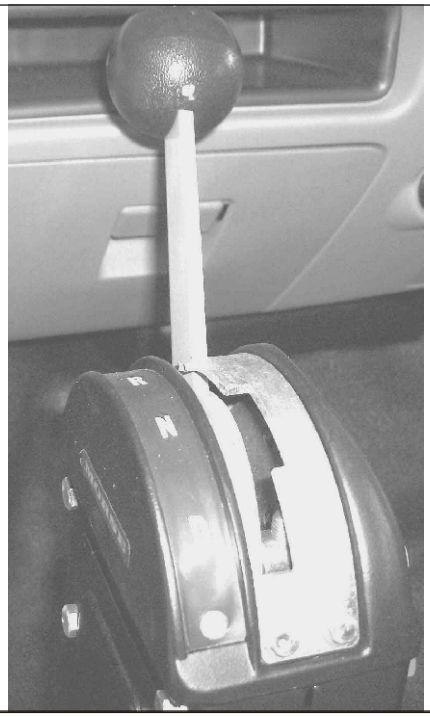


FIGURE 2. OPTIONAL FLOOR MOUNTED SHIFTER

⚠WARNING Always apply park brake when shifted to neutral (N). Unintended movement could result in persons falling or being crushed.

Preparation for Service
The unit is lubricated, adjusted, and tested at the factory prior to shipment. It is then prepared for shipment (See Section 4 of this chapter).

⚠WARNING Before placing the unit in service, perform the commissioning preparations. Failure to do so will cause the passenger stair to be unsafe to use, operate, or service and could cause serious injury or death.

2.2 DAILY INSPECTION

Before putting the unit into service and each day before operating the unit, always walk around the unit and make the following checks:

2.2.1 Hydraulic System

1. Look for fluid leaks on the ground and on hydraulic components. Check hydraulic hose and fitting connections for leaks and hose condition.
2. Check level of hydraulic oil by observing the sight gauge on hydraulic reservoir. The correct fluid is MOBIL DTE-13. In extreme cold, use Mobil Aero HFA (MIL H-5606). IMPORTANT! Check hydraulic oil level with cylinders completely lowered or overfilling might result, causing damage to the hydraulic system.

2.2.2 Stair Unit

1. Check all critical fastener connections for security.
2. Check that the stabilizer pads, links, and pivots are present and functional and that the mounting hardware is secure.
3. Remove any foreign objects from stairs and clean any grease, oil or other lubricants from stairs.
4. Check that the stair handrail is fastened securely to the stairs.
5. Inspect the wheels at the lower edge of the platform handrails (wing panels). If the wheels are cracked or damaged they must be replaced. Be sure all fasteners and retaining brackets to keep the wheels on the guide angle are in place and tight. Check that the notched track is tightly attached to the panel.
6. Check that the platform handrails (wings) slide freely. Check that the latch works properly and that the handrails lock in the detents securely. If the handrails do not slide freely or the latch does not work properly, adjustment is required before the stair unit can be put into service.

⚠WARNING To prevent hand rails from falling away from the stair unit and creating a safely hazard, you must inspect and service them as described in this manual.

7. Check that all the flip step pivot hardware is present and tight. Flip the step up for transporting.
8. If so equipped, check the fire extinguisher for adequate charge.

2.2.3 General Chassis Check

1. Check truck chassis and engine in accordance with manufacturers instructions
2. Observe that tires are properly inflated.

⚠WARNING Regularly check tires and wheels for proper tire inflation or loose wheel studs/nuts. Dual wheel sets must have equal inflation in both tires to prevent tire overloading. Wheel or tire failure could result in loss of vehicle control.

2.2.4 Electrical System

1. With the ignition switch on:
2. Check the fuel gauge for sufficient fuel for the day's operation. Check the instrument panel for low volts or low oil pressure and any other fault indications.
3. Check that horn, windshield wipers, headlights, tail lights, stop lights, backup lights and beacons are operational.
4. Turn on the Stair control Master Switch and switch on the Stair Lights switch and check that the tread lights and spotlight are operational.

2.2.5 Operational Check

1. Start engine and allow to warm up at idle speed for a few minutes.
2. Check operation of brakes and power steering.
3. Check the raise/lower operation of stair lift and stabilizer cylinders, using the control switches on the truck dash. Be sure there is sufficient overhead clearance before raising stairs.
4. If all of the above checks are satisfactory, the unit is ready to service aircraft. If trouble is discovered during any of the above checks, report the problem to the proper maintenance personnel for correction before further operation.

2.3 DRIVING THE UNIT

⚠WARNING The stair must be fully retracted and the A-Frame fully lowered whenever traveling and when not being used. Failure to do so could result in overturned machine from wind or jet blast.

NOTICE! When the "STABILIZERS NOT RETRACTED" indicator is ON, the stabilizers are not fully retracted and the stair can not be driven.

2.3.1 Interlocks

Interlocks
Vehicle will not drive with the stabilizers even slightly down and red "Stabilizers Not Retracted" indicator illuminated. If you attempt to move, the engine will shut down. Raise stabilizers until fully retracted and the "Stabilizers Not Retracted" indicator turns off.

1. No high speed or stunt-like maneuvers.
2. Riders only allowed if seated on passenger seat.
3. Use seat belts.
4. Use on restricted airport roads and ramp areas only, not on public roads in any country.
5. No high speed turns, especially when stairs are extended.
6. This is a high vehicle - always check your overhead clearance when driving under obstacles.
7. Brake gently when stairs are extended. Restrict driving speed to 5 mph when stairs are extended.

2.4 SERVICING AIRCRAFT

NOTE: It is recommended to record the stair lock lever index positions for each type of aircraft serviced, after determining this on the first application. There are index numbers at the stop block locations under the adjustable stair section on the right side. Use these settings thereafter. The stair lock lever (a pivoting pawl) and markers are visible through the roof window. Use these settings before approaching the aircraft in the future to lessen the possibility of error or damage.

⚠WARNING Moving stair can crush and cut hands and feet. Do not stand on or near the adjustable stair while it is extending or retracting.

1. Drive the unit to the aircraft to be serviced (To approx 15 feet away from the aircraft).

2. Leave the engine idling, place the transmission in neutral and set the parking brake.
3. Switch ON the MASTER SWITCH. Hold the A-FRAME UP/DOWN switch UP or DOWN as instructed in step 4 or 5 and to position the A-Frame at its center position.
4. To raise the A-Frame, hold the A-FRAME UP/DOWN switch UP. The A-Frame has rigid "ratchet teeth" welded to the frame which will "ratchet" past the pivoting A-Frame lock lever during raising. Then the A-Frame must be lowered down, against the first available ratchet tooth to securely lock the position during operation.
5. To lower the A-Frame, momentarily press the A-FRAME UP/DOWN switch to UP and relieve stair load from the A-Frame lock lever. Then press the A-FRAME RELEASE switch and hold while pressing the A-FRAME UP/DOWN switch DOWN. Release the A-FRAME RELEASE switch and A-FRAME UP/DOWN switch when the A-Frame reaches the required position.
6. Hold the STAIR EXTEND/RETRACT switch to the EXTEND position (This is assuming it is in the full retracted position) and adjust the stair height to the door sill height to be serviced and consider the following. If loading the aircraft, the fuselage will lower as much as several inches, dependent on aircraft; so position the platform far enough below the door sill that the door will not lower onto the platform and become damaged. If unloading, the aircraft will rise and it is safe to position the platform "even" with the door sill, allowing the door to move away from the platform.
7. The adjustable stair has "stop blocks" welded to the structure which slide past the pivoting stair lock lever while extending. After extending, the stair must be retracted against the first available stop block to securely lock the stair in position during operation. This will also align the steps properly.

⚠WARNING Numbered stop blocks must always rest on stair lock lever. Failure to do so creates a pinch point between stair steps and risk of serious injury to feet if stairs drift down to stop block.

8. As necessary adjust the A-Frame. It allows for fine adjustment of stair height/door sill adjustment. Be careful when lowering, as the stair will tilt toward the aircraft and contact/damage could occur. Now the passenger stair platform should be positioned at the correct service door sill height, but not be in contact with the aircraft

9. Release the parking brake and carefully idle the unit forward to the aircraft and make soft contact of the rubber platform bumper with the aircraft. Use the overhead spotlight as necessary for night operation.
10. **VERY IMPORTANT:** Do not adjust the stair height once in contact with the aircraft. If further adjustment is required, carefully back away and re-start this procedure.
11. Place transmission shifter to neutral position and set the parking brake.
12. Hold the A-FRAME UP/DOWN switch UP to move the stair away from the aircraft until approximately 3 inches of clearance is achieved.
13. Press the STABILIZER UP/DOWN switch DOWN and hold until all stabilizers are fully lowered. “STABILIZER NOT RETRACTED” indicator light will illuminate.

⚠WARNING To avoid crushing injury to feet, stay clear of stabilizers.

14. Hold the A-FRAME UP/DOWN switch UP to allow the pressure to be taken off the rigid ratchet tooth. Hold the A-FRAME RELEASE switch and lower the A-Frame until it is almost in contact with the aircraft. Release the A-FRAME RELEASE switch and lower the A-Frame lock lever against the rigid ratchet tooth.
15. Switch the engine OFF. For night time operation, turn the ignition switch to ON (leave power on) in order to power the stair lights. If the lights will be used for more than 30 minutes, do not turn the engine OFF.
16. Lower the flip step at the bottom end of the stair. Climb the stair to the platform and release the appropriate wing panel lock by pushing down on the latch handle. Move the panel back to the full open position. Stand as far back of the panels as possible so you are still protected by the wing panels if you should fall. Now the aircraft door may be opened and stowed. Care must be taken to stay away from any open areas while the wing panel is in the retracted position and the aircraft door is being positioned. After opening the door, move the wing panels ahead, as close to the aircraft as possible and be sure the panels lock in position by engaging in the closest detent notch.
17. The wing panels must be as close to the aircraft (or loading bridge) as possible. The space must be at a minimum so persons can not fall through the opening.
18. Check that the wing panels are secure by being sure they will not move when force is applied to them.

⚠WARNING To avoid falling between aircraft and panels, always slide panels as close towards aircraft as possible, then slide back to the closest lock position. Keep hands and feet clear when sliding panels. Never leave panels retracted when positioned at an aircraft. Failure to heed could result in serious injury or death to yourself or others.

19. Exit from the stair.

2.5 DRIVING AWAY FROM AIRCRAFT

1. Climb the stair to the platform and release the appropriate wing panel lock by pushing down on the latch handle. Move the panel back to the full open position. Now the aircraft door can be closed. Care must be taken to stay away from any open areas while the wing panel is in the retracted position and the aircraft door is being positioned.
2. Exit from the stair. Raise the flip step at the bottom end of the stair.
3. Start the engine and raise the A-Frame to tilt the stair away from the aircraft.
4. Press the STABILIZER UP/DOWN switch UP and hold until “STABILIZER NOT RETRACTED" indicator goes off.
5. Release the parking brake, place transmission in reverse, and back the unit a short distance from aircraft. Set park brake and place transmission in neutral position.
6. Momentarily press the STAIR EXTEND/RETRACT switch to EXTEND and relieve stair load from stair lock lever. Press the STAIR RELEASE switch and hold. Press the STAIR EXTEND/RETRACT switch to RETRACT and hold until the stair section is fully retracted. Just before it reaches bottom, release the stair release switch. This will allow the lock lever to slide into its proper position. Then release the STAIR EXTEND/RETRACT switch.
7. Momentarily press the A-FRAME UP/DOWN switch UP and relieve stair load from the A-Frame lock lever. Press the A-FRAME RELEASE switch and hold. Press the A-FRAME UP/DOWN switch DOWN to fully lower the A-frame. Release the A-FRAME RELEASE switch and A-FRAME UP/DOWN switch after the A-Frame reaches its down position.
8. Back the unit away from the aircraft and drive it to it’s proper place for storage.

2.6 EMERGENCY PROCEDURES

2.6.1 Using the Optional Hand Pump

1. A manually operated hydraulic pump is supplied on the hydraulic manifold. The pump permits raising or lowering the stair and stabilizers manually in the event of a failure of the engine or hydraulic system.
2. The override knob on the appropriate hydraulic solenoid valve must be pushed in or pulled out and held out by inserting the lock tool behind the knob for manual operation. See figure 1. The tool is attached to the valve with a retaining chain. After this is done, the manual pump can be operated.

VERY IMPORTANT: This lock out tool must be removed when manual operation is completed.

3. Move the wing panel back, close aircraft door and raise the flip step as instructed in 2.5

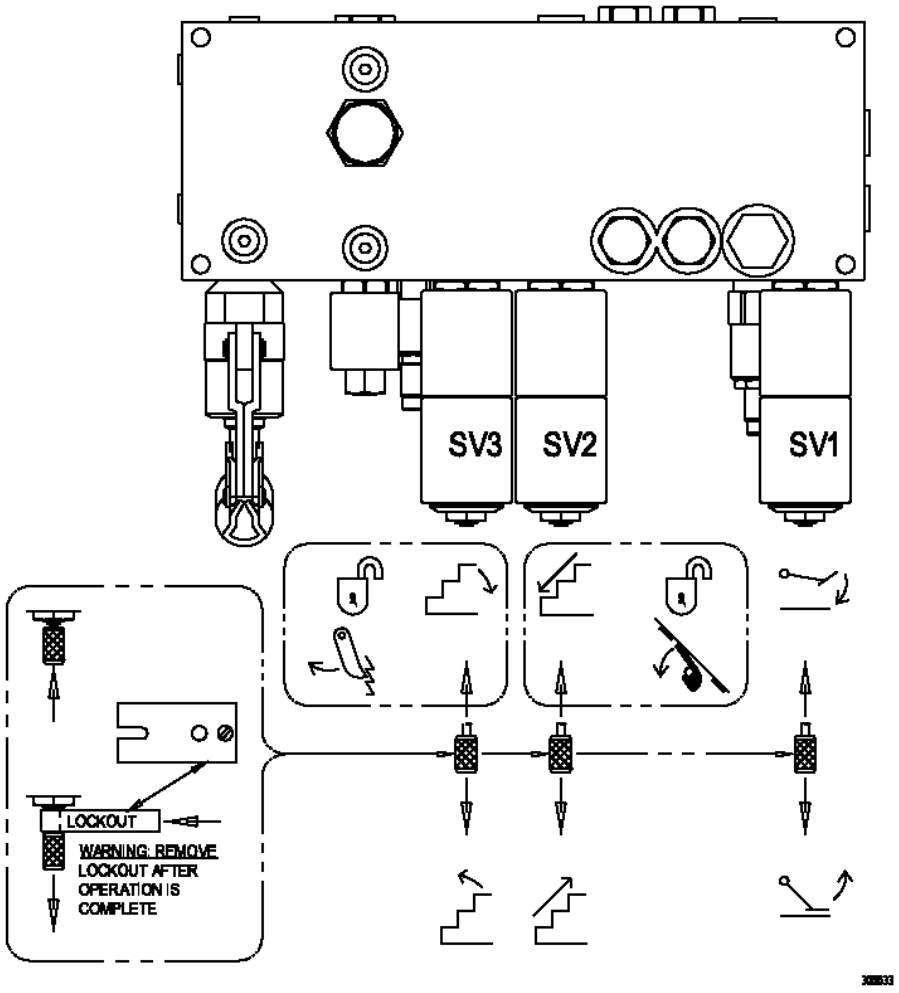


FIGURE 1. EMERGENCY HAND OPERATING HYDRAULICS

⚠WARNING Be sure that all persons are clear of the stair unit and away from possible pinch points while lowering or raising the stair.

⚠WARNING Numbered stop blocks must always rest on stair lock lever. Failure to do so creates a pinch point between stair steps and risk of serious injury to feet if stairs drift down to stop block.

4. Pull the red over ride knob on the stabilizer valve labeled SV1 and insert the slotted lock tool under the knob to keep it extended. Operate the pump with the handle until the stabilizers are raised enough to clear the ground. Then remove the tool from under the knob.

5. Be careful that the stair unit can not roll toward the aircraft and release the parking brake. Chock ahead of the wheels if necessary. Roll or tow the stair unit away from the aircraft. When parked, reapply the parking brake.
6. Pull the red over ride knob on the stair valve labeled SV2 and insert the slotted lock tool under the knob to keep it extended.
7. Operate the pump with the handle to extend the stair slightly and relieve the pressure from the stair lock lever.
8. With the ignition and master switches on, have a helper hold the STAIR RELEASE switch to release the stair lock lever. Then remove the tool from under the valve over ride knob. Push the knob in and allow the stair to retract by gravity.
9. If emergency manual operation is required to lower the stair, and electrical power is not available, a second person will be required to hold the stair lock release lever down while the hand pump is operated.

⚠ DANGER Have your helper operate the stair lock lever with a stick to prevent placing hands or body in unsafe locations where serious injury could occur as the stair lowers.

2.7 SERVICING LOADING FACILITIES OTHER THAN AIRCRAFT

Whenever the stair is positioned to a loading facility (such as a loading bridge) it is likely that there will be a significant difference in the loading access area compared to the width of the stair. You must install barriers or railings that conform to OSHA specifications and regulations to restrict the opening to the width of the stair wings.

This Page Intentionally Blank

3 SPECIFICATIONS AND CAPABILITIES

3.1 AIRCRAFT SERVICING CAPABILITY - 2005 & LATER

All Aircraft having doorsill heights ranging from 100” (254cm) to 200” (508cm).

3.1.1 Stair Capacity

Platform . . . . . .900 lbs. (409 kg) uniformly distributed load
Each Step . . . . . 200 lbs.

3.1.2 Height Range

Low Position . . . . . 100 in. (254 cm)
High Position . . . . . 200 in. (508 cm)

3.1.3 Dimensions

Nominal tread depth . . . . . 10.05 in. (26 cm)
Nominal tread width (lower section) . . . . . 42 in. (107 cm)
Nominal tread width (upper section) . . . . . 47 in. (119 cm)
Top platform width . . . . . 64 in. (163 cm)
Top platform depth . . . . . 84 in. (213 cm)
Intermediate landing depth . . . . . 19.75 in. (50 cm)
Constant riser height . . . . . 7.85 in. (20 cm)

3.1.4 Shipping Dimensions

Length . . . . . 288 in. (7.32 m)
Width . . . . . 90.7 in. (2.30 m)
Height . . . . . 145 in. (368 cm)
Weight . . . . . 11,000 lbs. (4,990 kg)

3.1.5 Operator Controls

Indicators . . . . . power, stabilizers down, stair lights
Switches. . . . . .power, stair lights, “A” frame and Stair interlocks
A-frame and Stair UP/DOWN and Stabilizers UP/DOWN

3.1.6 Vehicle (standard)

Ford F-350, V-8 engine, automatic transmission, 11,000 lbs. (4990 kg) GVW, power steering

3.1.7 Truck Chassis

Ford Series F-350, Type F37
Gasoline Engine . . . . . Ford 350 (5.4L) V8, Fuel injected
Diesel Engine (option) . . . Triton Ford 6.0L (V8 engine block heater standard)

3.1.8 Brakes

Service . . . . . Self-adjusting, dual power

3.1.9 Cab

. . . . . F350 Super Duty

3.1.10 Electrical

Alternator. . . . . Motorcraft 95 ampere
Battery . . . . . 650 CCA

3.1.11 Shock Absorbers

. . . . . Heavy duty, front and rear

3.1.12 Steering

. . . . . Power steering

3.1.13 Transmission

. . . . . 4R100 Heavy Duty Electronic Automatic 4-speed

3.1.14 Hydraulic System

Cylinders . . . . . single stage
Valveselectric switch actuated
Pump . . . . . engine driven
System pressure . . . . . 1,200 psi (82.8 bars)
Strainer, on suction line . . . . . 80 mesh
Hydraulic tank . . . . . breather cap
Auxiliary pump . . . . . manually operated

3.1.15 Options and Accessories

Two-tone paint
Diesel engine
Outside controls
Keyless ignition

Electric auxiliary pump

Rotating beacon
Hour meter
Morse control
Governor
Mico lever brake lock
Back-up alarm
Heavy-duty bumper/grill guard
Undercoating
Rustproofing
Rubberized stair treads and platforms

This Page Intentionally Blank

4 COMMISSIONING AND DECOMMISSIONING FOR OPERATION AND SHIPPING

4.1 COMMISSIONING/DECOMMISSIONING FOR AIRPORT, CROSS COUNTY OR SHIPPING

The unit has been thoroughly lubricated and tested before leaving the factory, but to ensure against damage, certain components have been strapped, wedged, packaged, or covered, and, if shipment was overseas, coated with preservatives.

⚠WARNING Before placing the unit in service, perform the commissioning preparations. Failure to do so will cause the passenger stair to be unsafe to use, operate, or service and could cause serious injury or death.

4.2 TRUCK CHASSIS

Observe break-in procedures as recommended in owner manual delivered with chassis by manufacturer.

4.2.1 Front Spring Lockouts

Figure 1

Front spring lockouts **must be installed before unit is placed in operation** and must be removed for any cross-country travel. Front springs are locked out by installing a spacer block between the axle and existing rubber pads on the frame.

1. Jack up front of truck to remove load from front springs.
2. Remove lockouts from their shipping position in glove box. Each lockout kit consists of a steel spacer block, a plate, and two capscrews and lockwashers.
3. Install lockout spacer blocks between rubber pads and frame as shown in Figure 1 on the next page.
4. Lower truck front end and remove jack.

NOTE: The resulting ride should be quite firm.

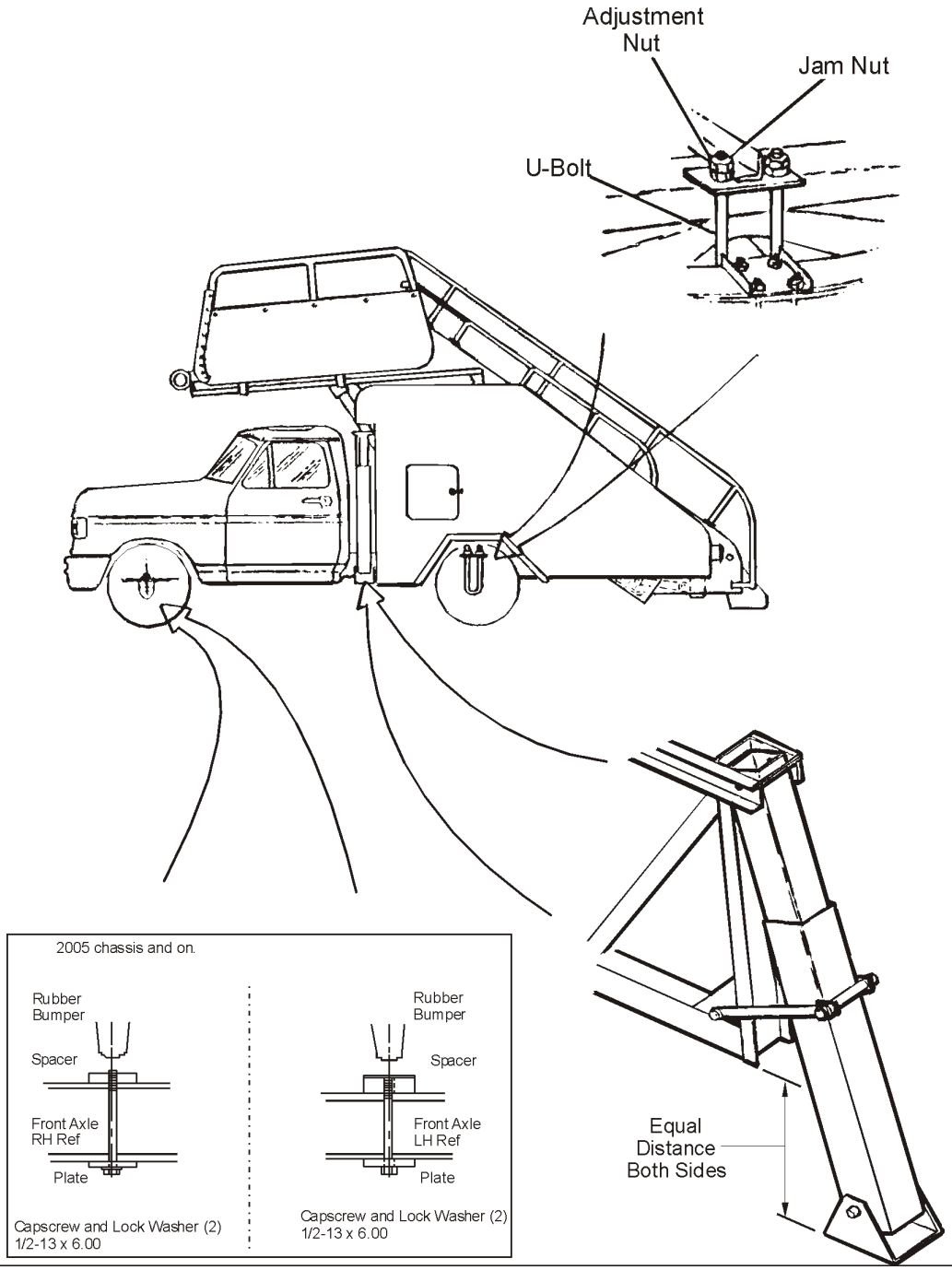


FIGURE 1. TRUCK PREPARATION

4.2.2 Rear Spring U-Bolts

Figure 1

Rear spring U-bolts (tie-downs) are shipped installed but not tightened. Prior to operating at destination, adjust rear spring U-bolts as follows:

1. Park vehicle on level surface.
2. Assure that front spring lockouts have been installed.
3. Raise adjustable stair to full extension. Lower A-frame fully.
4. Operate stabilizers to full extension.
5. Enter stair cavity to reach rear axle U-bolt adjustment nuts.
6. Alternately tighten adjustment nuts on each U-bolt until both front and rear stabilizer pads appear to make firm contact with ground. Verify by manually pulling out on the lower part of each front stabilizer or by kicking the foot pad.

NOTE: It will be easier to tighten the nuts on the U-bolts if the stabilizers are raised and the stairs are fully retracted to put maximum load on the rear springs.

7. Retract stabilizers.
8. Measure height of front stabilizer structure from ground on both sides of truck.
9. If measurements are unequal, tighten U-bolts on high side until both sides are even.
10. Continue tightening both U-bolts until the height of the frame has been reduced by an additional ½" on each side.
11. Again check that both sides have the same measurement from the ground at front stabilizer structure.
12. Extend stabilizers, and check that they contact the ground hard.
13. Retract stair, and make sure that all stabilizers are still in hard contact.
14. Tighten jam locknuts over rear axle U-bolt adjustment nuts.

4.3 INSTALLING THE HANDRAILS

4.3.1 Stair Handrails

⚠CAUTION Hand rails are marked to identify left hand and right hand installation. Failure to install correctly is unsafe.

1. Remove strapping from handrails.
2. Inspect handrails.
   a. Make sure the handrail support posts are secure on the handrail. Tighten the center bolt if required.

b. Check handrail for marks or scratches received during shipment. Use a file to smooth any nicks that might cause injury. Use fine or medium steel wool to polish surfaces.

3. The 1/4-28 handrail attaching screws are shipped installed on the stair. Remove handrail attaching screws. Note location of the 1.00" and 1.25" long screws.
4. Position handrail for installation. Check for proper alignment of screw hole holes. Support posts can be moved slightly to align holes. If necessary, use a rubber mallet to tap posts unto alignment.
5. Working down from the top handrail support post, secure handrail to stairs using the 1/4-28 screws.

4.3.2 Platform Handrails (Wings)

The platform handrails are shipped completely assembled and strapped to the platform deck.

1. Remove strapping and padding. Left and right handrails can be identified by observing position of bumpers (forward) and notched adjustment tracks (inboard).
2. Remove the rear stops from the lower tracks.
3. Using two people, place forward wheel of handrail onto lower track and slide upper (adjustment) track into slots in slide blocks. Slide handrail forward until rear wheel rests on lower track.
4. Install other platform handrail as described in step 3.
5. Re-install rear stops on lower tracks.
6. Slide handrails from stop to stop. Check for ease of operation and security in detents. If necessary, adjust the slide blocks.

4.4 MISCELLANEOUS PREPARATION

4.4.1 Cleaning

1. Wash road dirt from stair sections and chassis.

4.5 FLOODLIGHT

1. Remove the protective covering from the floodlight under platform.

4.5.1 Movable Handrails

1. The handrails have been strapped in position. Remove the straps.

4.5.2 Stabilizers

1. Each stabilizer is secured in the UP position. Remove straps.

4.5.3 Hydraulic Oil

1. Check level of hydraulic oil in reservoir. Correct level is at "FULL" mark on sight gauge with all actuating cylinders retracted. Working capacity of reservoir is 15 U.S. gallons (57 liters). See Chapter 2 for hydraulic oil specifications.

4.5.4 Fastenings

1. Check all fastenings throughout the unit for tightness and security.

4.5.5 Operational Check

1. Operate the unit in all functional modes. Check for proper control responses. Observe hydraulic fittings for leakage, etc.

IMPORTANT! Familiarize yourself with Section 1 and 2 before attempting to operate the unit.

4.6 RECORD AIRCRAFT SERVICING DATA

It is recommended to record the stair lock lever index positions for each type of aircraft serviced, after determining this on the first application. There are index numbers at the stop block locations under the adjustable stair section on the right side. Use these settings thereafter. The stair lock lever (a pivoting pawl) and markers are visible through the roof window. Use these settings before approaching the aircraft in the future to lessen the possibility of error or damage. See 2 - 2.4.

4.7 SHIPPING THE UNIT

If the unit is to be shipped to another location, it should be properly prepared to prevent damage. All component parts that were strapped or otherwise prepared at the factory for initial delivery should again be prepared in a similar manner. The front spring tie-downs should also be removed and the original rubber pads installed. Loosen the rear spring tie-downs until sufficient spring action is obtained. Store both front spring tie-down parts in appropriate locations so that they may be installed at next using station.

This Page Intentionally Blank

CHAPTER 2 MAINTENANCE

TABLE OF CONTENTS

1 SERVICING

⚠WARNING Perform lockout/tagout procedures before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could cause serious injury or death.

⚠WARNING Follow the recommended maintenance program to prevent unsafe operation or accidents.

⚠CAUTION Keep maintenance area clean and dry. Oily and wet spots are slippery, greasy rags are a fire hazard, and wet spots are dangerous around electrical equipment.

The following is a guide for conducting periodic inspections on the passenger stairs to ensure long service life. The frequencies shown are for the unit operating in average U.S. climate. If the unit is operated in adverse climatic conditions, i.e., salt spray, extreme cold or dusty environments, etc., adjust the inspection schedules to an appropriate frequency.

Servicing the Wollard Passenger Stair requires little more attention than other conventional vehicles of its type. No special tools are required, other than those normally found in an airline ground support equipment servicing facility. All work should be performed in accordance with standard shop practices.

1.1 NMC-Wollard, Inc. Torque Values

The following data is excerpted from SAE Report J1701, March, 1999. The complete report is available from SAE at www.sae.org. It contains detailed information about variables for torque management to achieve correct fastener joint tightening. This is an advisory guide and responsibility for its application lies with the user. Individual application discretion is recommended.

INCH SERIES TIGHTENING TORQUE, FT-LB

Bolt Size	Grade 2 Dry	Grade 2 Lubed	Grade 5 Dry	Grade 5 Lubed	Grade 8 Dry	Grade 8 Lubed
0.250-28	7	5	10	8	14	11
0.250-20	6	5	9	7	12	9
0.3125-24	13	10	20	15	28	21
0.3125-18	12	9	18	14	25	19
0.375-24	23	17	35	27	50	38
0.375-16	20	15	31	24	44	33
0.4375-20	36	27	56	42	78	59
0.4375-14	32	24	50	38	70	53
0.500-20	55	42	85	64	120	90
0.500-13	49	37	76	32	107	80
0.5625-18	78	59	121	91	171	128
0.5625-12	70	53	109	82	154	115
0.625-18	110	82	170	127	240	180
0.625-11	97	73	150	113	212	159
0.750-16	192	144	297	223	420	315
0.750-10	172	129	269	201	376	282
1.000-12	-	-	704	528	995	746
1.000-8	-	-	644	483	909	681

METRIC TIGHTENING TORQUE, N-m

Bolt Size	Class 8.8 Dry	Class 8.8 Lubed	Class 9.8 Dry	Class 9.8 Lubed	Class 10.9 Dry	Class 10.9 Lubed
8.0 x 1.25	26.40	19.80	28.50	21.40	36.50	27.30
10.0 x 1.50	52.20	39.20	56.60	42.40	72.20	54.20
12.0 x 1.75	91.00	68.00	99.00	74.00	126.00	94.00
14.0 x 2.00	145.00	109.00	157.00	118.00	200.00	150.00
16.0 x 2.00	226.00	170.00	245.00	184.00	313.00	235.00
20.0 x 2.50	441.00	331.00	478.00	358.00	610.00	458.00
24.0 x 3.00	762.00	572.00	826.00	620.00	1055.00	791.00
30.0 x 3.50	1515.00	1136.00	1641.00	1231.00	2095.00	1572.00
36.0 x 4.00	2647.00	1985.00	2868.00	2151.00	3662.00	2746.00

37° TUBE FITTINGS & PIPE FITTINGS

Dash #	37° Swivel Nut Ft-Lbs	37° Jic Flats from Finger Tight	O-Ring Lock Nut Ft.-lbs.	Pipe Dia. (Inch)	NPT Ft.-lbs.	NPT Turns from Finger Tight
-04	10	2	8	1/4	25	2 ½
-06	20	1 1/4	13	3/8	40	2 ½
-08	40	1	21	½	54	2 ½
-10	60	1	33	-	-	2 ½
-12	80	1	48	3/4	78	2 ½
-16	110	1	63	1	112	2 ½
-20	130	1	-	1 1/4	154	2 ½
-24	160	1	-	1 ½	211	2 ½
-32	250	1	-	2	300	2 ½

Torque Conversion: Ft-Lbs = 0.7376xN-m N-m = 1.356xFt-Lbs

NOTE: Do not use these values if a different torque value is given for a specific procedure.

1.2 Preventative Maintenance

1.2.1 Periodic Maintenance

FREQUENCY	DESCRIPTION OF PROCEDURE
AS REQUIRED	Inspect truck engine and chassis in accordance with the manufacturer's recommended maintenance schedule
WEEKLY *Every 50 Hours*	Check level of hydraulic oil in hydraulic reservoir.
	Add oil as indicated. Mobil DTE-13 is recommended.
	If an excessive amount of oil is required, start engine, turn on pump and check for leaks after adding oil to FULL mark on dipstick.
	Oil level should be checked with all hydraulic cylinders in full retracted position.
MONTHLY *Every 100 Hours*	Clean Y-Strainer. Place suction line shutoff valve in OFF position. Valve is located in the 1-inch hydraulic line under truck bed. The Y-strainer is located in same line just forward of shutoff valve.
	Remove strainer from bottom of Y-fitting by removing hexagon shaped reducing bushing.
	Clean foreign particles from strainer with a grease solvent.
	Allow solvent to dry.
	Replace strainer in Y-fitting.
	Clean side panels, threads and platforms. Mix 33% Kensonic-C (or equal), 33% mineral spirits and 33% water.
	Wash with above solution using cloth or sponge. Rinse with water hose and wipe dry.
ANNUAL *Every 2000 Hours*	Change hydraulic oil. Drain hydraulic system and refill with new, filtered oil.

1.3 Hydraulic System - Special Instructions

1.3.1 Hydraulic System Safety

⚠WARNING To minimize risk of serious injury or death, follow these hydraulic servicing precautions:

- Follow all necessary lockout/tagout procedures.
- Hydraulic systems have residual, stored pressure. Relieve all pressure from the hydraulic system before servicing.
- Allow fluid to cool before working on system.
- Hydraulic fluid escaping under pressure can have sufficient force to enter eyes and penetrate skin. If fluid gets in eyes or skin, flush with large quantities of water and seek medical attention.
- Wear eye protection when servicing hydraulic components or systems.
- Keep all hoses and connections in good serviceable condition. Check before start-up and periodically during operation.

- Do not investigate for leaks with hands. Use a large piece of cardboard.

1.3.2 Hydraulic System – Special Instructions

NOTICE! To minimize hydraulic system damage, do the following:

- Cleanliness is the best way to insure satisfactory component life, on either new or repaired units. Cleaning parts by using a solvent wash and air drying is adequate if clean solvent is used. This is precision equipment. The internal mechanism and related items must be kept free of foreign materials and chemicals.
- Protect all exposed sealing surfaces and open cavities from damage and foreign materials.
- Always replace gaskets and O-rings. Clean gasket sealing surfaces prior to installing new gasket. Lightly lubricate all O-rings with clean petroleum jelly prior to assembly.
- Keep oil storage areas clean and dry.
- Keep barrel bungs covered and sealed until you're ready to use the oil. Clean the bung seals before removing them, and clean the bung before removing it.
- Use only clean pumps and conduits to transfer fluid from barrels to the reservoir. Clean the system's entry port thoroughly.
- Filter all fluid introduced into the reservoir through a nominal, no-bypass, 10-micron filter. Do not use a bucket or such method.
- Never add used fluid to the system. The high costs of downtime and component replacement is more costly than the price of new oil.
- Never mix hydraulic fluids. It is highly possible that the additive package of one fluid will not be compatible with the other's additives. You can end up with a fluid in which none of the additive packages do their jobs.
- In the event of a catastrophic failure of a pump or motor: Drain, clean, flush the system, and change filters. Otherwise, metal particles and dirt can remain in the system to cause damage after you replace the component.

1.3.3 Changing Reservoir Oil

1. To drain tank, place a container under the tank and remove drain plug. Drain and discard oil.
2. Replace container under the open drain and flush tank interior with a mineral spirits type solvent. Allow time for the cleaning material to drain and tank interior to dry. A jet of air (low pressure) applied into the tank will speed the drying. Remember, keep the tank clean!
3. Replace drain plug and fill tank with recommended oil to proper level on dipstick (MOBIL DTE-13). Tank capacity is 15 gallons [57 liters].
4. Start engine and operate system. Recheck oil level. Add oil if required.

1.4 General Lubrication Diagram

Item	Specification	Fig.
Lubricate stair unlock mechanism shaft through the grease fittings on each shaft bracket.	All purpose grease	1
Lubricate the safety release linkage to both the stair and upper frame support.	SAE No.10	1
Lubricate the moveable handrail wheel bearings and latches.	SAE No. 10	1
Apply coating of grease to inside of main channel.	All purpose grease	1
Lubricate truck components as recommended by truck manufacturer.	Ford F300 manual	1
Lubricate stabilizer pivot pins.	SAE No. 10	1

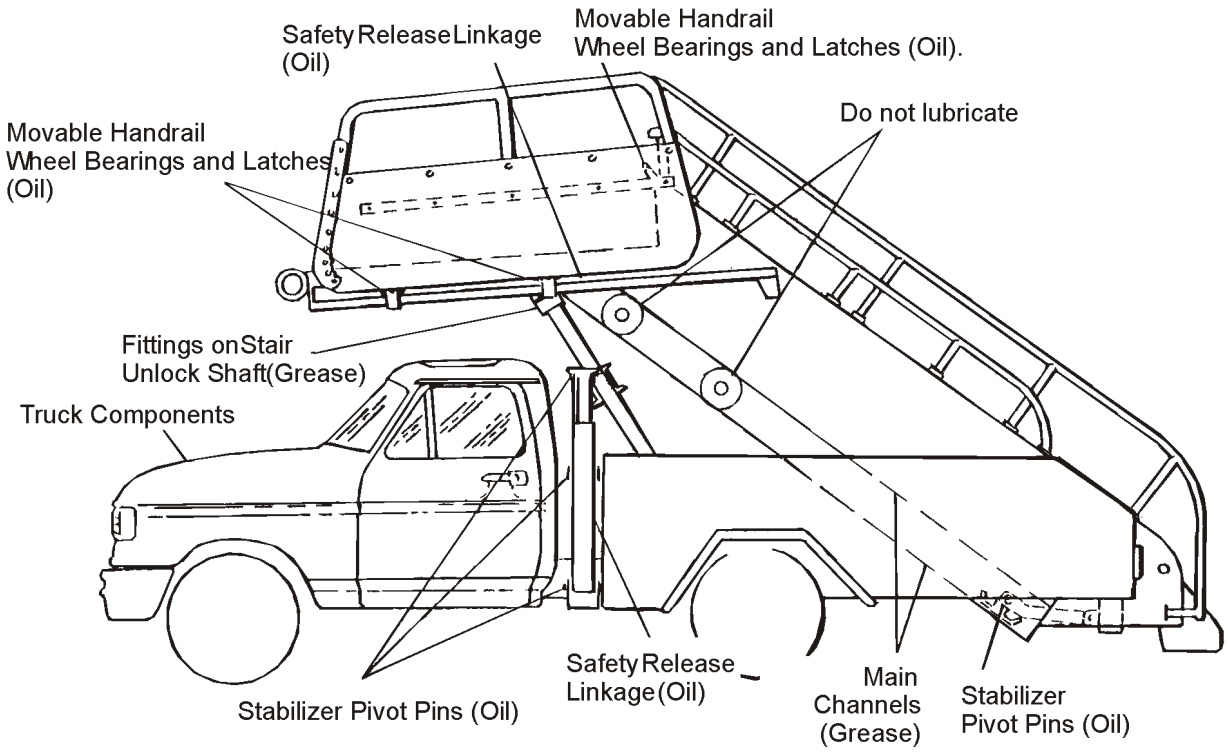


FIGURE 1.
LUBRICATION POINTS

This Page Intentionally Blank

2 TROUBLE SHOOTING

⚠WARNING Perform lockout/tagout procedures before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could cause serious injury or death.

2.1 Basic Troubleshooting - Hydraulic System

Problem	Possible Cause	Remedy
Adjustable section, stabilizers, or A-frame won't operate	Insufficient hydraulic oil in system	Add oil in reservoir to "FULL" mark on dipstick. Avoid overfilling by checking and replenishing oil supply only when all hydraulic cylinders are fully retracted.
	Shutoff valve in suction line under truck not open	Open valve.
	Belt worn, slipping, or broken	Replace belt if worn or tension is out of spec.
	Leaks in hydraulic system	Check all lines, connections and components for leaks. Tighten or replace leaking components.
	Dirty Y-strainer	Clean strainer with a grease solvent.
	Hydraulic pump defective	Repair or replace pump.
	Hydraulic cylinder defective	Repair or replace cylinder.
	System pressure relief valve defective or improperly adjusted	Replace relief valve section of control valve.
	Stair or A-frame unlock solenoid defective	Check for voltage to solenoid and control relay. Check continuity. Replace solenoid. Adjust linkage.
	Electrical Controls Not Functioning	See Schematics, Figures 3 & 4.
	Solenoid Valve Or Unloader Valve Not Functioning	See Figure 7. See Hydra force Combination Valve - 307575 in Chap.5.
	Magnetic Pump Clutch not energizing when Master Switch is on.	See Schematics, Figures 3 & 4.

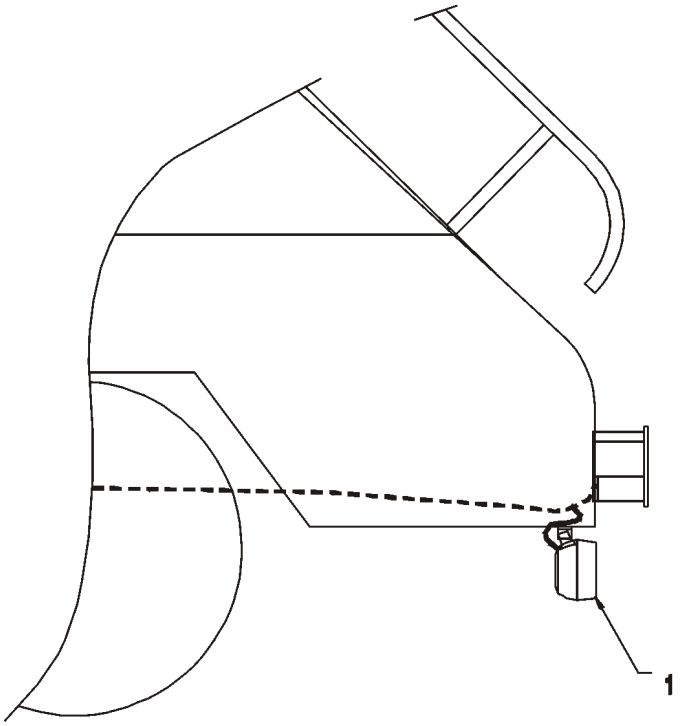
2.2 Basic Troubleshooting - Mechanical

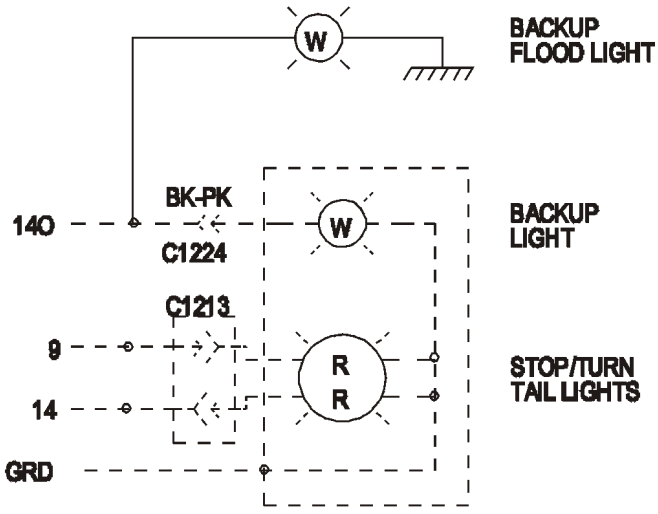
Problem	Possible Cause	Remedy
Front only or rear only stabilizers operate.	Supply hose leaking	Check hose for pressure.
	Pilot-operated check valve defective	Replace defective pilot-operated check valve.
Upper section of A-frame will not raise	A-frame flow control valve defective	Replace valve.
	Breather plug in cylinder obstructed	Remove and clean breather plug.
A-frame will not lower	Front support frame unlock solenoid defective	Refer to Hydraulic System troubleshooting.
	Unlock pawl loose on shaft	Check pawls for security; replace roll pins if missing or defective.
	Flow control valve defective	Replace flow control valve.
Adjustable section will not extend; stabilizers will extend	Adjustable section overloaded	Adjust load.
	Foreign matter between channels and main support wheels	Clean channels and wheels. Lubricate channels with all-purpose grease.
Adjustable section will not lower	Objects left on stair treads jammed between intermediate platform and adjustable platform	Raise section and remove objects; check for damage.
	Stair unlock solenoid defective	Refer to Electrical System troubleshooting.
Adjustable section lowers too slowly	System relief valve set too low	Adjust relief valve to 1,200 psi (84.37 kgps cm).
	Foreign matter between channels and main support wheels	Clean channels and wheels. Lubricate channels with all-purpose grease.

2.3 Basic Troubleshooting - Electrical System

Problem	Possible Cause	Remedy
"STABILIZERS NOT RETRACTED" indicator does not go out when stabilizer is retracted	Proximity switch improperly adjusted	Readjust switch.
	Proximity switch defective	Replace defective switch.
	Relay CR4 defective	Replace defective relay.
Pawls do not disengage ratchet teeth upon command from SAFETY RELEASE switch	Defective unlock solenoid on stair or A-frame locking mechanism	Refer to "Hydraulic System/Adjustable Section "...will not operate" at beginning of this table.
No response from any electrical command	Open circuit	Check wiring for continuity.
	Defective 70-amp main power supply circuit breaker	Replace circuit breaker.
	Defective main power relay CR1	Check for voltage. Replace relay.
"Stabilizer Not Retracted" indicator lamp does not light when stabilizer is extended	Defective indicator	Replace indicator.
	Limit switch actuators stuck	Check switch actuators. Replace switch if defective.
	Limit switches improperly adjusted	Readjust switches.
	Limit switches defective	Replace switches.
	Defective circuit breaker	Replace appropriate 20-amp circuit breaker
"LIGHTS ON" indicator light or platform spotlight does not illuminate when switch is on	Defective spotlight lamp and/or spotlight indicator lamp	Replace lamp.
	Defective switch	Replace switch.
	Defective 25-amp circuit breaker	Replace circuit breaker.
	Short in wiring	Check wiring and repair.
Stair lights, indicator light and/or stair tread illuminating lights do not illuminate when "LIGHTS" switch is on	Defective lamp	Replace lamp.
	Defective switch	Replace switch.
	Defective 25-amp circuit breaker	Replace circuit breaker.
	Open circuit	Check continuity and repair.
	Short in wiring	Check wiring.

2.4 Electrical and Hydraulic Schematics and Diagrams

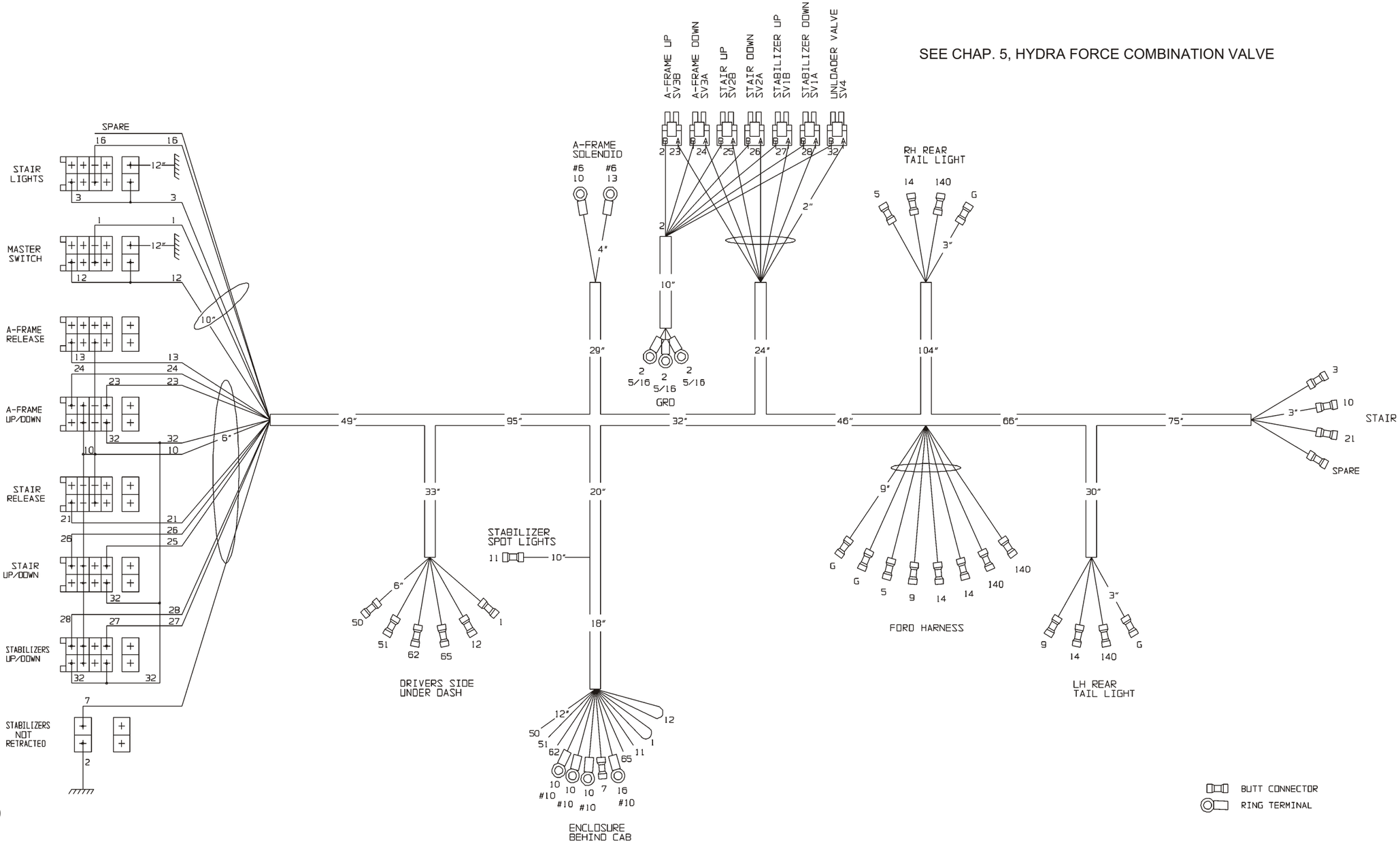




18359

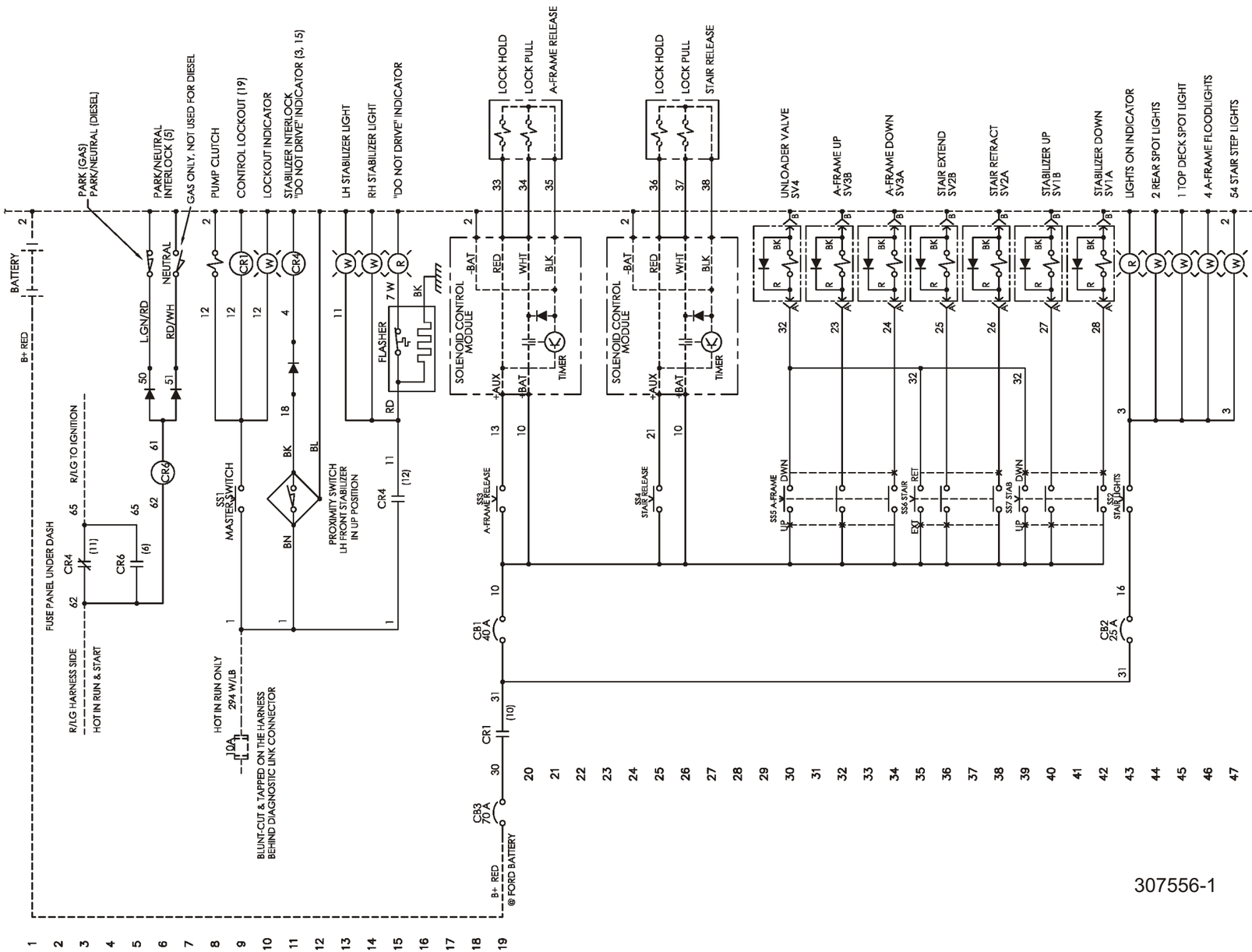
TYP. BOTH SIDES

FIGURE 1.
LIGHTS, FLOOD, BACKUP, OPTION



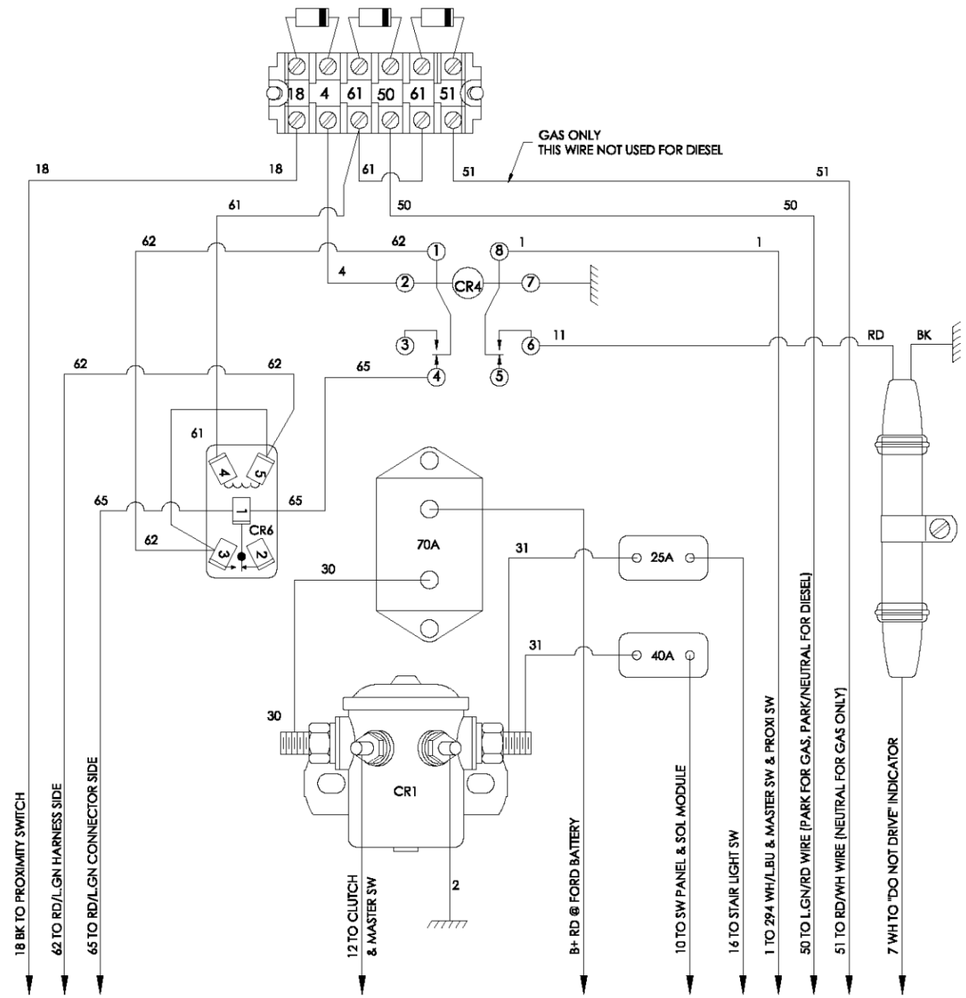
307609

FIGURE 2.
HARNESS, CHASSIS

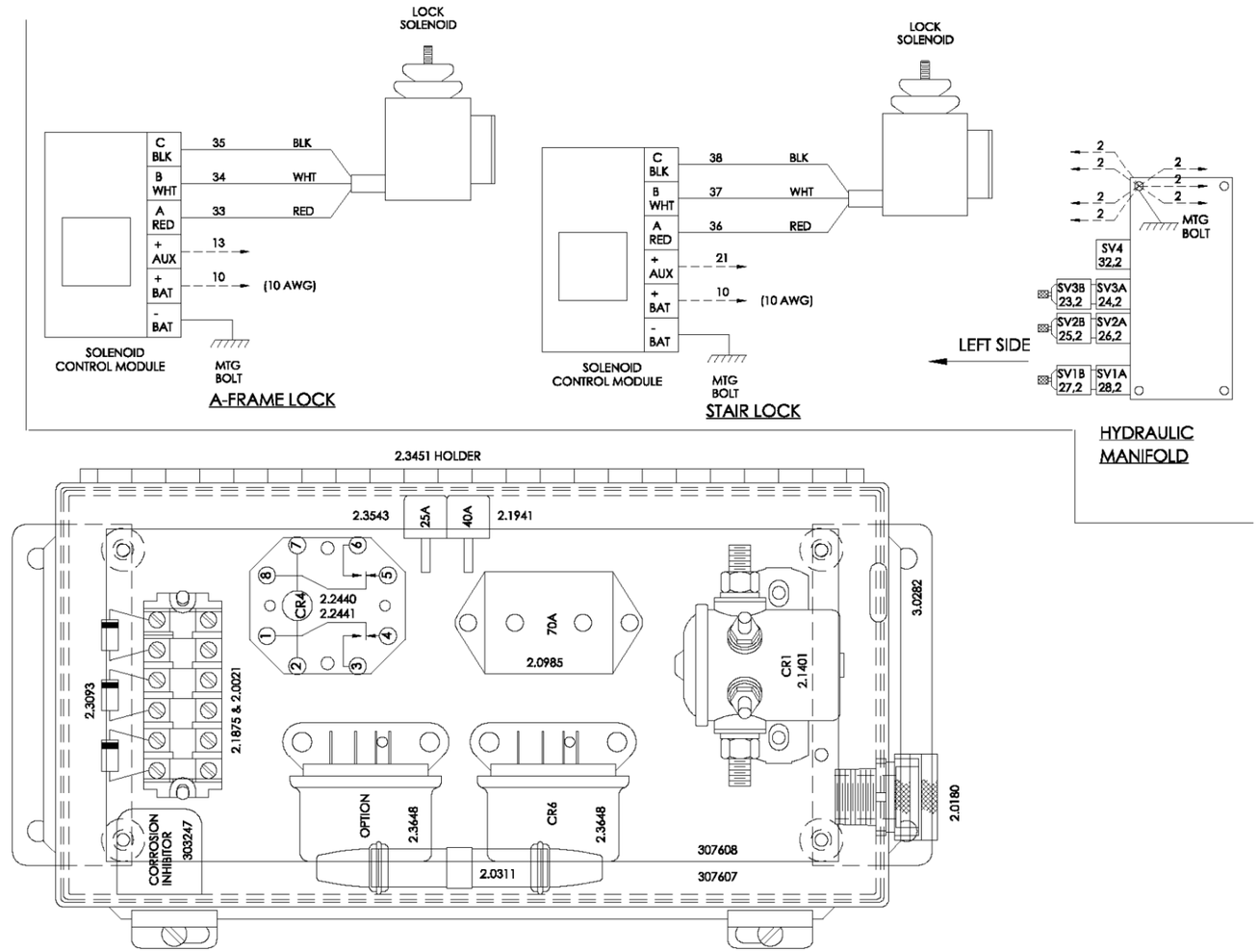


307556-1

FIGURE 3.
ELECTRICAL SCHEMATIC, GAS/DSL, MANIFOLD HYD'S



307556-2



307556-3

FIGURE 4.
WIRING DIAGRAM, GAS/DSL, MANIFOLD HYD'S

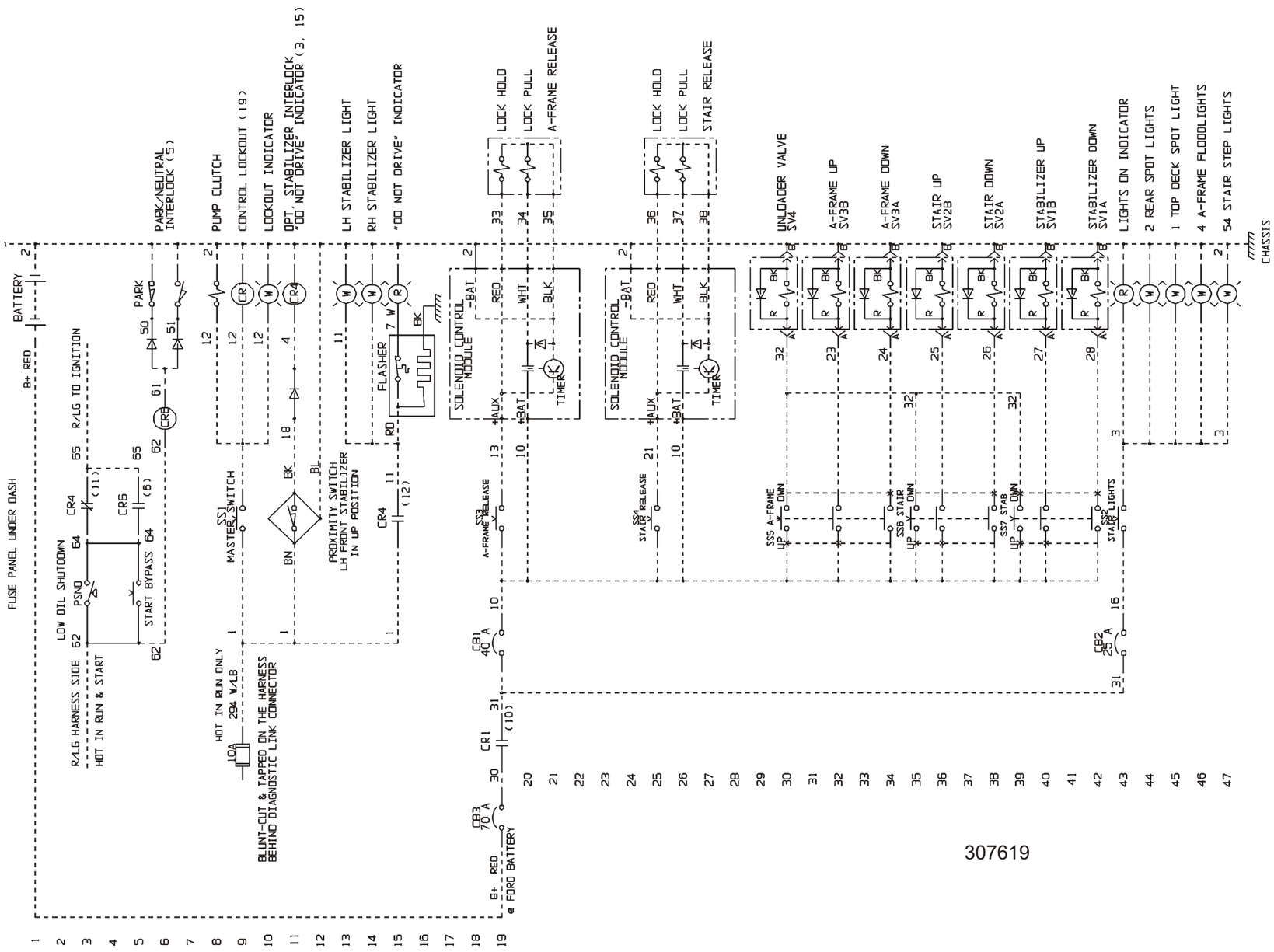


FIGURE 5.
SHUT DOWN, LOW OIL, TMPS200, GAS/DSL, OPTION, ELEC. SCHEMATIC (SN 1381+)

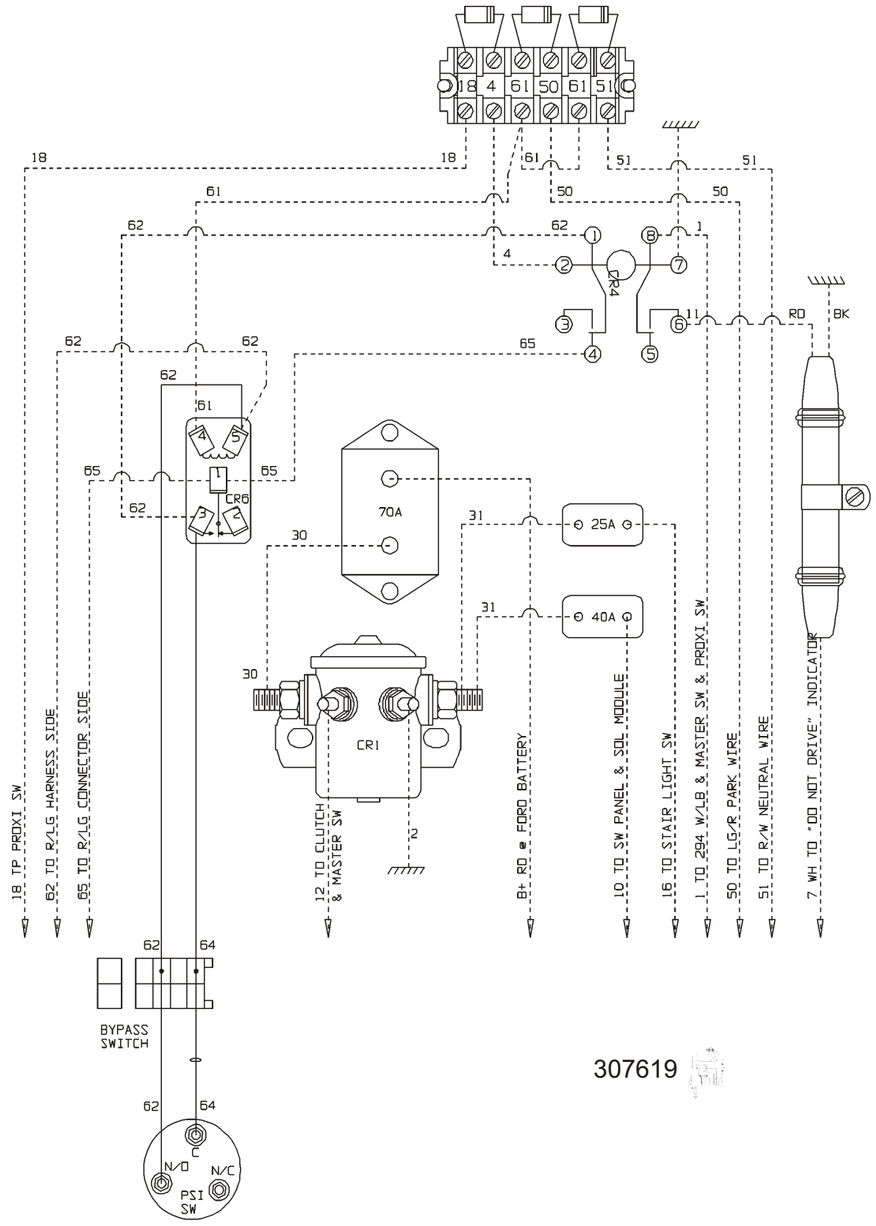


FIGURE 6.
SHUT DOWN, LOW OIL, TMPS200, GAS/DSL, OPTION, WIRING DIAGRAM

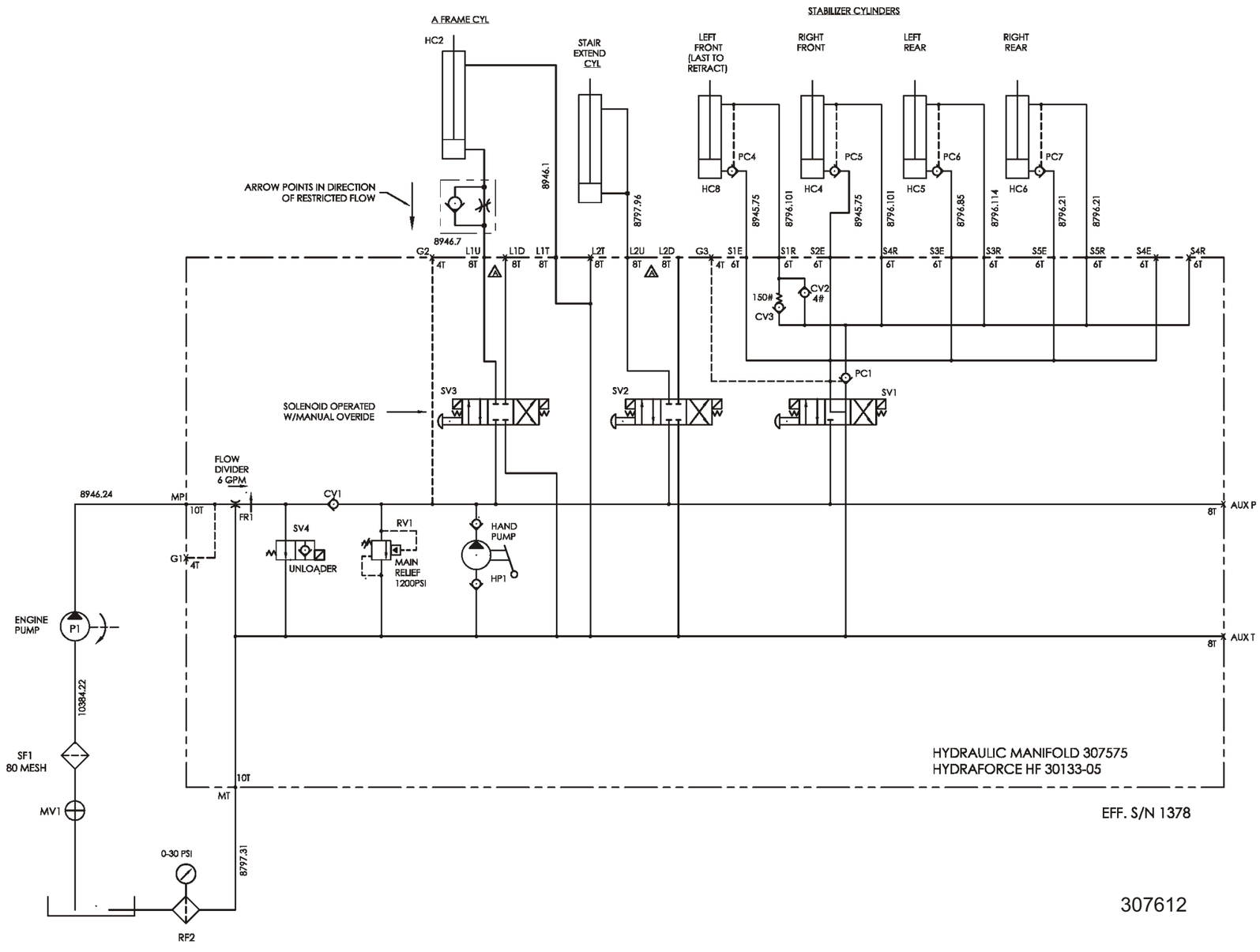
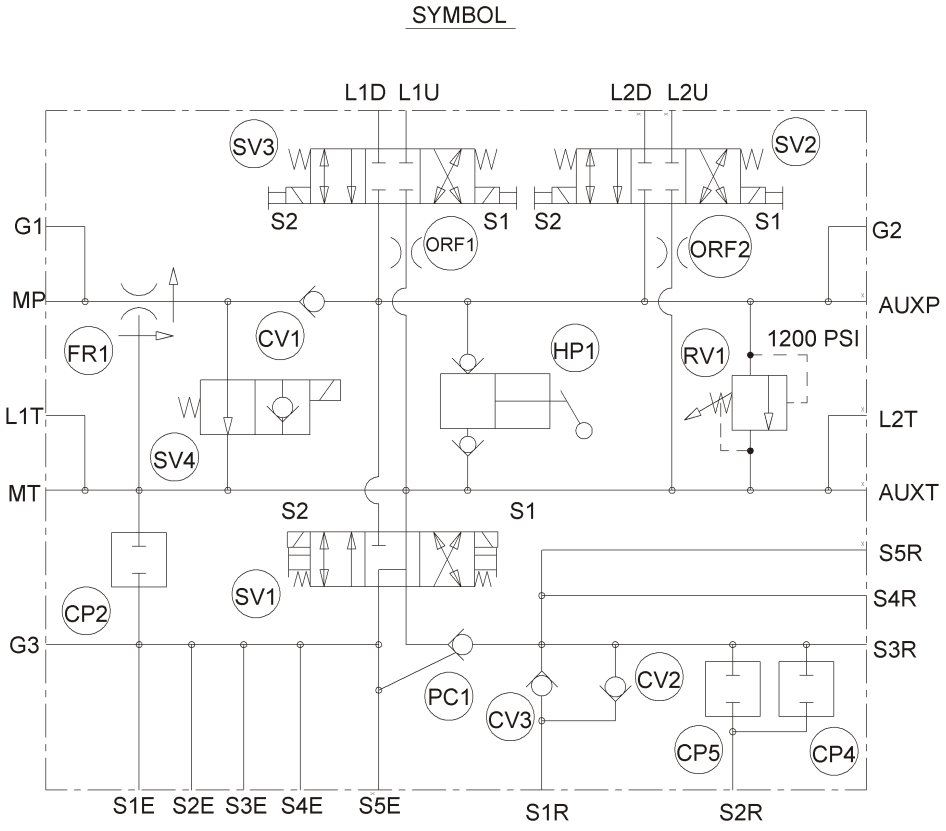


FIGURE 7.
HYDRAULIC SCHEMATIC



307575

FIGURE 8.
HYDRAULIC MANIFOLD, LIFT/STABILIZER

This Page Intentionally Blank.

3 REMOVAL AND INSTALLATION

⚠WARNING Perform lockout/tagout procedures before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could cause serious injury or death.

⚠CAUTION Using non-original replacement parts is not recommended. Their use may cause unit failure and/or affect vehicle safety.

NOTE: The instructions in this chapter are recommended procedures only. Procedures may be altered to fit the user's needs and facilities.

3.1 Stair Assembly

3.1.1 Special Tools and Equipment

The following equipment is needed to perform this operation:

- 2 hoists.
- 2 cable slings.
- 1 forklift (or a combination of 1 hoist and 1 forklift or other suitable means of lifting the stair components).
- 3 open-top tables approximately 3 feet high, 4 feet wide and 5 feet long, mounted on casters (required to handle the main and adjustable stair sections).
- 2 lift pins (Part # LP36D2-038-1) or 3/4 X 4" hex head bolts and nuts.
- 1 length of 1-1/4" pipe, 8 feet long.
- 1-1/8" pipe nipple.
- 6 feet of 1/8-inch rubber hose (neoprene or other oil resistant type).

3.1.2 Stair Removal

1. Support upper end of stair by placing a pipe (1-1/4-inch standard pipe or other member of sufficient length and strength), across the underside of the top platform so that it protrudes out each side.
2. Suspend two cable slings from a hoist and place a sling around each pipe end so it cannot slip off or shift.
3. Remove the bolts from each side of the lower end of the main section at lower handrail attach angles and insert lift pins. (3/4-inch hex head bolts and nuts can be substituted if Wollard lift pins are not available.)
4. Using a second hoist with cable slings, attach slings to pins (or bolts).

5. Turn hydraulic shutoff valve (located between tank and Y-strainer) to "OFF" position before disconnecting hydraulic lines.
6. Disconnect battery.
7. Disconnect all electric wires and hydraulic lines from truck section to the stair. Cap all open hydraulic lines and ports.
8. Take sufficient strain on forward hoist and disconnect A-frame from main stair section by removing two attaching bolts.
9. Remove the two attach bolts from lower end of main stair frame.
10. Be sure all lines and cables are disconnected and clear. Hoist stair assembly from support frame and drive truck away.

3.1.3 Stair Installation

1. Set adjustable section to lowest position on the main section.
2. Replace bolt in each lower handrail attach angle with lift pins. (3/4-inch hex head bolts and nuts can be substituted if Wollard lift pins are not available.) Attach hoist cables to lift pins.
3. Support upper end of stair by placing a 1-1/4-inch pipe of sufficient length across underside of top platform so that it protrudes out each side. Place hoist cable sling around each pipe end making sure that it cannot slip off or damage platform.
4. Hoist stair assembly to sufficient height.
5. Back truck section under stair assembly.
6. Align attach lugs of main section with attach lugs at lower end of main stair frame.
7. With upper end of stair assembly at sufficient height, align A-frame lugs with upper lugs on main stair. Install bolts.
8. Slowly release strain from hoist at upper end of stair and remove pipe support and slings.
9. Connect all electric wires and hydraulic lines from truck section to stair assembly.
10. Release strain from hoist at lower end of stair and remove sling and lift pins.
11. Replace original bolts through lower handrail attach angles.
12. Start engine.
13. Hold stair "SAFETY RELEASE" switch on and slowly operate "STAIR UP/DOWN" control handle to extend and retract cylinder to allow air to exit system. Lower stair and release "SAFETY RELEASE" switch.
14. Stop engine.
15. Check for hydraulic oil leaks.

3.2 Separating and Mating Stair Sections

3.2.1 Separating Stair Sections

1. Remove stairs from truck as outlined in preceding paragraphs.
2. Using a hoist, raise lower end of main section to approximately four feet above floor level.
3. Roll an open-end work table under stair and position with one end as close as possible to the underside of the top platform.
4. Lower platform end of stair onto table so that notches in safety rack will rest solidly when stair is fully lowered.
5. Lower the lower end of stair onto the table. Remove the hoist cable and pipe from top platform.
6. Place a table at lower end of main section.
7. Roll tables apart to extend adjustable section about ten inches. Remove clevis pin from upper end of hydraulic cylinder.
8. Disconnect tread light cable at splice on underside of adjustable section.
9. Roll table holding the adjustable section away from main section while simultaneously rolling a second table under main section.

IMPORTANT! To prevent main section from dropping onto table when adjustable section is pulled clear, main section should be blocked up just before adjustable section channels pass centerline of upper wheels.

3.2.2 Mating Stair Sections

NOTICE! Before mating adjustable section to main section, make sure that the channel tracks are clean and free of any foreign matter.

1. Apply a thin coat of all-purpose grease (Valvoline X-ALL MP grease or equivalent) approximately two inches wide down center of inside of each channel for entire length. Make sure that steel wheels on main section turn freely and are clean and lubricated.
2. If not already done, install lift pins in handrail lower attach angle on main section and slip on rig hoisting sling.
3. Make sure that upper end of main section has sufficient clearance from work table to allow mating of adjustable section.
4. Roll table with adjustable section into position with main section and slip the adjustable section channels over upper wheels on main section. Take care that wiring is kept clear while mating sections.

5. When adjustable section has mated sufficiently with main section, remove blocks from under upper end of main section and continue slipping sections together until upper platform level is approximately ten inches from highest step position on main platform.
6. Connect tread light cable at splice on underside of adjustable section.
7. Align holes in piston of hydraulic cylinder with holes in lugs of attaching brackets and insert clevis pins and lock pins. Slide sections together until upper platform level aligns with highest step of main section.

3.3 Stair Cylinder Removal and Replacement

3.3.1 Stair Cylinder Removal

NOTE: It is not necessary to remove the stair assembly to remove the cylinder.

1. Remove fiberglass side panels to allow clearance for lifting procedure in step 7.
2. Remove bolts from each side of lower end of main section at handrail attachment angles. Insert lift pins.
3. Raise hoist to lift weight of stairs from cylinder lower attach point.
4. Relieve hydraulic pressure from cylinder by operating cylinder control lever.
5. Disconnect hydraulic lines from cylinder.
6. Remove two 3/4-inch bolts and tie-downs attaching stairs to lower end of main stair frame.
7. Lift rear of stairs 3 to 4 feet. Upper portion will pivot at two attach points.
8. Remove lock pin from clevis pin in lower clevis of cylinder. Support end of cylinder and remove clevis pin.
9. Remove four bolts and nuts securing cylinder bracket and remove bracket.
10. Pull upper stair portion slightly forward if necessary to expose upper cylinder attach point.
11. Remove lock pin and clevis pin from upper clevis.
12. Pull cylinder out through hole exposed by removal of lower cylinder bracket.
13. Install the cylinder using the reverse removal instructions.
14. Start engine.
15. Hold stair "SAFETY RELEASE" switch on and slowly operate "STAIR UP/DOWN" control handle to extend and retract cylinder to allow air to exit system. Lower stair and release "SAFETY RELEASE" switch.
16. Stop engine.

17. Check for hydraulic oil leaks.
18. Replace side panels.

3.4 A-Frame Removal and Installation

3.4.1 A-Frame Removal

1. Remove side panels.
2. Support upper end of stair by placing a pipe (1-1/4" standard pipe is excellent), or other member of sufficient size and strength, across underside of top platform so that it protrudes from each side.
3. Suspend two cable slings from a hoist and place one sling around each pipe end. Assure that slings cannot slip off or shift.
4. Turn hydraulic shutoff valves under truck to "OFF" position. Disconnect hydraulic lines to A-frame lift cylinder. Plug open lines and ports.
5. Disconnect electrical leads to A-frame unlock relay solenoid and spotlight.
6. Raise hoist sufficiently to take load off the two upper attach bolts (main stair to A-frame). Remove upper attach bolts and nuts.
7. Raise hoist enough to provide clearance for removal of A-frame.
8. Clear A-frame of all attached wiring and hydraulic lines.
9. Support upper end of A-frame. Remove the attach bolts and nuts securing lower end of A-frame to stair support frame.
10. Using a second hoist, lift A-frame clear of attach lugs and remove from either side of truck. Move to work area for further breakdown.
11. Keep upper end of stair supported by first hoist.
12. Disassemble lift portion of A-frame (reference Chapter 4).
13. Install in opposite of removal procedures.
14. When installation is complete, start engine and slowly extend and retract cylinder to allow air to exit system.
15. Stop engine and check for hydraulic oil leaks.

3.5 Main Stair Frame Removal and Installation

3.5.1 Main Stair Frame Removal

1. Remove stair assembly.
2. Remove A-frame.
3. Remove bolts, nuts and straps holding main support frame.
4. Make sure all wires, lines, and hoses are clear. Attach suitable hoist cable slings to frame and lift frame from truck.

3.5.2 Main Stair Frame Installation

Installation is the reverse of removal.

3.6 Electrical Components Removal and Installation

Electrical system components are conventional items requiring conventional methods of mounting. An automotive mechanic possessing normal skills can accomplish removal and installation of any electrical part with little effort. Use the schematic diagram in this Chapter and the exploded views and parts listings in Chapter 4 as a guide.

3.7 Hydraulic System

Plumbing within the hydraulic system uses standard hydraulic lines, fittings, and hoses. Relief and check valve installations follow normal hydraulic system layout and mounting methods, assuring uncomplicated maintenance procedures. Major assemblies require more attention to installation methods. During removal of major components, observe mounting and installation, type of mounting hardware, and note order of disassembly. Also note any other peculiarities which will assist during installation. After replacing any component in the hydraulic system, run a complete operational check.

NOTICE! Use only MOBIL DTE-13 or equivalent in operating temperatures of +20°F to +120°F (-7°C to +50°C). Use Mobil Aero HFA or equivalent (MIL-H-5606A) in operating temperatures of -25°F to +50°F (-32°C to +10°C). Do not use hydraulic oils of different specifications. They may not be compatible and could result in damage to the hydraulic system components.

3.7.1 Hydraulic System Safety

⚠WARNING To minimize risk of serious injury or death, follow these hydraulic servicing precautions:
Follow all necessary lockout/tagout procedures.

- Hydraulic systems have residual, stored pressure. Relieve all pressure from the hydraulic system before servicing.
- Allow fluid to cool before working on system.
- Hydraulic fluid escaping under pressure can have sufficient force to enter eyes and penetrate skin. If fluid gets in eyes or skin, flush with large quantities of water and seek medical attention.
- Wear eye protection when servicing hydraulic components or systems.
- Keep all hoses and connections in good serviceable condition. Check before start-up and periodically during operation.
- Do not investigate for leaks with hands. Use a large piece of cardboard.

3.7.2 Hydraulic System Procedures

NOTICE! To minimize hydraulic system damage, do the following:

- Cleanliness is the best way to insure satisfactory component life, on either new or repaired units. Cleaning parts by using a solvent wash and air drying is adequate if clean solvent is used. This is precision equipment. The internal mechanism and related items must be kept free of foreign materials and chemicals.
- Protect all exposed sealing surfaces and open cavities from damage and foreign materials.
- Always replace gaskets and O-rings. Clean gasket sealing surfaces prior to installing new gasket. Lightly lubricate all O-rings with clean petroleum jelly prior to assembly.
- Keep oil storage areas clean and dry.
- Keep barrel bungs covered and sealed until you're ready to use the oil. Clean the bung seals before removing them, and clean the bung before removing it.
- Use only clean pumps and conduits to transfer fluid from barrels to the reservoir. Clean the system's entry port thoroughly.
- Filter all fluid introduced into the reservoir through a nominal, no-bypass, 10-micron filter. Do not use a bucket or such method.
- Never add used fluid to the system. The high costs of downtime and component replacement is more costly than the price of new oil.
- Never mix hydraulic fluids. It is highly possible that the additive package of one fluid will not be compatible with the other's additives. You can end up with a fluid in which none of the additive packages do their jobs.
- In the event of a catastrophic failure of a pump or motor: Drain, clean, flush the system, and change filters. Otherwise, metal particles and dirt can remain in the system to cause damage after you replace the component.

3.8 Wheel Mounting (Dual Rear Wheels)

Dual rear wheel vehicles are equipped with wheels attached to the wheel hubs with integral two-piece swiveling lug nuts. Lug nut torque must be 140 ft-lbs. + 15 ft-lbs.

Wheel change includes both front and rear wheels on dual rear wheel vehicles.

⚠WARNING To minimize the risk of tire/wheel failure and loss of vehicle control, when servicing tire/wheels:

- Do not use cleaning solvent on tires. Solvents cause deterioration of the rubber.
- Never inflate tires with air from systems using alcohol evaporators.
- Never mix rim parts of different manufacturers or different sizes.
- Do not use damaged parts.

⚠CAUTION After initially mounting wheel and tire assembly, recheck lug nut torque after the first hour of operation and after the first 8 hours of operation. After this, check monthly or every 250 hours, whichever comes first. Do not lube wheel studs as it will result in inaccurate tightening torque. Failure to follow these procedures could result in wheel mounting failure and loss of vehicle control.

3.9 Installation and Removal of Optional Extended Stair

3.9.1 Extended Stair Instructions

The extended stair option has three main parts: the Step Platform Assembly, the Deck Bumper Assembly, and the Wing Handrail Assembly.

The step platform assembly consists of a platform that provides an extra 16 inches of height above the standard deck and an extra 16 inches further forward of the standard deck. It is shipped fully assembled and installed to the top stair deck.

The deck bumper is included for use on the standard level deck only if the platform is removed.

The wing handrails and wings are shipped uninstalled. To install:

1. Unpack both wings and lay each on a non-scratch surface, flat side down.
2. Lay the right-hand wing handrail over the right-hand wing so the bracket holes line up with the holes in the wing frame.
3. Attach the handrail to the inside of the wing using 1/4-20 x 2.25 capscrews installed from either the top or the inside.
4. Do the same with the left-hand wing.
5. Install wings as described in Chapter 2 of the Wollard 252 manual.

3.9.2 Removing the Step Platform Assembly

If you want to remove the step platform assembly in order to reach lower aircraft door sill heights, perform the following steps:

1. Place stair and A-frame in DOWN position.
2. Remove the right-hand and left-hand wings.
3. Remove the sixteen ½-inch capscrews that hold the step platform to the main deck.
4. Using appropriate slings and forklift (or crane), lift the step platform off of the main deck and place on ground away from the work area.
5. Remove the wing handrails from the wings.
6. Reinstall the wings. Refer to Chapter 2.

NOTICE! If you remove the step platform, you must install the deck bumper onto the main deck. The bumper provides structural support to the deck as well as protecting aircraft from damage.

7. Install the deck bumper assembly to the front of the deck. Place washers and locknuts on the four studs after they are installed through the deck frame.

3.9.3 Reinstalling the Step Platform Assembly

Follow the above procedures in reverse order.

NOTICE! The deck bumper must be removed if the step platform is installed. If left on, the deck bumper will block the stair operator's view of the platform bumper, possibly resulting in damage to aircraft.

3.10 Installation of Optional Canopy

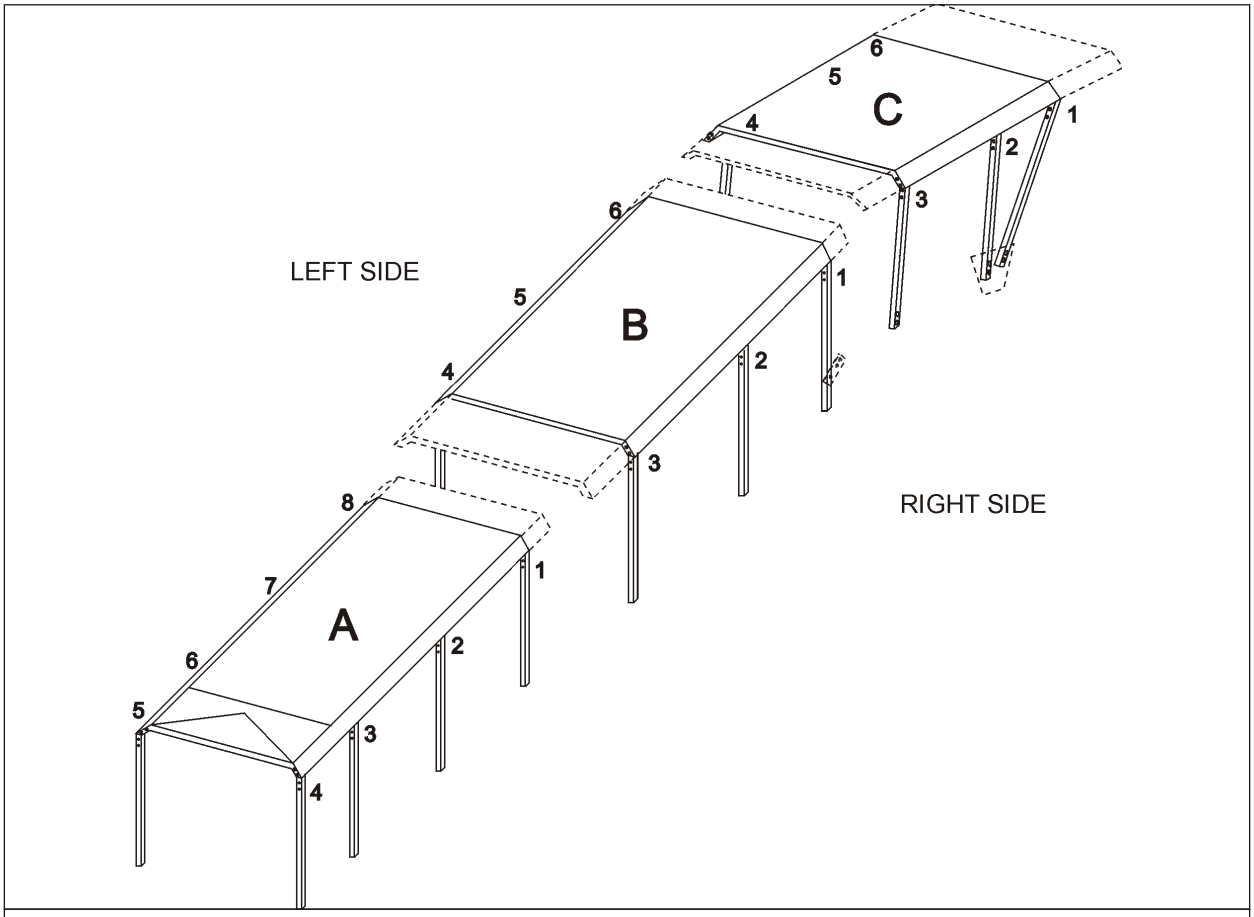


FIGURE 1. OPTIONAL CANOPY

3.10.1 Deck Section

Figure 2

The Deck section is the first canopy section to be installed. The stair must be DOWN.

1. Unpack wings and all canopy components.
2. Install wings onto stair deck. See instructions in the Passenger Stair Manual.
3. Install a temporary safety guard between the deck forward handrails. Suggested method: A steel bar or heavy wood beam secured to handrails with 10-15 wraps of reinforced tape (such as duct tape).

⚠WARNING Install a temporary safety guard between handrails across front of deck to help prevent a fall and furthermore each person working on the stair deck should wear a safety harness secured to the deck.

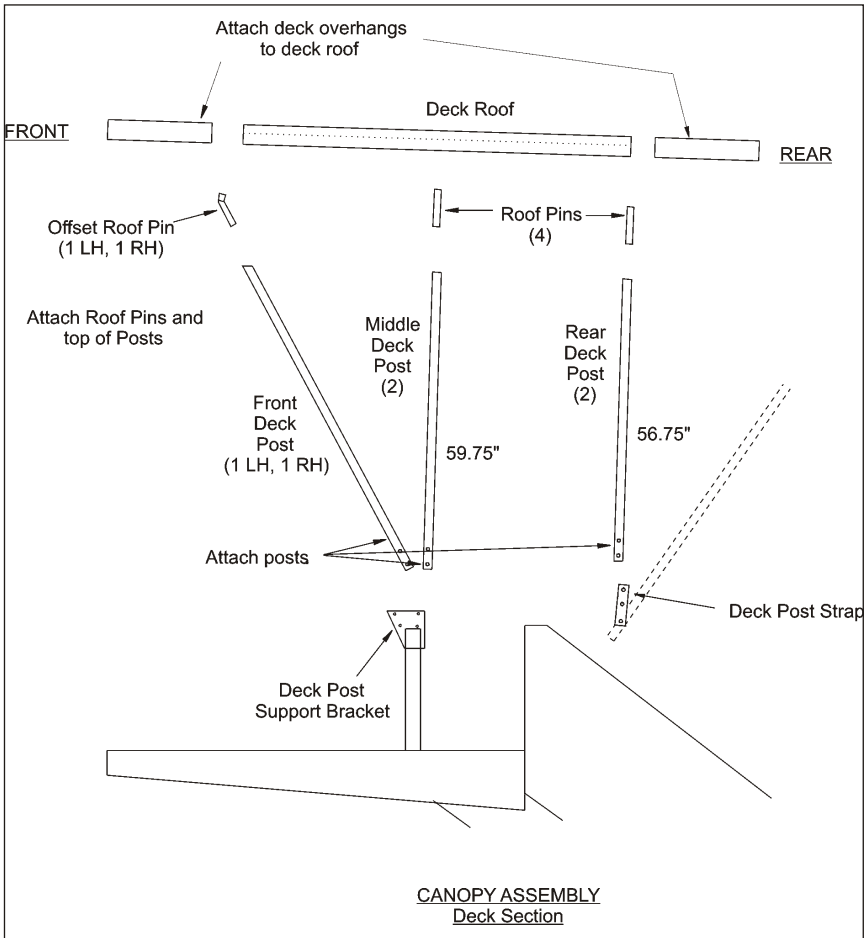


FIGURE 2.
CANOPY ASSEMBLY DECK SECTION

4. Place deck section canopy on a non-scratch surface, top side down.

NOTE: Roof pins are shipped installed.

5. Install (6) deck posts onto the roof pins. Refer to Figure 2 to determine correct location for the different post lengths. Secure the posts with 3/8 capscrews and washers. **Capscrews must face the same direction.**
6. Stand deck canopy section on its posts. Attach slings and lift deck section using a crane, OR, with four people, lift the deck section and carry it up to the stair deck.

7. Secure front and middle posts to outside of mounting plate with 3/8 capscrews and washers. **Capscrews should face inward.**
8. Lower Section

3.10.2 Lower Section

Figure 3 and Figure 4

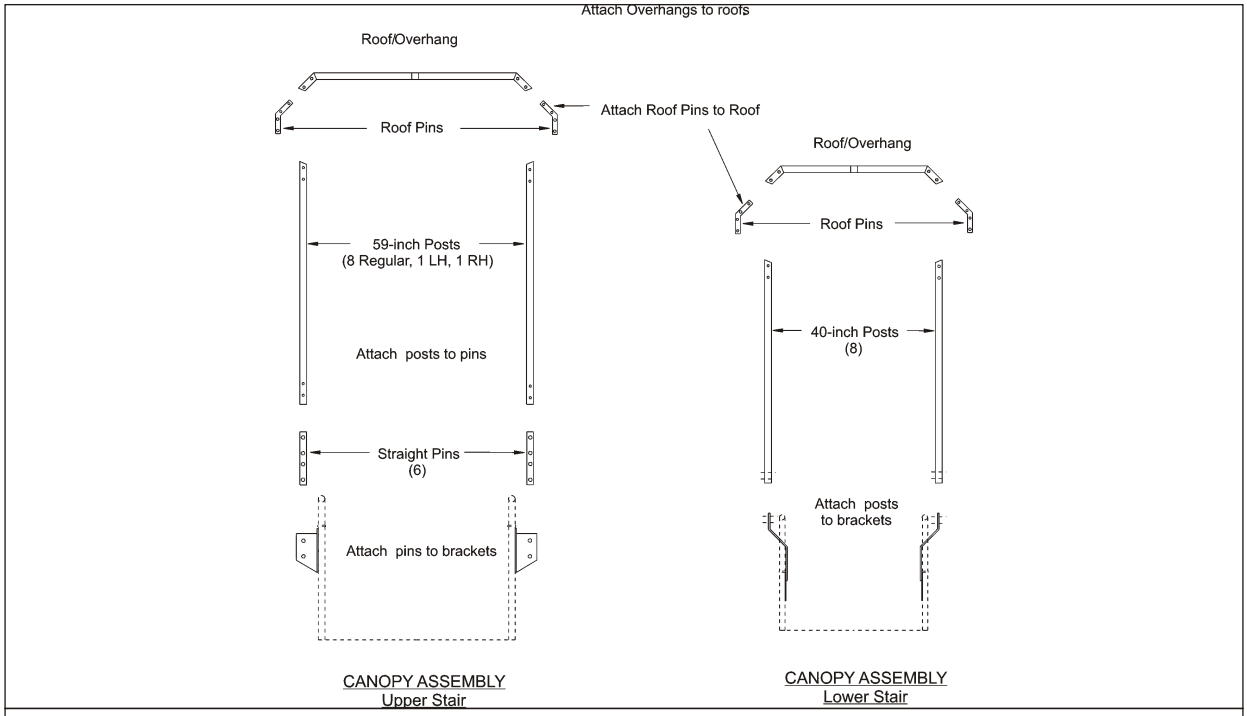


FIGURE 3. CANOPY ASSEMBLY LOWER SECTION

1. Install the deck section can opy.
2. Place lower canopy section on a non-scratch surface, top side down.

NOTE: Roof pins are shipped installed.

3. Install (8) 40-inch posts onto the roof pins. Install, but do not tighten, 3/8 x 0.75 capscrews and washers. All capscrews should face out.
4. Raise the stair to its fullest extent.
5. Stand lower section on its posts. With one person on each post (6 people needed), lift the section and carry it up the stair.
6. Place posts onto the brackets. Secure posts to brackets using 3/8 x 0.75 capscrews and washers. All capscrews should face out.

NOTE: The brackets are shipped installed on the stair.

7. Attach upper section overhang to upper section using 3/8 x 0.75 capscrews and washers.
8. Make sure upper Section handrails do not contact lower Section posts. If needed, loosen handrail and/or post fasteners and move handrails and/or posts and retighten fasteners.

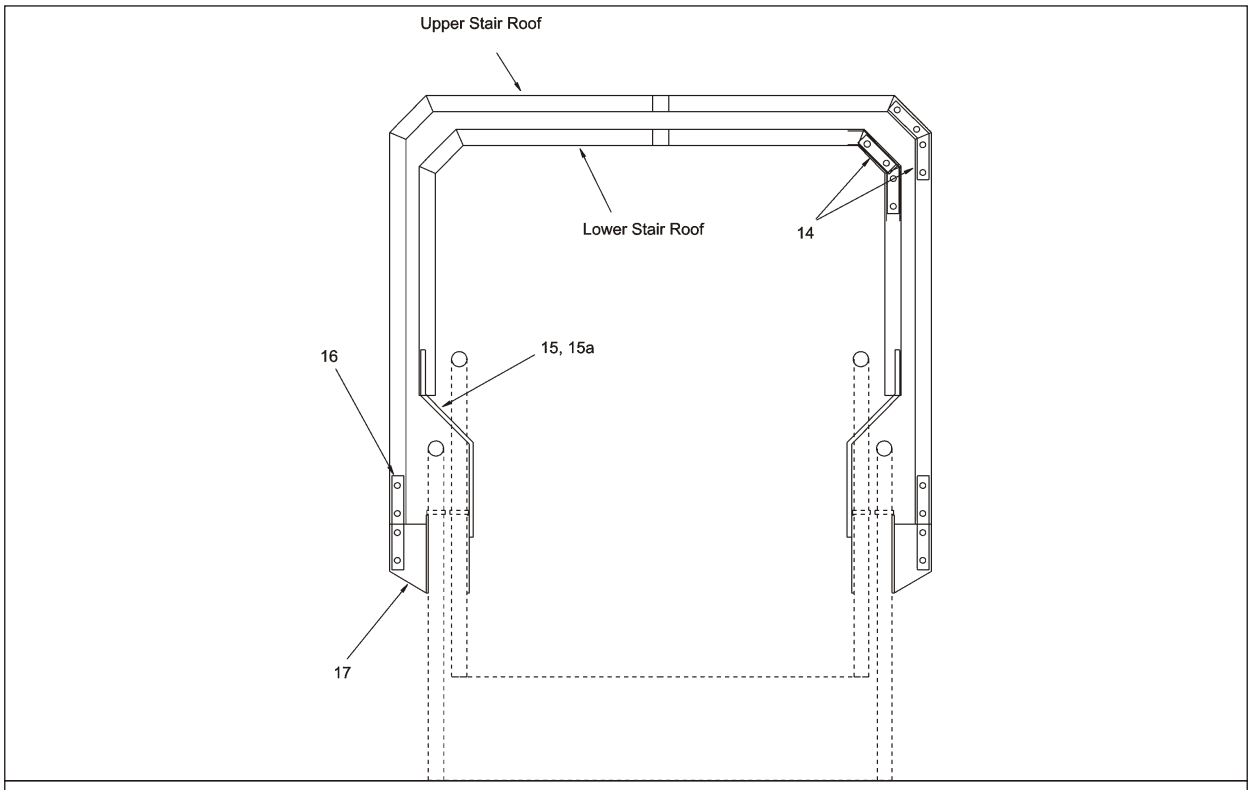


FIGURE 4. CANOPY ASSEMBLY LOWER SECTION

3.10.3 Final Assembly

1. Stand directly behind the stairs and check that the each canopy Section is centered and square. Check all clearances. Readjust as required.
2. Tighten 3/8-16 capscrews to pins inside aluminum tubes to 30 ft/lbs torque.
3. Tighten capscrews through aluminum tubes without deforming washers or tubes.

3.10.4 Upper Section

Figure 5

1. Install deck canopy Section and lower canopy Section.
2. Place upper canopy Section on a non-scratch surface, top side down.

NOTE: Roof pins are shipped installed.

3. Install (6) 59-inch posts onto the roof pins. Install, but do not tighten, 3/8 x 0.75 capscrews and washers. **All capscrews should face the same direction.**

NOTE: Two posts have an extra hole 11 inches from the bottom. These belong on the front pins. See Figure 5 to locate front end of canopy Section.

4. Raise stairs to maximum height.
5. Stand upper canopy Section on its posts. With one person on each post (6 people needed), lift the Section and carry it over the lower Section and up the stair.
6. Place posts onto the straight pins. Secure posts to straight pins using 3/8 x 0.75 capscrews and washers. At each joint, **all four capscrews should face the same direction.**
7. Attach rear deck Section posts to front post brackets. Use a deck post strap and three 3/8 x 2.75 capscrews, nuts, and washers on each post. **Locate strap and nuts on outside of tubes.**

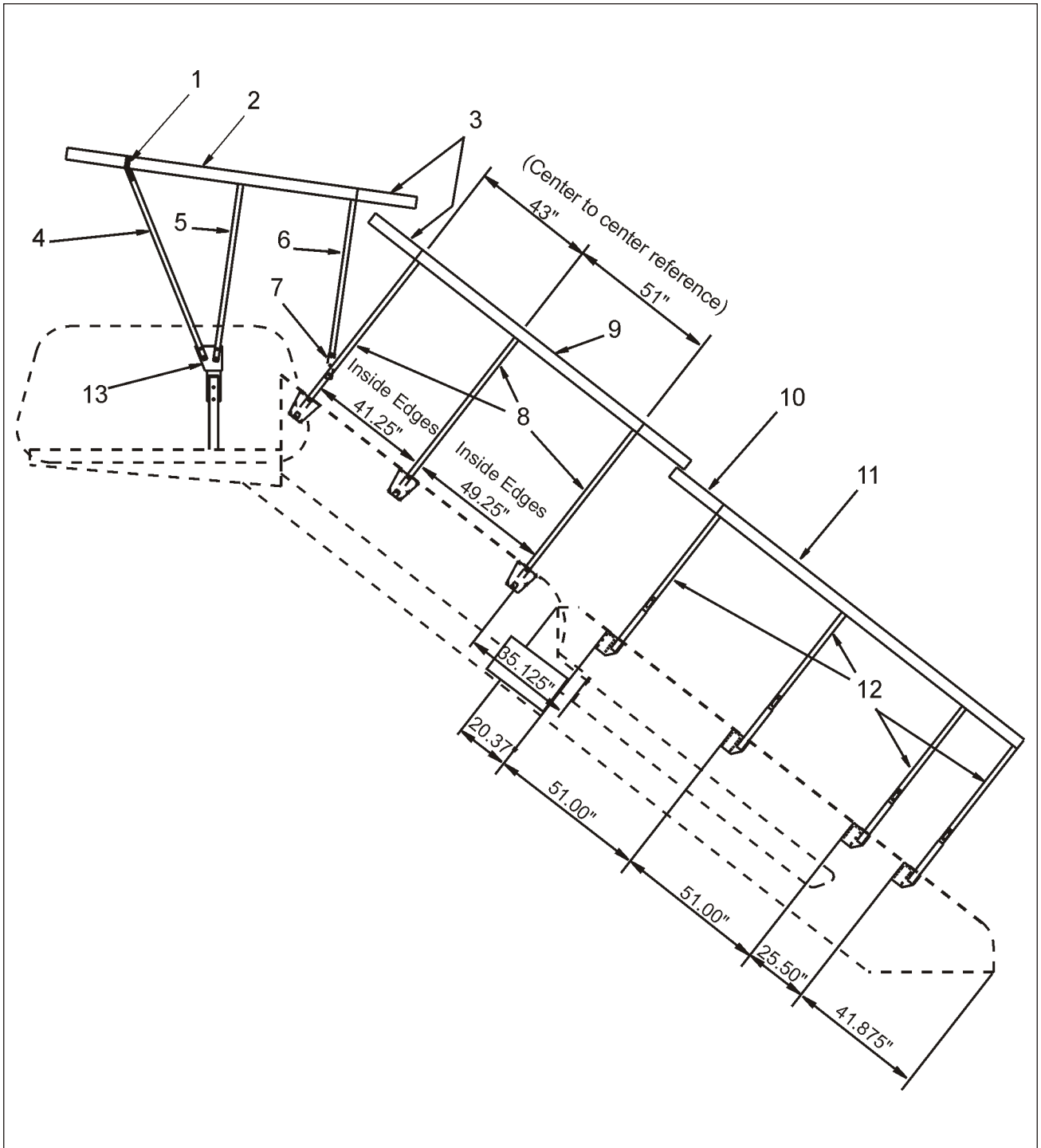


FIGURE 5.
UPPER STAIR SECTION

3.11 Ford 6.0L Diesel Clutch Pump Kit Installation

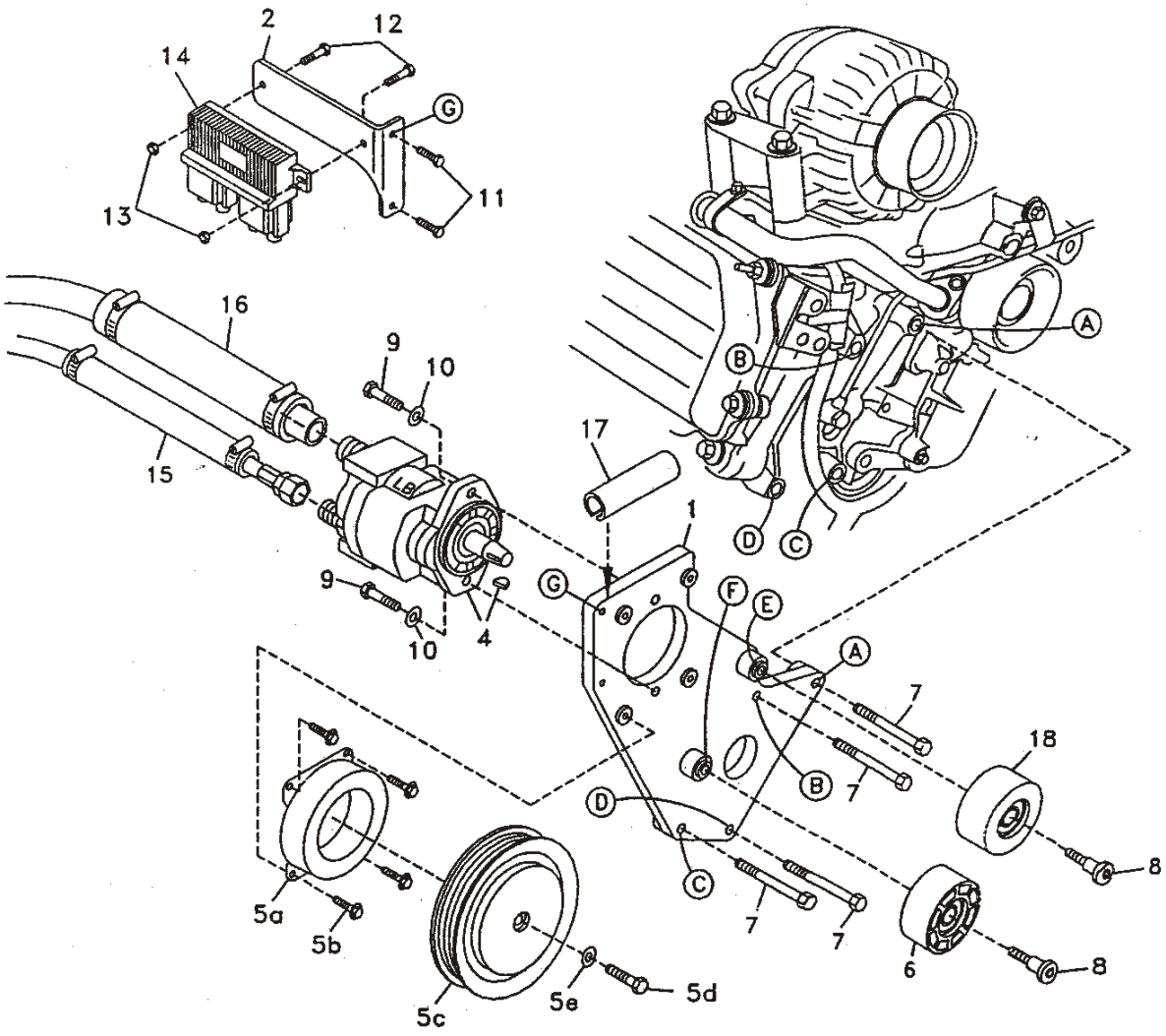


FIGURE 6. FORD 6.0L DIESEL CLUTCH PUMP KIT

1. Disconnect the battery.
2. Remove the air deflector shield from the top of the fan shroud.

3. Remove the OEM intercooler tube.
4. Unbolt the electrical module (14) from its mounting bracket on the passenger side valve cover. Keep it plugged in and just move it out of the way for now. Unbolt the mounting bracket. It will not be needed again. See figure 6.
5. Remove the OEM belt. The tensioner has a spring to lock it open without any tension. Remove two bolts mounting the tensioner. Just let it lay against the shroud to allow room to mount the pump bracket.
6. Loosen the battery hold down clamps and slide the battery out toward the fender. Tighten the hold down clamps. Tie the air conditioner line to the positive battery cable running down the rear of the battery. See figure 7.
7. Slip the small hose insulation sheath (15) over the pressure hose. Slip the large hose insulation sheath (16) over the suction hose. Place the sheaths where the hoses run close to the exhaust to protect the hoses from the heat. Route the hoses back to the firewall and down running them outside the frame.
8. Mount pump (4) onto bracket (1) with the two 3/8 x 1 1/4 bolts (9) with two 3/8 flat washers (10). Install the adapter into the inlet and outlet ports in back of the pump. Connect the hoses to the pump. Mount the bracket onto the engine with the four M10 x 45 bolts (7). Reattach OEM tensioner with the OEM bolts.
9. Mount the DewEze electrical module bracket (2) onto the front of the pump bracket at location G with the two 1/4 x 3/4 bolts (11). Attach the electrical module (14) to its bracket with two 1/4 x 1 bolts (12) and two 1/4 nuts.(13)
10. Mount the 3” diameter slotted-face idler pulley (6) to the boss on the pump bracket at location F with an M10 x 40 Torx head shoulder bolt (8). Mount the 2.50” diameter smooth-faced idler (18) to the boss at location E with an M10 x 40 Torx head shoulder bolt.(8)
11. Mount the clutch coil (5a) to the pump bracket with four 1/4 x ½ flange bolts (5b). Mount the clutch pulley (5c) to the pump shaft with the 5/16 x 1 1/4 bolt (5d) and heavy flat washer (5e) making sure the key is in place on the shaft.
12. Install the belt as (19) shown in the diagram (Fig. 7). Release the lock on the tensioner to tighten the belt.
13. Slit the 4” long hose (17) lengthwise in one wall if it is not already slit. Slip the hose over the top of the pump bracket. Install the DewEze intercooler tube (3) into the same location as the OEM tube was. It may be necessary to loosen the hose clamp on the rubber elbow on the turbo (location H) so the elbow can be rotated to line up with the intercooler tube. Secure the tube with the OEM hose clamps.

14. Hold the deflector shield in place on top of the fan shroud before snapping into place, noting where it contacts the intercooler tube or the clutch pulley. Trim away that portion of the shield. Snap the shield into place making sure it does not make contact. See figure 7.
15. Reconnect the battery.
16. Run the engine and check for any clearance or alignment problems. Adjust as needed.

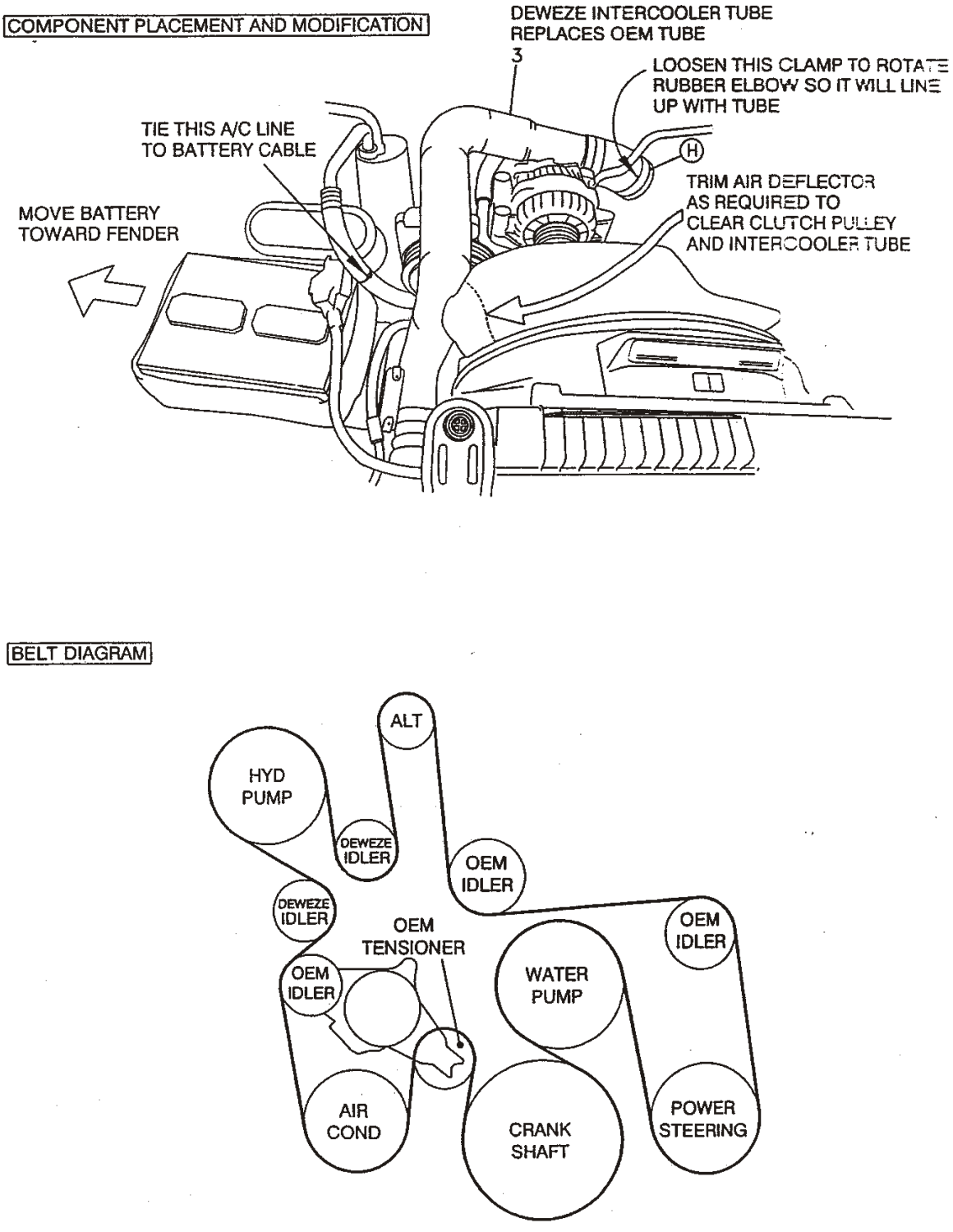
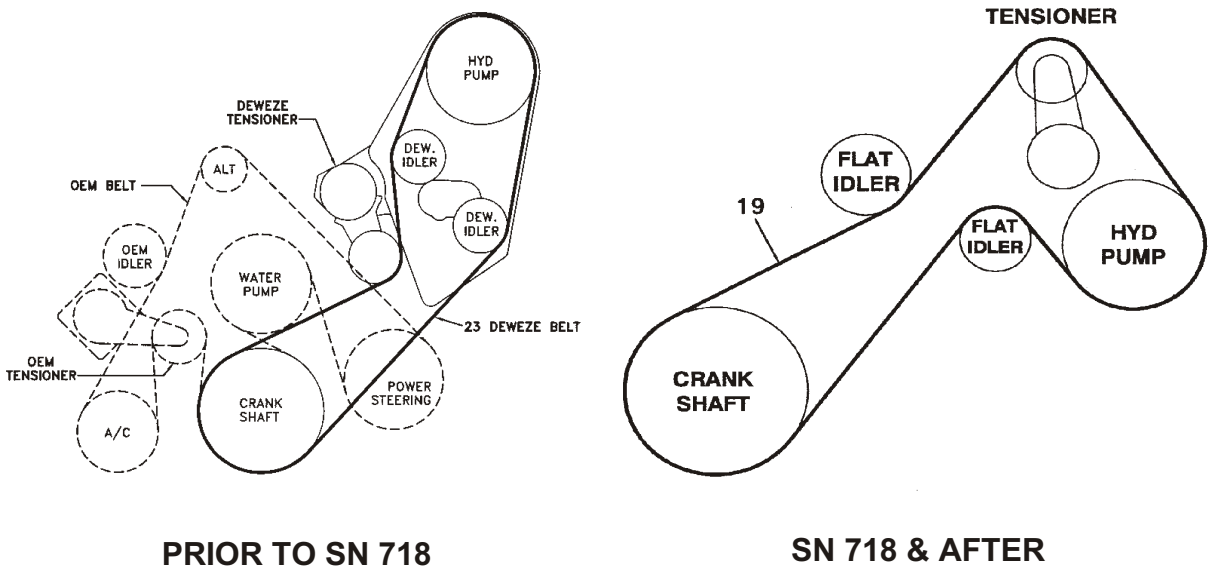


FIGURE 7. FORD 6.0L DIESEL CLUTCH PUMP KIT



PRIOR TO SN 718 **SN 718 & AFTER**

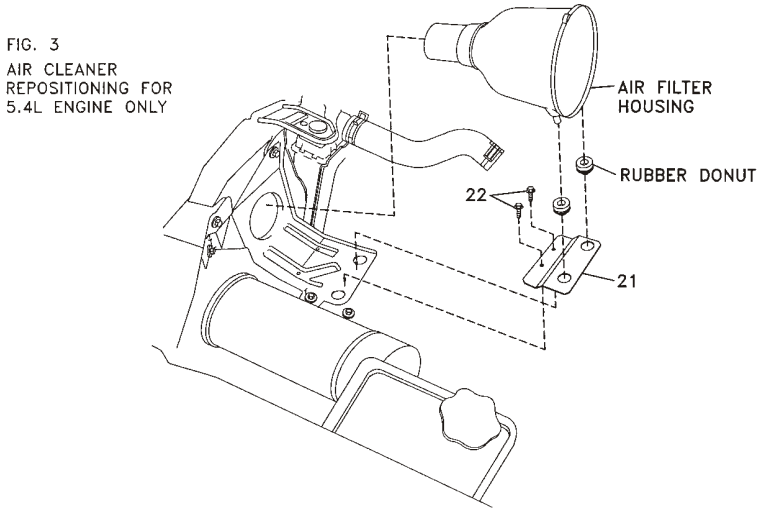


FIGURE 8. F350 V8/GAS CLUTCH PUMP INSTALLATION

3.12 F350 V8/Gas Clutch Pump Installation

1. Disconnect battery and drain the radiator.
2. Remove the upper radiator hose. Make note as to which end is which, as it will be turned around when it is installed later.

3. Remove the fan shroud and fan. Repositioning the air cleaner, are for the 5.4L engine only. Refer to fig. 8. If you have the 6.8L engine, discard the DewEze air cleaner bracket (21).
4. Remove the air filter housing by releasing the large toggle clamp and pulling the front filter housing up and to the rear. Tie the rear of the housing and inlet tube to the rear of the engine compartment to keep it out of the way.
5. Remove the rubber donuts from the OEM air cleaner support and place them in the holes in the DewEze air cleaner bracket (21). Hold this bracket on top of the OEM support placing the small holes in the DewEze bracket in between the large holes in the OEM support. Run the 3/16 x 3/4 self-tapping screws (22) through the small holes into the OEM support.
6. Remove OEM bolts from engine at locations A, B, and C. Lay the wiring off to the side.
7. Remove the wiring harness from the attachment points on the valve cover at the front corner and the stud bolt under the air tube. Push the wiring harness back on top of the valve cover to clear the pump and bracket.
8. Mount the crank pulley (16) to the damper using three M10 x 60 bolts (17), 10mm lock washers (18), and 3/8 flat washers (19).
9. Bolt the pump (6) to the rear of the mounting bracket (1) using two 3/8 x 1 1/4 bolts (13) and two 3/8 flat washers (14). Attach the clutch coil (7) to the front of the bracket using four flange bolts supplied with the clutch. Insert the coil wire through the ½" hole right above the coil to keep it from contacting the clutch pulley.
10. Attach the flat idler pulley (3) to the tensioner arm (2) with the 7/16 x 1 3/16 flange bolt (10). Mount the tensioner assembly on the pump bracket at location E with one ½ x 3 ½ bolt (12), inserting the bolt head on the back of the tensioner into the small hole on the tensioner mounting pad.
11. Insert an M10 x 60 bolt (11) through an idler bushing (15) and into a serpentine idler also. Mount one idler onto the boss at location D and the other idler on the boss at location G.
12. Mount the pump bracket onto the engine at locations A, B, and C with the three M10 x 110 bolts (8) with 3/8 flat washers (14). Torque these bolts to 30-41 ft/lbs.
13. Bolt the wiring harness holder to the back of the pump bracket at location F using a 5/16 x 3/4 bolt (9).
14. Mount the clutch pulley (7) onto the pump shaft using the bolt and washer supplied with the clutch.

15. Install the pump drive belt (21) making sure pulleys are aligned and the belt runs true.
16. Replace the fan and fan shroud.
17. Replace the upper radiator hose, turning the ends opposite from the way it was originally. This is to give enough clearance between the clutch and the hose.
18. Replace the air filter housing and filter into the hose in the front of the truck then push it down into the rubber donuts in the new location. Untie the rear housing and clamp it to the front half.
19. Replace the coolant in the radiator.
20. Reconnect the battery.
21. Run the engine and check for alignment and clearance problems.

3.13 Deweze, Ford 5.4L, 2008+ Clutch Pump Installation

This installation procedure is included in Chapter 5, DewEze 2008+ Pump Clutch Kit Installation, Part No. 308703

4 REPAIRS

⚠WARNING Perform lockout/tagout procedures before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could cause serious injury or death.

⚠WARNING Any brake service, other than periodic inspection or bleeding, should be performed only by personnel specially trained in brake service. Improper and poor quality service procedures can result in brake system failure, loss of vehicle control, and personal injury.

4.1 Stabilizer Proximity

1. Fully extend Stabilizers.
2. Remove proximity switch from location on left-hand structural channel directly behind cab.
3. Fully retract stabilizers.
4. Working from inside of stair assembly cavity, insert switch body through mounting hole unit end of switch touches stabilizer arm. Hold in this position and snug remaining nut up against channel. Pull switch out 1/8" and again snug nut up against channel.
5. Fully extend stabilizer
6. Install locking nut on switch body.
7. Fully retract stabilizers. Switch is now properly adjusted with a 1/8" clearance between end of proximity switch and retracted stabilizer arm.

This Page Intentionally Blank

CHAPTER 3 OVERHAUL/MAJOR REPAIR

TABLE OF CONTENTS

This Page Intentionally Blank

1 GENERAL REPAIRS

⚠WARNING Shut off and tag out the machine before adjusting, lubricating, cleaning or otherwise servicing. Failure to do so could result in unexpected startup and could result in injury or death.

1.1 GENERAL INFORMATION

In most cases, the time and material cost of overhaul makes replacement a better option. If your troubleshooting and inspection shows that a component is faulty, we recommend removing and replacing the component.

1.2 TRUCK CHASSIS

The truck chassis manufacturer (Ford) has overhaul manuals available. Contact your local Ford parts dealer.

This Page Intentionally Blank

CHAPTER 4 REPAIR PARTS

Table of Contents

1 HOW TO USE THE REPAIR PARTS CHAPTER

TO ORDER REPAIR PARTS, call NMC-WOLLARD, Inc. Customer Service at 1-715-835-3151. Be prepared to supply the model number and serial number of your machine. Inform the Customer Service Representative what page and figure number the part you require is on, along with the date that appears in the footer of the parts page. Then order the part number that is listed for the item you require. For your convenience, Visa and MasterCard are accepted for payment.

VENDOR PART NUMBER column lists the original manufacturers' part numbers of items purchased by Wollard. Although these parts may be purchased from Wollard by using the Wollard part number, you may wish to purchase directly from the original manufacturer.

ABBREVIATIONS may be used in this manual as follows:

A/R	As Required
COMM	Commercial Item Readily Available From Local Sources
DPST	Double-Pole Single-Throw
HHCS	Hexhead Capscrew
ID	Inside Diameter
LH	Left-Hand
NS	Not Shown
OA	Over-All
OD	Outside Diameter
RH	Right-Hand
RHMS	Roundhead Machine Screw
SHCS	Socket Head Capscrew
SPDT	Single-Pole Double-Throw

NOMENCLATURE column contains the part description required for identification or procurement. If the part is an item purchased by Wollard and has not been modified by Wollard, then following the description will be the vendor's federal supply (CAGE) code. If a vendor does not have a CAGE code, a number will be assigned by Wollard with the prefix letter "V". Example: V1234. Where there is no vendor or CAGE code, Wollard Airport Equipment Co. is the manufacturer.

EFF (Effectivity) column identifies by code the model or serial number/s on which a particular part is used. Absence of the code in the "EFF" column indicates that the part or assembly is used on all models with Ser #001 and on.

See the Introduction for Effectivity Code and Serial Numbers

This Page Intentionally Blank

2 LIST OF VENDORS

Cage Code	Vendor
NVC	Air Dro (Defco), 1112 Brooks St. S.E., Decauter, AL 35602
V00502	Crane Company, Hydro-Aire Division, 300 Winona Avenue, Burbank, CA 91503
00779	Tyco Electronics Corp., M/S 38-77, 2800 Fulling Mill Road, PO Box 3608, Harrisburg, PA 17105-3608, Middletown, PA 17057
01121	Allen-Bradley Company, 500 Elm Grove Road, Milwaukee, WI 53122
01276	Aeroquip Corporation, 1225 West Main Street, Van Wert, OH 45891
02249	Gresen Mfg., Dana Corp., 600 Hoover Street NE, Minneapolis, MN 55413-2903
03743	Appleton Electric Co., Div. of Emerson Electric Co., 2205 12th Ave., South Milwaukee, WI 53172-2541
04597	Projects Unlimited Inc., 3680 Wyse Road, Dayton, OH 45414
07988	Automotive, Inc., Fluid Power Systems Component Div., 595 Schelter Rd, Lincolnshire IL 60069-4220
10402	Whelen Engineering Co. Inc., Rt 145 Winthrop Rd., Chester, CT 06412-0684
11671	Tyrone Hydraulics Inc., Dana Corporation, Drive, Corinth, MS 38834
13445	Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127
15605	Eaton Corp., Operations & Technical Ctr.,4201 N 27th St., Milwaukee, WI 53216-1807
16476	Datcon Instruments Co., PO Box 128, East Petersburg, PA 17520-0128
19738	Avdel Corp., 50 Lackawanna Ave., Parsippany, NY 07054-1008
20984	Arrow Safety Device Company, Route 113, Georgetown, DE 19947-9524
27007	Cessna Aircraft Co., Fluid Power Div., 3401 E 4th St., PO Box 1028, Hutchinson, KS 67501-1969
28815	TRW Inc., 1330 Geneva Drive, Sunnyvale, CA 94088-3510
29771	Deltrol Corp., 3001 Grant Ave., Bellwood, IL 60104-1251
41625	Incom Intl. Inc., Morse Controls Div., 21 Clinton St., Hudson OH 44236-2802
44185	NMC-WOLLARD, Inc., 2021 Truax Blvd., Eau Claire, WI, 54703
54173	Custom Connector Corp., 1738 E 30th St., Cleveland, OH 44114
58854	(Sylvania Electric) GTE Products Corp., Lighting Products Group, 60 Boston Street, Salem, MA 01970
71176	Emerson Electric Co., Browning Mfg. Div., 1248 E Second St., PO Box 687, Maysville, KY 41056-1655
72635	R.E. Dietz Co., 225 Wilkenson St., Syracuse, NY 13221
75175	Concord Instruments Corp., 1910 Elm St., Cincinnati, OH 45210-2451

78225	Stant Mfg. Co., 1620 Colombia, Connersville, IN 47331-1672
78290	Struthers Dunn, Inc., South Windsor, CT 06074
80089	(RBM Controls) Essex Electromechanical Div., Hamilton Standard Controls Inc., 131 Godfrey Street, Logansport, IN 46947-1843
81834	Grote Mfg. Company Inc., PO Box 766, Madison, IN 47250-0766
83803	Peerless Electronics, PO Box 7025, NY 11563-7025
85814	The Nason Co., 1307 Hwy 11, Walhalla, SC 29691
86768	Teledyne Republic Mfg., 15655 Brook Park Rd., Cleveland, OH 44142
88136	Trombetta Corp., 13901 Main St., Menomonee Falls, WI, 53051
89020	Thomas & Betts, Industrial Electrical Products Div., 16228 Flight Path Dr., Brooksville, FL 34609-6875
91929	Micro Switch Division of Honeywell Inc., 11 West Spring Street, Freeport, IL 61032
92194	Alpha Wire Corporation, 711 Avenue, Elizabeth, NJ 07207
92563	McGill Mfg. Co. Inc., Bearing Div., 909 N Lafayette St., Valaparaiso, IN 46383-4210
94222	Southco Inc., 210 N Brinton Lake Rd., Concordville, PA 19331

3 NUMERICAL PART NUMBER LIST

4 ILLUSTRATED PARTS LIST

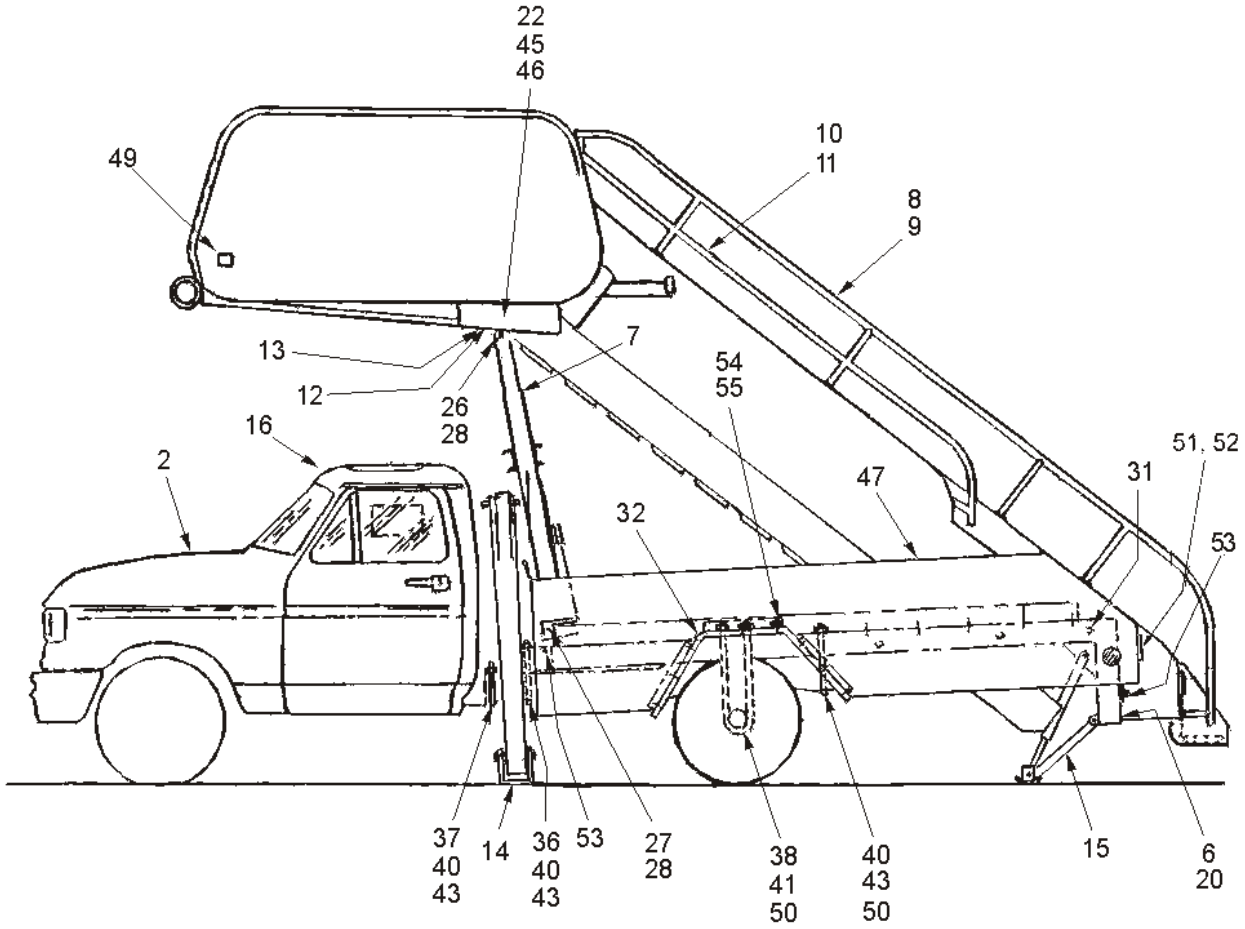


FIGURE 1.
MAIN ASSEMBLY
1 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
1-	307554		Base Group, 1 of 2		Ref
2			See Appropriate Truck Prep Page In this Chapter.		1
6	12645		Bolt, Stair		1
7	12681W		A-Frame Assembly (See Figure 2)		1
8	12708W		Main Stair Assembly (See Figure 3)		1
9	304454		Handrail, Main Stair (See Figure 4)		2
10	12651		Adjustable Stair Assembly (See Figure 5)		1
11	5474		Handrail, Adj. Stair Assy (See Figure 7)		2
12			Latch Assembly, Stair Tread		Ref
13	12751W		Solenoid Installation (See Figure 16)		Ref
14	12794		Stabilizer, Main (See Figure 8)		2
15	12803W		Stabilizer, Rear (See Figure 9)		2
16	9.2091		Trim, Rubber, 3/32"		75"
20	3.0395		Nut, Lock, 1"-8 USS		1
22	Comm		HHCS, 3/8-16 x 1.50"		6
26	3.0539		HHCS, 1-14 x 3.00" SAE		2
27	3.0540		HHCS, 1-14 x 3.50" SAE		2
28	3.1662		Nut, Lock, Jam, 1-14 SAE		4
31	Comm		Screw, TEK, HH, Self-drill, 1/4-20 x 0.75"		6
32	307558		Frame Weldment, Stair Support F350		1
36	12655.20		U-Bolt, Sq., 3/4-10 x 3.5"ID x 14.2		1
37	12655.04		U-Bolt, Sq., 3/4-10 x 10-1/2" x 3.50" (Fwd LH)		1
38	12654.02		U-Bolt, Rd, 3/4 x 25 x 5.50" (Axle)		2
40	3.0393		Nut, Lock, 3/4-10 USS		10
41	3.0381		Nut, Hex, 3/4-10		4
43	3.0307		Flat Washer, 3/4 SAE		16
45	Comm		Nut, Lock, 3/8-16		6
46	3.2766		Washer, 3/8"		6
47	16768.2		Panel Weldment, RH		1
	303986		Panel Weldment, LH		1
49	12679W		Placards and Signs (See Figure 17)		1
50	12655.08		U-Bolt, Sq., 3/4-10 x 15 x 3.50" AFT		1
51	303742		Bracket, Taillight, RH		1
52	303773		Bracket, Taillight, LH		1
53	Comm		Screw, TEK, 1/4 x 1.00		16

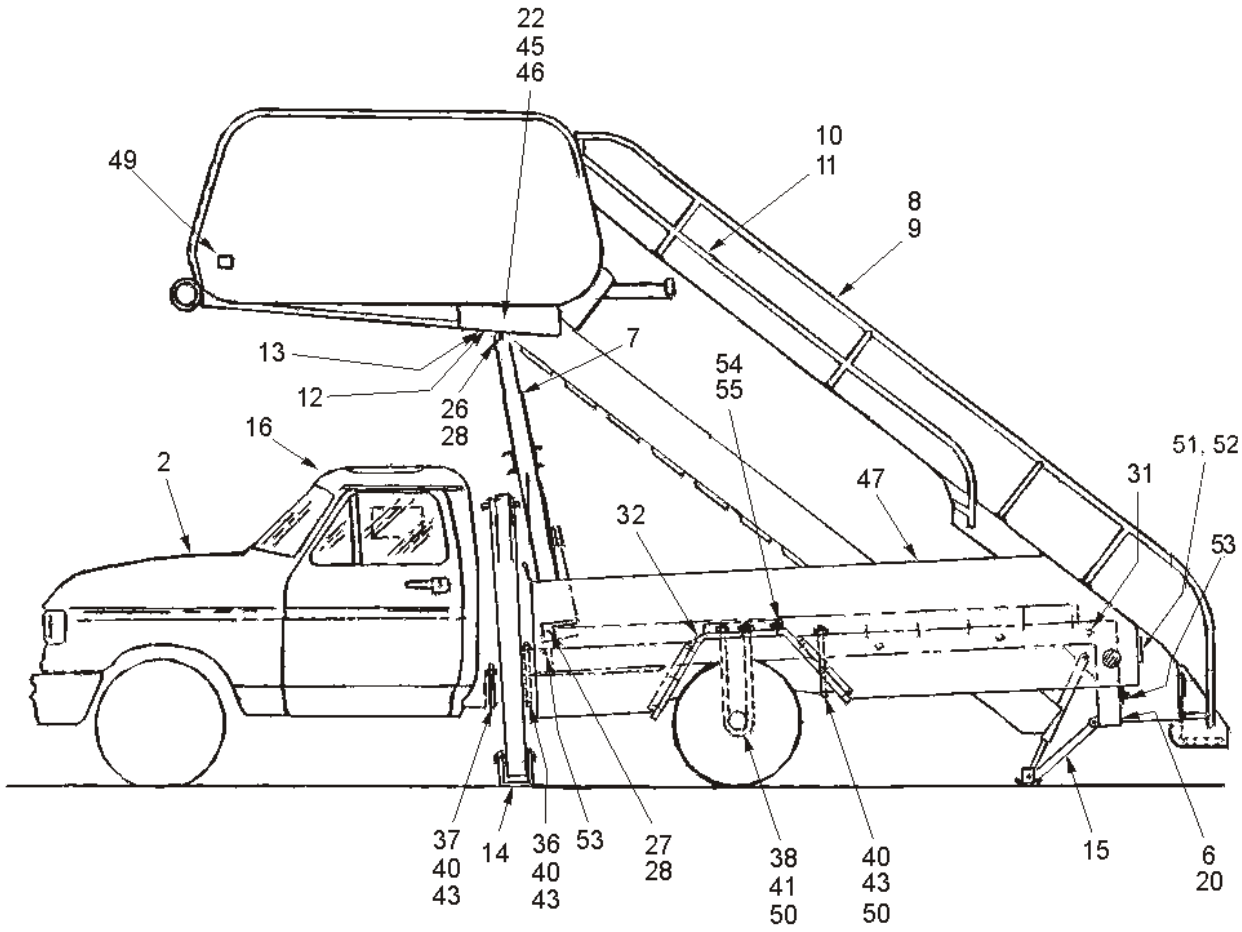


FIGURE 1.
MAIN ASSEMBLY
2 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
1-	307554		Base Group, 2 of 2		Ref
54	Comm		Locknut, 1/4-20		14
55	Comm		Washer, 1/4"		14
56	304990		Canadian Run Lights, Option		Ref
	304989		Kit, Daytime Running Lights		1
57	304191		Decal, Canada Vehicle Alternation		1
NS	Comm		HHCS,1/4-20 x 1.00		14
NS	1.0757		Spring, Pull w/Hoop Ends		1
NS	303986		Side Panel, Steel, LH		1
NS	307555		Hydraulic Assembly (See Figure 10)		1
NS	2.0795		Tape, Transp. Electrical, 3/4" x 60 Yd.		1
NS	3.0382		Nut, Hex Jam, 3/4-10 USS		4

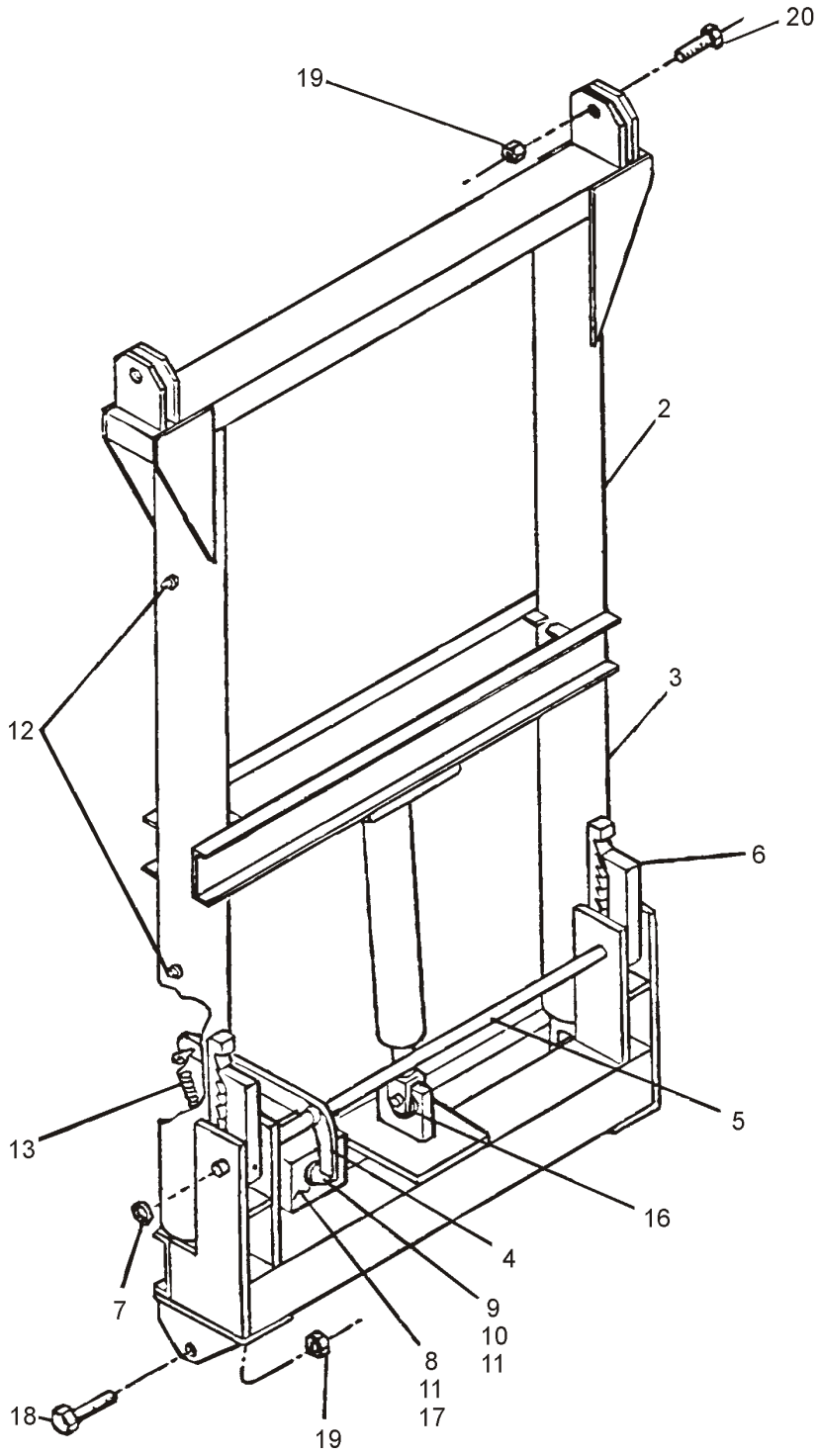


FIGURE 2.
A-FRAME ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
2-	12681W		A-Frame Assembly		Ref
2	12682		Frame, Upper		1
3	12683		Frame, Lower		1
4	12675		Arm, Release		1
5	12681.5		Shaft, Pawl		1
6	12668		Pawl, A-Frame		2
7	Comm		Washer, 3/4"		4
8	Comm		HHCS, 1/4-20 x 0.75"		2
9	Comm		Pin, Clevis, 1/4 x 23/32" Grip		1
10	Comm		Pin, Cotter, 1/16 x ½", SS		1
11	Comm		Washer, 1/4"		3
12	Comm		Grease Fitting, 1/4"-28, Straight		4
13	1.0757		Spring, 3/8" O.D. x 8" Lg.		1
16	12681.16		Spacer		4
17	Comm		Nut, Lock, 1/4-20		2
18	Comm		Capscrew, 3.50" Lg.		Ref
19	Comm		Nut, Lock Jam		Ref
20	Comm		Capscrew, 3.00" Lg.		Ref

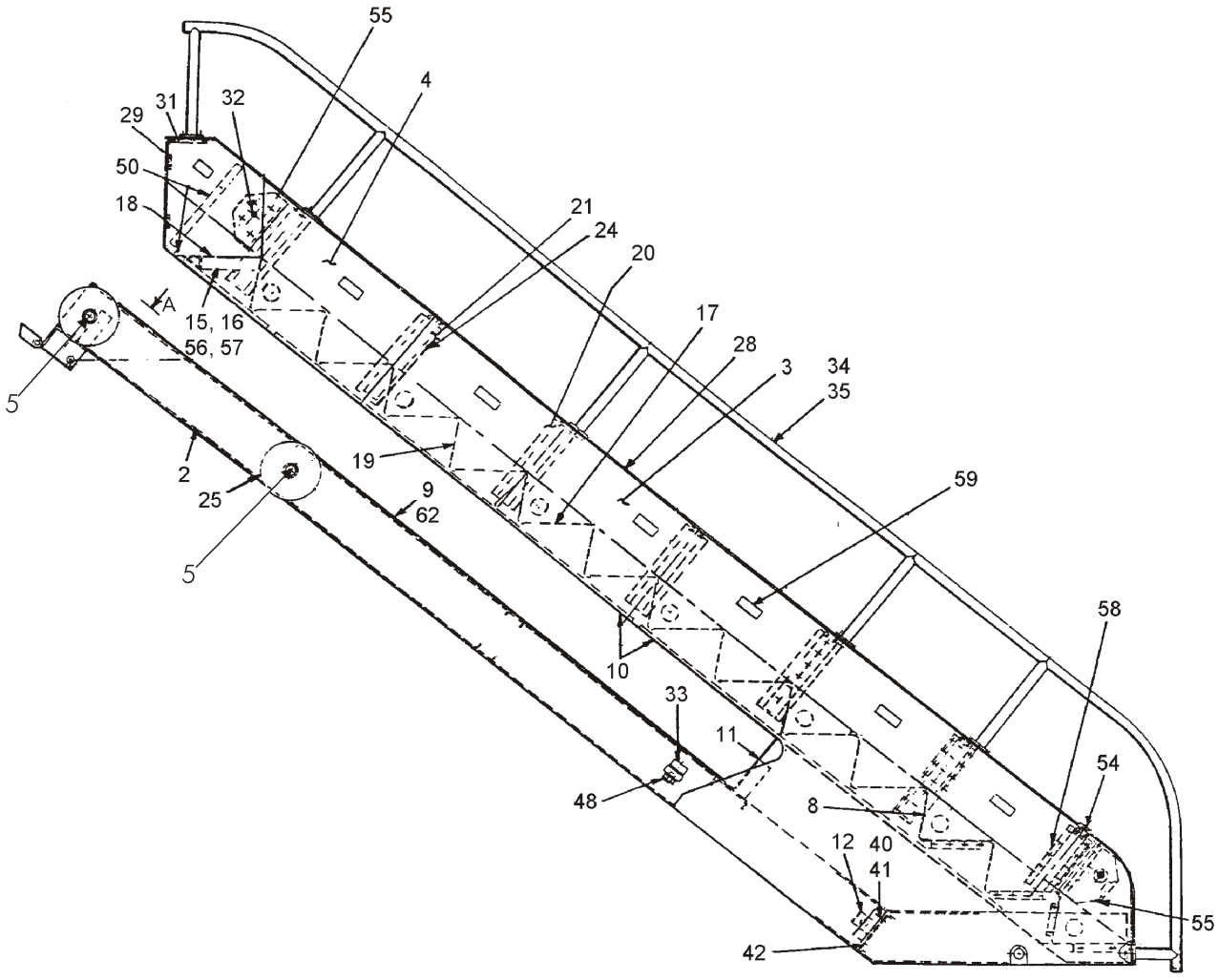


FIGURE 3.
MAIN STAIR ASSEMBLY
1 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
3-	12708W		Main Stair Assembly, 1 of 2		Ref
2	12705W		Main Stair Structure		1
3	12514		Main Outer Skin, Lower		2
4	12515		Main Outer Skin, Upper		2
5	12769W		Pin, 1.50 x 8.75, ETD-150		4
8	17682		Riser, Main Stair		1
9	12747W		Dust Cover		1
10	17502		Channel, Skin Spacer		4
11	12757W		Closure Sheet		1
12	12758		Eye, Cylinder Mounting		1
15	12774.01		Support, LH Intermediate Step		1
16	12774.02		Support, RH Intermediate Step		1
17	17678.01		Tread, Main Stair		13
18	17678.03		Tread, Intermediate		1
19	17679.03		Riser, Main Stair		12
20	12770.03		Section, Hat, Main Stair Assembly		10
21	12775		Splice, Hat Section		2
24	12761W		Plate, Spline		4
25	12768W		Wheel and Bushing		4
28	12708.28		Top Cap, Main Stair, x 200"		2
29	12708.29		Top Cap, Main Stair End, x 16.75		2
31	12741W		Spacer, Skin, 1.5 x 5.5		4
32	1.2253		Plug, Button, (½ Blk Plastic Button)		4
33	1.4957	CR25	Bearing, Cam Follower (V92563)		2
34	304454 RH		Handrail Assy., RH (See Figure 4)		1
35	304454 LH		Handrail Assy., LH (See Figure 4)		1
40	Comm		HHCS, ½-13 x 1.75"		4
41	Comm		Nut, Lock, ½-13		4
42	12754W		Shim Plate (If Req'd.)		A/R
48	3.1649		Nut, Lock, 7/8-14NF		2
50	17503		Channel, Skin Spacer		4
54	Comm		HHCS, 1/4-20 x 0.75"		4
55	12669		Spacer, Reinforcing		4
56	12764W		Cross, Intermediate Step		1
57	12765W		Plate, Reinforced, Intermediate Step		1
58	12770.02		Hat Section, Short		2
59	12770.05		Spacer, Stair Panel		14
62	12756		Cover, Dust		1
NS	305743		Extrusion, #1 Die, 3/8” x 2” x 19’		

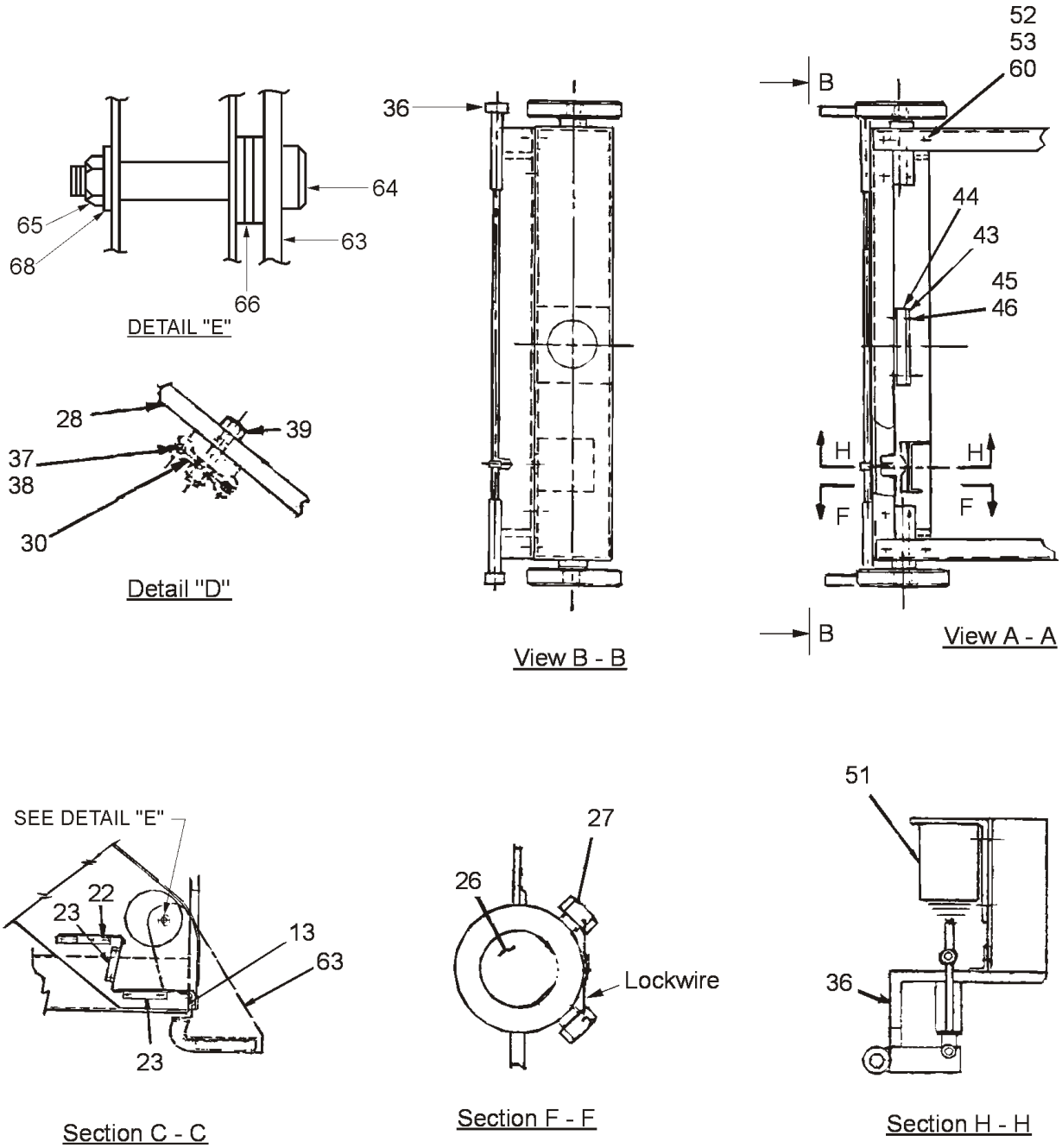


FIGURE 3.
MAIN STAIR ASSEMBLY
2 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
3-	12708W		Main Stair Assembly, 2 of 2 “D” Size		Ref
13	12703W		Support, LWR Step		1
22	17676		Angle, Tread		24
23	17677		Angle, Riser		28
26	12769W		Pin, 1.50 x 8.75, ETD-150		4
27	308647		HHCS, Drilled, 7/16-20 x .84"		8
28	12708.28		Top Cap, Main Stair, x 200"		2
30	12524		Spacer, Skin		18
36	12776		Latch Assy., Safety		1
37	Comm		Screw, Pan HD Mach, #10-32NF x 2.00"		40
38	Comm		Nut, Lock, #10-32NF		40
39	Comm		HHCS, 1/4-28NF x 1.25"		20
43	12712W		Support, Cylinder		1
44	12748W		Support Pad, Cylinder		1
45	Comm		HHCS, 3/8-16 x 2.00		4
46	Comm		Nut, Lock, 3/8-16		4
51	12751W		Solenoid Installation (See Figure 16)		1
52	Comm		HHCS, 7/16-14 x 2"		6
53	Comm		Nut, Lock, 7/16-14		6
60	3.1453		Washer, Bevel		4
63	12715		Flip Step Structure		1
64	3.3219		Bolt, Shoulder, 0.50 x 2.25 Lg. x 3/8-16 Thd		2
65	Comm		Nut, Jam Lock, 3/8-16		2
66	Comm		Washer, ½", USS		6
68	Comm		Washer, 3/8"		2
NS	Comm		Rivet, Pop, 3/8"		2
NS	3.3241	2771-0617	Monobolt, 3/16" Dia (V19738)		A/R
NS	19448		Skin, Main Section, Inner, Lwr LH & RH		2
NS	19447		Skin, Main Section, Inner, Upr LH & RH		2

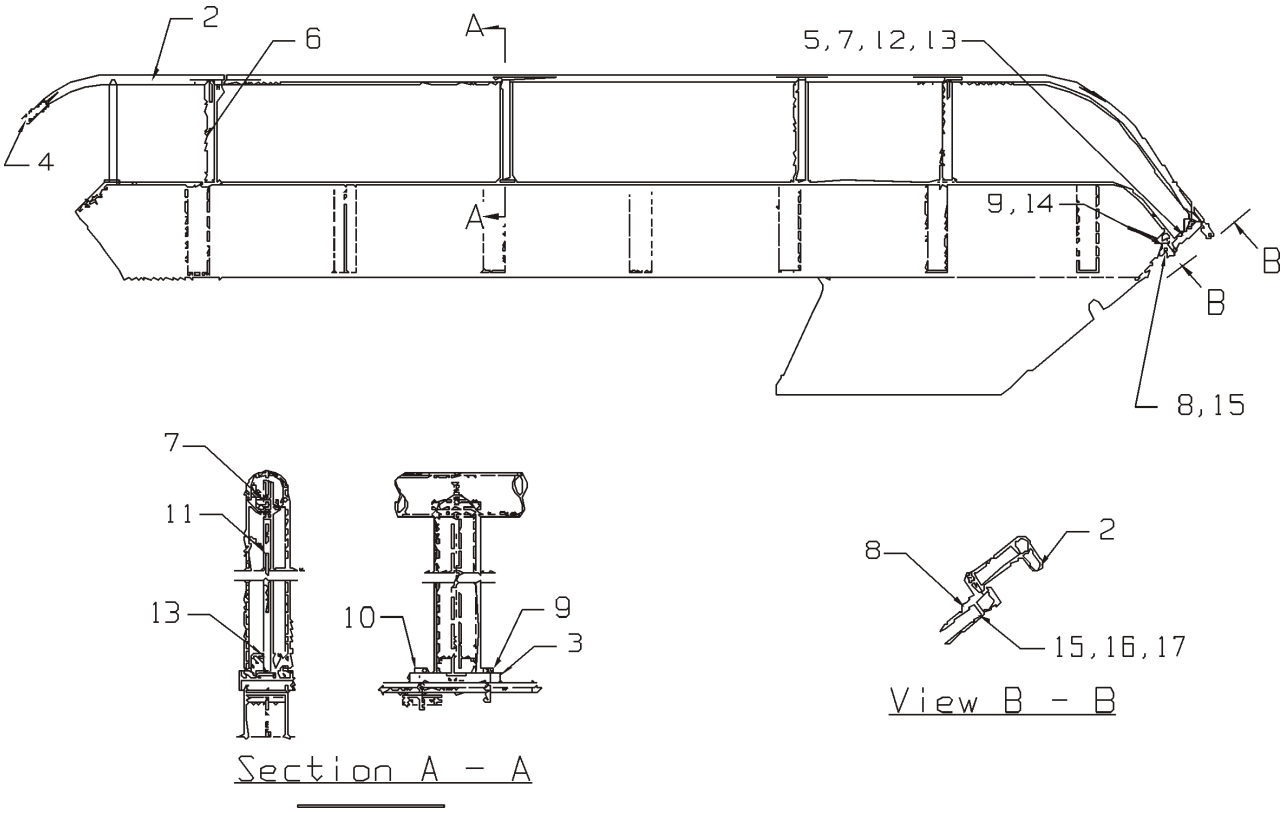
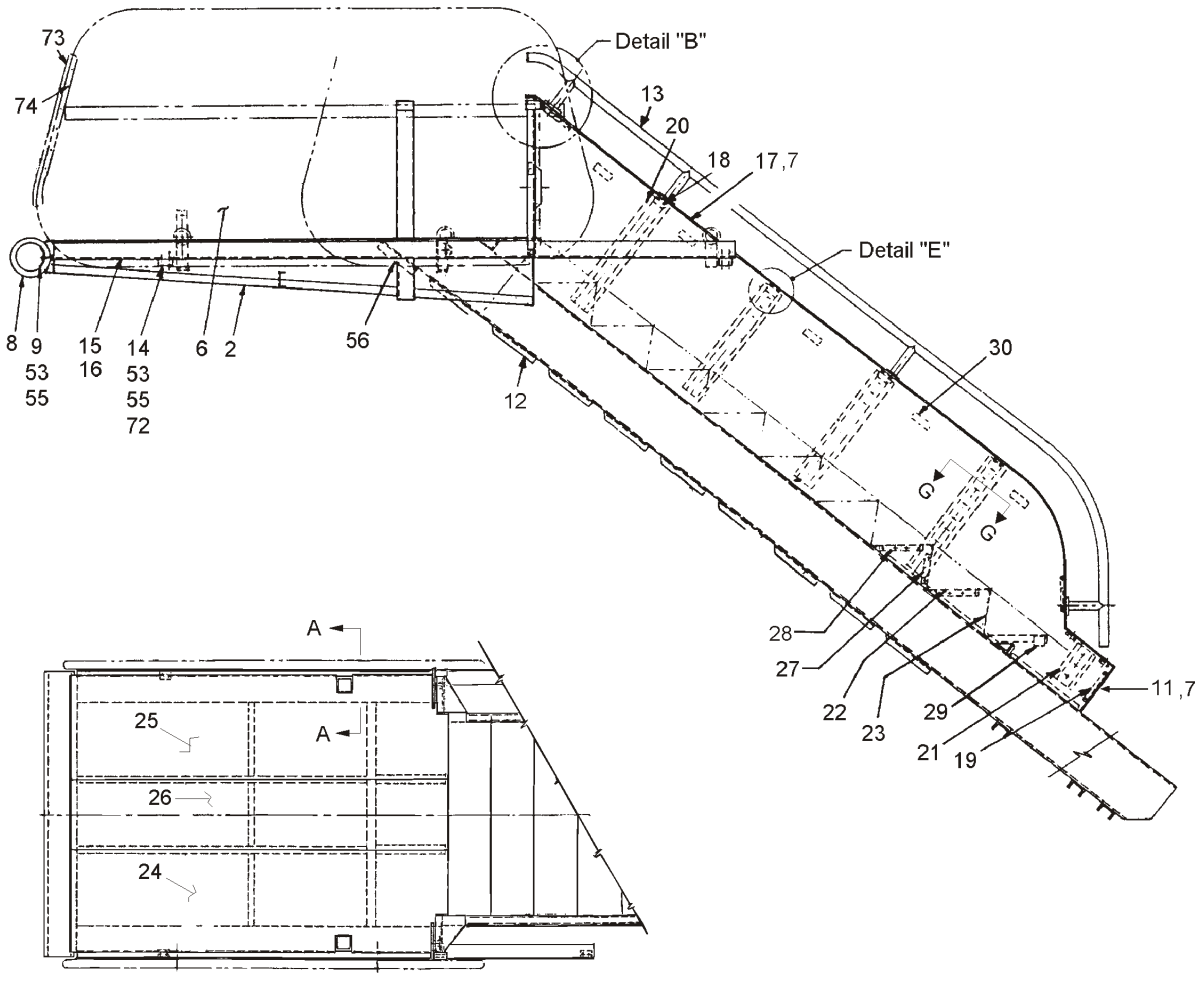
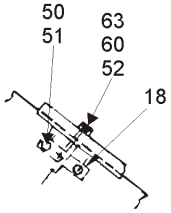


FIGURE 4.
HANDRAIL ASSEMBLY

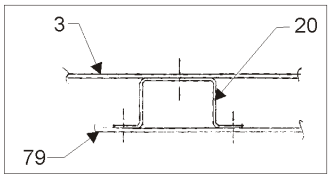
Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
4-	304454L		Handrail Assy, LH		Ref
	304454R		Handrail Assy, RH		Ref
2	304461L		Pipe, Handrail, LH		1
	304461R		Pipe, Handrail, RH		1
3	6259		Pad, Stanchion, Drilled		6
4	302999		Plug, Pipe, Alum, 1.25	E	2
	302999		Plug, Pipe, Alum, 1.25	F	1
5	5699		Post, Vertical, Handrail		1
6	5679		Post, Vertical, Handrail		5
7	7352		Plate, Nut		6
8	12749		Brkt, Handrail Mntg		1
9	Comm		HHCS, 1/4-28 x 1		6
10	Comm		HHCS, 1/4-28 x 1-1/4		6
11	3.0505		HHCS 3/8-24 x 17		5
12	Comm		HHCS, 3/8-24 x 7		1
13	Comm		Washer, 3/8		6
14	Comm		Nut, 1/4-28		2
15	3.0459		HHCS 3/4-10 x 3		2
16	3.0308		FW 3/4 USS ZP		2
17	3.0393		Nut Lock 3/4 US		2



Top View



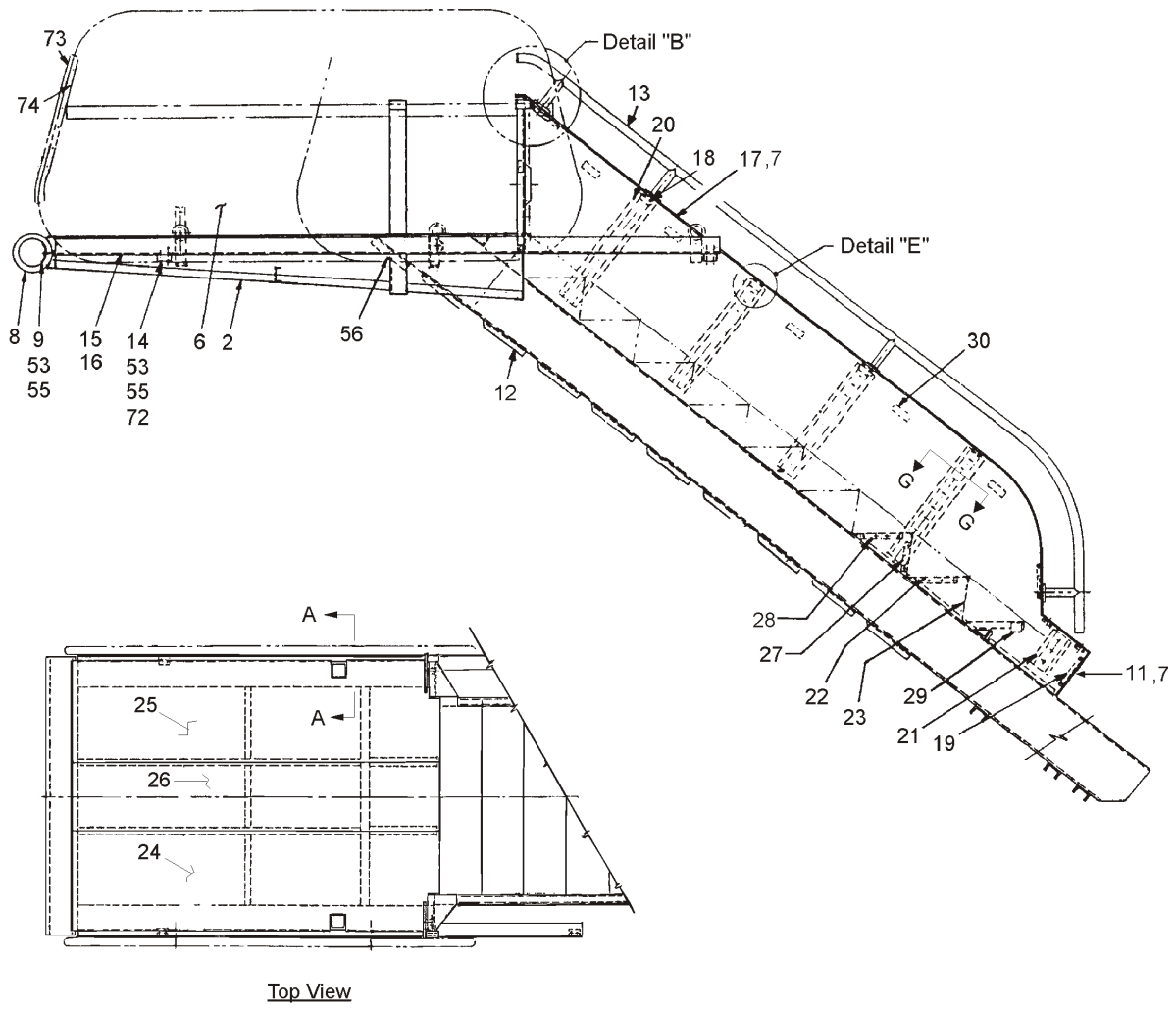
Detail "E"



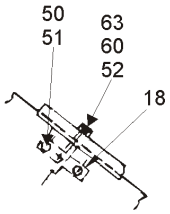
DETAIL G-G

FIGURE 5.
ADJUSTABLE STAIR ASSEMBLY
1 OF 3

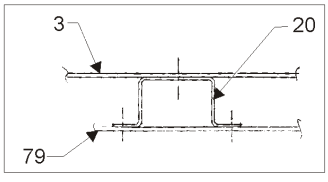
Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
5-	12651		Adjustable Stair Assembly, 1 of 3		Ref
0	12716		Structure, Adjustable Stair		1
3	12520		Skin, Outer		2
6	13219		Wing Assembly (See Figure 6)		2
7	305742		Extrusion, 1 Die, 3/8 x 2 x 15'		2
8	12738		Bumper		1
9	12739W		Retainer, Bumper		1
11	12651.11		Extrusion		2
12	303590		Safety Stop		18
13	5474		Handrail, Adjustable Section (See Figure 7)		2
14	12129		Stop, Wing		4
15	12624.01		Track, Lower, LH		1
16	12624.02		Track, Lower, RH		1
17	302967		Extrusion		2
18	12524		Spacer, Skin		12
19	12741		Spacer, Skin, 1.5 x 5.5		6
20	12770.01		Hat Section, Long		8
21	12770.04		Hat Section, Short		2
22	17678.01		Tread, Adjustable Section		9
23	17679.02		Riser, Adjustable Section		9
24	12737W		Deck Plate, RH		1
25	12736W		Deck Plate, LH		1
26	12744W		Deck Plate, Center		1
27	17677		Angle, Riser		18
28	17676		Angle, Tread		18
29	12733		Support, Tread		1
30	12770.05		Spacer		10
50	Comm		Screw, Pan HD Mach, #10-32NF x 1-7/8		36
51	Comm		Nut, Lock, #10-32NF		36
52	Comm		HHCS, 1/4-20 x 1.25		18
53	Comm		Nut, Lock, 3/8-16		27
54	Comm		HHCS, 3/8-16 x 1.00		11
55	Comm		Washer, Flat, 3/8 USS		23
56	12651.56		Angle		2
60	Comm		Nut, Lock, 1/4-20		20
61	Comm		HHCS, 1/4-20 x 2.00		4
62	Comm		Rivet, RD HD Alum, #6-8		A/R
63	Comm		Washer, Flat, 1/4		38



Top View



Detail "E"



DETAIL G-G

FIGURE 5.
ADJUSTABLE STAIR ASSEMBLY
2 OF 3

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
5-	12651		Adjustable Stair Assembly, 2 of 3		Ref
72	Comm		HHCS, 3/8-16 x 2.00		4
73	9439		Bumper		Ref
74	Comm		Rivet, Blind Alum, Washer HD, #ABL-6-10A		24
79	19449		Inner Skin	B	2
NS	3.3241	2771-0617	Monobolt, 3/16" Dia. (19738)		A/R

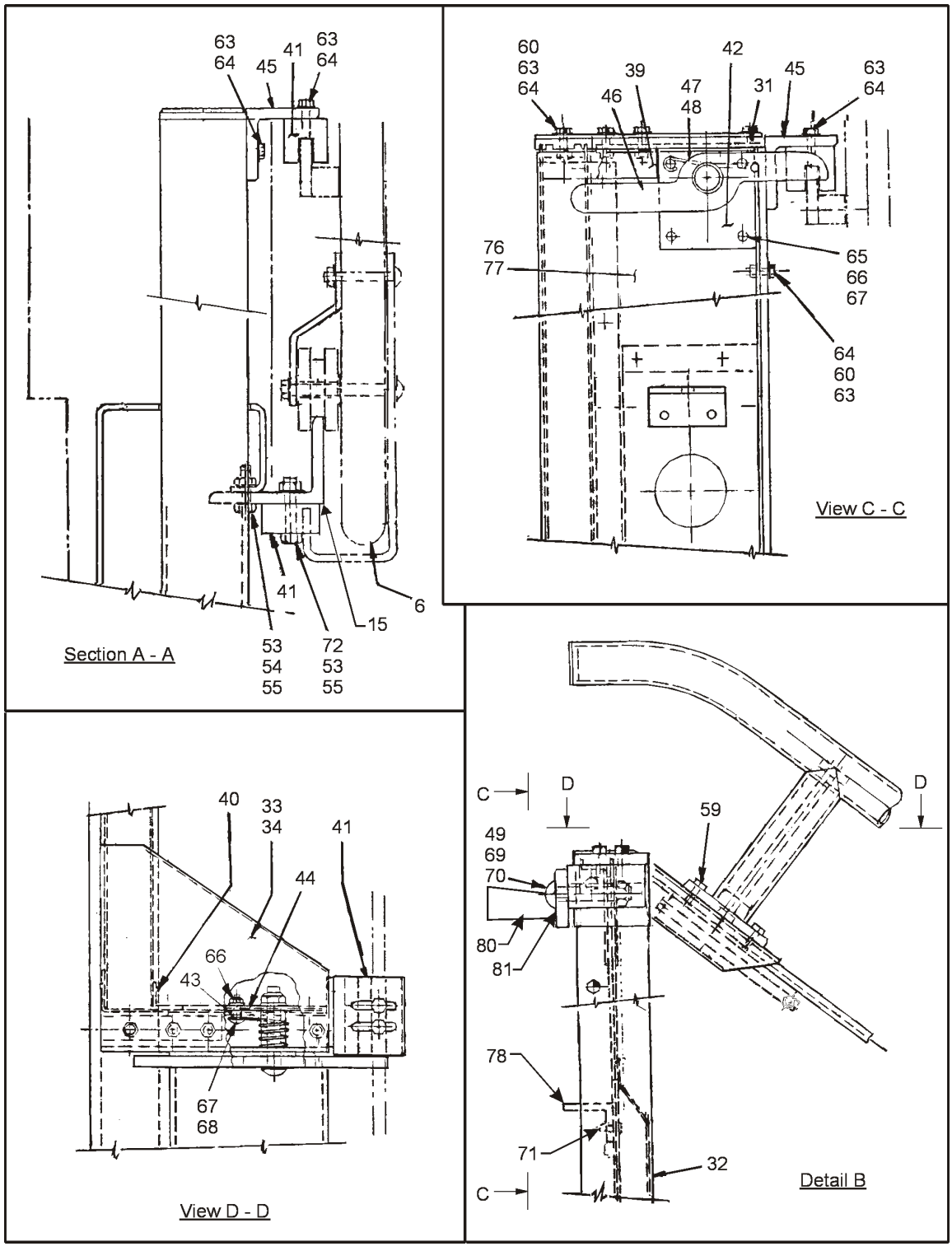


FIGURE 5.
ADJUSTABLE STAIR ASSEMBLY
3 OF 3

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
5-	12651		Adjustable Stair Assembly, 3 of 3		Ref
6	13219		Wing Assy (See Figure 6)		2
15	12624.01		Track, Lower, LH		1
31	300268		Extrusion		2
32	12538		Side Cap, Platform		2
33	12589.01		Corner Cap, LH		1
34	12589.02		Corner Cap, RH		1
39	12591W		Bracket		2
40	12743W		Angle, Mounting		2
41	8869		Slide Block, Wing		4
42	3741		Latch Pivot		2
43	12651.43		Spacer		1
44	5664		Plate, Backup		2
45	7916		Track Support, Upper		4
46	5665		Latch, Wing Lock		2
47	5662		Latch Spring, LH		1
48	5663		Latch Spring, RH		1
49	Comm		Bolt, Clevis		2
53	Comm		Nut, Lock, 3/8-16		27
54	Comm		HHCS, 3/8-16 x 1.00		11
55	Comm		Washer, Flat, 3/8 USS		23
59	Comm		HHCS, 1/4-20 x 1.50		44
60	Comm		Nut, Lock, 1/4-20		20
63	Comm		Washer, Flat, 1/4		38
64	Comm		HHCS, 1/4-20 x 1.00		14
65	Comm		RHMS, #10-24 x 0.75		6
66	Comm		Nut, Lock, #10-24		8
67	Comm		Washer, Flat, #10		8
68	Comm		RHMS, #10-24 x 1.25		2
69	Comm		Nut, Lock, Thin, ½-20		2
70	Comm		Washer		2
71	Comm		Rivet, RD HD Alum, #4-6		A/R
76	19450		End Panel, LH		1
77	19473		End Panel, RH		1
78	19474		Angle, Light Mounting		1
80	303485		Handle w/ 3/8" Lockwasher (NS)		1
81	Comm		Lockwasher, 3/8		2

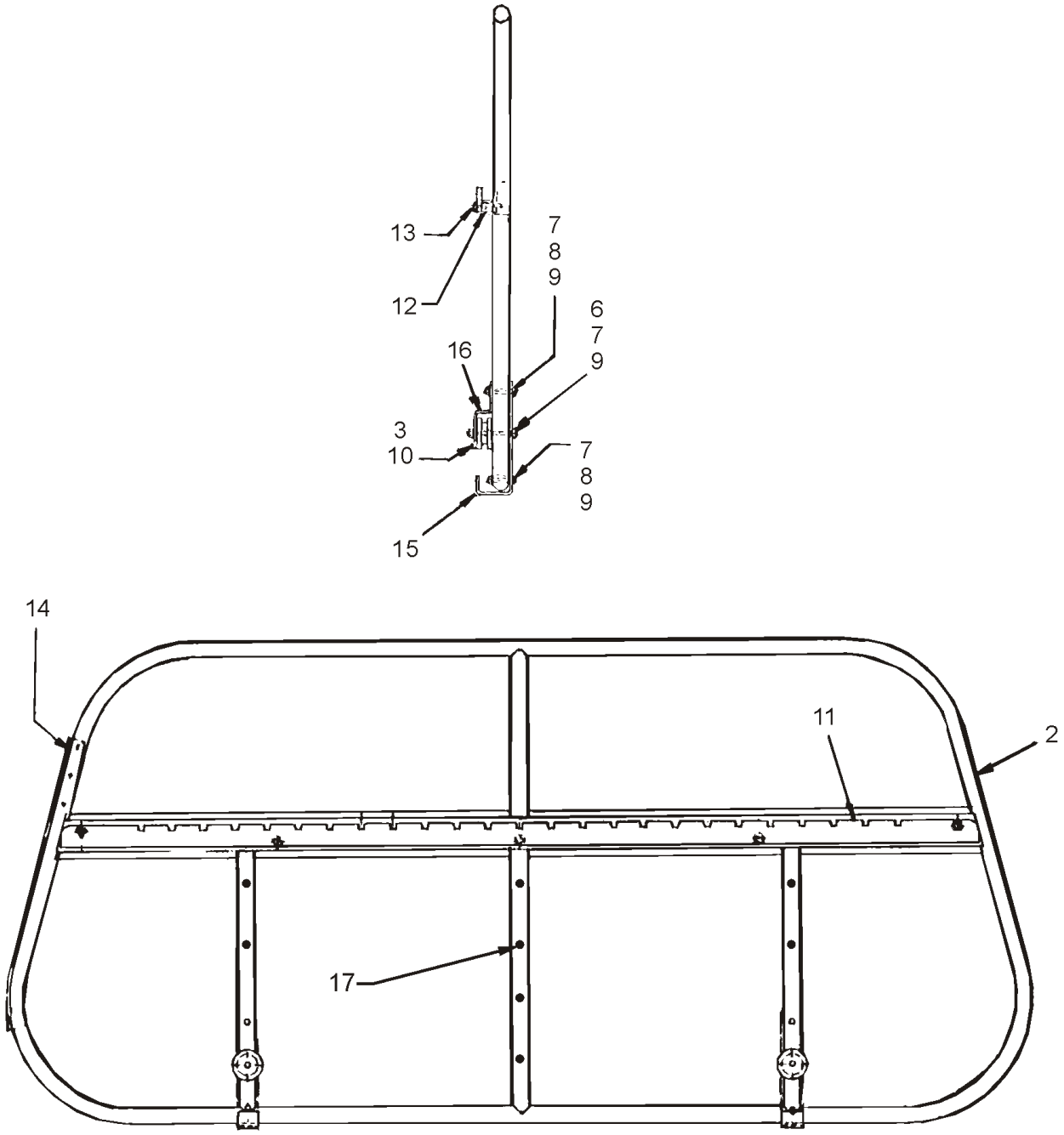
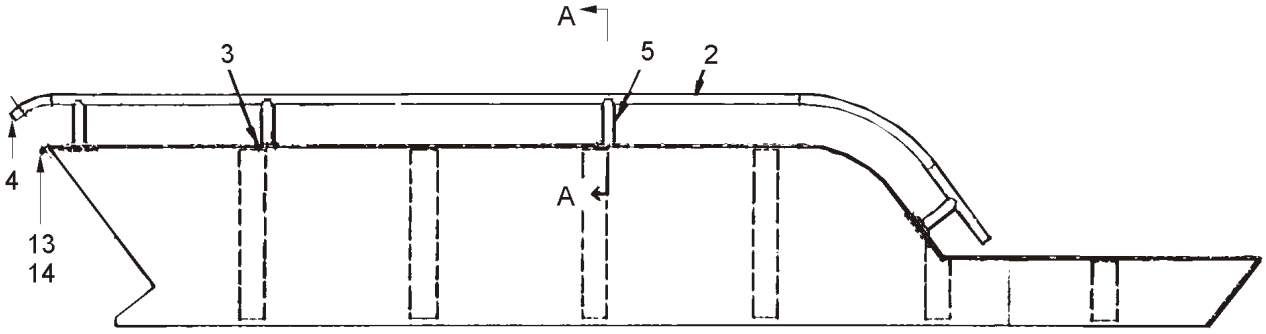
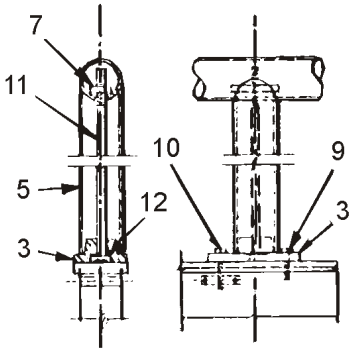


FIGURE 6.
WING ASSEMBLY, PLATFORM

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
6-	13219		Wing Assembly, Platform		Ref
2	9433		Frame, Wing		1
3	9436		Wheel		2
6	300029		Bolt, Carriage, 3/8-16 x 4.00		2
7	305157		Nut, Jam, Lock, 3/8-16		6
8	300028		Bolt, Carriage, 3/8-16 x 2.50		4
9	F100062		Washer, Flat, 3/8, USS		6
10	13219.10		Tube, Hydraulic, ½" OD x .049 Wall x 1-17/32"		2
11	9319		Track, Notched		2
12	13219.12		Spacer		5
13	Comm		Screw, HH Self-Drill, 1/4 x 2.50		5
14	9439		Bumper		2
15	14773		Guard, Wing		2
16	12128		Support, Wheel		2
17	302591		Rivet, Pop, 3/16 x .902		22
NS	F100360		HHCS 1/4-20 x 1.5 GR 5		5
NS	F009535		LW 1/4 Reg		5





Section A - A

FIGURE 7.
ADJUSTABLE SECTION HANDRAIL

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
7-	5474		Adjustable Section Handrail		Ref
2	307373		Handrail, Upper Adj.		1
3	6259		Pad, Stanchion		4
4	302999		Plug, Railing		2
5	5699		Post, Vertical		4
7	7352		Nut, Plate		4
9	Comm		HHCS, 1/4-28 x 1.25		6
10	Comm		HHCS, 1/4-28 x 1.25		2
11	Comm		HHCS, 3/8-24 x 7.00		4
12	Comm		Washer, 3/8		4
13	Comm		HHCS, 1/4-28 x 1.50		2
14	Comm		Nut, Lock, 1/4-28		2

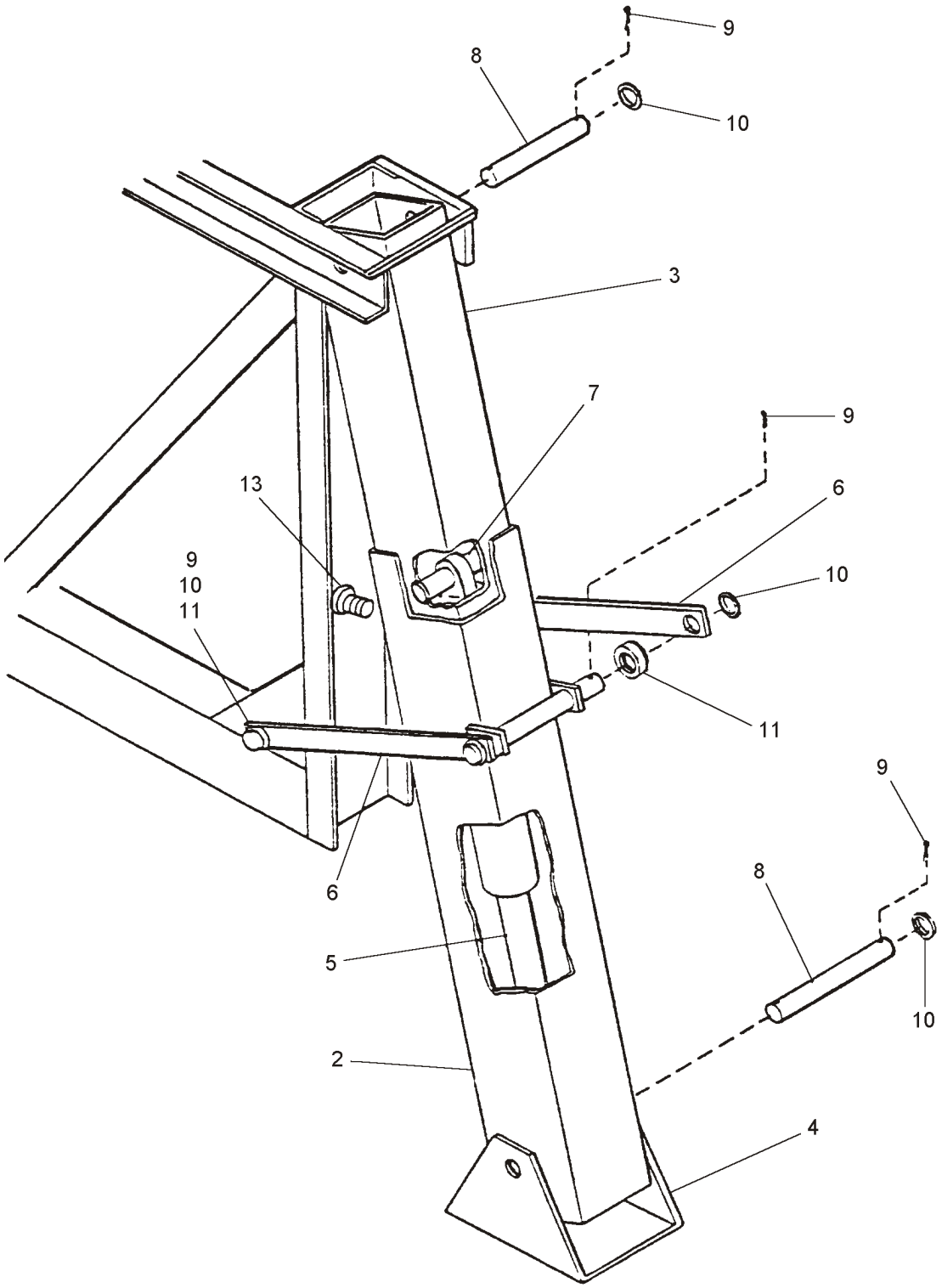


FIGURE 8.
MAIN STABILIZER ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
8-	12794		Main Stabilizer Assembly		Ref
2	12789W		Tube, Lower		1
3	12793W		Tube, Upper		1
4	304106		Shoe Weldment Stabilizer		2
	302964		Shoe Weldment, Stabilizer, Super-Duty		Ref
5	12817		Cylinder		Ref
6	12762W		Link, Stabilizer		2
7	12794.7		Shaft, Hydraulic Cylinder Top		1
8	12792W		Shaft, Upper Tube Pivot		1
9	Comm		Cotter Pin, 3/16 x 1.25		8
10	3.0296		Washer, Flat, 1" I.D.		8
11	12794.11		Spacer		4
13	302490		Switch, Proximity (LH Only) (See Fig. 15)		Ref

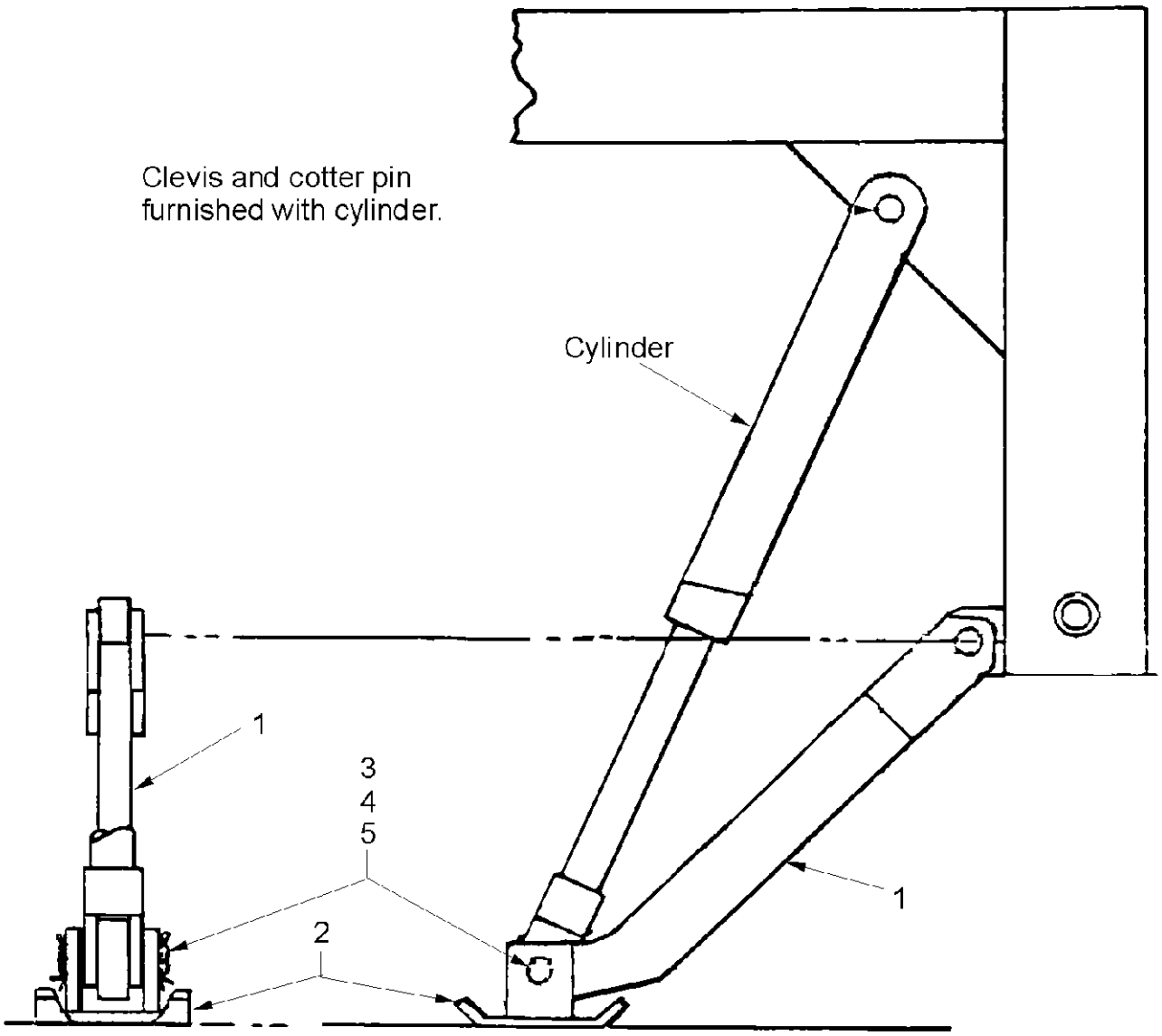


FIGURE 9.
REAR STABILIZER ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
9-	12803W		Rear Stabilizer Assembly		Ref
1	12797W		Arm, Stabilizer		1
2	12801W		Pad, Stabilizer		1
3	12798W		Pin, Clevis		1
4	Comm		Cotter Pin, 3/16 x 1.50"		4
5	3.0296		Washer, Flat, 1"		6

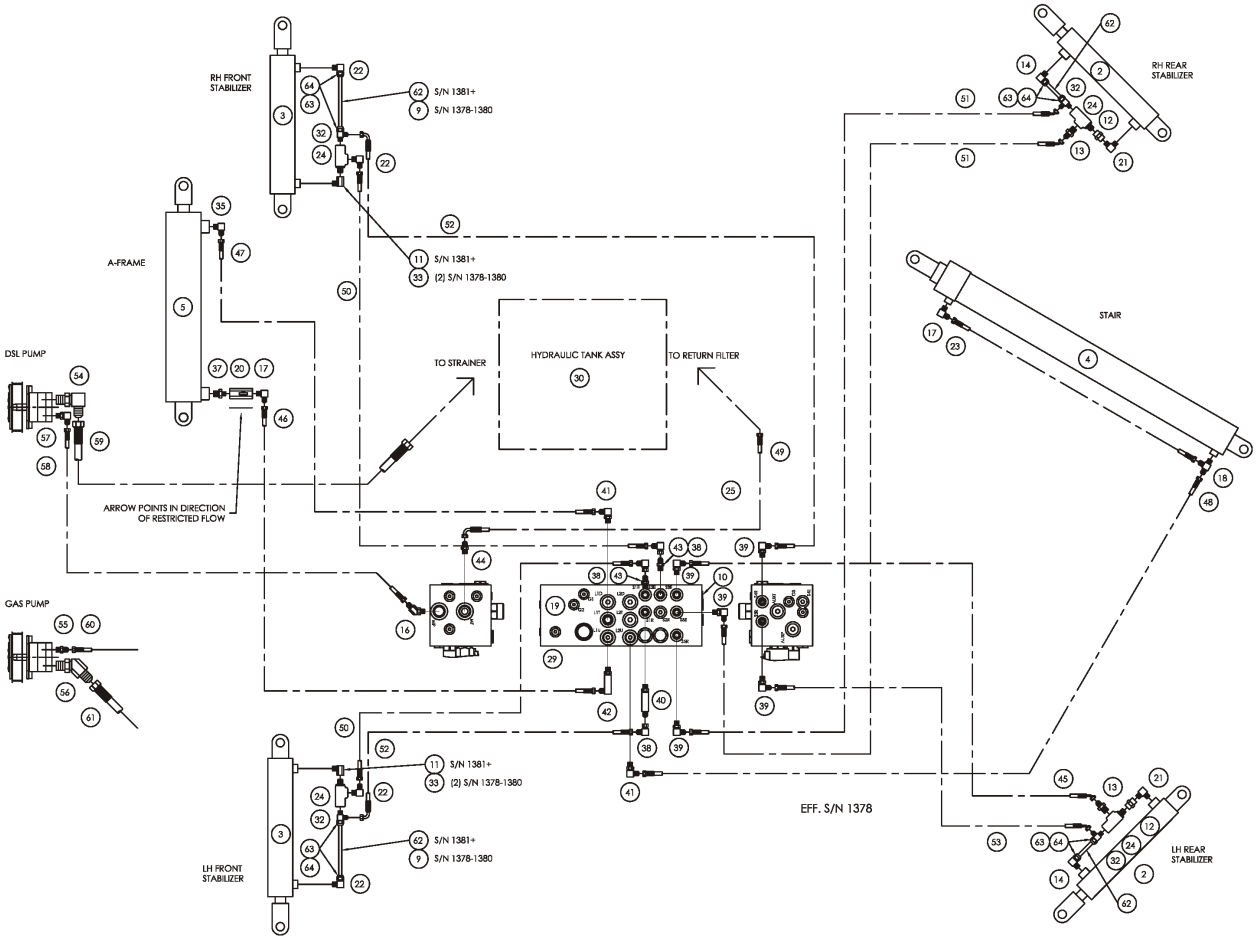


FIGURE 10.
HYDRAULIC ASSEMBLY
1 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
10-	307555		Hydraulic Assembly		Ref
2	18039		Cyl, 1 1/8R x 2B x 9S		2
	300231	5200-148	Kit, Seal 5200-148		A/R
3	12817		Cylinder, 1 1/4R x 2 1/2B x 12S		2
	1.7957	5200-268	Kit, Seal		A/R
4	8766		Cylinder, 2 1/2R x 3B x 118 1/2S		1
	1.7599	5200-173	Kit, Seal		A/R
5	12819		Cylinder, 1 1/2R x 3 1/2B x 18 1/2S		1
	1.7913	5200-209	Kit, Seal		A/R
9	307616		Tube, Hyd	G	2
10	3.2625		Ftg, Hyd, Plug, 06MB		1
11	154074		Ftg, Hyd, 06MP-06FP90	C	2
12	3.2212		Ftg, Hyd, 06FP-06FP		2
13	3.1572	2021-6-6	Ftg, Hyd, 06MJ-06MP (01276)		2
14	3.1926	2024-6-88-6	Ftg, Hyd, Ell, 06MJ-08MB		2
16	202074		Ftg, Hyd, 08MJ-10MB45		1
17	3.1317	2024-6-8	Ftg, Hyd, Ell, 08MJ-06MP90 (01276)		2
18	3.1630	2028-6-8	Ftg, Hyd, Tee, 08MJ-06MP-08MJ		1
19	NW036178		Ftg, Hyd, Plug, 04MB		3
20	1.0906	F25B	Valve, Flow Control, 06 (29771)		1
21	3.1386	2085-8-6S	Ftg, Hyd, 08MP-06MP90		2
22	3.1564	2024-6-6S	Ftg, Hyd,06MJ-06MP90		4
23	8946.24		Hose Assy, #08M, 143.72” LG		1
24	306408		Valve, PO Check, 06		4
28	303618		Handle, Handpump		1
29	307575		Manifold, Lift/Stabilizer (See Fig 13)		1
30	307596		Tank Assy, Hydraulic (SN 1380+)(See Fig. 11)		Ref
	5456		Tank Assy, Hydraulic (SN 1378-1379) (See Fig. 12)		
32	3.1535		Ftg, Hyd, Tee, 06MJ-04MP-06MJ		4
33	NW031415		Ftg, Hyd, 06MP-06FP45	G	4
35	3.1566	2024-8-8S	Ftg, Hyd, 08MJ-08MP90 (01276)		2
37	3.1389	2083-6-8	Ftg, Hyd, 08MP-06MP (01276)		2
38	3.2143	2071-6-6S	Ftg, Hyd, 06MJ-06FJ90 (01276)		3
39	3.2878		Ftg, Hyd, 06MJ-06MB90		5
40	307617		Ftg, Hyd, 06MJ-06MBL		1
41	91930		Ftg, Hyd, 08MJ-08MB90		2
42	90375		Ftg, Hyd, 08MJLL-08MB90		1
43	3.2518	202702-6-6 S	Ftg, Hyd, 06MJ-06MB (01276)		2
44	3.2703		Ftg, Hyd, 08MJ-10MB		1
45	8796.85		Hose Assy, #06M, 106.54” LG		1
46	8946.7		Hose Assy, #08M, 42.72” LG		1
47	8946.1		Hose Assy, #08M, 68.72” LG		1
48	8797.96		Hose Assy, #08M, 181.00” LG		1
49	8797.9		Hose Assy, #08M, 50.08” LG		1
50	8945.75		Hose Assy, #06M, 151.14” LG		2

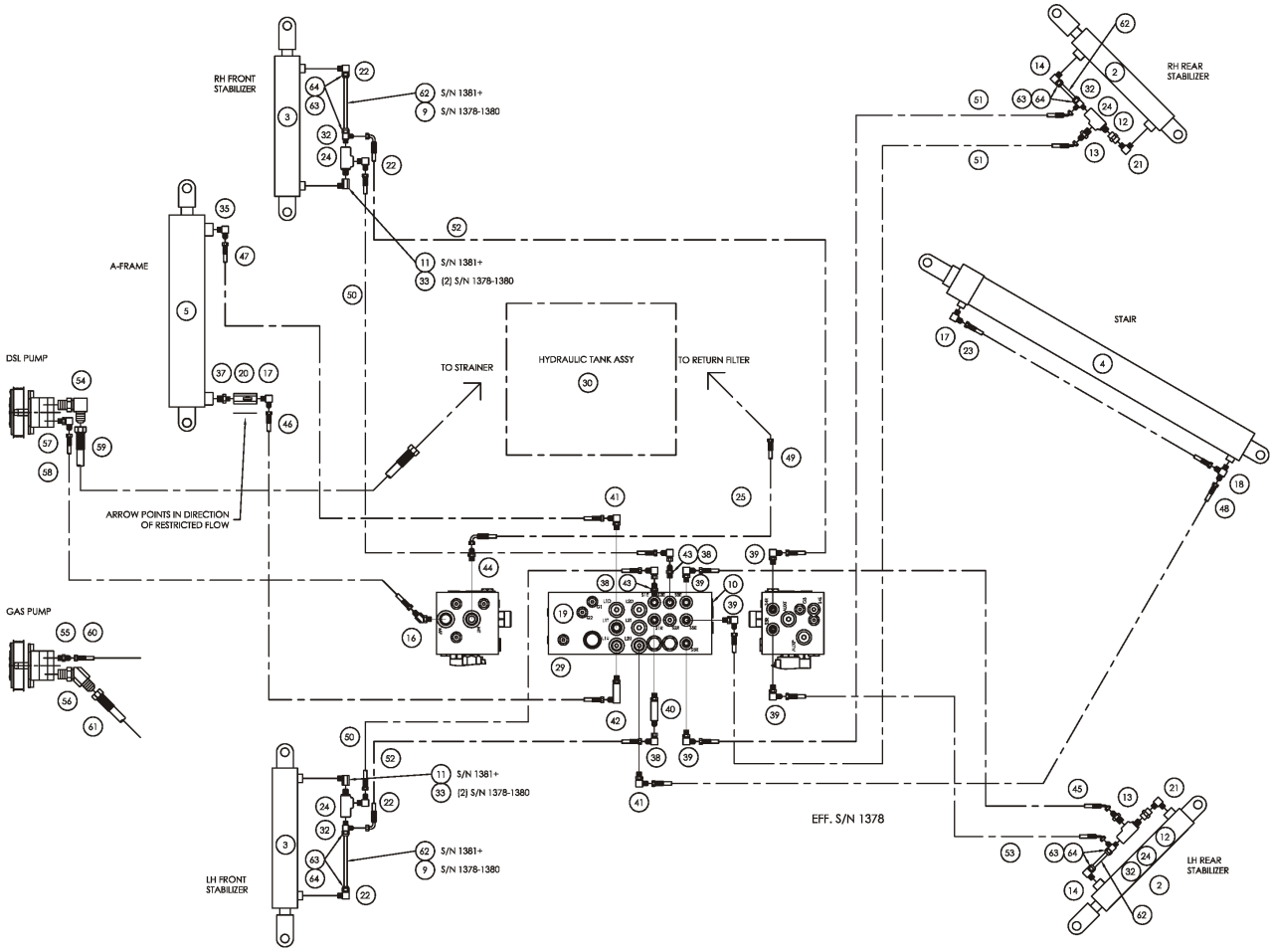


FIGURE 10.
HYDRAULIC ASSEMBLY
2 OF 2

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
10-	307555		Hydraulic Assembly		Ref
51	8796.21		Hose Assy, #06M, 123.54” LG		2
52	8796.101		Hose Assy, #06M, 156.75” LG		2
53	8796.114		Hose Assy, #06M, 111.00” LG		1
54	NW030992		Ftg, Hyd, 16MJ-16MB90 (DSL)		Ref
55	3.2961		Ftg, Hyd, 16MJ-16MB90 (GAS)		Ref
56	NW035809		Ftg, Hyd, 16MJ-16MB45 (GAS)		Ref
57	F102080		Ftg, Hyd, 08MJ-12MB90 (DSL)		Ref
58	8946.24		Hose Assy, #08M, 143.72” LG (DSL)		Ref
59	10384.22		Hose Assy, #16L, 126.00” LG (DSL)		Ref
60			Hose Assy, #08M (DSL)		Ref
61			Hose Assy, #16L (DSL)		Ref
62	7.0394		Tbg, Hyd, 3/8x.035	C	24”
63	303859		Nut, Tube, Flareless, 06, 37F		4
64	303858		Ferrule, Nut, 06, 37F		4
NS	307719		Lockout, Valve, Stabilizer	D	1
NS	304271		Lockout, Valve, Stabilizer	B	1

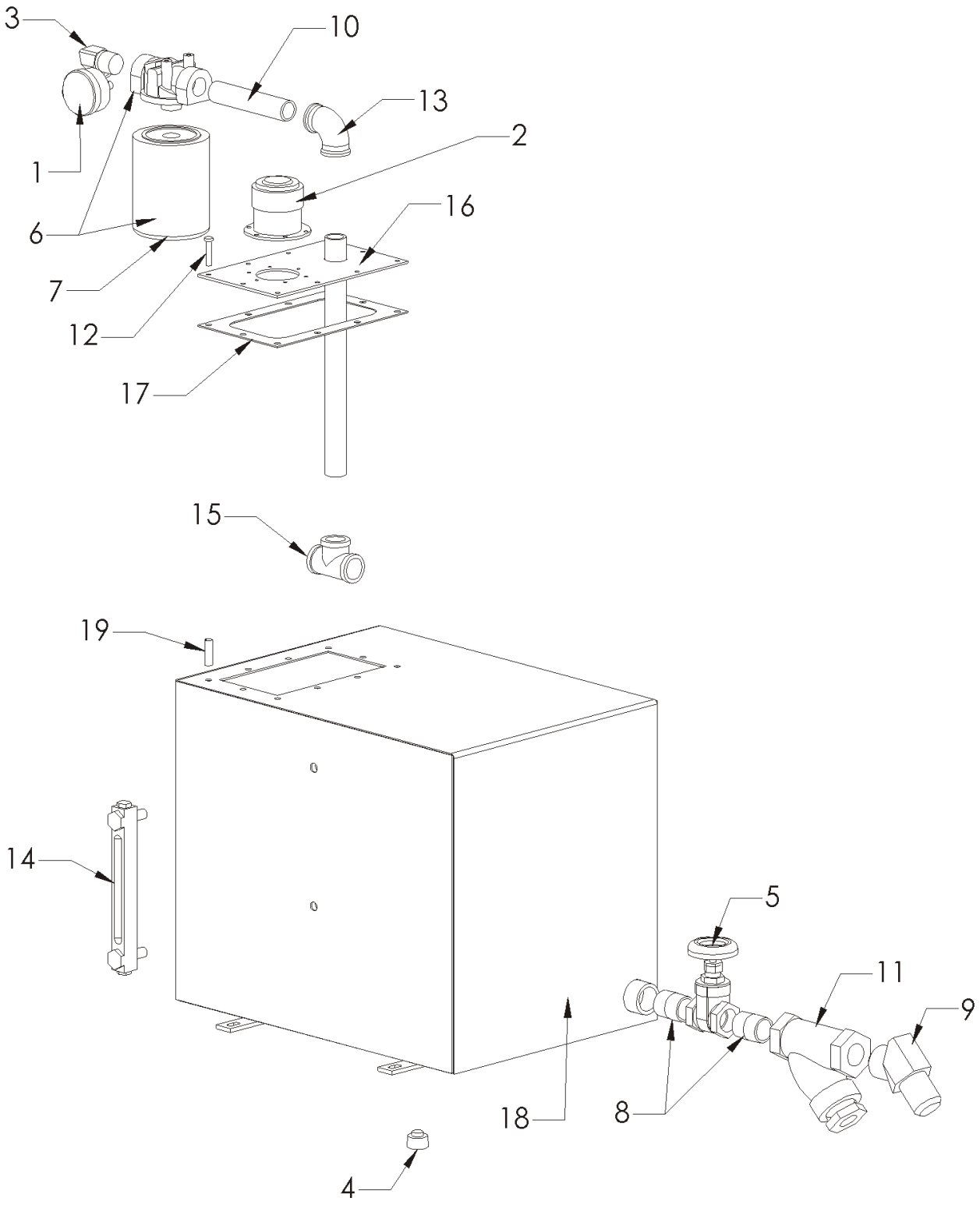


FIGURE 11
HYDRAULIC TANK (SN 1382+)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
11-	307596		Tank Assy, Hyd. TMPS200	D	Ref
1	1.9008	9690217	Gauge, Pressure, 0-30 PSI, 1/8NPT		1
2	1.8090	FBA108W	Fill Unit, W/ Strainer, A115W		1
3	3.1568	2501-08-12	Ftg, Hyd, 08MJ-12MP90		1
4	1.7162	MDP-105	Plug Magnetic Drain, 3/4 NPT		1
5	1.7146	F99Z136004	Valve, Gate, 1 NPT Female		1
6	1.0437	FPC30	Filter, Hyd, Return, 3/4"NPT		1
7	1.3712		Element, Hyd Filter		1
8	3.0935		Nipple, 1" NPT Close, SCH 40, BIP		2
9	45458	4503-16-16	Ftg, PHyd, 16H-16MP45		1
10	3.0915		Ftg, P, N, 12MP-5"L, BIP		1
11	1.8943		Strainer, Y, 1" NPT, 80 Mesh, BIP		1
12	F009591		RHMS, #10-24 x 3/4, SL, ZC		10
13	3.0888	65-104	Ftg, P, Ell, 12PF, BIP, SCH40		1
14	307606	G605-07-A-1	Gauge, Sight, 7" Frnt Mnt, ½-20		1
15	307230	402-007	Ftg, P, Tee, 12SLP-12SLP-12FP, PVC 402-007 Nibco		1
16	307594		Cover Weldment, Hyd Tank		1
17	307602		Gasket, Hyd Tank Cover, TMPS200		1
18	307591		Tank, Hyd, TMPS200, Cleaned		1
19	306580		Nutsert, #10-24, Closed End		10

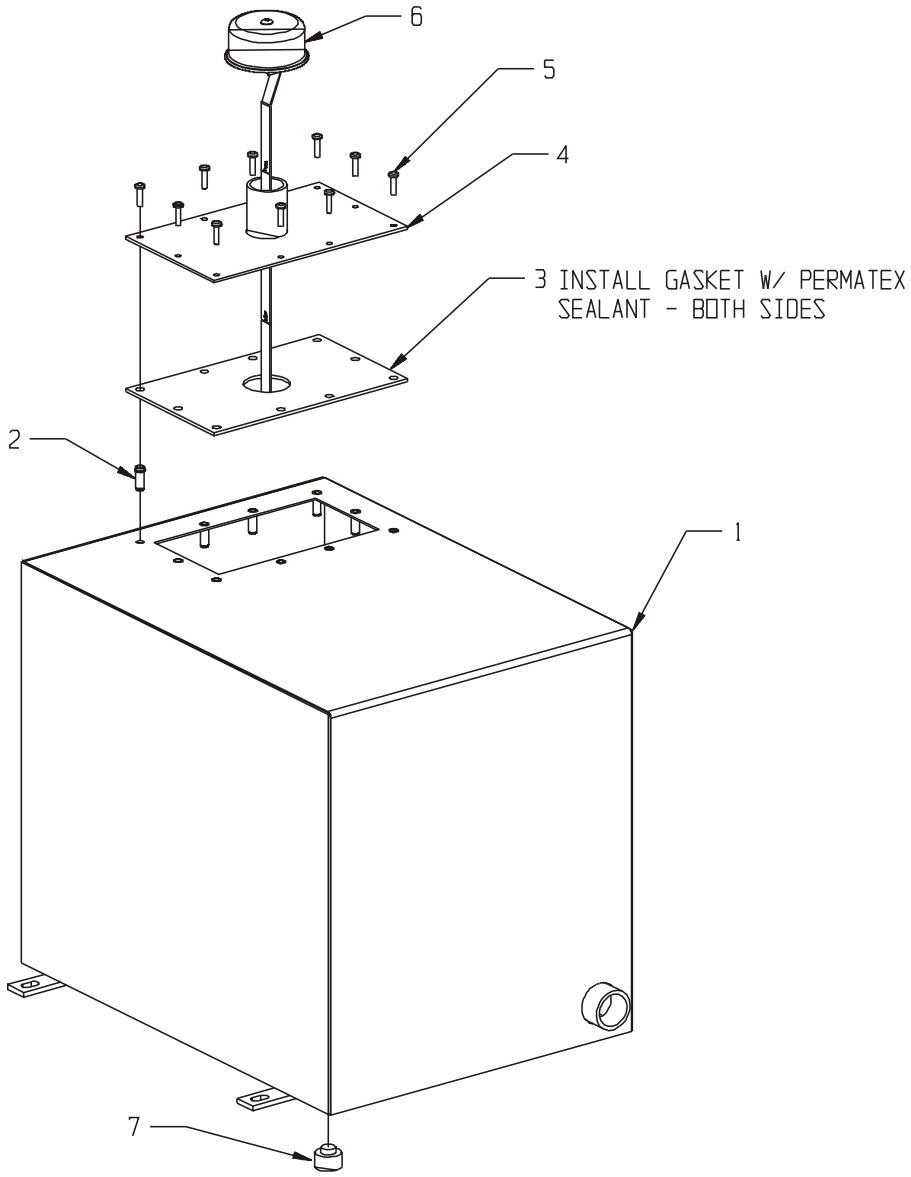


FIGURE 12.
HYDRAULIC TANK (SN 1378-1379)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
12-	5456		Tank Asm, Hydraulic, TMPS	A	Ref
1	307164		Hydraulic Tank		1
2	306580		Nutsert, 10-24		10
3	304771		Gasket		1
4	307165		Cover		1
5	F009591		RHMS 10-24 x 3/4 SS		10
6	307167		Cap/Dipstick Asm		1
	1.0202		Cap, Fill, Oil		1
	307168		Dipstick, Hyd Tank		1
	Comm		Screw, Truss Hd w. ESNA Nut, #10-32 x 2.00		1
7	1.7162		Plug, Magnetic Drain, 3”		1

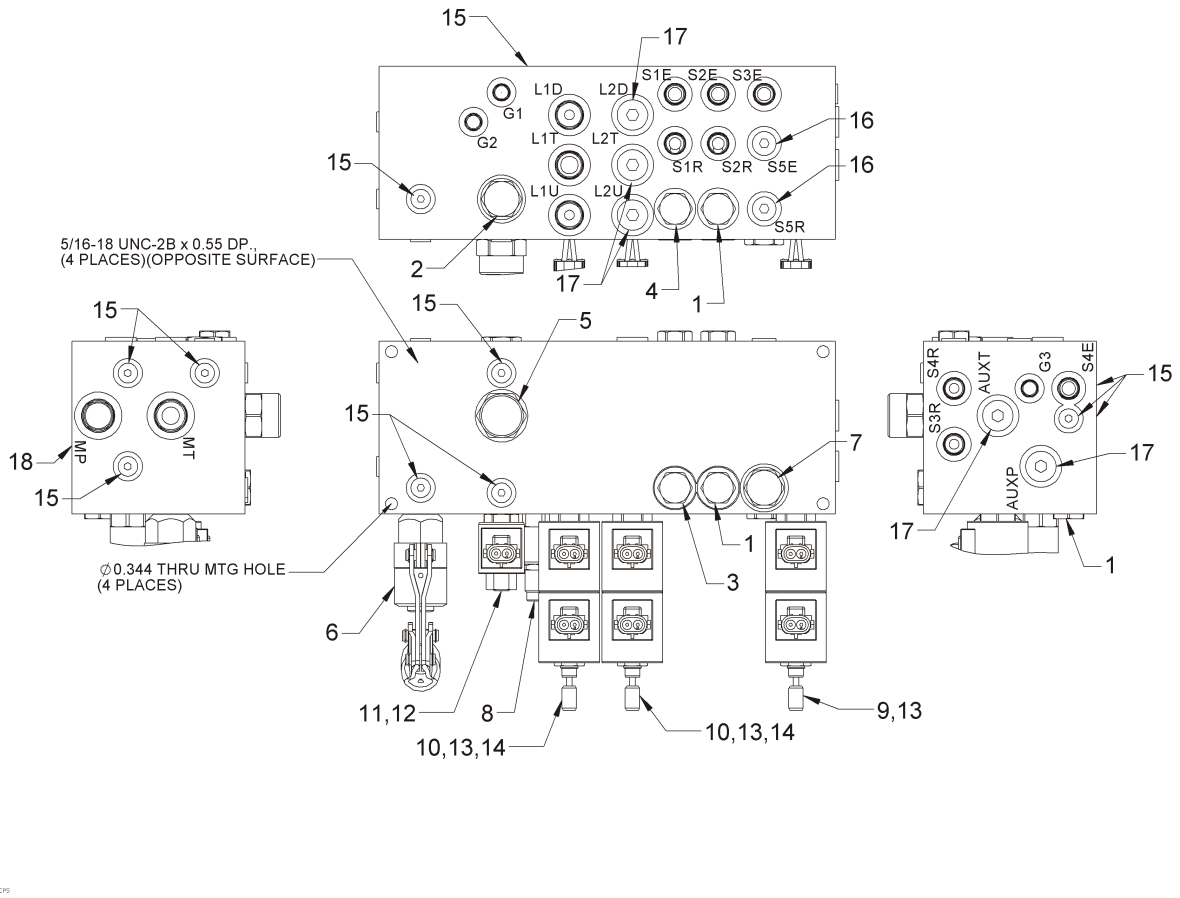


FIGURE 13.
HYDRAULIC MANIFOLD, LIFT/STABILIZER

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
12-	307575		Manifold, Lift/Stabilizer		1
1	308883	CP08-20-N	Plug		3
2	308849	CV10-20-0-N-02	Check Valve		1
3	308850	CV08-20-0-N-04	Check Valve, 4 PSI		1
4	308851	CV08-20-0-N-150	Check Valve, 150 PSI		1
5	308884	FR12-30F-0-N	Regulator, Pressure Comp.		1
6	307547	HP10-21A-0-N-B	Hand Pump, Push Handle, .65 cu in/Stroke		1
7	307497	PC10-30-0-N	Check, Pilot to Open		1
8	308852	RV10-22A-0-N-25/12	Relief, Differential Area Poppit, 250-2400 PSI		1
9	305745	SV10-47DM-0-N-00	Spool, 4 Way, 3 Pos		1
10	308847	SV10-47CM-0-N-00	Spool, 4 Way, 3 Pos, Closed Center		2
11	308848	SV08-21-0-N-00	Poppit, 2 Way, Normally Open		1
12	307610	6309737	Coil, Solenoid Valve, Small		1
13	307611	6359732	Coil, Solenoid Valve, Large		6
14	308885	7063130	Orifice Disc		2
15	308886	6103004	Port Plug		11
16	308887	6103006	Port Plug		2
17	308888	6103008	Port Plug		5
18	308890	7274010	Block		1
20	308889	3108080	Plug		13
NS	F002547		Pin, Cotter 1/8x2 (thru manual over ride holes)		3

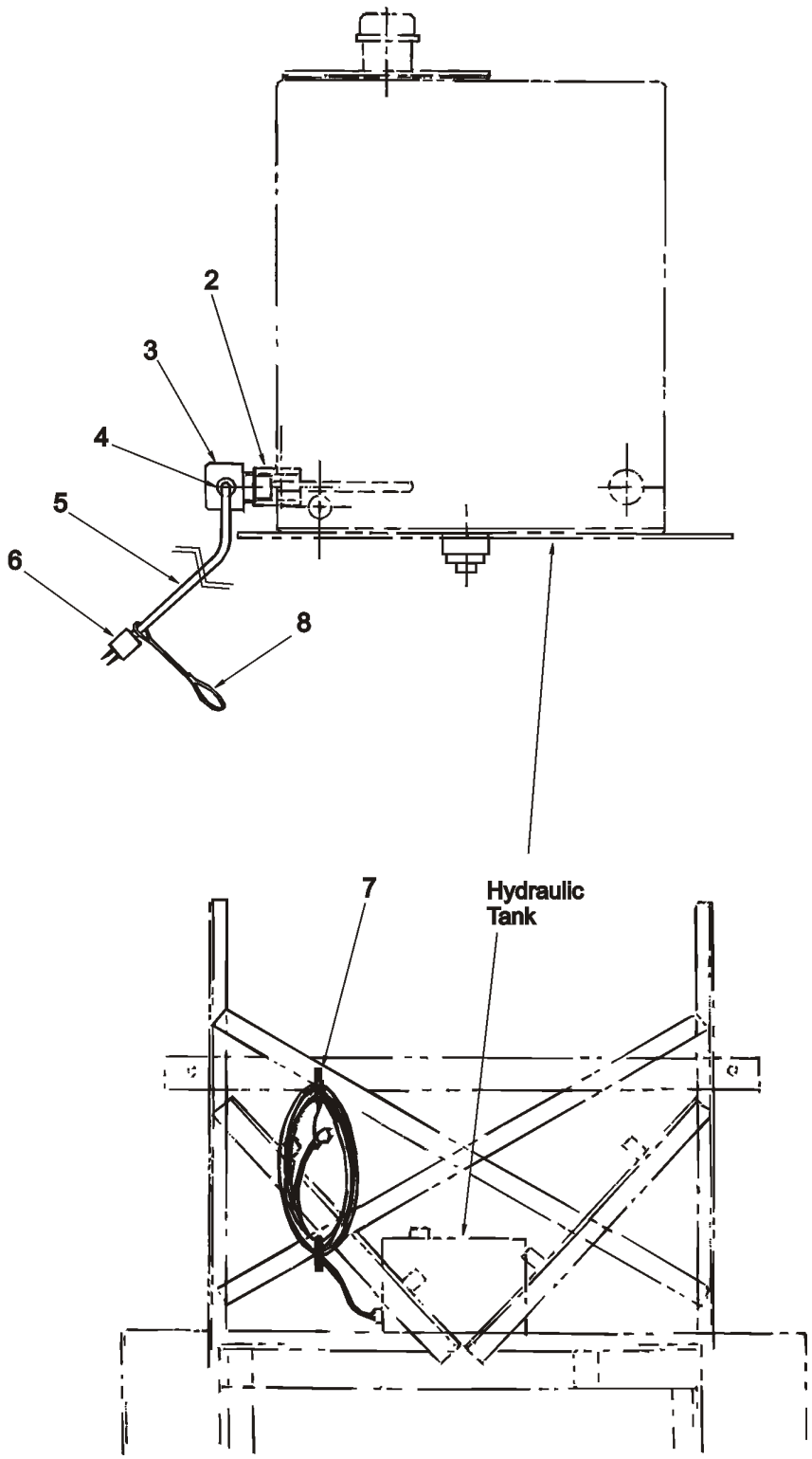


FIGURE 14.
TANK, HEATED, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
14-	16493		Tank, Heated, Option		Ref
2	3.0847	Comm	Coupling, I" NPT		1
3	2.2839	375	Heater, 120V (Artmo)		1
4	2.0180	Comm	Connector		1
5	2.0906	Comm	Cable, 14-3 Type SO		20'
6	2.3709	Comm	Plug, 3-Wire		1
7	12654.08	Comm	U-Bolt		2
8	1.3522	Comm	Cable, SST		6"

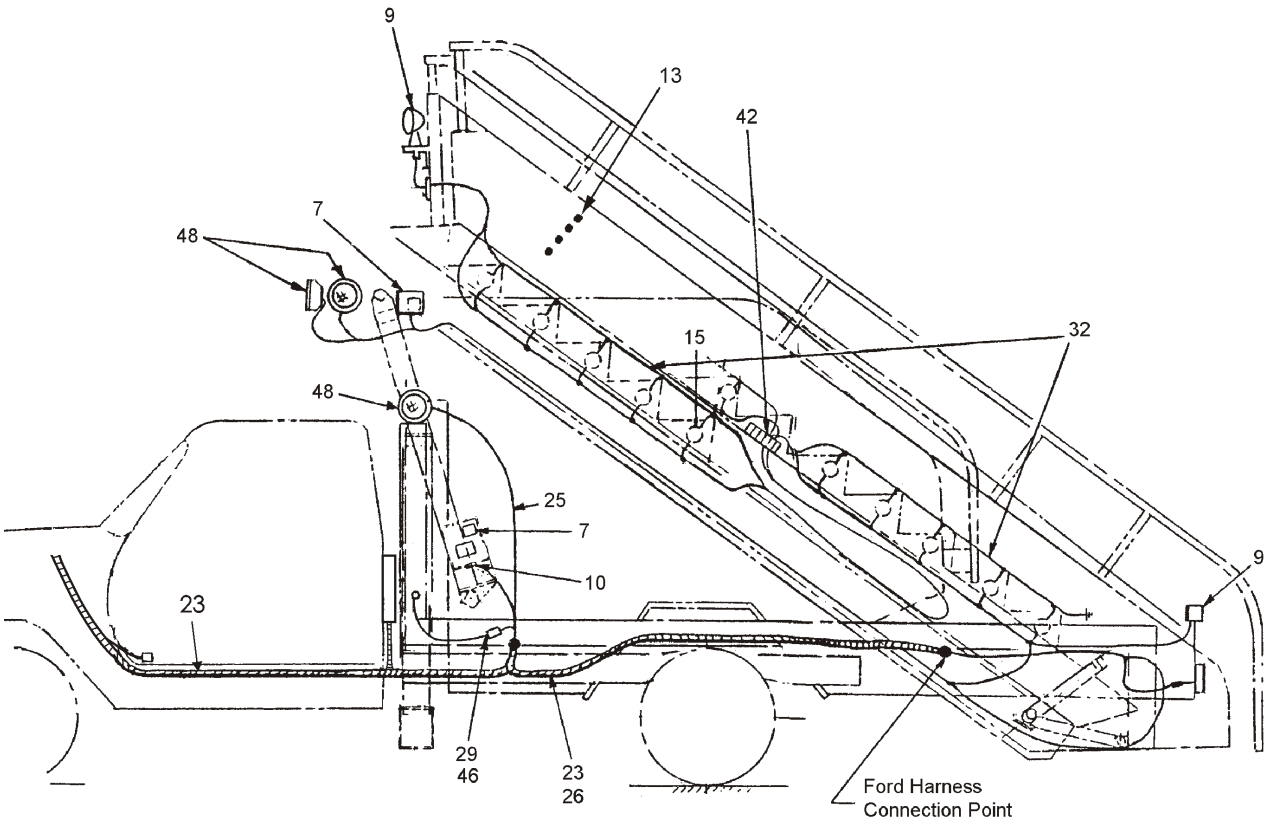
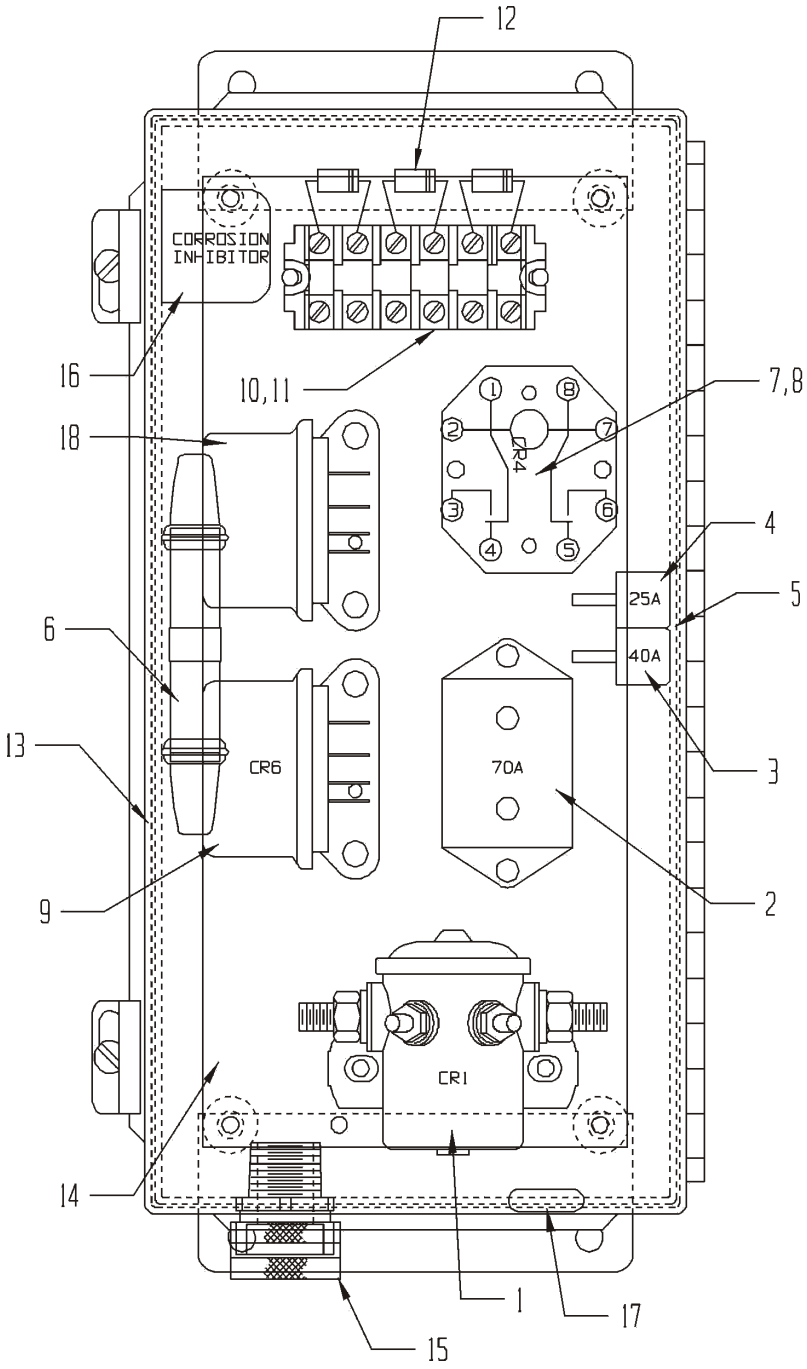


FIGURE 15.
ELECTRICAL ASSEMBLY
1 OF 3

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
15-	307556		Electrical Assembly, 1 of 3		Ref
7	307371		Solenoid Assembly (See Figure 16)		2
9	2.3607	883-3301	Spotlight (75175)		3
10	3.1178		Grommet		1
13	Comm		Rivet, Pop, #6-8, Alum		92
15	2.3902	60191	Light, Stair Tread (81834)		54
23	307609		Harness		1
25	Comm		Conduit, Flexguard, 3/8" x 30 Ft.		1
26	Comm		Conduit, Flexguard, ½" x 40 Ft.		1
29	9.1954	300-3/8	Tube, Shrink Fit, 3" Lg. (92194)		1
32	2.0812		Clip, Spring		6
42	2.1875	CEM 426	Block,Terminal,4		2
46	9.1678	300-3/16	Tube, Shrink Fit, 1" Lg. (92194)		1
48	2.3608	64931	Floodlight, Rubberized (81834)		4
	2.3706	4411	Lamp, Floodlight		Ref



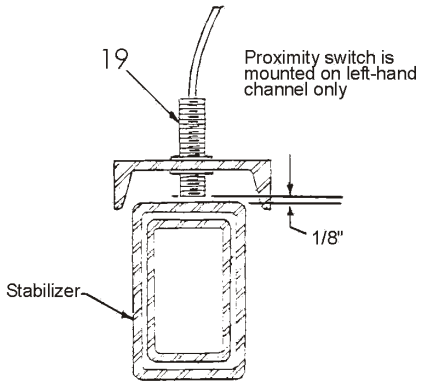
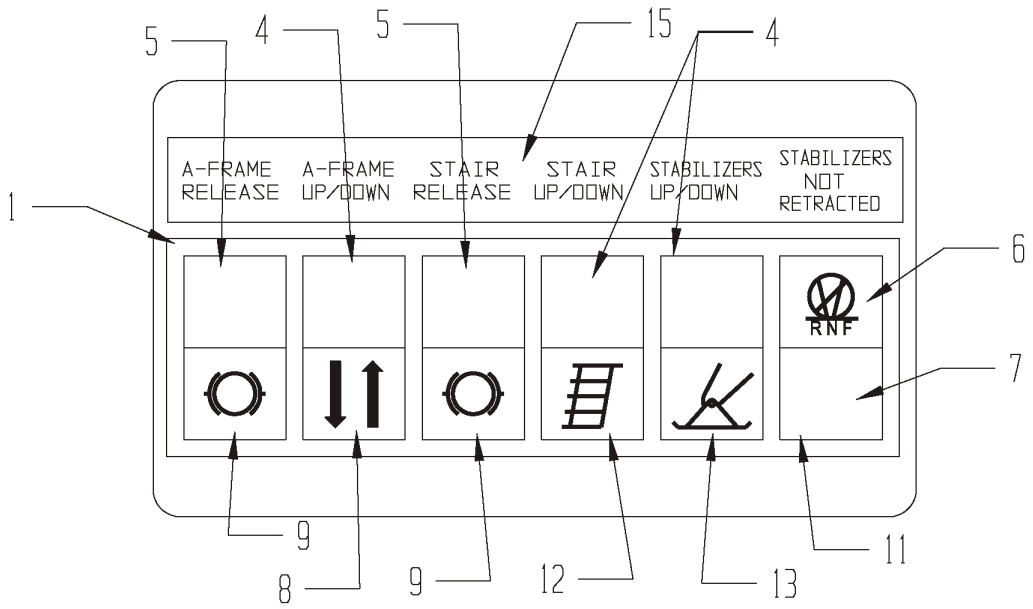


FIGURE 15.
ELECTRICAL ASSEMBLY
2 OF 3

Fig.-Item	nmc-wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
15-	307556		Electrical Assembly, 2 of 3		Ref
1	2.1401	Stancor 70-902	Relay,Power,SPNO,12VDC/80A		1
2	2.0985	SDLA-70	Breaker,Circuit,70A Auto-Reset		1
3	2.1941	30056-40	Breaker,Circuit,40A Auto-Reset		1
4	2.3543	30056-25	Breaker,Circuit,25A Auto-Reset		1
5	2.3451	30090-3	Holder, Circuit Breaker,3-Gang		1
6	2.0311	245	Flasher,3-Wire,Independent,12V		1
7	2.2441	RB08-PC	Socket,Relay,8-Pin		1
8	2.2440	RR2P-UD C12VDC	Relay, Plug-In,8-Pin,12 VDC		1
9	2.3648	150-905	Relay,12VDC,SPDT,15A,Enclosed		1
10	2.0021	Buchanan 924	Block, Terminal		6
11	2.0022	530	Terminal End (83079)		1
12	2.3093	NTE 5805	Diode,3A,200V,Axial Lead		3
13	307607		Enclosure, Modified,TMPS200		1
14	307608		Panel,Modified,12x6x4,TMPS		1
15	2.0180	OZGSR50 625	Connector, Cord ½" Hub		1
16	303247	A-HCI10E	Inhibitor Corrosion		1
17	3.0282	AN931-6-10	Grommet, 0.38ID, 0.63HD, 1/16 Grv		1
18	2.3648		Relay, Opt		1
19	302490	972AA3X M-B3P-L	Switch, Proximity, SPNC (91929)		1
NS	2.3639		Connector, Butt		3
NS	3.0284		Grommet, .63ID, .88 HD		1
NS	2.1033		Wire 6 GA Blk SGX		120”
NS	3.2827		Grommet, .25 ID, .44 HD		1



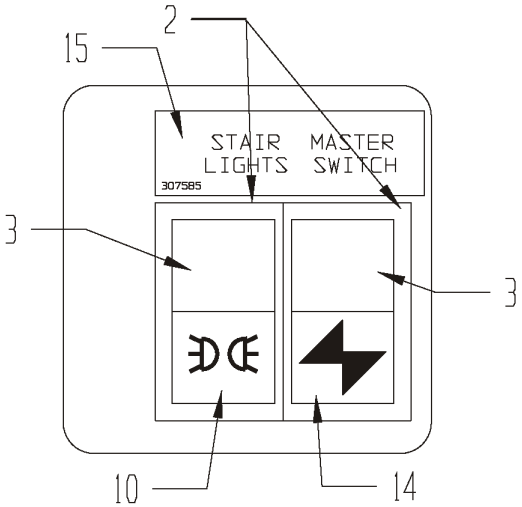


FIGURE 15
ELECTRICAL ASSEMBLY
3 OF 3

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
15-	307556		Electrical Assembly, 3 of 3		Ref
1	NW035381	595902	Frame, 6 Switch		1
2	NW036731	594802	Holder, Switch, End Piece		2
3	NW034176	511005	Switch, Rocker, Off-On, SPST		2
4	NW035377	511-056	Switch, Rocker, Mom-Off-Mom		3
5	NW035374	511008	Switch, Rocker, Off-Mom. On		2
6	306213		Insert, Switch, No Shift, Red		1
7	NW035382	596620	Insert, Switch, Blank, Black		3
8	307562	594405	Insert, Switch, Up/Dwn. Gn		1
9	307565	594499	Insert, Switch Release, Red		2
10	307564	595105	Insert, Switch, Stair Lts, Gn		1
11	NW035378	511502	Housing, Light Indicator, 2-Lamp		1
12	307560	596204	Insert, Switch, Stair, Gn		1
13	307561	596157	Insert, Switch, Stabilizer, Gn		1
14	307563	594421	Insert, Switch, Power, Red		1
15	307585		Decal, Controls, Elec, TMPS200		1
NS	37409	913328	Connector, Light		3
NS	37408	596289	Connector, Switch		7

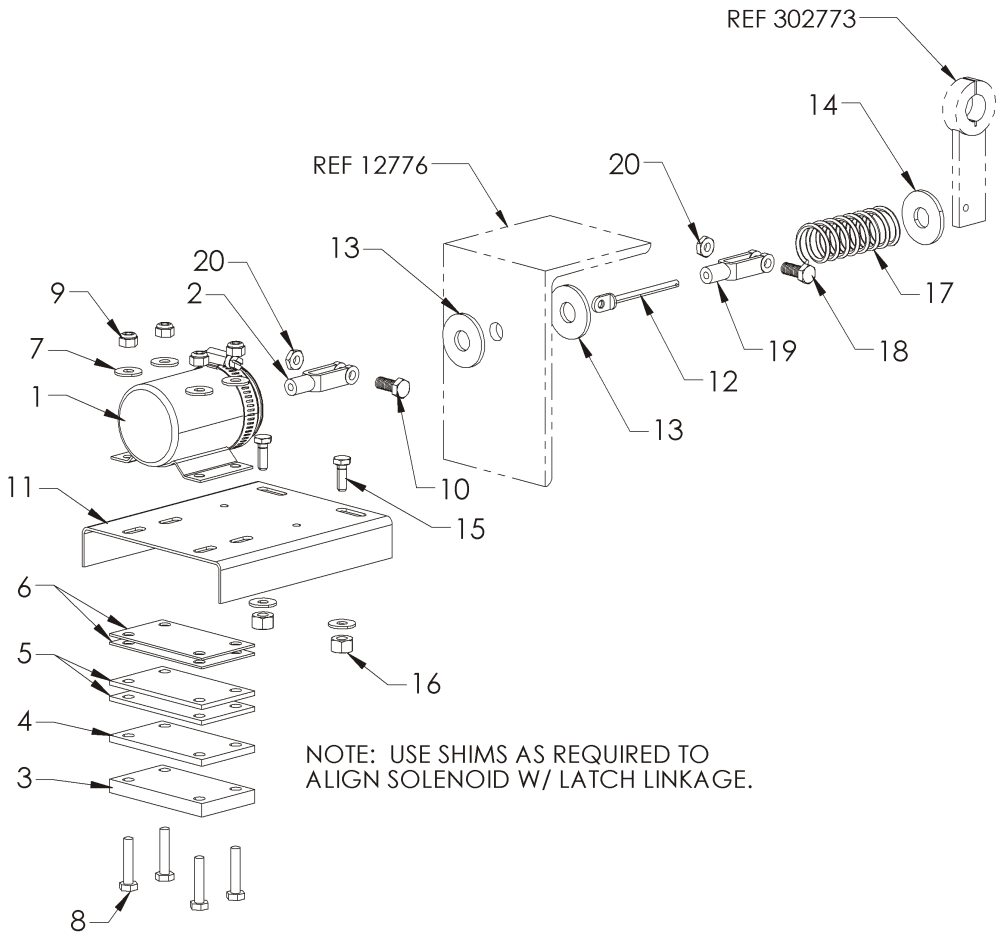
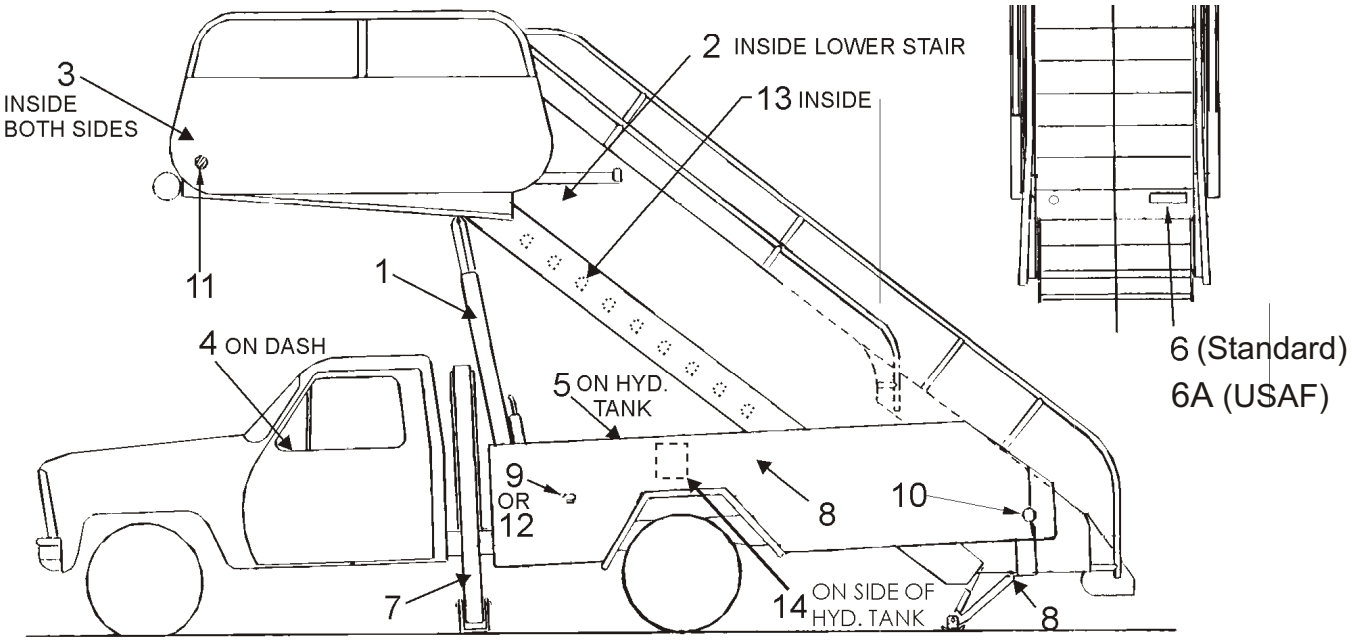


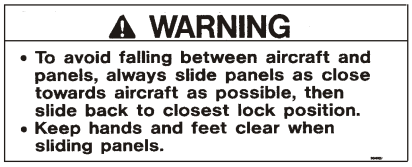
FIGURE 16.
SOLENOID ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
16-			Solenoid Installation		Ref
	307371		Solenoid Assembly (Inc Items 1-9)		Ref
	303793		Module, Solenoid Control		2
1	303792		Solenoid, 12V, 3 Wire		1
2	303931		Clevis, 1/4-20 x 1/4 Pin		2
3	307365		Shim, Sol. Mnt, 3/8"		1
4	307366		Shim, Sol. Mnt, 3/16"		1
5	307367		Shim, Sol. Mnt, 1/8"		2
6	307368		Shim, Sol. Mnt, 16 GA		2
7	F009704		Washer, Flat, .25		9
8	F018975		HHCS, .25-20x1.25		4
9	F0135881		Nut, Hex, .25		4
10	Comm		RHMS, 10-32 x 1.00		1
11	307364		Bracket		1
12	3.0042		Eyebolt		1
13	Comm		Washer, 1/4" AN		2
14	Comm		Washer, ½" SAE		1
15	Comm		HHCS, 1/4-20 X 0.75		6
16	Comm		Locknut, 1/4-20		6
17	1.0761	LC098K7	Spring, Compression, 7/8" O.D. X .105 Wire X 3-1/8" Free		1
18	Comm		RHMS, 10-32 x 0.75		1
19	1.4474	125-001	Yoke, Brake, 3/16 X #10-32		1
20	Comm		Locknut, #10-32 NF		2



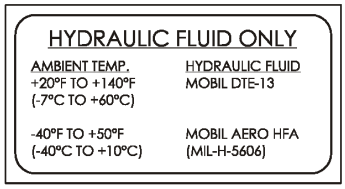
1

2

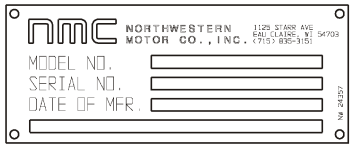


3

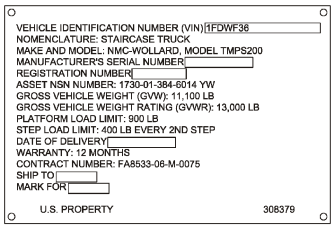
4



5



6



6A

7

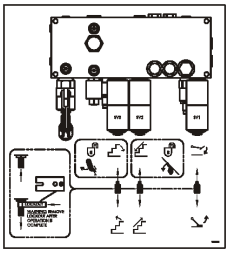
8

9

10 11

ILLS. NOT AVAILABLE

13



14

12

FIGURE 17.
PLACARDS AND SIGNS

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
17-	12679W		Placards and Signs		Ref
1	304272		Decal, Warn, Stair Lock, Large		1
2	305335		Decal, Warn, Stair Crush		1
3	304327		Decal, Warn, Wing Panel		2
4	305732		Decal, Warn, Read Manual		1
5	562A503		Placard, Mobile DTE 13		1
6	NW24357		Plate, Serial Number (Standard)		1
6A	308379		Plate, Data, TMPS200 (USAF)		1
7	562A439		Placard, Warning, Stabilizer		1
8	306521		Decal, NMC-Wollard, Black		2
	306522		Decal, NMC-Wollard, White		2
9	562A279		Decal, Gasoline Only		1
	Comm		Rivet, Pop, Alum., #4-4		4
10	1.7779		Reflector, Red, 3" Dia.		2
11	1.7965		Reflector, Amber, 3' Dia.		2
12	153768		Decal, Diesel Fuel Only		1
13	1.0597		Number Set, Adhesive-Backed No. 1-10		1
14	306633		Decal, Hand Pump Operation		1
15	306633		Decal, Hand Pump Operation		1
NS	304191		Placard, Canadian Running Lights (opt)		1

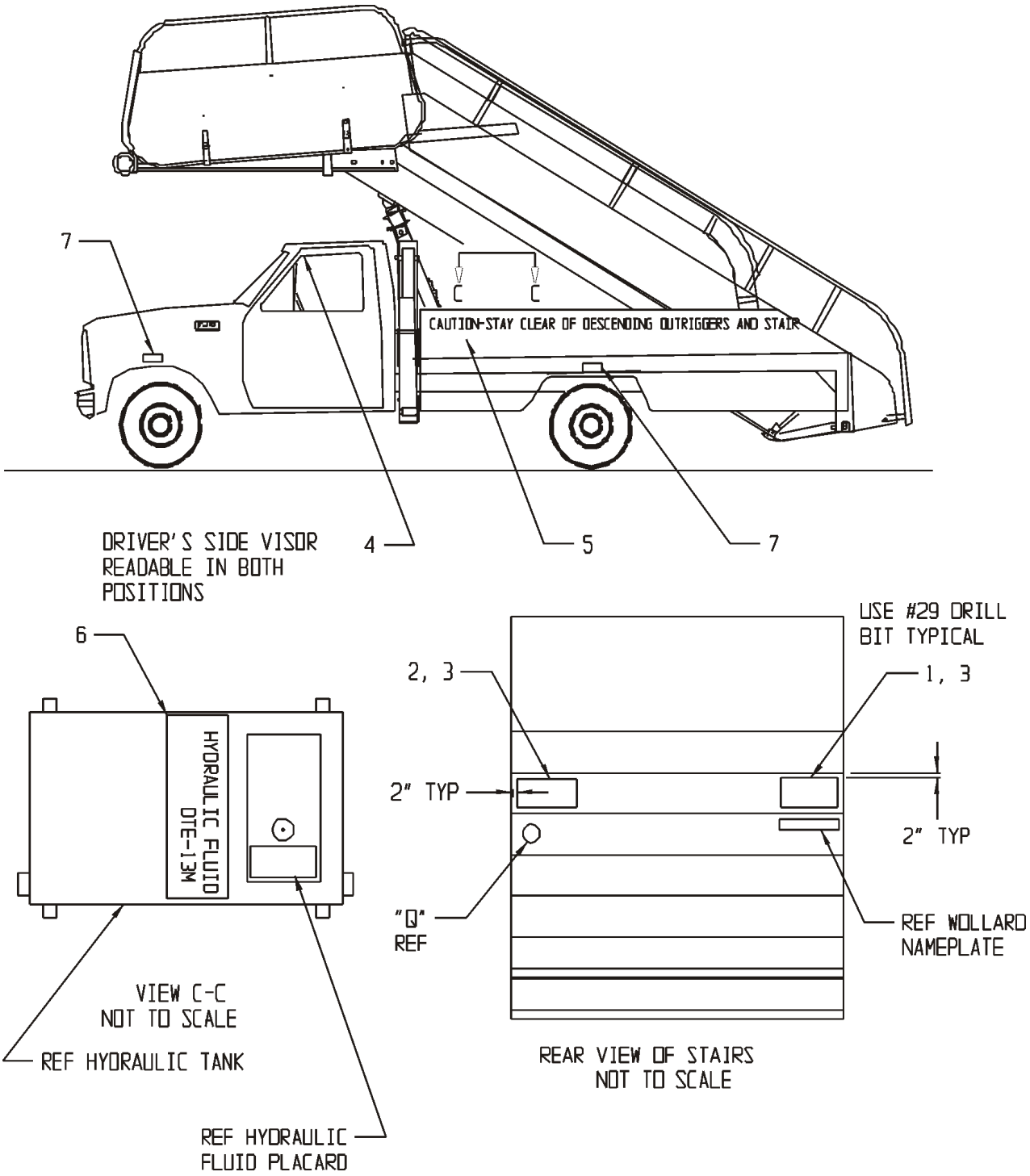


FIGURE 18.
PLACARDS, SPECIAL, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
18-	302744		Placards, Special, Option		Ref
1	302842		Placard, Weight		1
2	302843		Placard, Load Capacity		1
3	Comm		Pop Rivets, Aluminum #4-4		12
4	303251		Placard, Vehicle Height		2
5	303250		Placard, Caution Stair		2
6	303254		Placard, Hydraulic Fluid		1
7	303253		Placard, 65 PSI		4

FIGURE 19.
BEACON, ROTATING, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
19-	8807		Beacon, Rotating, Option		Ref
1	2.3911	Amber RB11-12V	Rotating Light (10402)		1
2	2.1532		Wire, 14 Ga.		192”
3	2.1031	8801-K22	Toggle Switch, Beacon On-Off (15605)		1
4	562A518		Placard, Beacon On/Off		1

Fig Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
19-	306992		Cab Rotating Beacon, Option		Ref
1	306993		Beacon, Rotating, Amber		1
2	2.1532		Wire, 14AWG Type GPT Black		192”
3	2.1031		Switch, Toggle, Spnd		1
4	562A518		Placard, Beacon		1

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
19-	305259		Beacon, Flashing, Amber, Option		Ref
1	305260		Light, Beacon, Flashing, Amber		1
2	2.1532		Wire 14GA Black (30 inches each)		2
3	2.1031		Switch, Toggle		1
4	562A518		Placard, Beacon, On/Off		1

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
19-	308425		Beacon, Amber, Rot, Dual, Option		Ref
1	308426		Light, Beacon, Rot, Amber, Dual		1
2	F006612		Wire 14GA Black GXL		192”
3	2.1031		Switch, Toggle		1
4	562A518		Placard, Beacon, On/Off		1

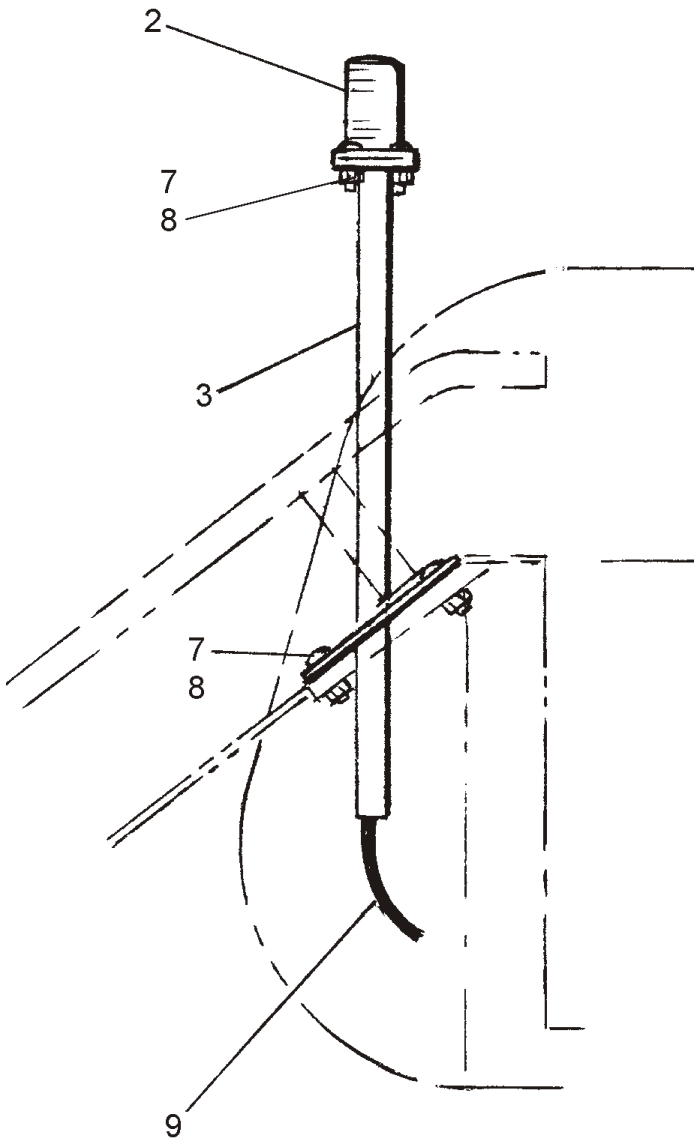
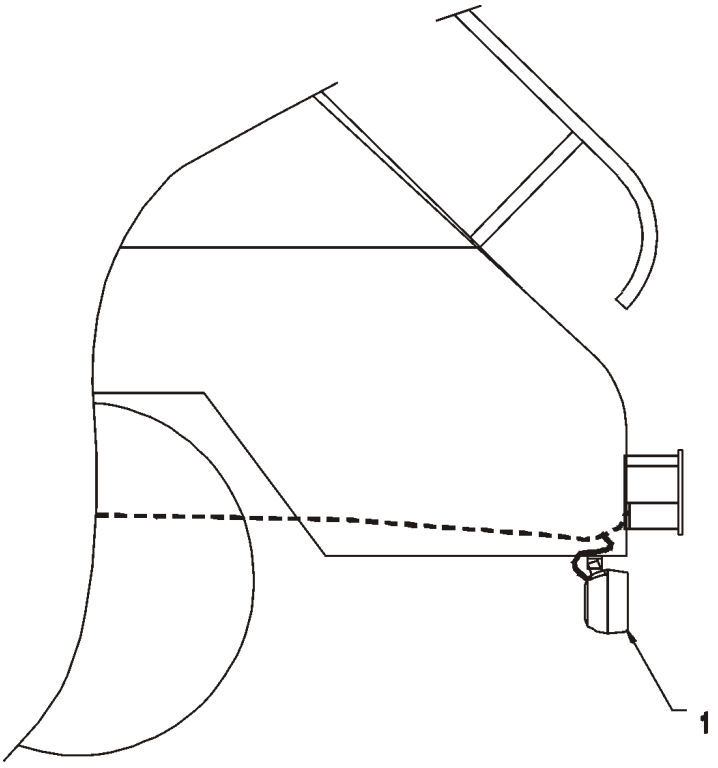
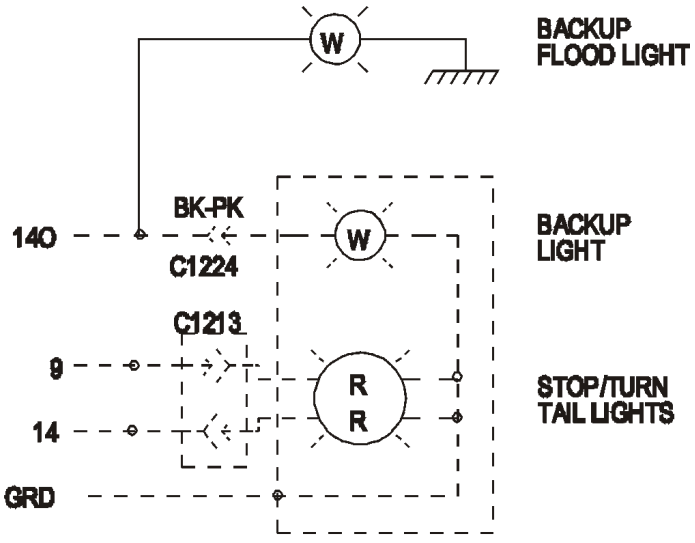


FIGURE 20.
LIGHT, WARNING, AMBER, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
20-	10099		Light, Warning, Amber, Option		Ref
2	39476	035-10-312	Light, Amber Warning (20984)		1
3	10099.3		Pole Assembly		1
7	Comm		RHMS, #10-24 x 1.00		7
8	Comm		Nut, Lock, #10-24		7
9	10099.9		Cable, S.O., #16-2 x 50'		1
NS	2.0311		Flasher (not shown)		1





TYP. BOTH SIDES

FIGURE 21.
LIGHTS, FLOOD, BACK-UP, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
21-	18359		Light, Flood, Back-up, Option		Ref
1	2.3836		Floodlight		

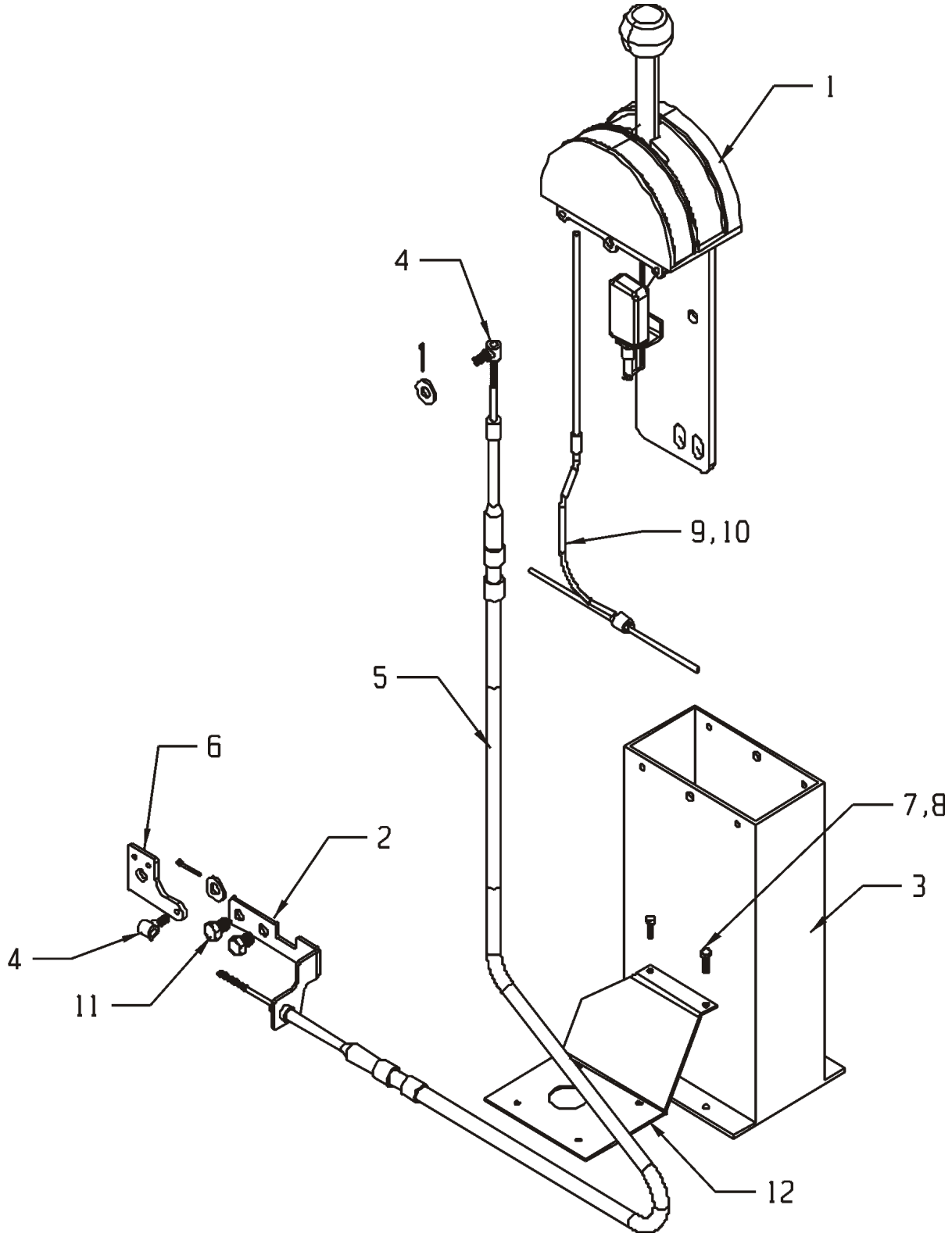


FIGURE 22.
MORSE CONTROL, OPTION - 2005+

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
22-	307539		Morse Control, Option - 2005+		Ref
1	306294		Shifter, Morse Control		1
2	307523		Cable Mount, Morse		1
3	1.5956	D044585	Floor Stand (41625)		1
4	1.5955	A038491	Ball Joint (41625)		1
5	1.6015	D037911-003-0072	Cable		1
6	307524		Extension, Shifter		1
7	F017264		HHCS, 1/4-20 x 1.00		2
8	F013588		Nut, Lock, 1/4-20		2
9	2.3437	Comm	Wire, Black, 14AWG 600V THHN		6'
10	2.3478	Comm	Conduit, 1/4 Flexguard		6'
11	302258	Comm	HHCS, M14 x 2.0 x 20mm		2
12	303768		Mnt. Wldmnt., Morse Control		1
NS	303734		Clamp Plate, Transmission Shift		1
NS	302754	Comm	Grommet		1

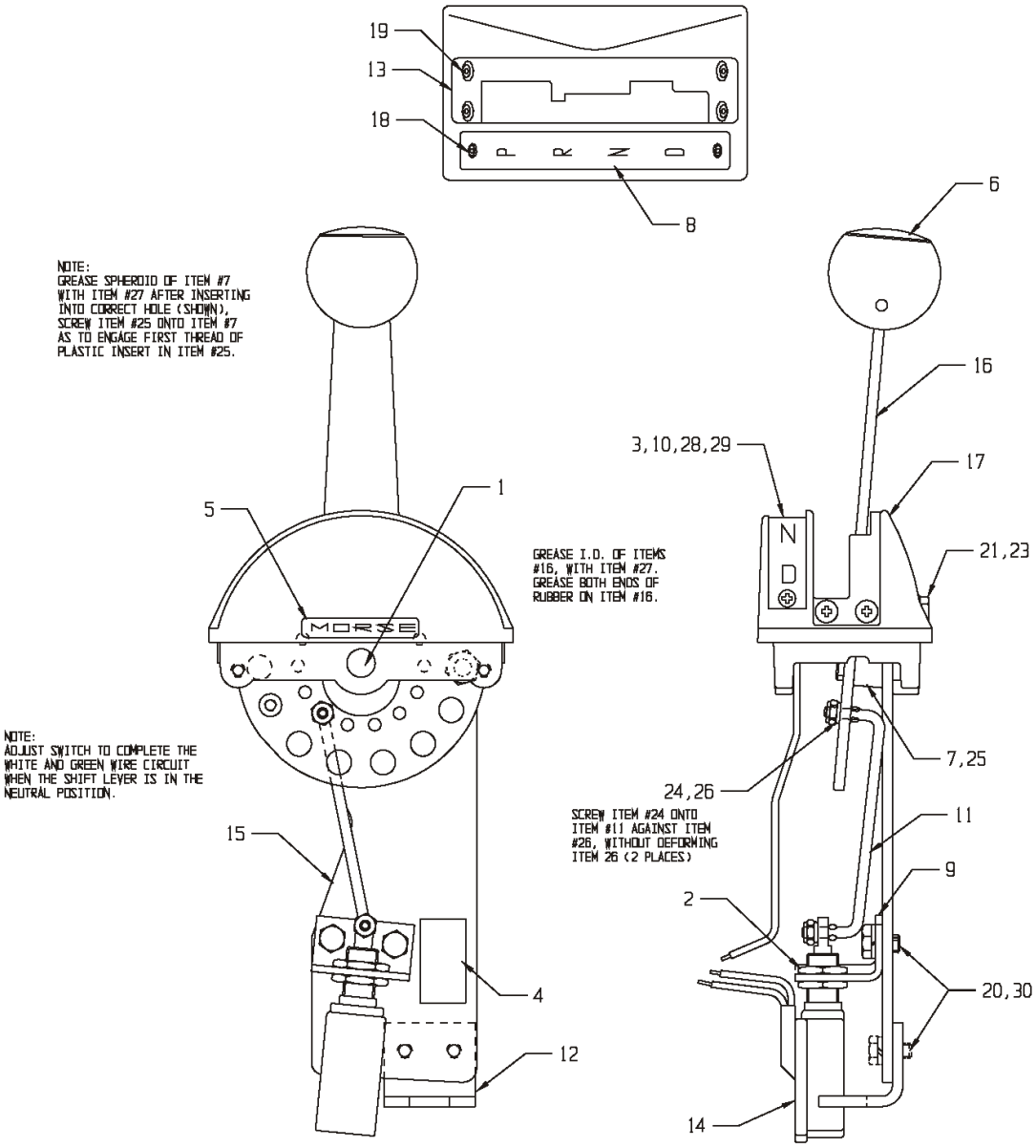


FIGURE 23.
MORSE CONTROL SHIFTER ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
23-	306294	315829	Morse Control Shifter Assembly		Ref
1		043698	Shaft		1
2	Comm	043716	Nut		2
3		044654	Reflector Strip		2
4		048449	Decal, Patent		1
5		060058	Decal, Morse		1
7		043197	Trunnion		1
6		068444	Knob		1
8		300207-001	Position Strip		1
9		043684	Bracket, Switch		1
10		044406	Light Pipe		1
11		048353	Arm, Switch Actuator		1
12		043685	Support, Cable		1
13		315828	Gate Plate		1
14		045184	Switch		1
16		068703-001	Lever, Shift		1
15		043683-001	Adapter Plate		1
17		044405-001	Housing		1
18	Comm	050151-289	SCR. Phillips Truss Hd. #6-32 x .438		2
19	Comm	050152-274	SCR.Phillips Truss Hd. #10-24 x .313		4
20		050407-033	HHCS .25-28UNF x .50		4
21		050407-842	HHCS .375-24 x .75		2
22		050602-528	Set Scr. Hex Soc. .25-20 x .375		2
23		050803-099	Washer, Int. Tooth, .375		2
24		050908-296	Elestic Stop Nut #10-32 UNF		2
25		050908-336	Elestic Stop Nut .313-24 UNF		1
26		051200-24	O-Ring .188 ID x .313 OD x .063 Wide		2
27		051700-008	Lubricant		AR
28		045063-001	Pigtail Assembly		1
29		051800-001	Bulb, G.E. #53		1
30		050801-327	Lockwasher, Split .25		4

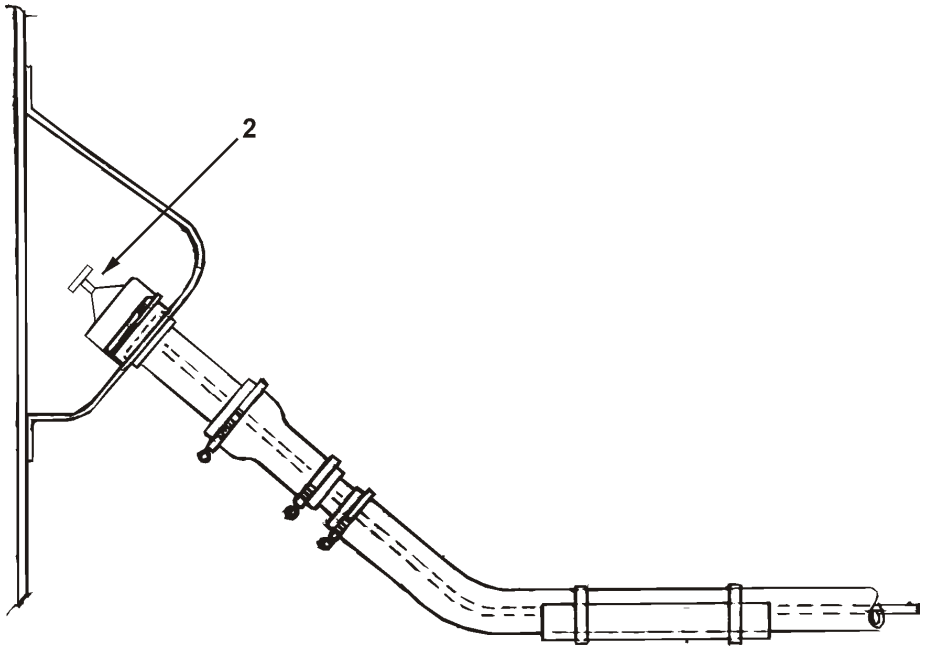


FIGURE 24.
GAS CAP, PROTECT-O SEAL OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
24-	16391		Gas Cap, Protect-O Seal Option		Ref
2	1.7899		Fill Unit, without Baffle		1

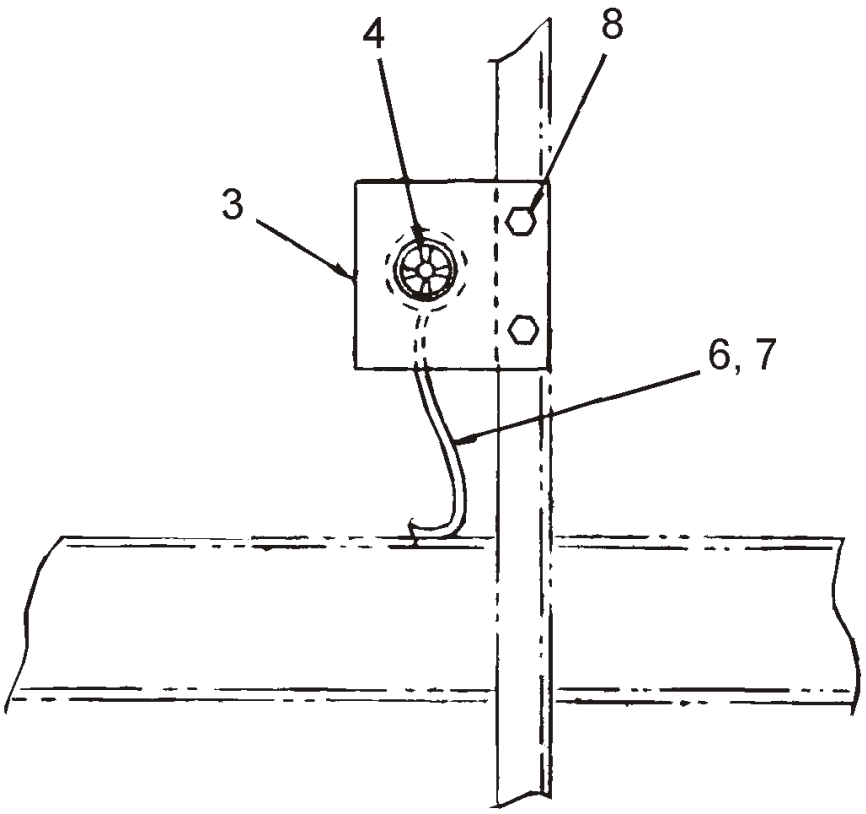
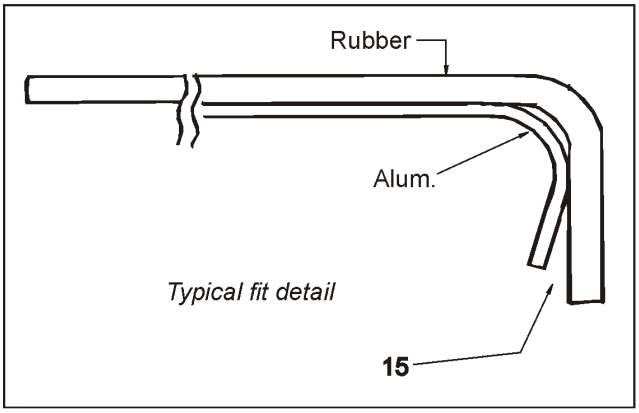


FIGURE 25.
ALARM, BACKUP, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
25-	16499		Alarm, Backup, Option		Ref
3	14733		Bracket, Alarm Mounting		1
4	2.3665		Alarm		1
6	2.2612		Wire		5'
7	2.2478		Flex Guard, 1/4"		2'
8	Comm		Screw, Self-drill, 1/4-20 x 0.50		2



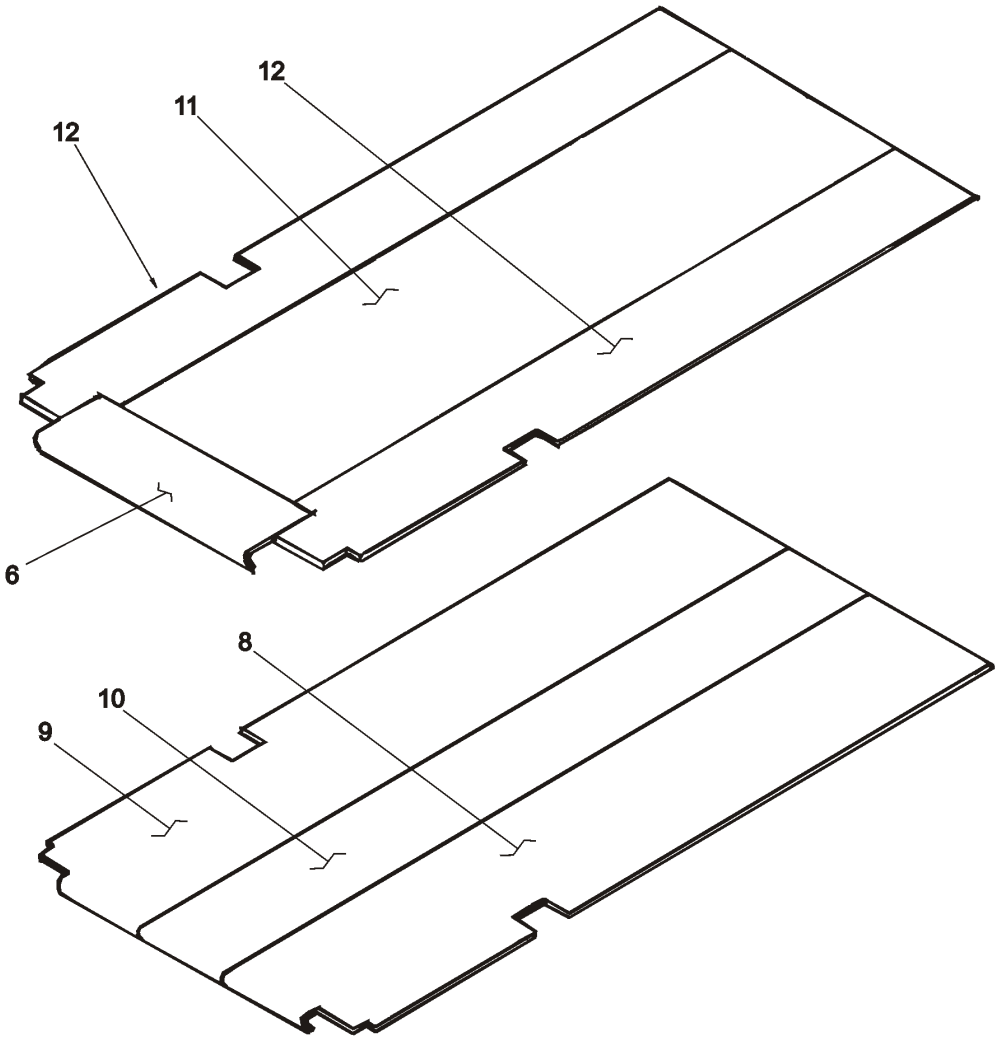


FIGURE 26.
STAIR AND DECK TREAD, RUBBER, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
26-	17406		Stair and Deck Tread, Rubber, Option		Ref
6	304759		Rubber Tread, Adj.		10
8	17408		Deck Plate, LH, Alum.		1
9	17409		Deck Plate, RH, Alum.		1
10	17410		Deck Plate, Center, Alum.		1
11	17406.11		Rubber Deck		1
12	17406.12		Rubber Deck		2
15	9.2033		Sealant, Epoxy		A/R
NS	3.3362		Monobolt, 3/16 Dia.		250
NS	17407.1		Main Tread, Alum.		13
NS	17407.2		Adj. Tread, Alum.		9
NS	17407.3		Intermed. Tread, Alum.		1
NS	304758		Rubber Tread, Main		14
NS	17406.7		Rubber Tread, Intermed.		1
NS	9.2032		Adhesive, Tread		A/R
NS	302753		Flip Step		1

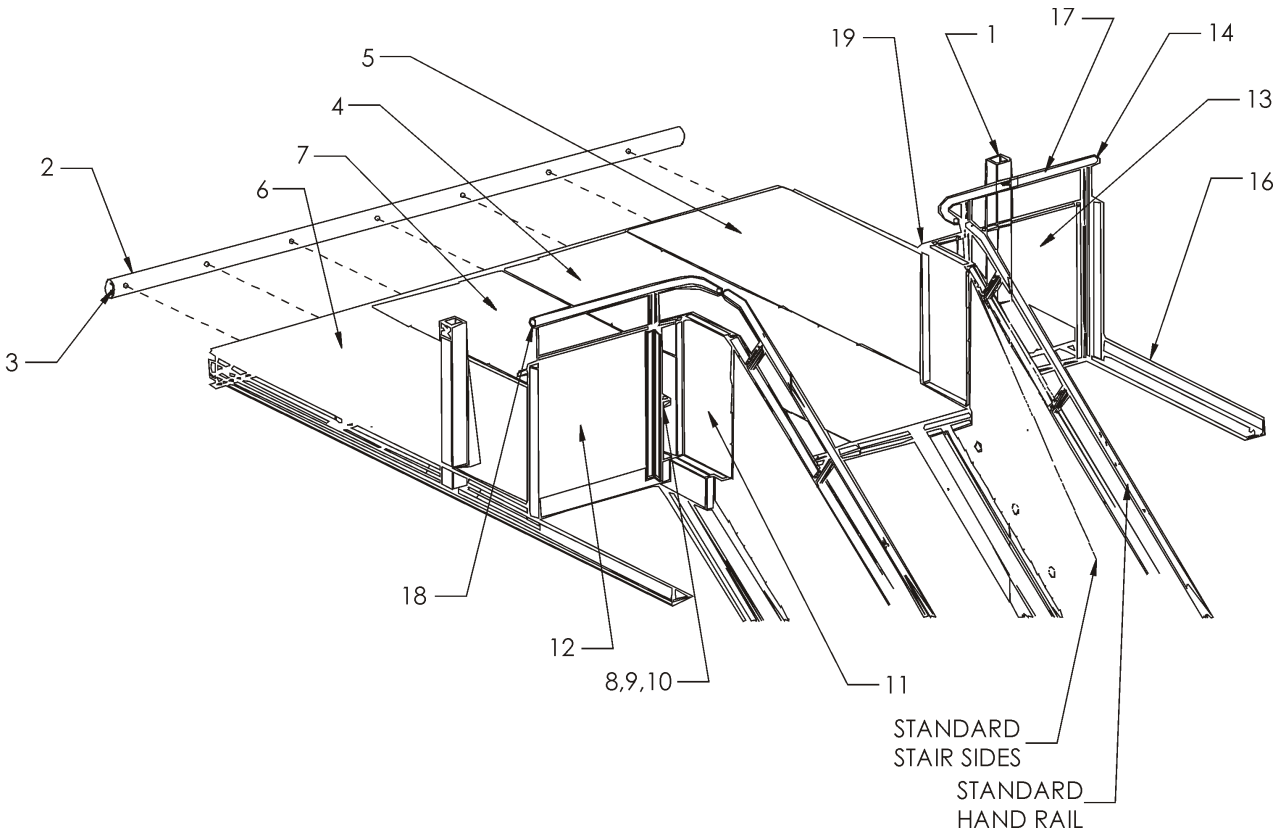


FIGURE 27.
PLATFORM, 3-METER, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
27-	303106		Platform, 3-Meter, Option		Ref
1	303575		Stair Weldment		1
2	303576		Bumper, 5 x 7 x 118		1
3	303577		Hold-On Weldment, Bumper		1
4	303588		Plate, Deck, Center, RH		1
5	303580		Plate, Deck, RH		1
6	303581		Plate, Deck, LH		1
7	303582		Plate, Deck, Center, LH		1
8	2.3607		Spot Light		1
9	19474		Angle, Mount, Spot Light		1
10	3.0282		Grommet, AN931-6-10		1
11	303583		Angle, Mount, LH		1
12	303584		Panel, End, LH		1
13	303585		Panel, End, RH		1
14	302999		Cap, End, Modified		4
15	303578		Track, Lower, LH		1
16	303579		Track, Lower, RH		1
17	303611		Handrail, Weldment, RH, Platform		1
18	303612		Handrail, Weldment, LH, Platform		1
19	303613		Angle, Mount, RH		1

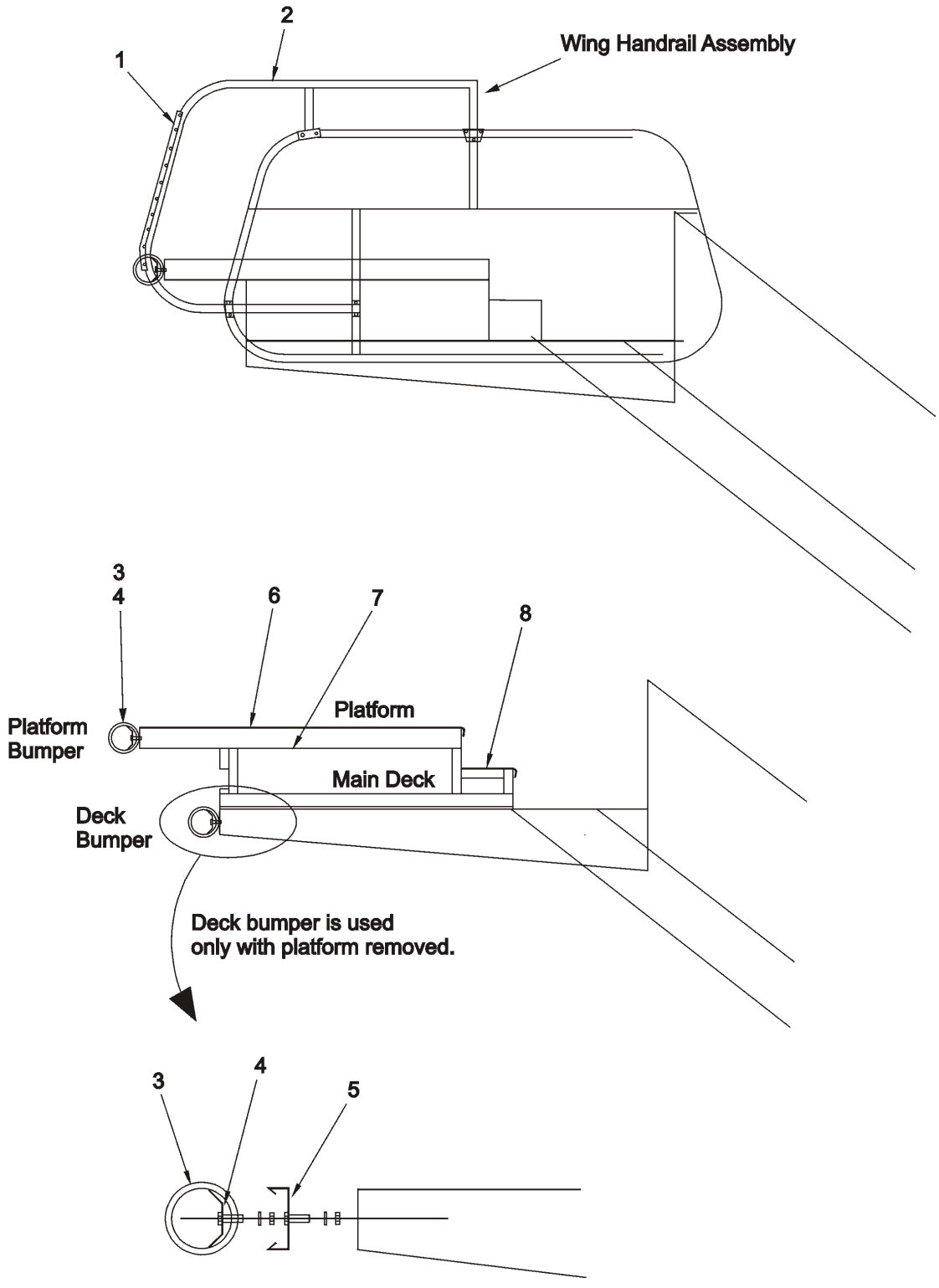


FIGURE 28.
STAIR ASSEMBLY, EXTENDED, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
28-	301160		Stair Assembly, Extended, Option		Ref
1	9439		Bumper		1
2	301435.1		Handrail, Wing, RH		1
	301435.2		Handrail, Wing, LH		1
3	12738		Bumper		1
4	12739		Hold-On, Bumper		1
5	301436		Support, Bumper		1
6	301159		Tread Plate, Platform		3
7	301227		Frame, Platform		1
8	17678.07		Tread, Stair		2

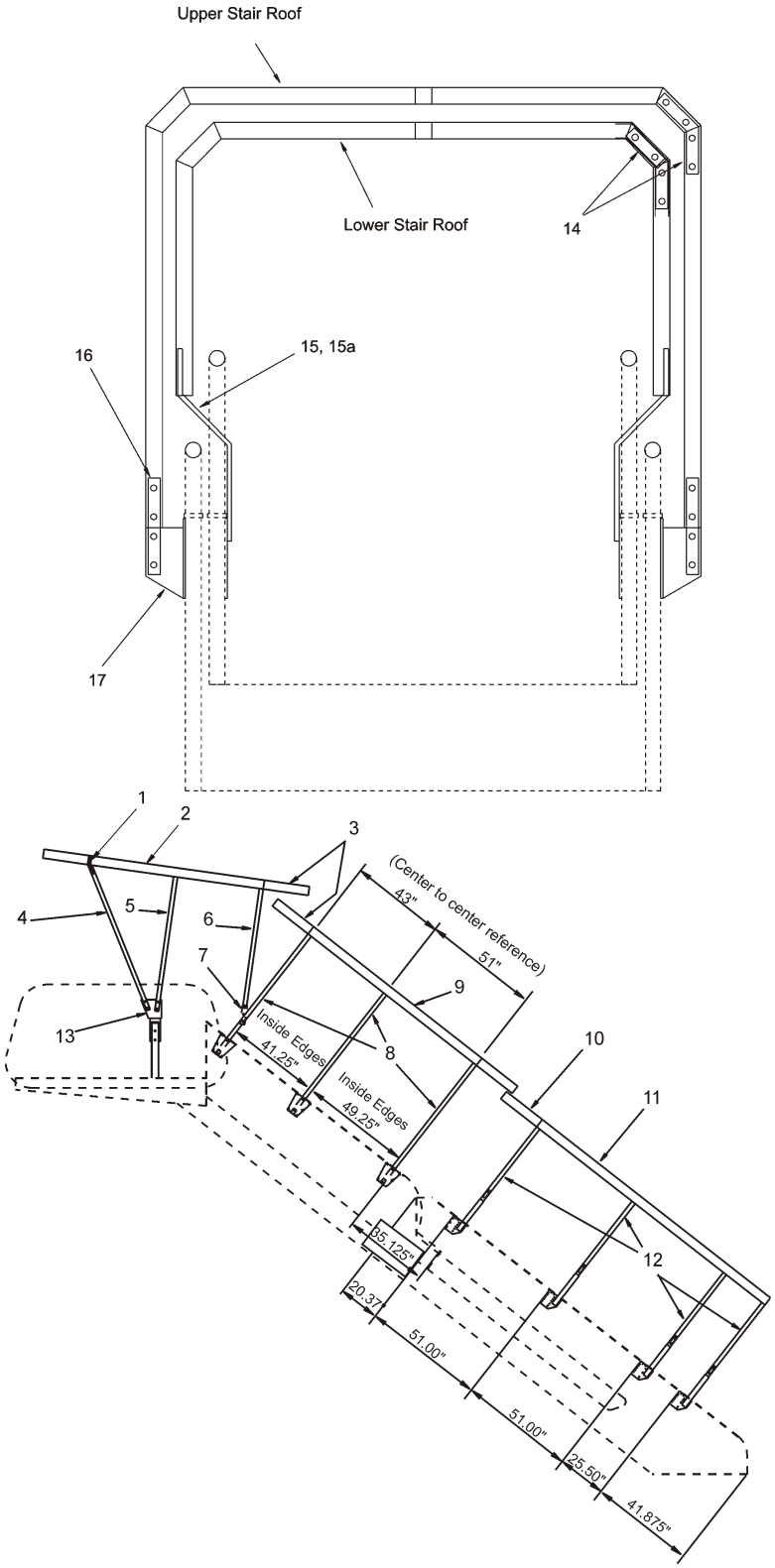


FIGURE 29.
CANOPY ASSEMBLY OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
29-	300865		Canopy Assembly Option		Ref
1	301211.1		Pin, Offset Roof, LH		1
	301211.2		Pin, Offset Roof, RH		1
2	301187		Roof, Deck		1
3	301268		Overhang, Upper		4
4	301063		Post, Front Deck		2
5	301064		Post, Middle Deck		2
6	301065		Post, Rear Deck		2
7	301210		Strap, Deck Post		2
8	301174		Post, Canopy, Upper Section		6
9	301185		Roof, Upper Section		1
10	310269		Overhang, Lower		1
11	301182		Roof, Lower Section		1
12	301173		Post, Lower Section		8
13	301204.1		Bracket, Deck Post Support, LH		1
	301204.2		Bracket, Deck Post Support, RH		1
14	300988		Pin, Roof		18
15	301201.1		Bracket, Lower Section, RH		3
	301201.2		Bracket, Lower Section, LH		3
15a	301474.1		Bracket, Lower Section, Bottom, RH		1
	301474.2		Bracket, Lower Section, Bottom, LH		1
16	301158		Pin, Straight		6
17	301188		Bracket, Upper Section		6
18	Comm		HHCS, 3/8-16 x 0.75, Gr. 5		250
19	Comm		Washer, Flat, 3/8		250

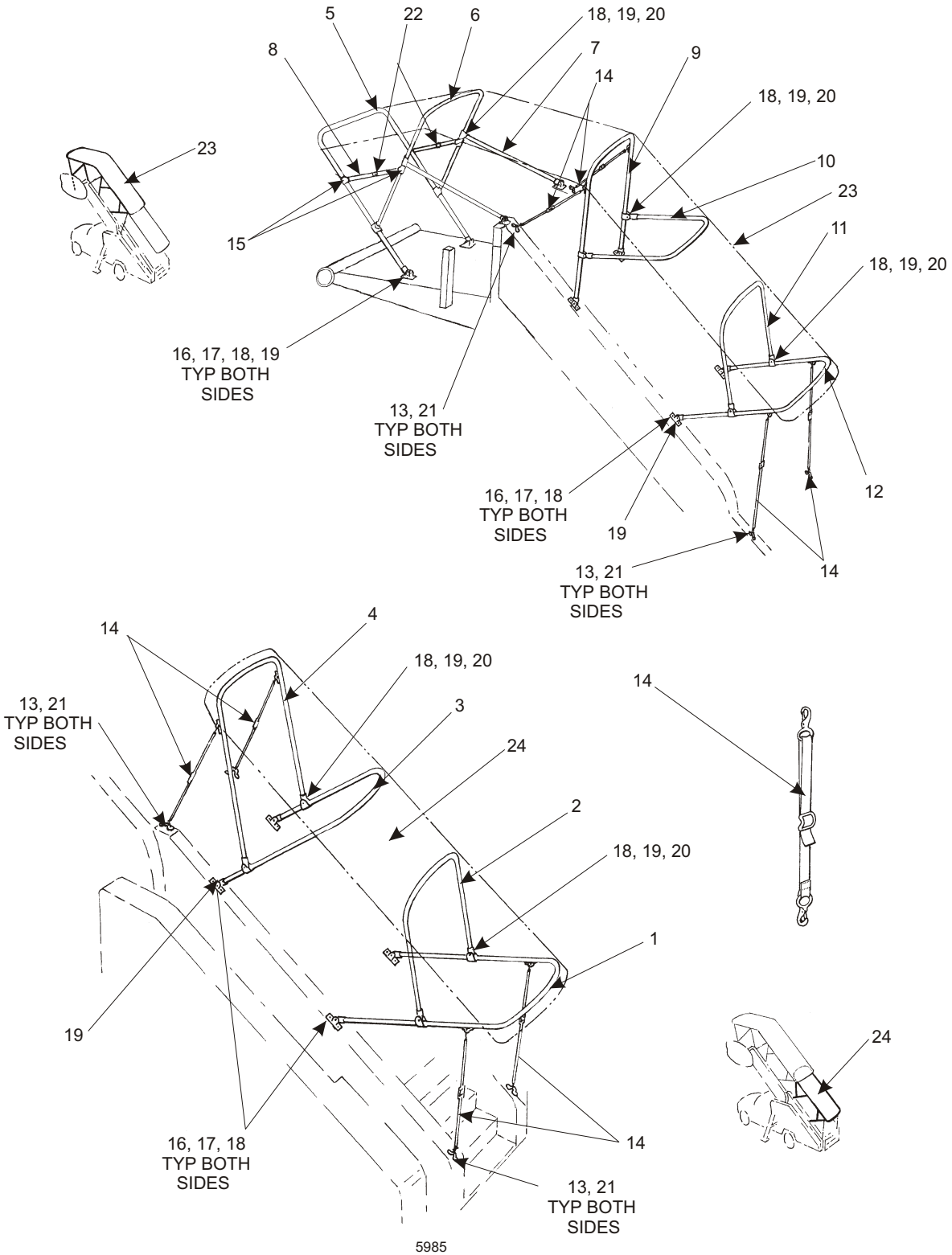


FIGURE 30.
CANOPY, INSTALLATION & ASSEMBLY

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
30-	5985		Canopy, Installation & Assembly		Ref
1	305306		Hoop, Fixed #1, Main		1
2	305307		Hoop, Fixed #1, Bow		1
3	305308		Hoop, Fixed #2, Main		1
4	305309		Hoop, Fixed #2, Bow		1
5	305310		Hoop, Adj. #1, Main		1
6	305311		Hoop, Adj. #1, Bow		1
7	305312		Strut, Adj. #1, Extension		2
8	305313		Strut, Adj. #1, Lock-out		4
9	305314		Hoop, Adj. #2, Main		1
10	305315		Hoop, Adj. #2, Bow		1
11	305316		Hoop, Adj. #3, Main		1
12	305317		Hoop, Adj. #3, Bow		1
13			Pad Eye, 3/6 x 5/8 x 1-7/8		8
14			Strap Assembly		8
15			Jaw Slide, Chrome, 7/8”-1”		4
16			Camel Back Fitting Chrome 3/16		10
17	Comm		Screw, Fl. Hd, 1/4-28 x .75” lg		20
18	Comm		Screw, Rd. Hd, 1/4-20 x 1” lg		30
19			Rail End Eye, Chrome 7/8”		24
20			Jaw Slide, Chrome 7/8”-7/8”		10
21	Comm		Screw, Rd. Hd, 10-32 x 1”		16
22			Hinge, Rail Gate, Chrome 1”		2
23	305708		Cover, Adjustable		1
24	305707		Cover, Fixed		1

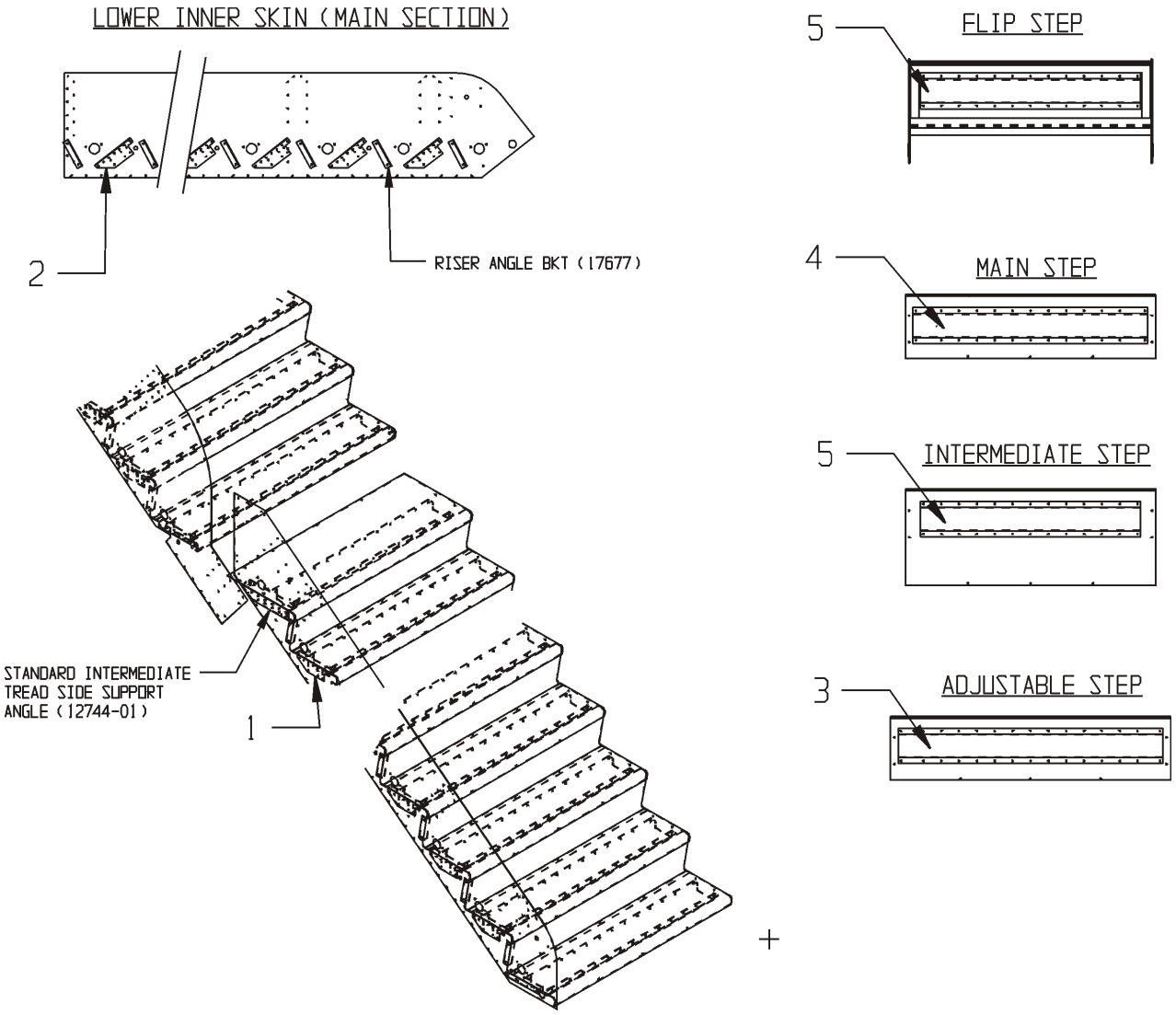


FIGURE 31.
STEP REINFORCEMENT OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
31-	306247		Step Reinforcement Option		Ref
1	302847.1		Side Support Angle (LH)		21
2	302847.2		Side Support Angle (RH)		21
3	302848.1		Adjustable Step Support		9
4	302848.2		Main Step Support		13
5	302848.3		Flip/Intermediate Step Support		2
NS	3.3241		Rivet		1500

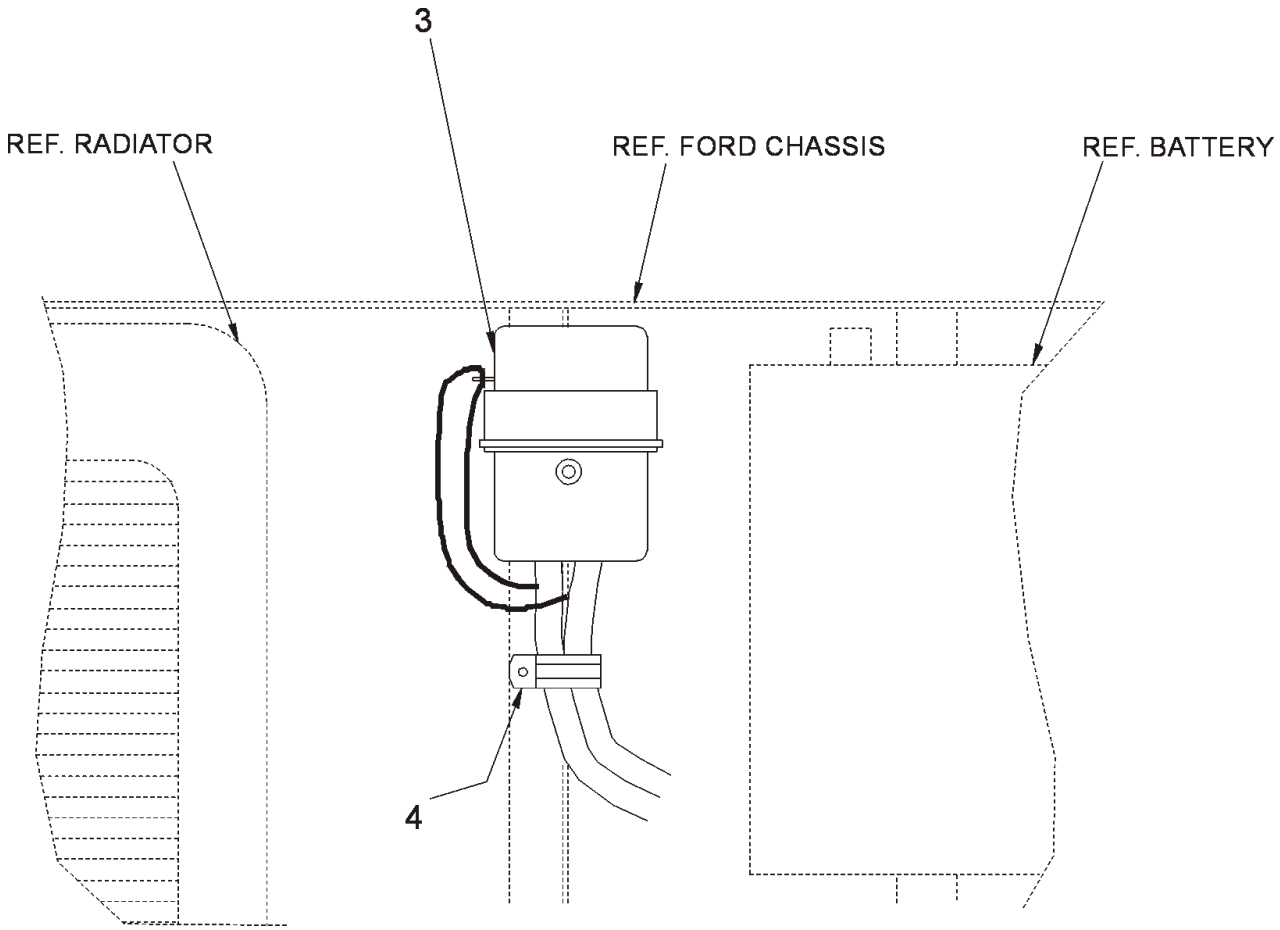


FIGURE 32.
BATTERY JUMPER SYSTEM OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
32-	18360		Battery Jumper System Option		Ref
3	2.3869		Jumper Cable Plug Assembly		1
4	F101134	Comm	Clamp		1

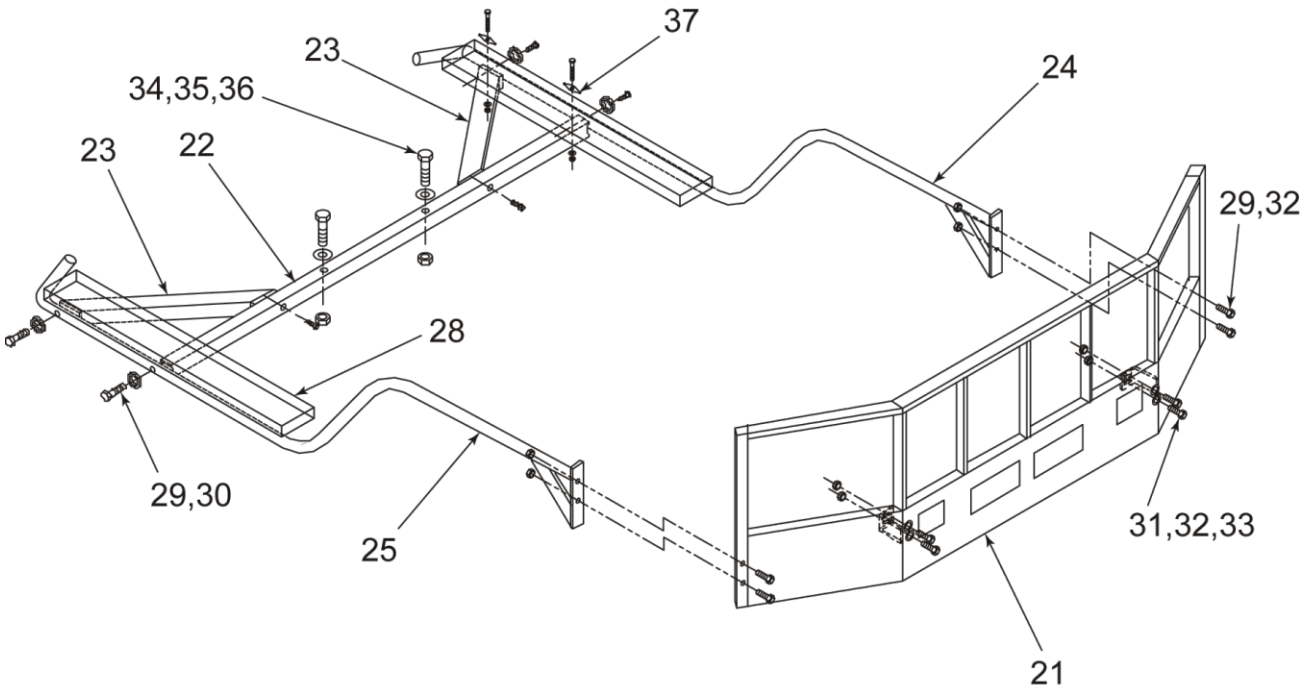


FIGURE 33
OPTION, HD BUMPER F350, 1999-2000
1 0F 4

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
33-	303814		Bumper, F350, HD, Option (1999-2000)		Ref
21	303930		Weldment, Heavy Duty Bumper		1
22	303925		Support Weldment, Rubrails		2
23	303921		Gusset Wldmt		1
24	303949		Rubrail Weldment, L.H.		1
25	303953		Rubrail Weldment, R.H.		1
28	304705		Gripstud Weldmnt		2
29	Comm		HHCS ½-13 x 3.0 lg.		8
30	Comm		Lockwasaher 1/2”		12
31	Comm		HHCS 1/2-13 x 2.0 lg		4
32	Comm		Nyloc Hex Nut 1/2-13		12
33	Comm		Flatwasher, ½”		12
34	Comm		HHCS 5/8-11 x 3.5 lg		2
35	Comm		Nyloc Hex Nut 5/8-11		2
36	Comm		Flatwasher 5/8”		2
37	1.5782		Gripstrut Anchor		2

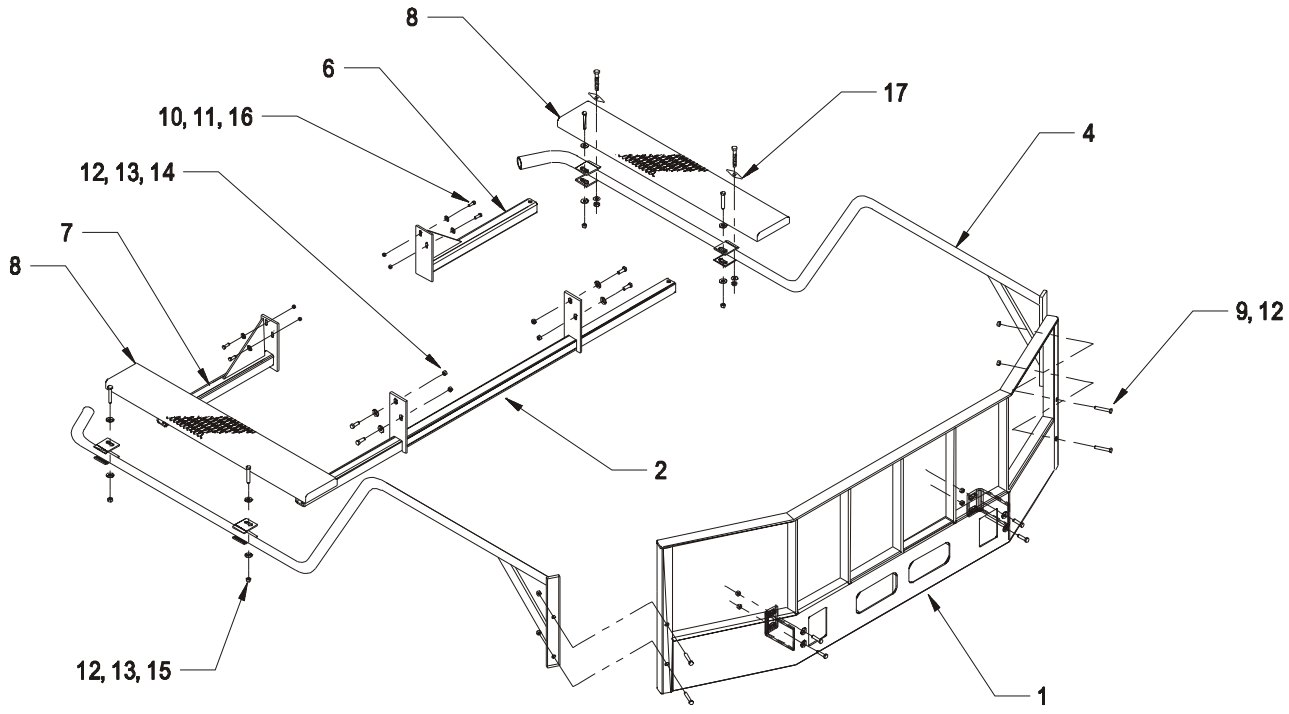


FIGURE 33.
OPTION, HD BUMPER F350, 2000-2008
2 OF 4

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
33-	303814		Bumper, F350, HD, Option (2000-2008)		Ref
1	306389		Weldment, Heavy Duty Bumper		1
2	306391		Support Weldment, Rubrails		1
4	306399		Rubrail Weldment, L.H.		1
5	306400		Rubrail Weldment, R.H.		1
6	306394		Support Weldment, Rear L.H.		1
7	306395		Support Weldment, Rear R.H.		1
8	304705		Gripstrut Weldment		2
9	Comm		HHCS ½-13 x 3.0 lg.		10
10	Comm		Nyloc Hex Nut 3/8-16		4
11	Comm		Flatwasher, 3/8”		4
12	Comm		Nyloc Hex Nut ½-13		12
13	Comm		Flatwasher, ½”		12
14	Comm		HHCS ½-13 x 1.5 lg		4
15	Comm		HHCS ½-13 x 3.25 lg		4
16	Comm		HHCS 3/8-16 x 1.25 lg		4
17	1.5782		Gripstrut Anchor		4

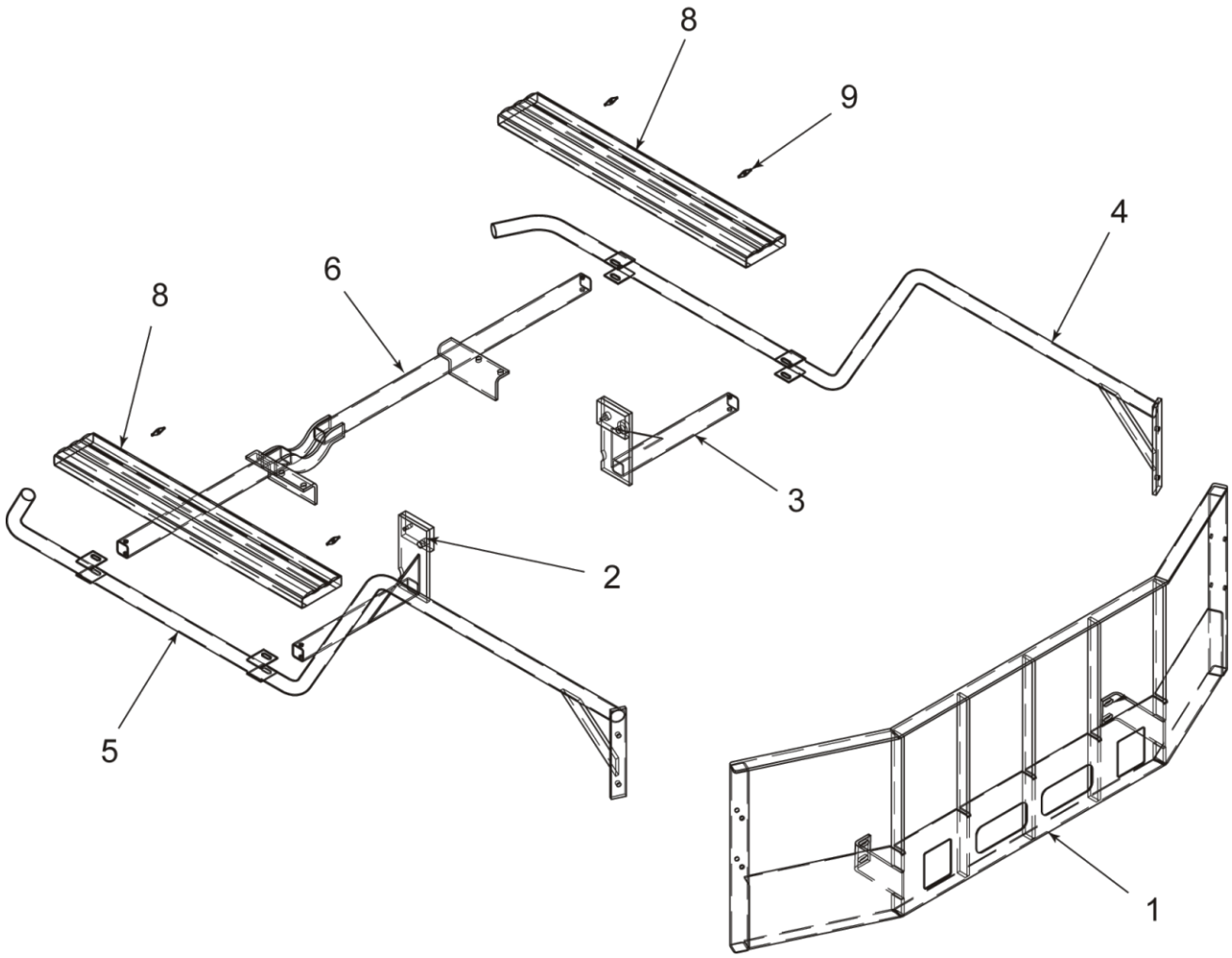


FIGURE 33
OPTION, HD BUMPER, F350, 2009
3 OF 4

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
33-	303814		Bumper, F350, HD, Option (2009)		Ref
1	309175		Weldment, Heavy Duty Bumper		1
2	309173		Support Weldment, RH,Frt,Rubrails		1
3	309174		Support Weldment, LH,Frt,Rubrails		1
4	309165		Rubrail Weldment, L.H.		1
5	309167		Rubrail Weldment, R.H.		1
6	309177		Support Weldment, Rear Rubrails		1
8	304705		Gripstrut Weldment		2
9	1.5782		Gripstrut Anchor		4

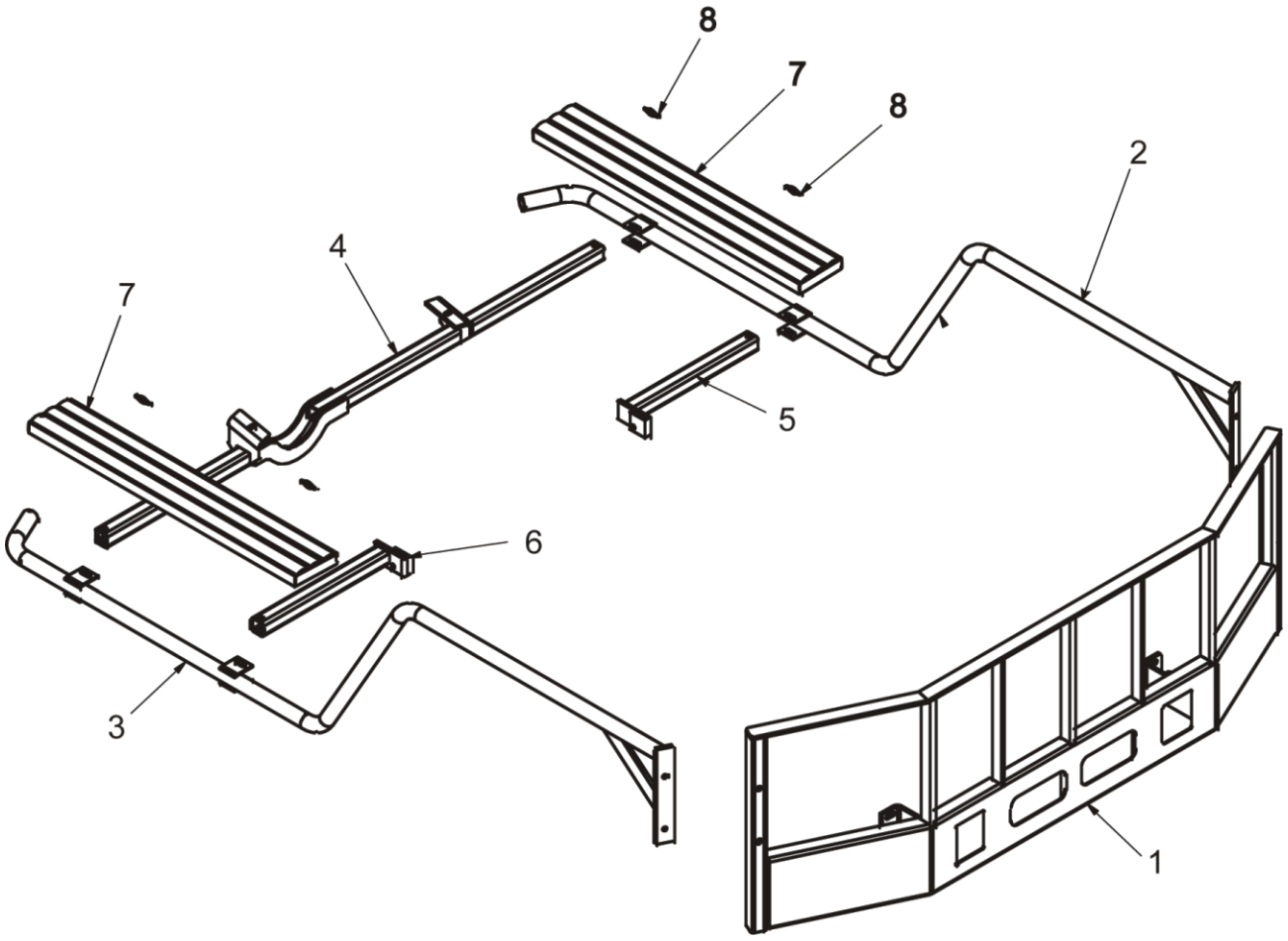
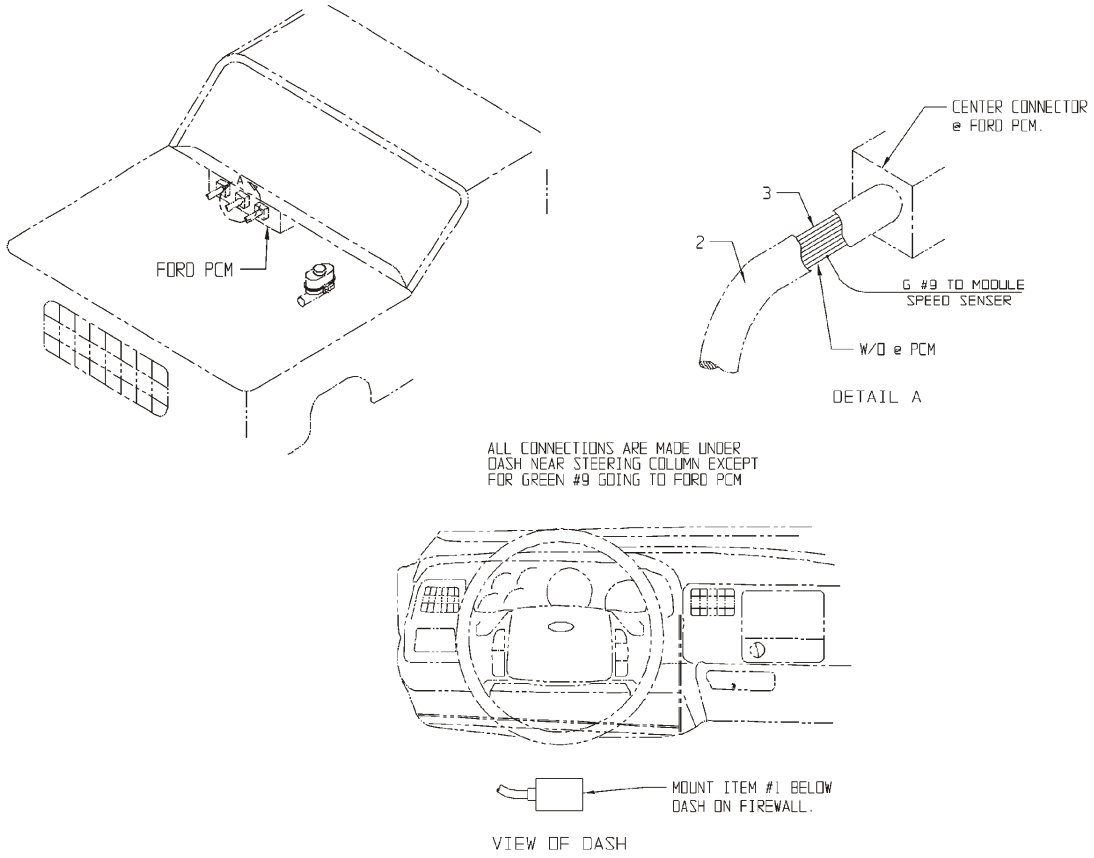


FIGURE 33
OPTION, HD BUMPER F350, 2010 +
4 0F 4

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
33-	309735		Bumper, F350, HD, Option (2010+)		Ref
1	309736		Weldment, Heavy Duty Bumper		1
2	309179		Rubrail Weldment, L.H.		1
3	309740		Rubrail Weldment, R.H.		1
4	309741		Support Weldment, Rear Rubrails		1
5	309738		Support Weldment, LH,Frt,Rubrails		1
6	309737		Support Weldment, RH,Frt,Rubrails		1
8	304705		Gripstrut Weldment		2
9	1.5782		Gripstrut Anchor		4



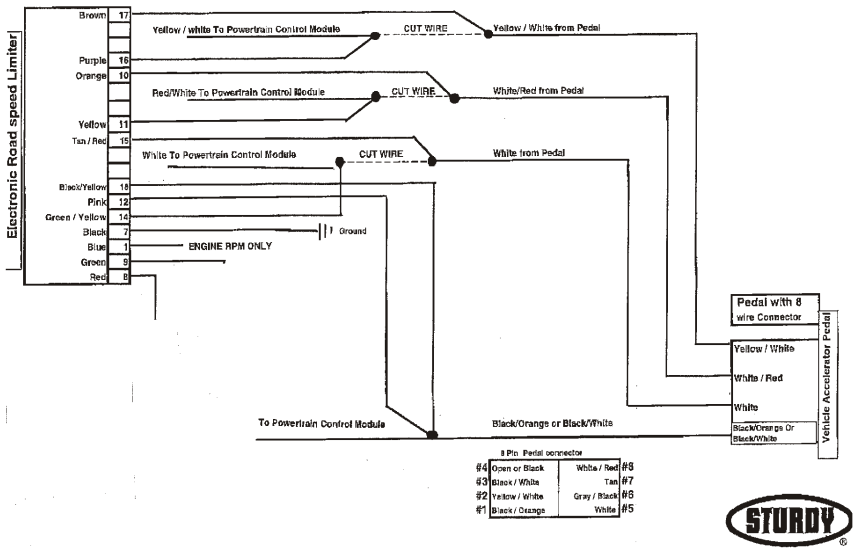


FIGURE 34
GOVERNOR, F350 GAS, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
34-	307521		Govenor, F350 Gas, 0-25MPH, Opt.		Ref
1	307522		Module, Govenor		1
2	2.3478		Loom, 1/4 ID, Flexgaurd		72”
3	2.1532		Wire, 14Ga, Bk		84”

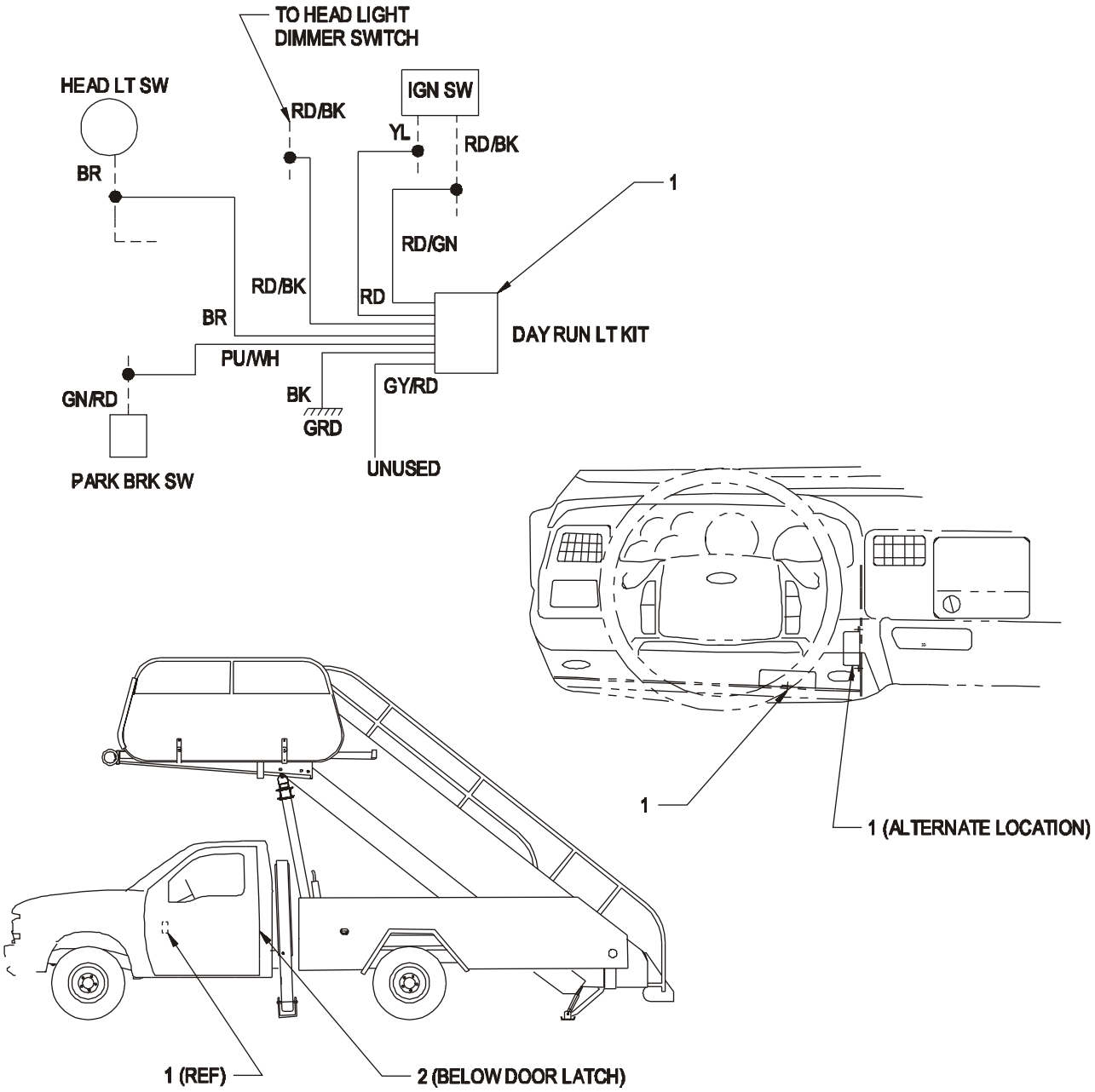


FIGURE 35.
LIGHTS, CANADIAN RUNNING, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
35-	304990		Lights, Canadian Running, Option		Ref
1	304989		Kit, Daytime Run Lights		1
2	304191		Decal, Canada Vehicle Alteration		1

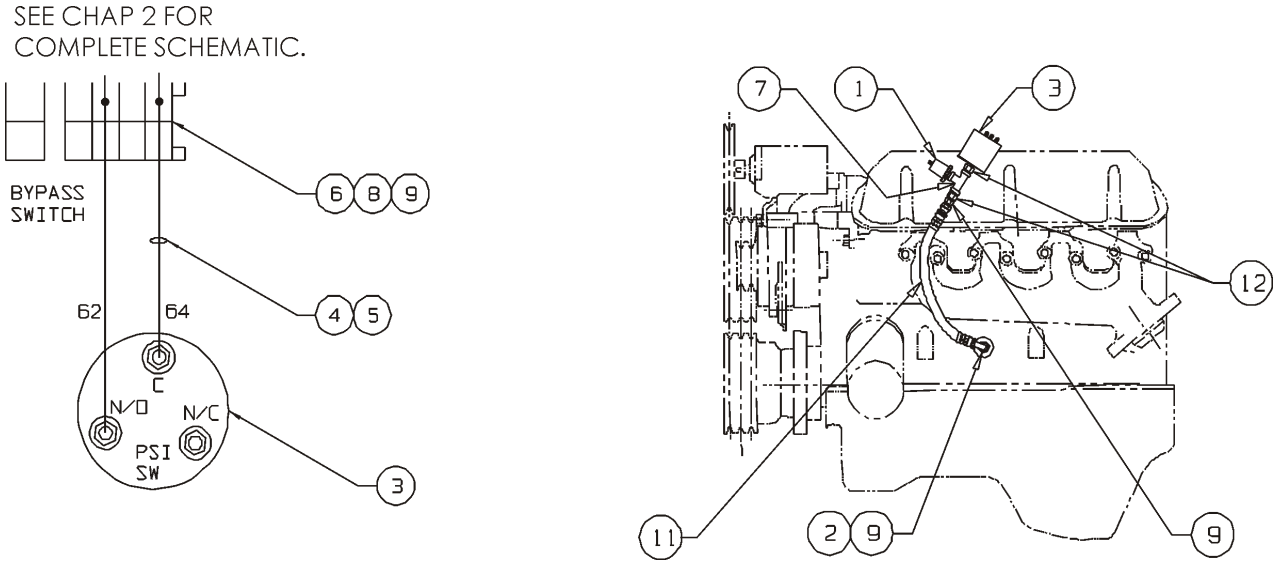


FIGURE 36.
SHUT DOWN, LOW OIL, GAS/DSL, OPTION (SN 1381+)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
36-	307619		Shut Down, Low Oil, TMPS200 Gas/Dsl, Opt (SN1381+)		Ref
1			Ford Pressure Switch		Ref
2	3.2283		Ftg, Hyd, 04MP-02FP		3
3	2.3707		Pressure Switch, SP2C-8F-8PSI		1
4	F002958		Wire, Bk, 16Ga		240”
5	2.3478		Conduit, Flexgaurd, 1/4”		120”
6	NW035374		Switch, On-Off, Momentary		1
7	3.0802		Ftg, Hyd, Tee, 04MP-04MP-04MP		1
8	NW035382		Insert, Blank		1
9	37408		Connector, Switch		1
10	562A347		Placard, Low Oil Bypass (Not Shown)		1
11	14762.8		Hose Assy, #04M, 26” LG, ST/90		1
12	3.1352		Ftg, Hyd, 04MJ-02MP		2

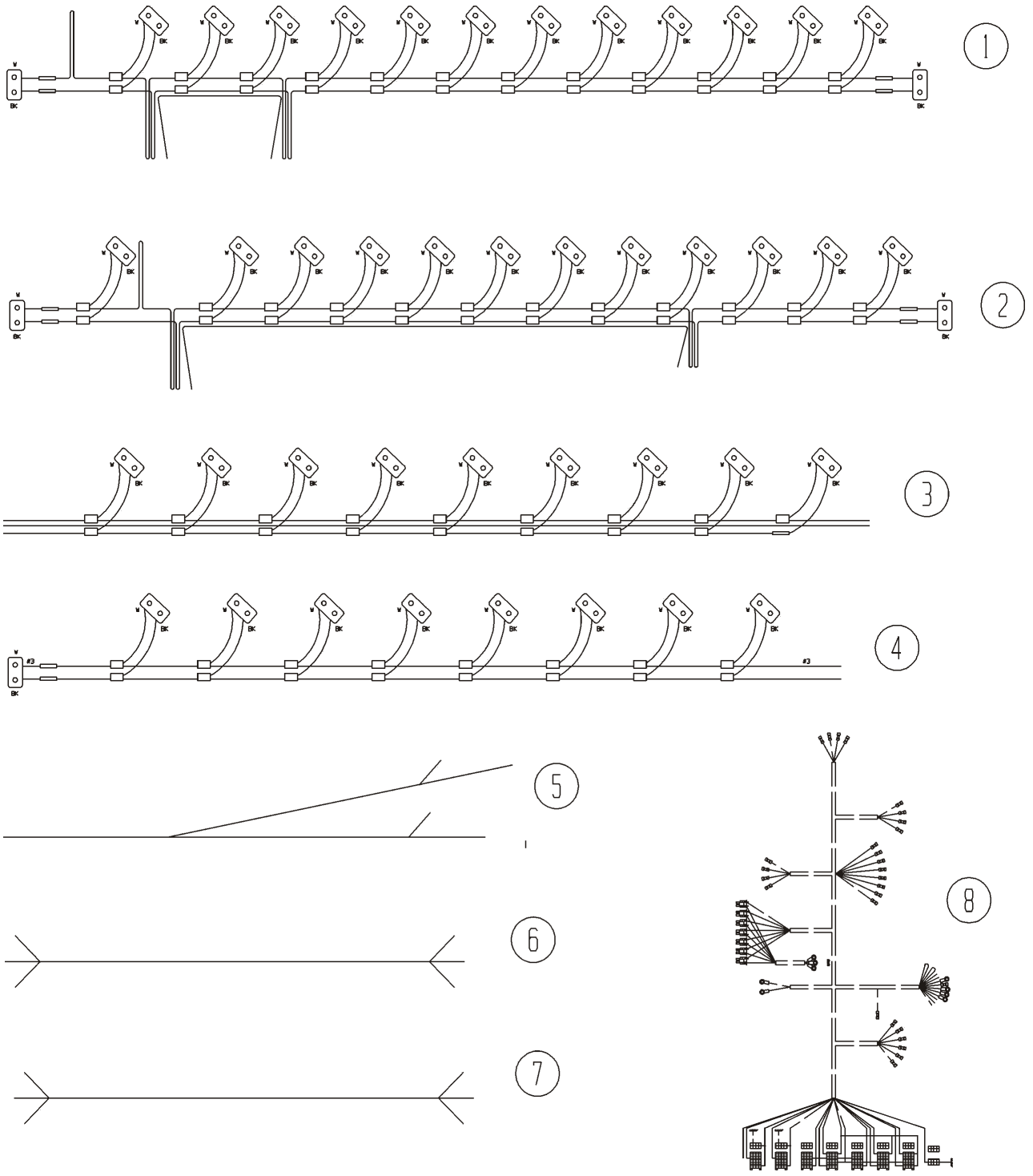


FIGURE 37.
HARNESS ASSEMBLIES

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
37-			Harness Assemblies		Ref
1	300209		Harness Wire, Left Main Stairs		1
2	300210		Harness Wire, Right Main Stairs		1
3	300211		Harness, Wire Left Adj. Stairs		1
4	300212		Harness, Wire Right Adj. Stairs		1
5	303383		Harness, Wire Stabilizer Lights		1
6	303384		Harness, Wire Stair Release		1
7	303385		Harness, Wire Adj Stair/Junction Block		1
8	307609		Harness, Chassis/ Man, TMPS200		1

Illustration Not Available At Time Of Publication.

FIGURE 38.
WHEEL/TIRE, F350 CURRENT YEAR, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
38-	1.6581		Wheel/Tire, F350 Current Year, Option		Ref

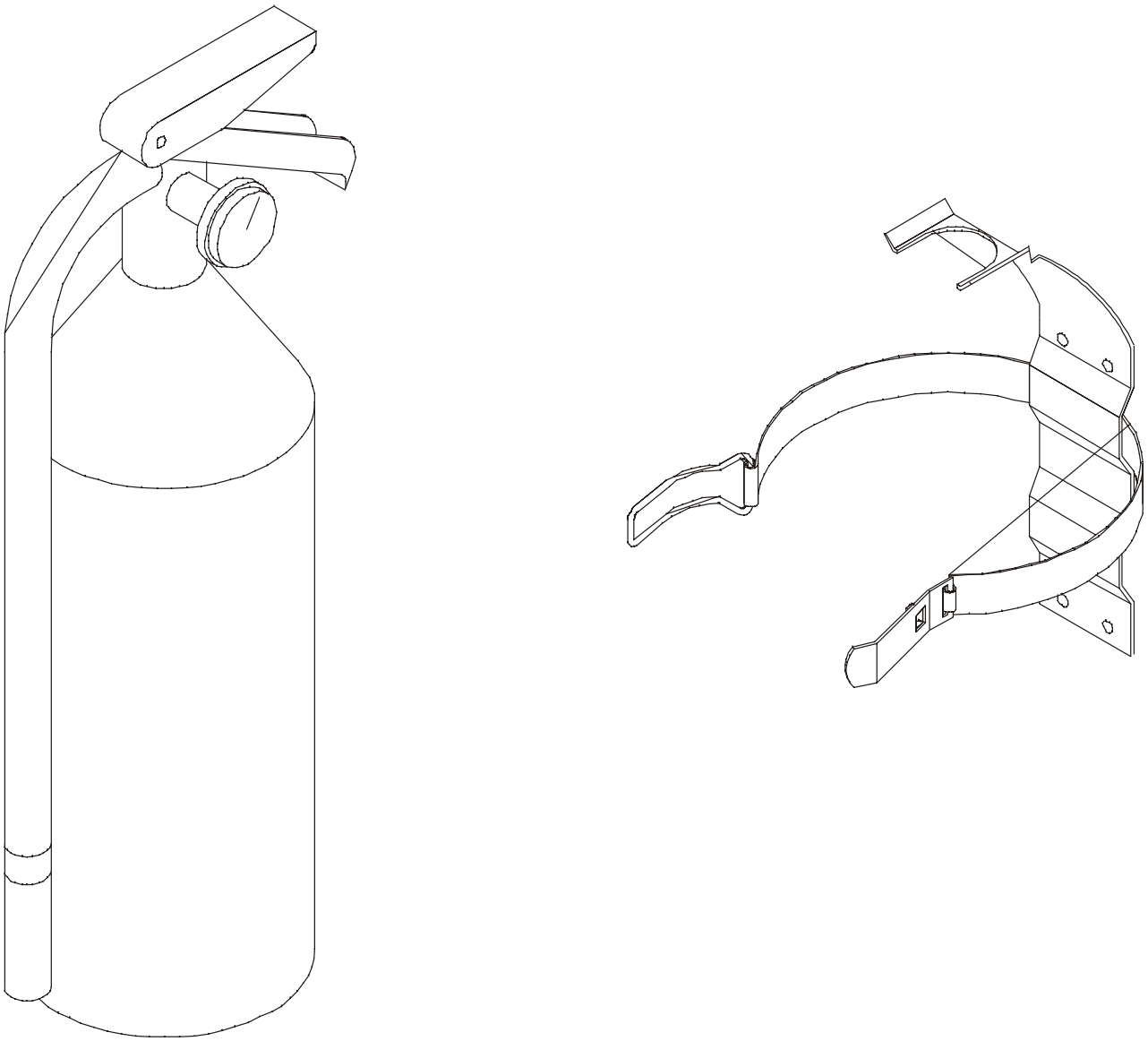


FIGURE 39.
FIRE EXTINGUISHER, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
39-	19251		Fire Extinguisher, Option		Ref
1	1.8786		Fire Extinguisher, 5#		1

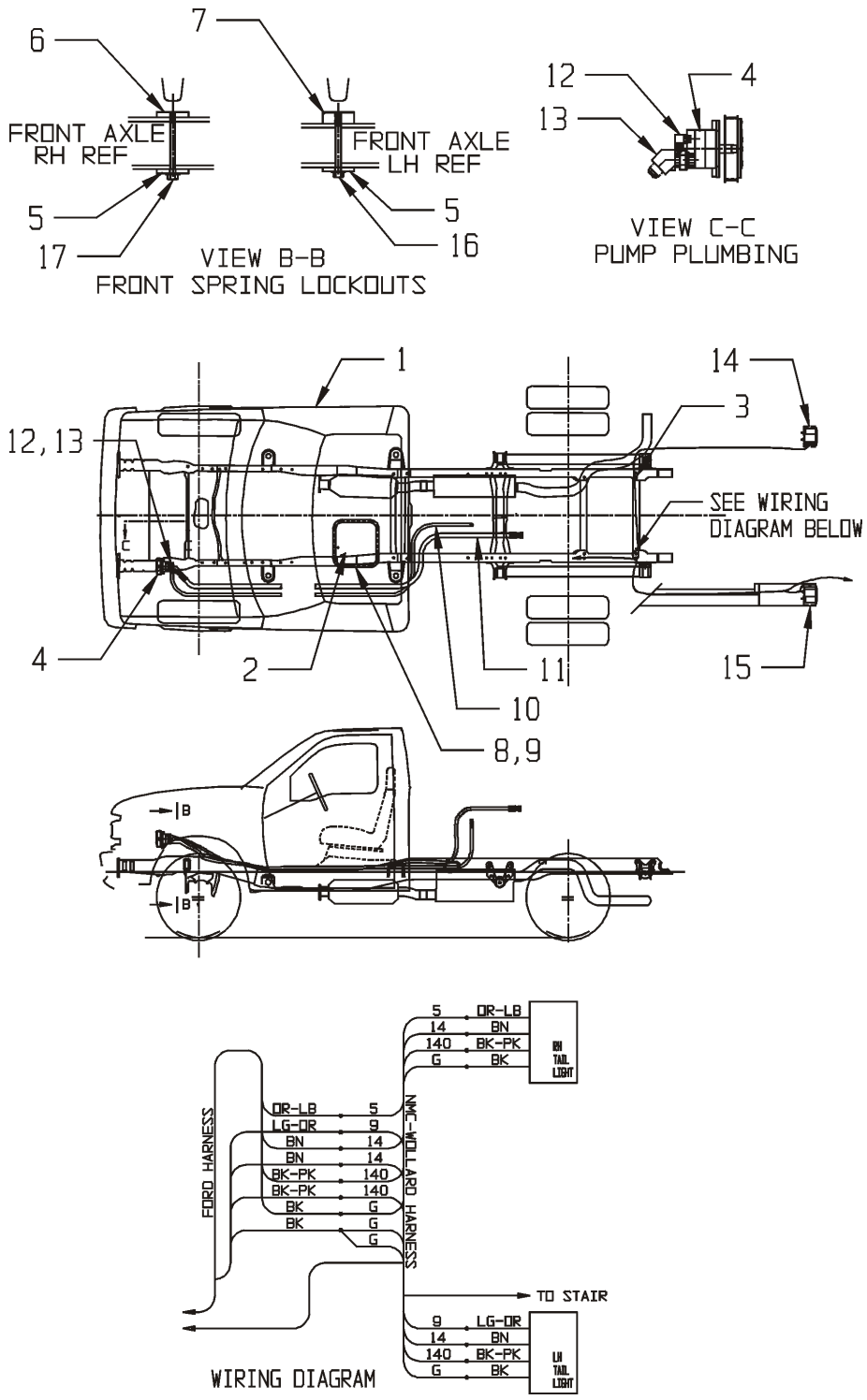


FIGURE 40.
TRUCK PREP, F350 6.0L DIESEL (1 OF 2)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
40-	307557		Truck Prep, F350 5.4l Diesel (1 Of 2)		Ref
1	560A89		Decal, Diesel Fuel		1
2	307298		Glass, 1/4 x 16 x 16 x 2.5RD		1
3	303769		HHCS 3/8-16 x 1.5, Gr8		8
4	307377		Pump Kit w/Clutch, V8, Diesel		1
5	300831		Plate, Spacer, Lower		2
6	303815		Plate, Spacer, RH, Upper		1
7	303812		Plate Wldmnt, LH Upper		1
8	304427		Trim, w/ Seal, .25 x 375 OD, 90°		70”
9	307372		Seal Windshield		70”
10	8946.24		Hose Assy. #8M		1
11	10384.22		Hose Assy. #16L		1
12	F102080		Ftg, Hyd, 08MJ-12MB 90		1
13	NW035809		Ftg, Hyd, 16MJ-16MB45		1
14	303742		Brkt, Taillight, RH		1
15	303773		Brkt, Taillight, LH		1
16	307559		Manual, TMPS200		1

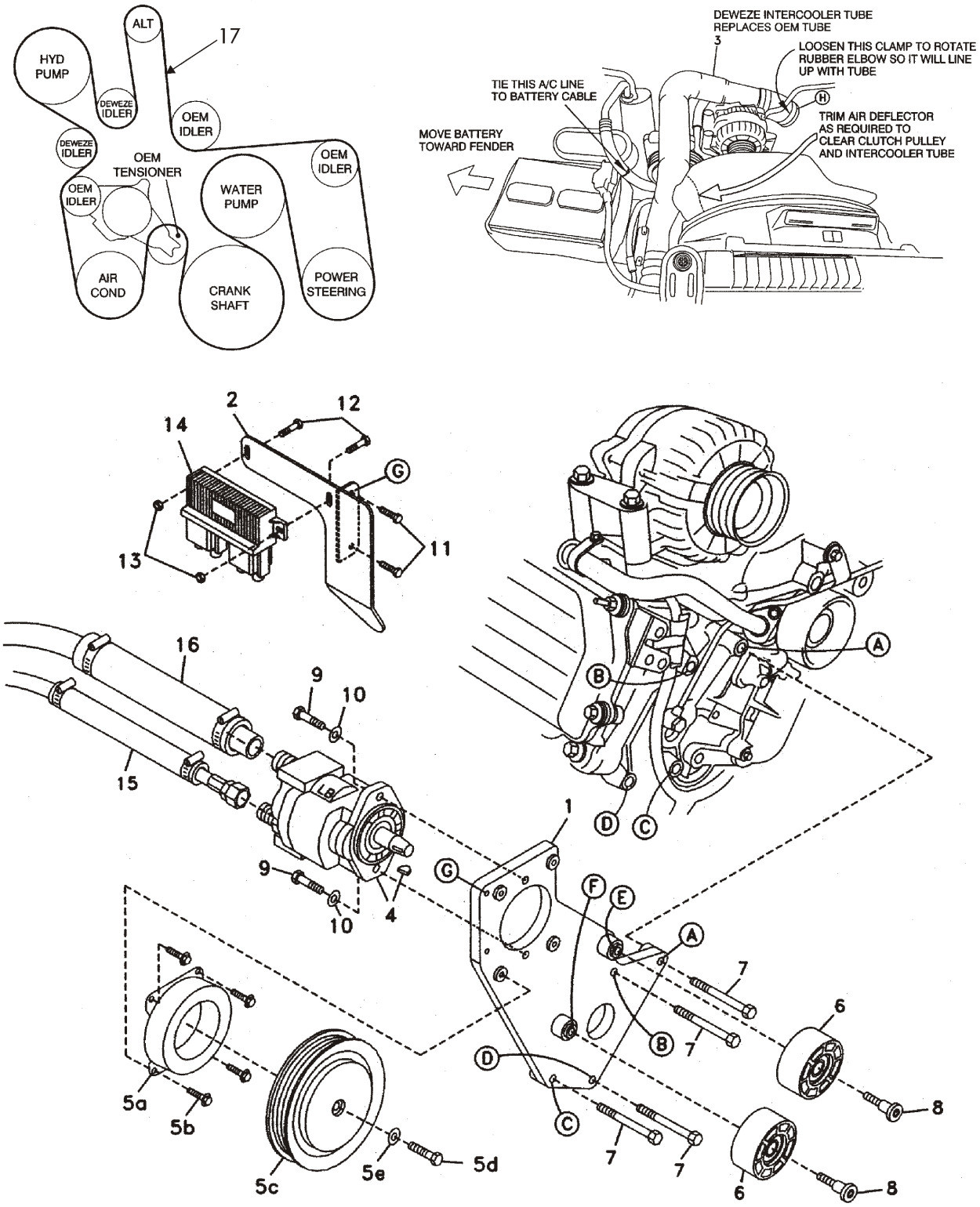


FIGURE 40.
TRUCK PREP, F350 6.0L DIESEL (2 OF 2)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
40-	307557		Truck Prep, F350 6.0L Diesel (2 OF 2)		Ref
	307377		Pump Kit w/ Clutch F350 V8		Ref
1		711575	Pump Mount Bracket		1
2		715007	Electrical Module Bracket		1
3		700272	Intercooler Tube		1
4			Pump		1
5		740148	Clutch		1
6	307054	740261	Idler Pulley		1
7		110488	M10 x 45 x 1.5 Bolt		4
8		110213	M10 x 40 Torx Head Shoulder Bolt		2
9	F100312	110425	3/8-16 x 1 1/4 Bolt		2
10	F100062	110676	3/8 Flat Washer		2
11		110561	1/4-20 x 3/4 Bolt		2
12		110464	1/4-20 x 1 Bolt		2
13		110609	1/4-20 Nut		2
14			Electrical Module		1
15			Insulation, Pressure Hose		1
16			Insulation, Suction Hose		1
17	307056	740360	Belt, Poly-Cog 1490KB		1

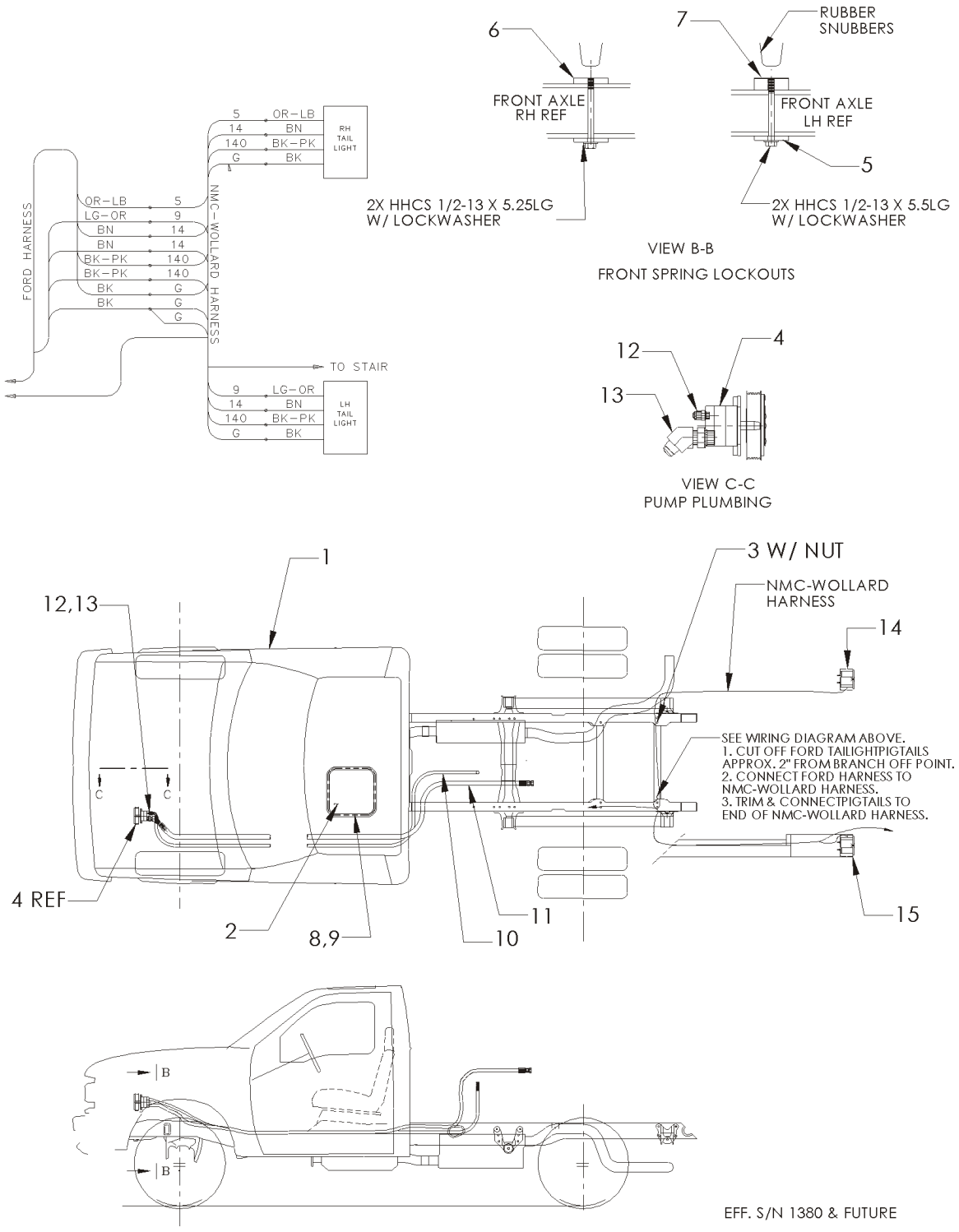


FIGURE 41.
TRUCK PREP, F350 V8 GAS (1 OF 2)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
41-	307577		Truck Prep, F350 5.4l Diesel (1 Of 2)		Ref
1	562A279		Decal, Gasoline Only		1
2	307298		Glass, 1/4 x 16 x 16 x 2.5RD		1
3	303769		HHCS 3/8-16 x 1.5, Gr8		8
4	307498		Pump Kit w/Clutch, V8, Gas		1
5	300831		Plate, Spacer, Lower		2
6	303815		Plate, Spacer, RH, Upper		1
7	303812		Plate Wldmnt, LH Upper		1
8	304427		Trim, w/ Seal, .25 x 375 OD, 90°		70”
9	307372		Seal Windshield		70”
10	8797.94		Hose Assy. #8M		1
11			Hose Assy. #16L		
12	3.2961		Ftg, Hyd, 08MJ-12MB		1
13	NW035809		Ftg, Hyd, 16MJ-16MB45		1
14	303742		Brkt, Taillight, RH		1
15	303773		Brkt, Taillight, LH		1
16	307559		Manual, TMPS200		1

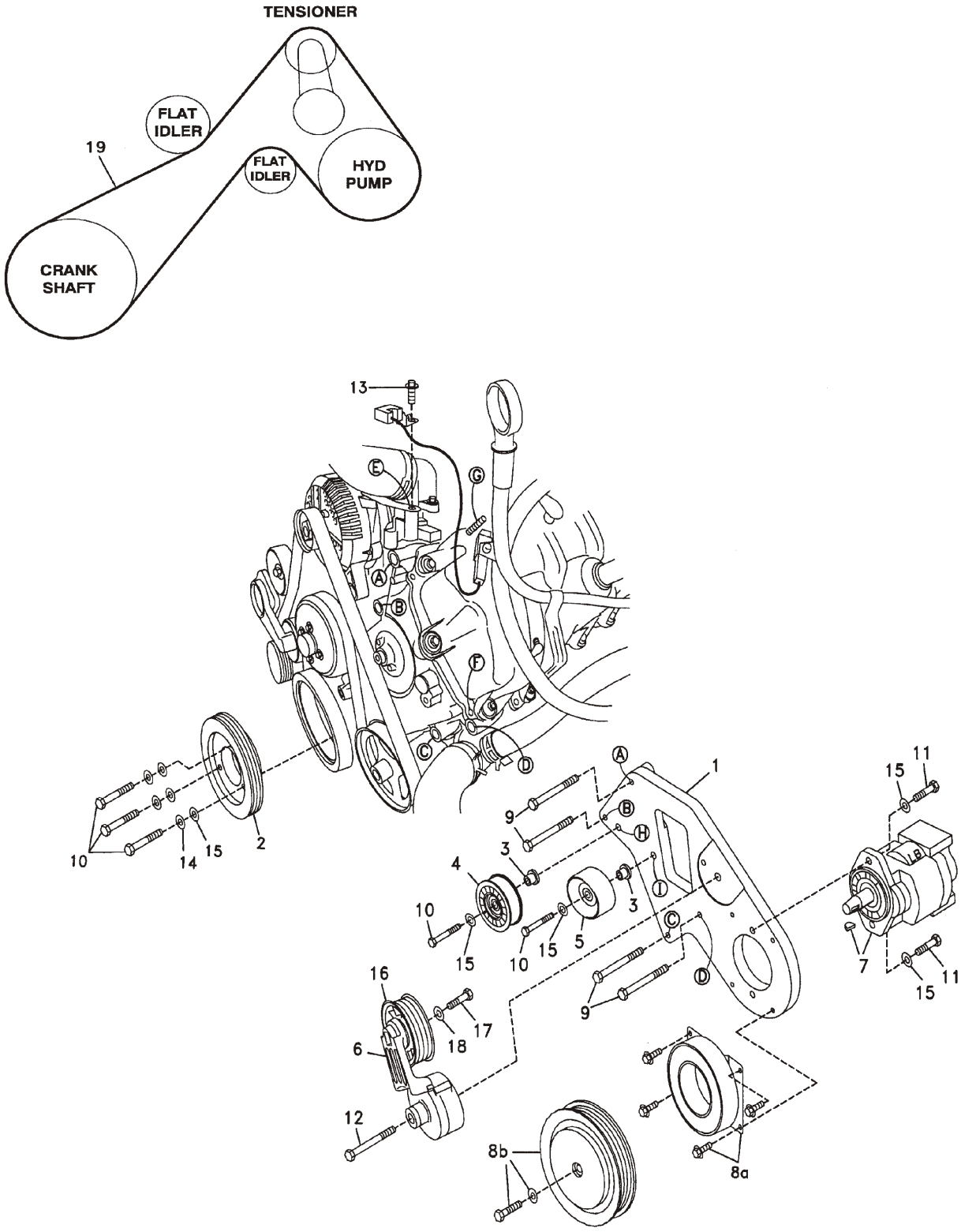
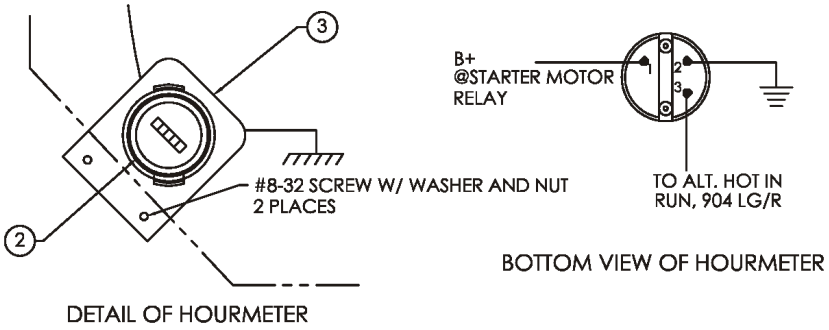
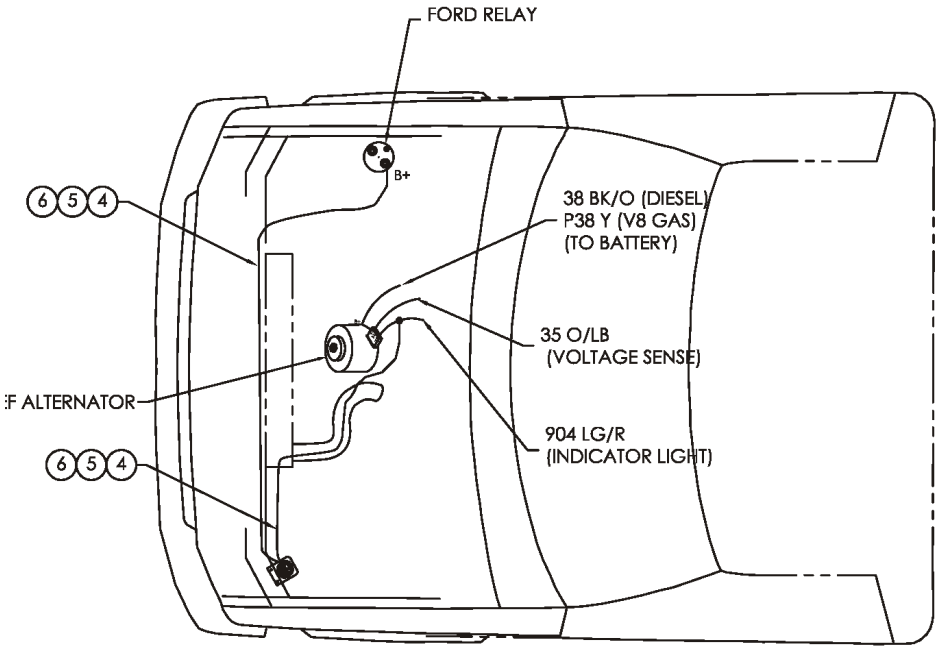


FIGURE 41.
TRUCK PREP, F350 V8 GAS (2 OF 2)

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
41-	307577		Truck Prep, F350, 5.4L, Gas (2 OF 2)		Ref
1		711625	Engine Bracket		1
2		740383	Crankshaft Pulley		1
3		711630	Idler Bushing		2
4		740145	Idler Pulley, Flat 3.75”		1
5		740302	Idler Pulley, Flat 3.00”		1
6		740385	Tensioner		1
7			Pump, a Rear Port		1
8		742016	Clutch		1
9		110761	M10 x 1.5 x 110 Bolt		4
10		110180	M10 x 1.5 x 60 Bolt		5
11	F100312	110425	3/8-16 x 1 1/4 Bolt		2
12		110747	M12 x 1.75 x 75 Bolt		1
13			Bolt		1
14		110689	M10 Lock Washer		3
15	F100062	110676	3/8 Flat Washer		7
16		740233	Idler Pulley, 6-Groove		1
17		110469	M8 x 1.25 x 20 Bolt		1
18		110703	M8 Flat Washer		1
19		742019	Belt, Micro-V K060725		1





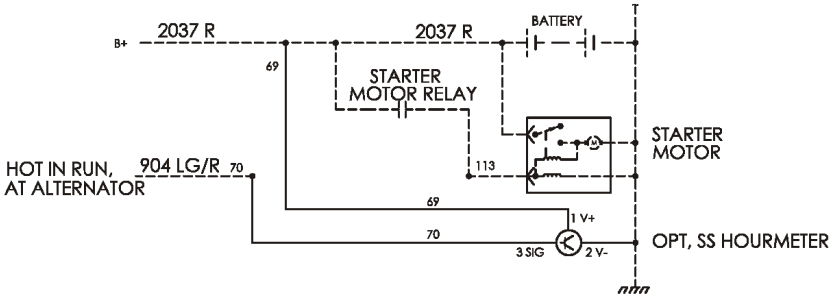
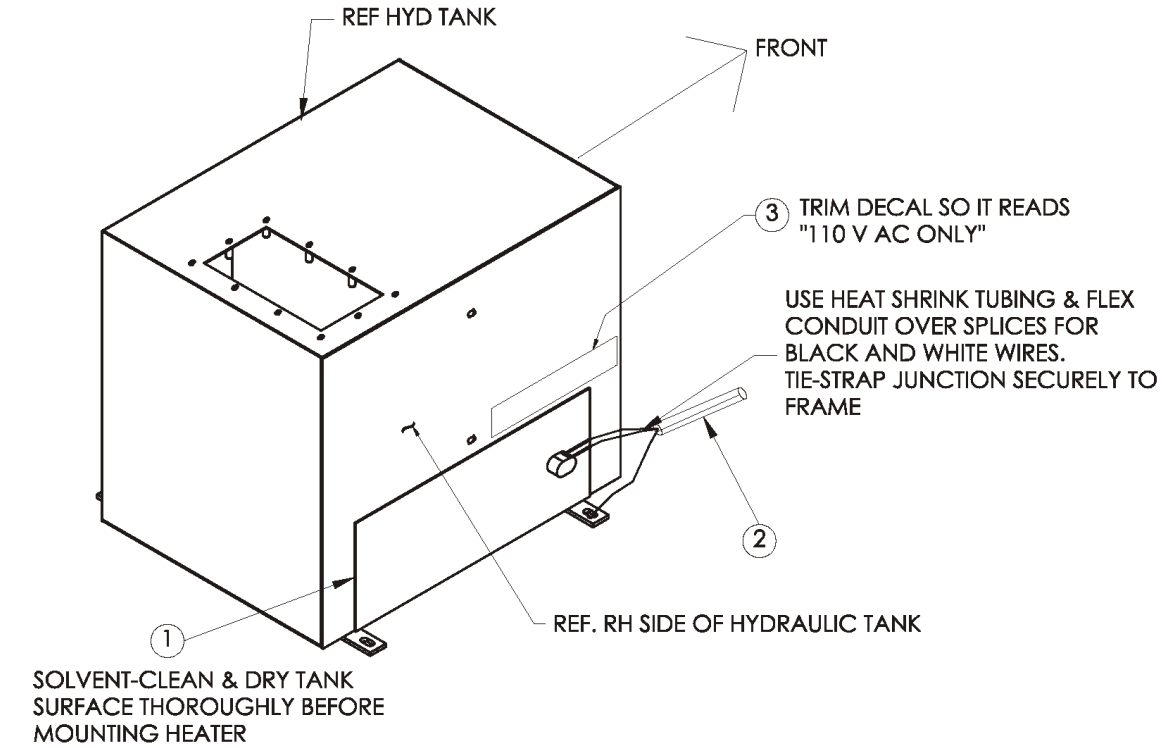


FIGURE 42.
HOURMETER INSTALLATION OPTION, DIESEL

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
42-	305216		Hourmeter Installation Option, Diesel		Ref
2	1.8317		Gauge, Hourmeter, Sol St, 9-60VDC		1
3	18921		Bracket, Hourmeter		1
4	F002958		Wire, 16 GA, Black, J1128 GPT SAE		96”
5	2.3478		Conduit, Flexguard, 1/4”		96”
6	F104276		Terminal, Push On Insul, 3/16 Female Blade		3



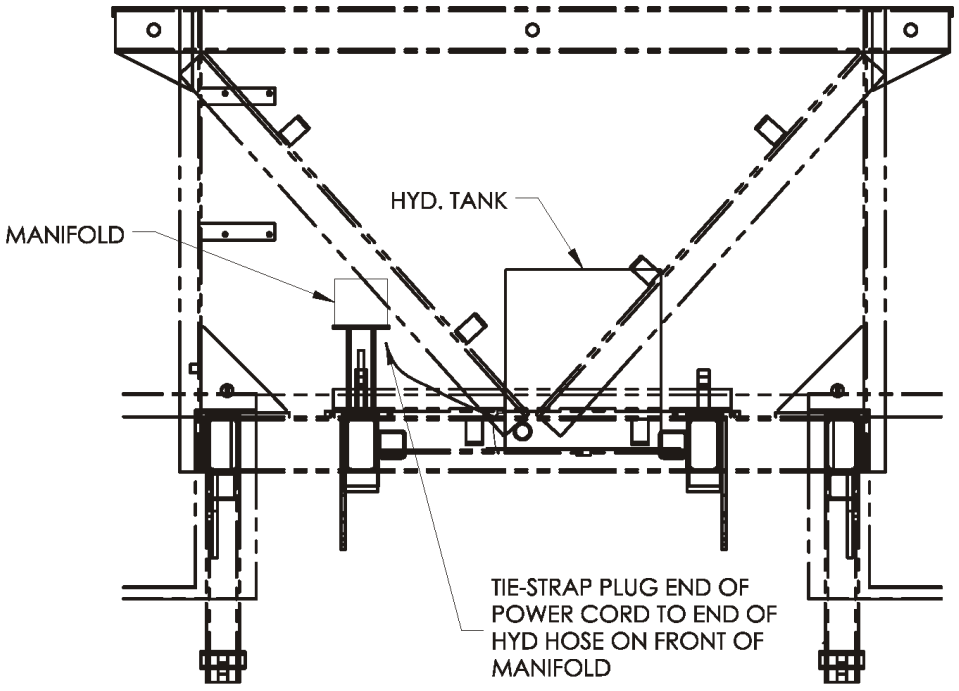
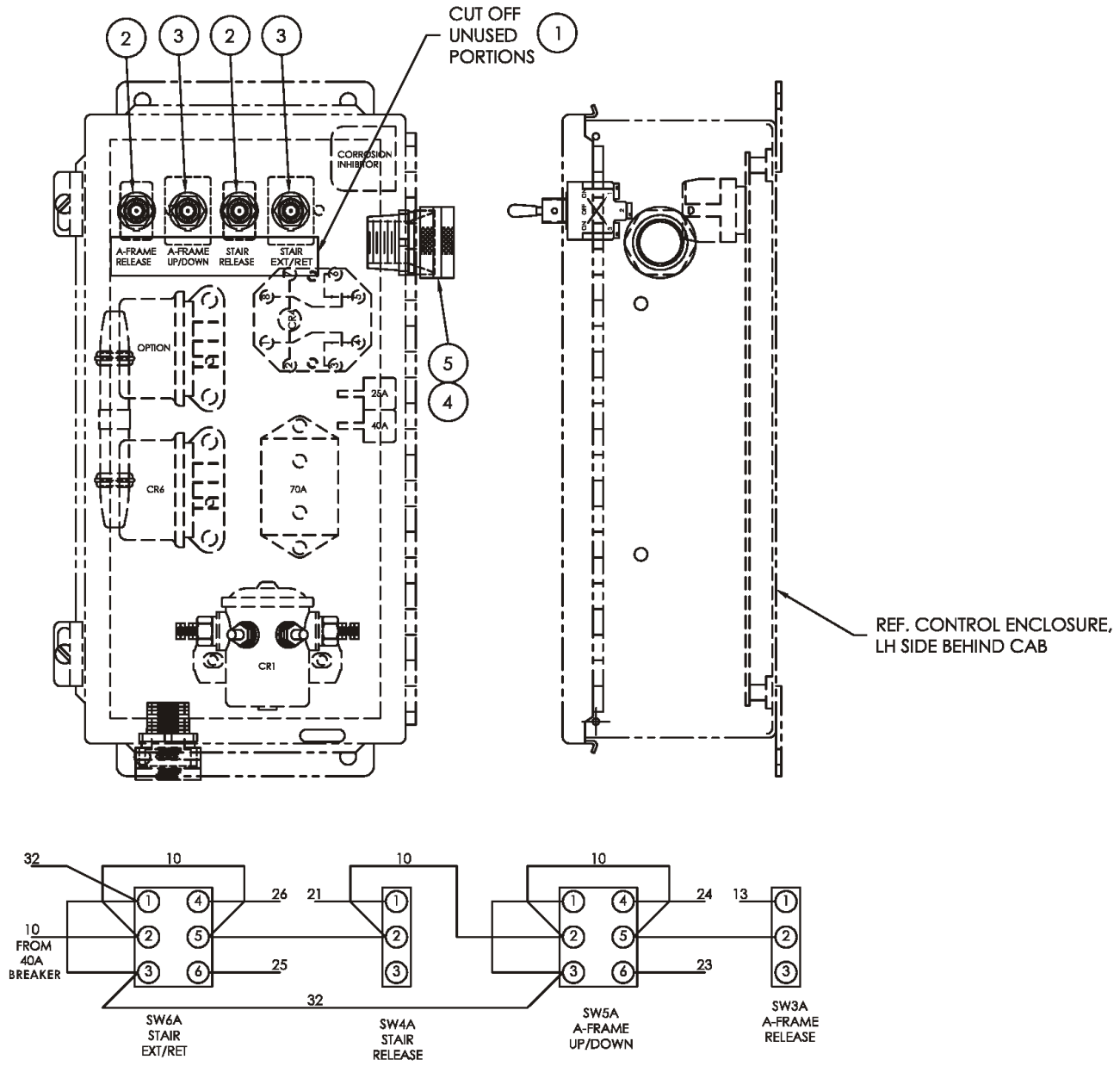


FIGURE 43.
HEAT, HYDRAULIC TANK, OPTION

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
43-	308380		Heat, Hyd. Tank, Option		Ref
1	2.3894		Heater, Flex, 120V/450W, PSA		1
2	45459		Cord, Power, 14/3, 125V/15A, 6’		1
3	562A54		Placard, 110V, AC-Only		1



SWITCH WIRING VIEWED FROM REAR OF J-BOX DOOR.
FOR VALVES, SPLICE INTO CORRESPONDING WIRE ON HARNESS
SIDE OF MANIFOLD PLUGS, USING SEALED HEAT-SHRINK SPLICES.
FOR RELEASES, RUN WIRES DIRECT TO CONTROL MODULE TERMINALS.

FIGURE 44.
OUTSIDE CONTROLS, OPTIONAL

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
44-	308433		Outside Controls, Optional		Ref
1	307585		Decal, Controls, Electrical		1
2	2.1998		Switch, Toggle, SP3T, Momentary		2
3	2.3012		Switch, Toggle, DP3T, Momentary		2
4	2.3826		Wire 16/8 SO		48”
5	2.0182		Connector, Cord, .63, 3/4 NPT		1

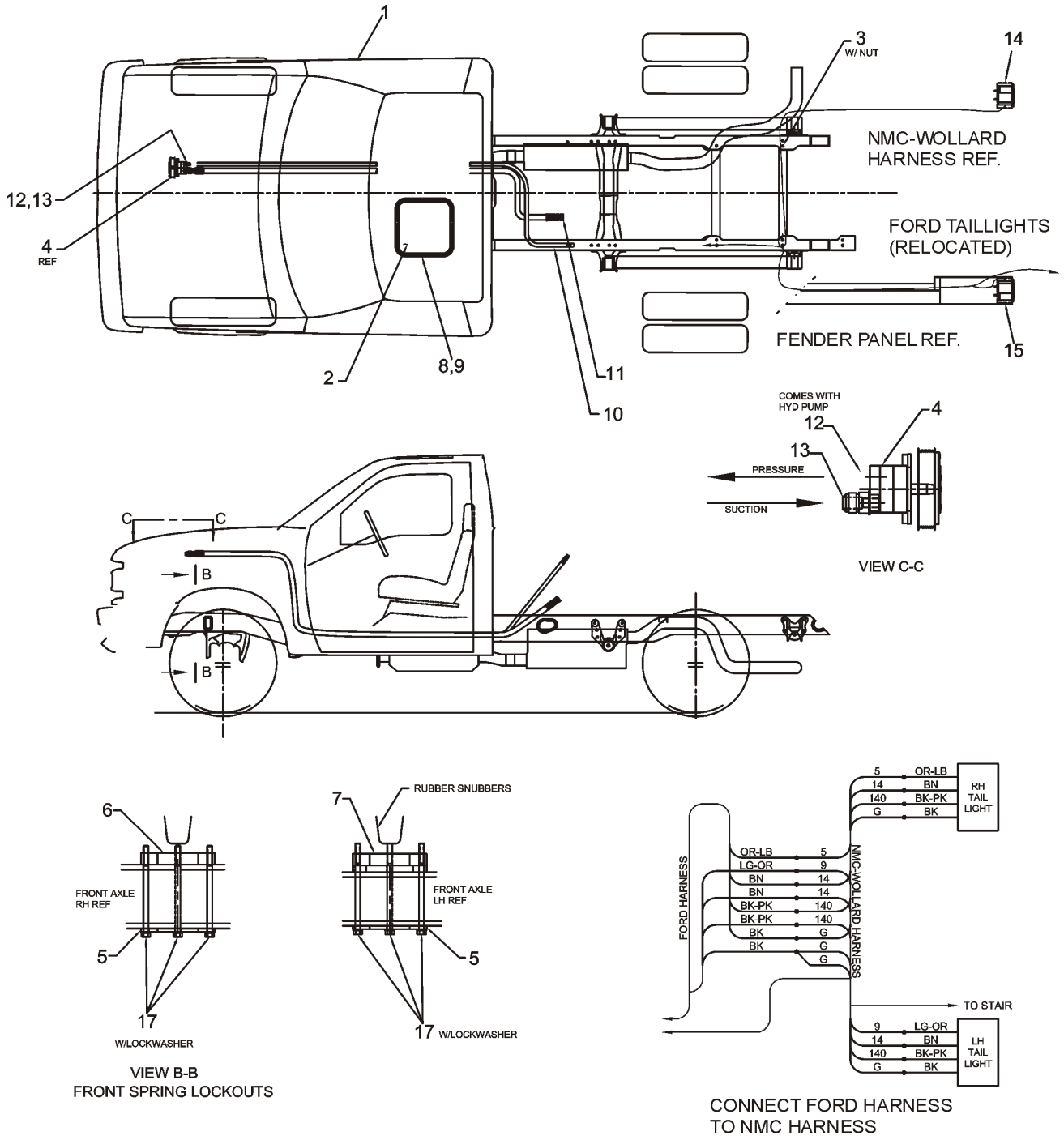
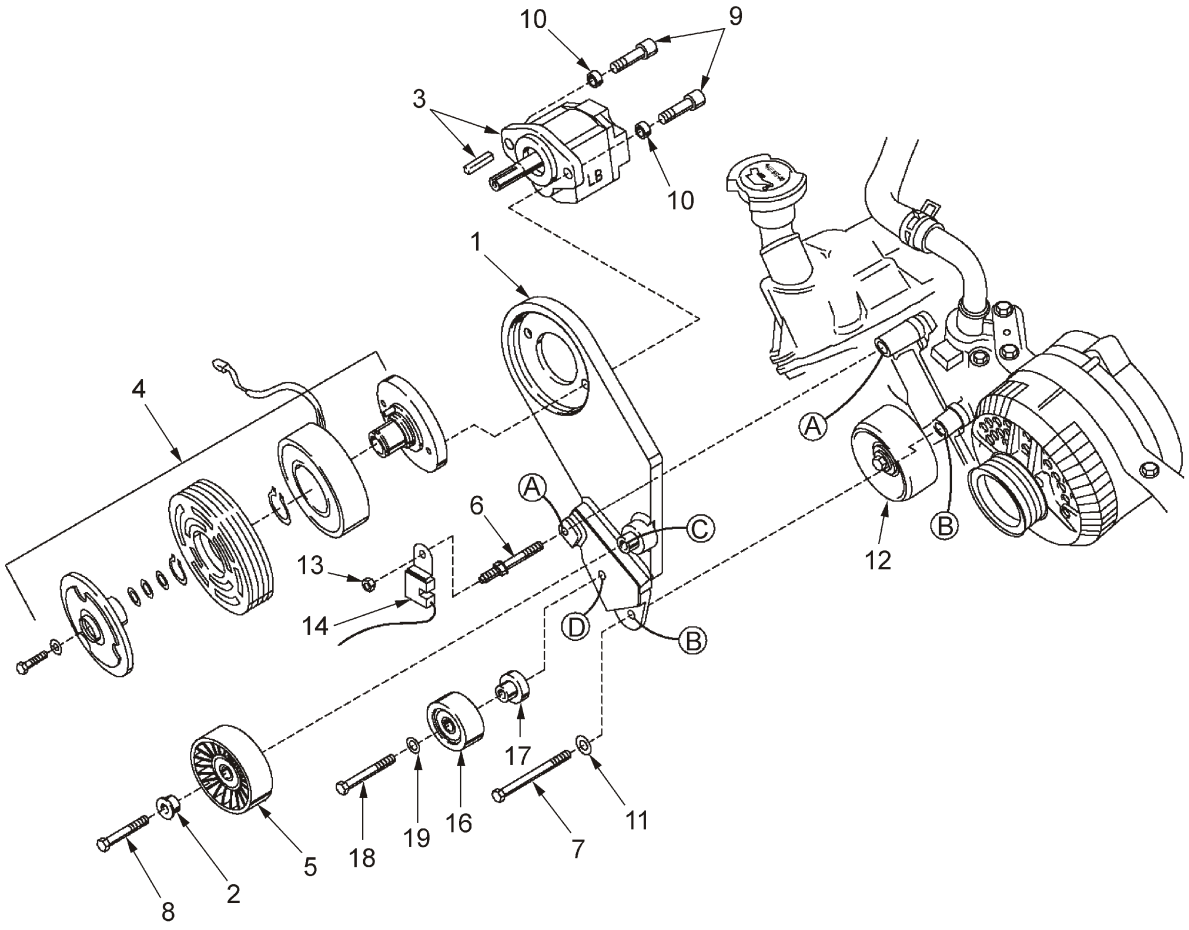


FIGURE 45.
TRUCK PREP, F350 V8 GAS, 2008+

Fig.-Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
45-	308707		Truck Prep, F350 V8 Gas, 5.4L	H	1
1	306307		Truck Chassis, F350V8 Triton Gas		1
2	307298		Glass, 1/4x16x16x2.5RD		1
3	303769		HHCS 3/8-16x1.5 Gr8		8
4	308703		Pump Kit w/Clutch, V8, Gas (see fig 46)		1
5	308827		Retainer, Spacer Plt, 200		2
6	308870		Spacer, Front Axle, Top, 200		1
7	308826		Spacer Wld, Frt Axle, LH Top, 200		1
8	304427		Trim w/Seal, .25x.75 OD, 90 Deg		70”
9	307372		Seal, Windshield		70”
10	8797.94		Hose Asm, #8M		1
11	308882.1		Hose Asm , #16L		1
12	90413		Ftg, Hyd, 08MJ-08MB		
13	203852		Ftg, Hyd, 12MJ-10MB		1
14	303742		Brkt, Tail Light RH		1
15	303773		Brkt, Tail Light LH		1
17	NW036922		HHCS, 3/8-16x6.5 Gr5		6
18	RF090896		Sleeve, Alum Fbrgls 2.50		240”
NS	562A279		Decal, Gasoline Only		1



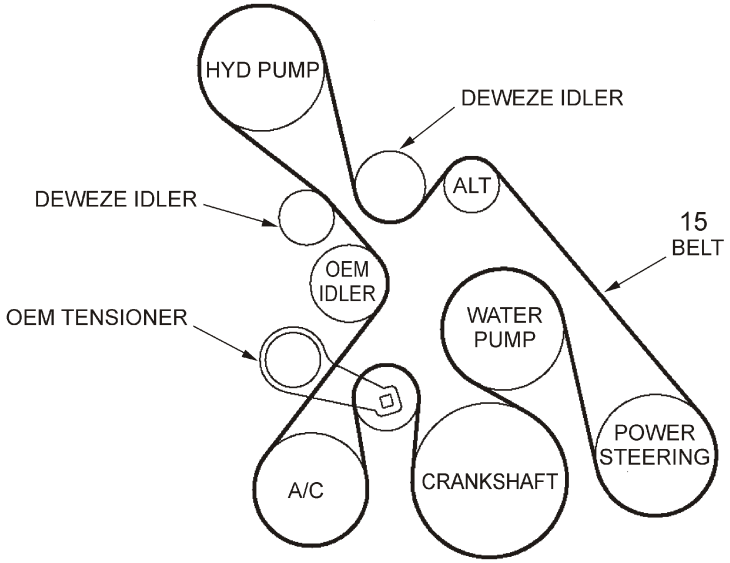


FIGURE 46.
PUMP KIT W/CLUTCH F350 V8, GAS, 2008+

Fig. - Item	NMC-Wollard Part No.	Vendor Part No.	Nomenclature	Eff	Units Per Assy
46-	308703		Pump Kit w/Clutch F350 V8, Gas, 2008+	H	
1	308970	711677	Pump Bracket		1
2	308971	711072	Idler Bushing		1
3	308972		Pump (rear port)		1
4	308973	740162	Clutch		1
5	308974	740389	Idler Pulley		1
6			Stud Bolt		1
7		110140	M8 X 1.25 x 60 Bolt		1
8		110479	M10 x 1.5 x 30 Bolt		1
9		110465	3/8 x 1-1/4 Socket Head Bolt		2
10		110271	3/8 Lock Washer, .55 O.D. X .13 Thick		2
11		110703	M8 Flat Washer		1
12			Idler Pulley		1
13			Nut		1
14			Wire		1
15	308975	740357	Belt, Gates 6K126.68		1
16	308976	740339	Idler Pulley		1
17	308977	711688	Idler Bushing		1
18		110488	M10 x 1.5 x 45 Bolt		1
19		110676	3/8 Flat Washer		1

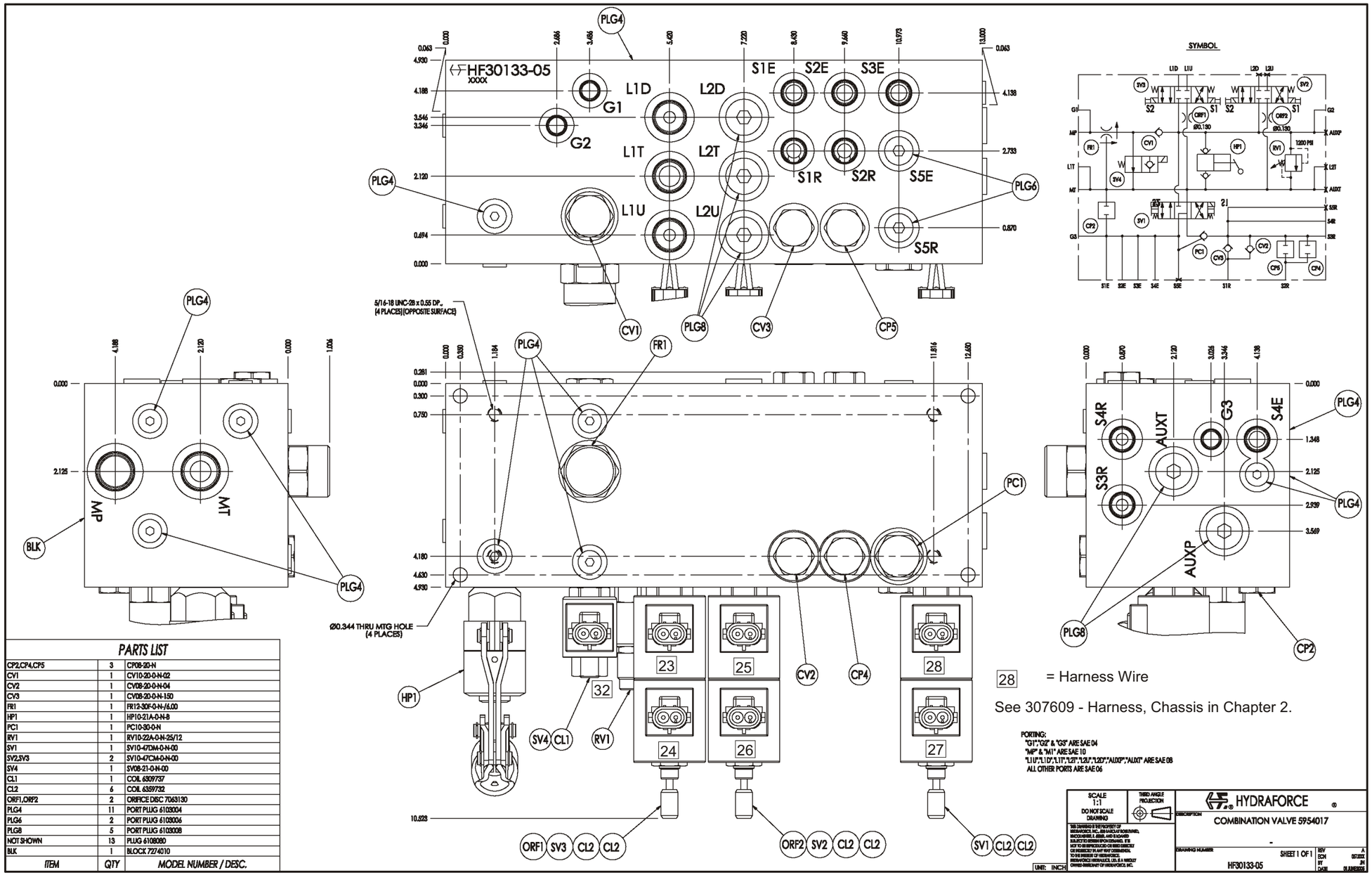
THIS PAGE INTENTIONALLY BLANK

CHAPTER 5 MANUFACTURERS' INFORMATION

Table of Contents

This Page Intentionally Blank

Hydraforce Combination Valve - 307575



PARTS LIST		
CP2,CP4,CP5	3	CP08-20-N
CV1	1	CV10-20-0-N-02
CV2	1	CV08-20-0-N-04
CV3	1	CV08-20-0-N-150
FR1	1	FR12-30F-0-N-/6.00
HP1	1	HP10-21A-0-N-B
PC1	1	PC10-30-0-N
RV1	1	RV10-22A-0-N-25/12
SV1	1	SV10-47DM-0-N-00
SV2,SV3	2	SV10-47CM-0-N-00
SV4	1	SV08-21-0-N-00
CL1	1	COIL 6509737
CL2	6	COIL 6359732
ORF1,ORF2	2	ORIFICE DISC 7063130
PLG4	11	PORT PLUG 6103004
PLG6	2	PORT PLUG 6103006
PLG8	5	PORT PLUG 6103008
NOT SHOWN	13	PLUG 6108080
BLK	1	BLOCK 7274010
ITEM	QTY	MODEL NUMBER / DESC.

28 = Harness Wire

See 307609 - Harness, Chassis in Chapter 2.

This Page Intentionally Blank

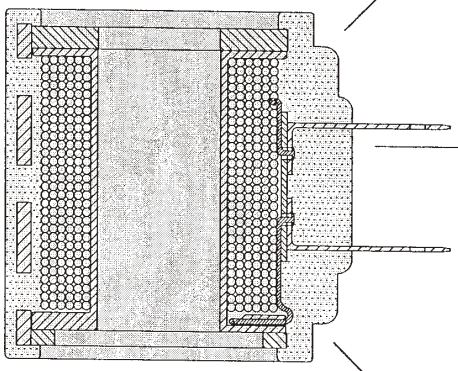
Hydraforce Combination Valve - 30575
Standard Coils and Proportional Valve Coils

WHY HYDRAFORCE STANDARD COILS OUTPERFORM COMPETITIVE UNITS

More Ampere Turns
More copper wire turns deliver more magnetic flux per current input.

High Quality Materials
HydraForce coils are made with high quality, Class H magnetwire and insulation materials.

Rugged Casing
Coils are housed in a durable 30% glass-filled thermoplastic casing, providing a rigid base for coil terminations.



Superior Frame Density
Thick iron surrounds the copper winding, increasing the coil's flux density and therefore its power as an electromagnet.

Multiple Termination Options
HydraForce offers many standard types of electrical connections, and will consider OEM requests for special terminations.

DC Windings
All windings are DC. AC service coils are internally full-wave-rectified, so cartridges are voltage-interchangeable and do not exhibit AC "buzz" or suffer burn-out due to partial armature shift. HydraForce DC coils are UL Listed under File #AU2326.

Custom Coils
HydraForce can provide windings precisely-tailored for special OEM applications. Some of the common windings are listed on the following page; consult the factory if these do not meet your requirements.

Heat Rise
Rather than using heat sinks or external cooling methods, HydraForce uses larger coils for lower heat rise, stronger electro-magnetic force and longer coil life. HydraForce coils can be operated continuously at ambient temperatures to 100°C without challenging the coil's insulation system.

Note: Some coils may differ in construction from this illustration.

Hydraforce Combination Valve - 30575
Standard Coils and Proportional Valve Coils

COMMON WINDING SPECIFICATIONS

08, 80 Size Coil Data (14.7 Watts)		
Volts	Resistance (DC) @ 20°C Ohms	Initial Current Draw Amps
DC Service		
6*	2.46	2.44
10	6.8	1.47
12	9.8	1.22
20*	27.2	0.74
24	39.3	0.61
30*	61.4	0.49
36	88.3	0.41
48	156.6	0.31
72*	352.4	0.20
110	823.1	0.13
AC Service		
24	31.2	0.61
115	765.5	0.13
230	3035.0	0.06

*Special Order Coils

1.43A @ 14VDC

10, 38, 58, 12, 52, 16, 56 Size Coil Data (20 Watts)		
Volts	Resistance (DC) @ 20°C Ohms	Initial Current Draw Amps
DC Service		
6*	1.8	3.33
10	4.8	2.08
12	7.2	1.67
20*	19.0	1.05
24	28.8	0.83
30*	43.2	0.69
36	64.8	0.56
48	110.2	0.44
72*	249.8	0.29
110	605.0	0.18
AC Service		
24	23.6	0.83
115	568.0	0.17
230	2304.0	0.09

*Special Order Coils

1.94A @ 14VDC

70 Size Coil Data Proportional Coil Data		
Volts	Resistance (DC) @ 20°C Ohms	Nominal I-Max. Current Draw Amps
12	5.0	1.50
24	20.0	0.75

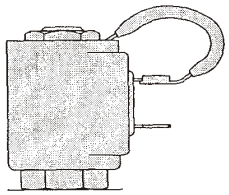
EHPR Coil Data Proportional Coil Data		
Volts	Resistance (DC) @ 20°C Ohms	Nominal I-Max. Current Draw Amps
10	3.1	1.50
12	5.4	1.20
20	12.5	0.75
24	21.7	0.60

COIL INFORMATION

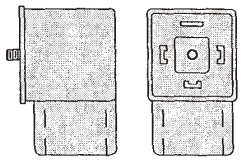
- AC service coils are internally rectified, and can be used in 50 or 60 cycle (Hz) lines.
- Special voltages and terminations are available for OEM applications; consult factory.
- Coil should always be installed with lettering facing up.
- Standard coils are not hermetically sealed. For applications requiring water or weather resistant coils, see pages 8.250.1-2 and pages 3.400.1-6
- AC voltage service with transient surges over 1000 volts may require that a varistor be placed in parallel at the coil.

Voltage	Varistor Part No.	Joule Rating Required
115	GE: V150LA10A Siemens: S10R150 or equivalent	45 minimum
230	GE: V250LA40A Siemens: S20R250 or equivalent	130 minimum

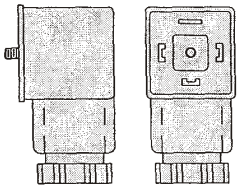
COIL ACCESSORIES



Coil Ground Strap for DS Coils P/N 6502200



DIN 43650 1/2" Conduit to Connector P/N 6110001

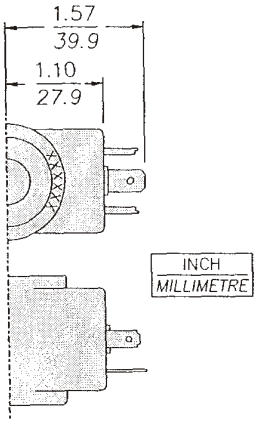


DIN 43650
Cable Gland PG 9
(7 mm nominal cable diameter)
P/N 6110002

or Cable Gland PG 11
(9 mm nominal cable diameter)
P/N 6110005

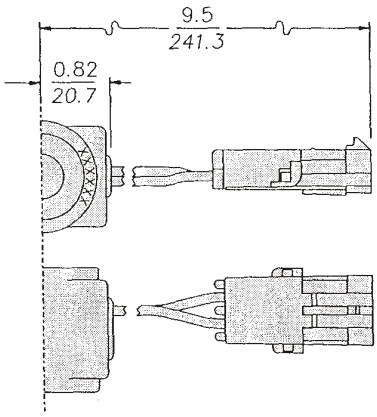
Hydraforce Combination Valve - 30575
Standard Coils and Proportional Valve Coils

SERIES 08, 80, 88, 98 COIL INFORMATION



G

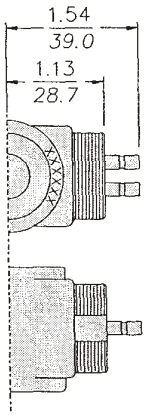
DIN 43650 Connector



W

Dual 18 Gauge Leads with Weather Pack® Connector

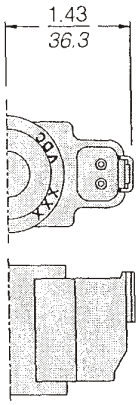
For use with Packard part no. 12015792 male plug



K

Kostal Connector

DK Coils; U.K. availability only.



DR

Integral Deutsch Connector

DR Models without Diode
DR/D Models with Diode
DR/Z Models with Zener Diode

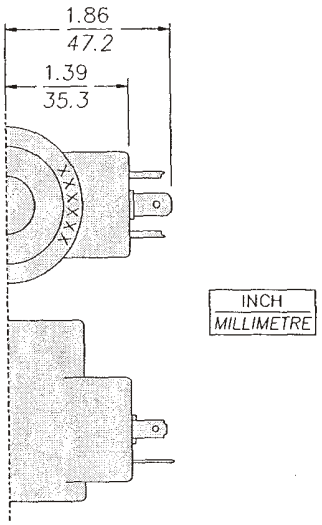
Voltage	Part Number Suffix					
	G	W	K	DR	DR/D	DR/Z
10 VDC		6309410				
12 VDC	6306012	6309412	6348812	4301512	4301872	4301852
24 VDC	6306024	6309424	6348824	4301524	4301874	4301854
36 VDC	6306036	6309436				
48 VDC	6306048	6309448				
110 VDC	6306110					
*24 VAC	6316024					
*115 VAC	6316115					
*230 VAC	6316230					

*Rectified

12VDC W/ DIODE 6309737

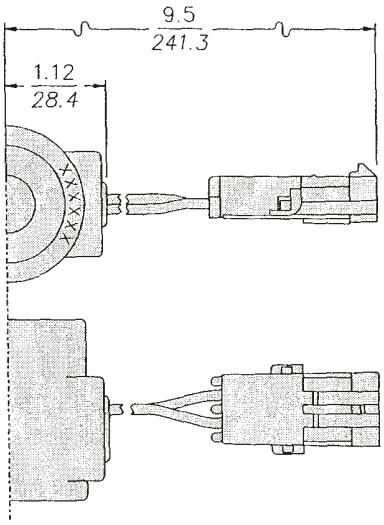
Hydraforce Combination Valve - 30575
Standard Coils and Proportional Valve Coils

SERIES 10, 12, 16, 38, 58 COIL INFORMATION



G

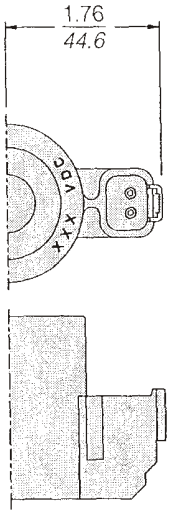
DIN 43650 Connector



W

Dual 18 Gauge Leads with Weather Pack® Connector

For use with Packard part no. 12015792 male plug



DR

Integral Deutsch Connector

DR Models without Diode
DR/D Models with Diode
DR/Z Models with Zener Diode

Voltage	Part Number Suffix				
	G	W	DR	DR/D	DR/Z
10 VDC		6359410			
12 VDC	6356012	6359412	4301612	4301892	4301862
24 VDC	6356024	6359424	4301624	4301894	4301864
36 VDC	6356036	6359436			
48 VDC	6356048	6359448			
110 VDC	6356110				
*24 VAC	6366024				
*115 VAC	6366115				
*230 VAC	6366230				

*Rectified

12VDC W/ DIODE 6359732

DeWeeze Pump Kit w/Clutch F350 V8, Gas, 2008+

DEWEZE — Clutch Pump Kit **700439**

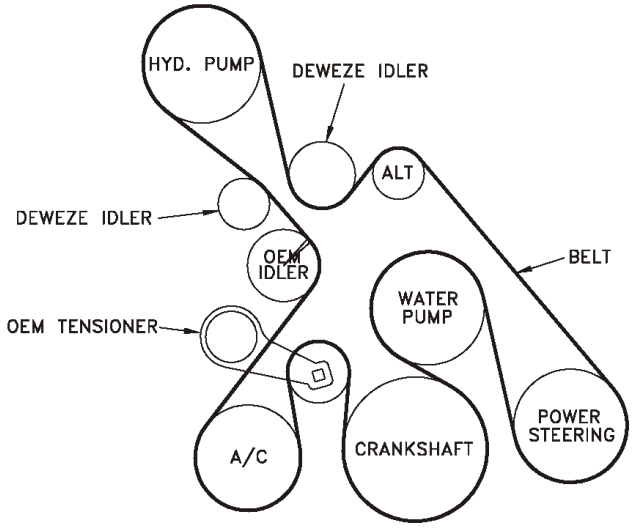
Ford, 5.4L:G, F-350, A/C, AA Pump, Rear Port

Bolt Packages:	
Bracket	None
Idler pulley	711678 (Inc. 2, 8, 17-19)
Pulley	None
Tensioner	None

Bracket Assy.	None (Inc. items)		
Issue Date	3-30-05	Revision Date	NC 3-30-05

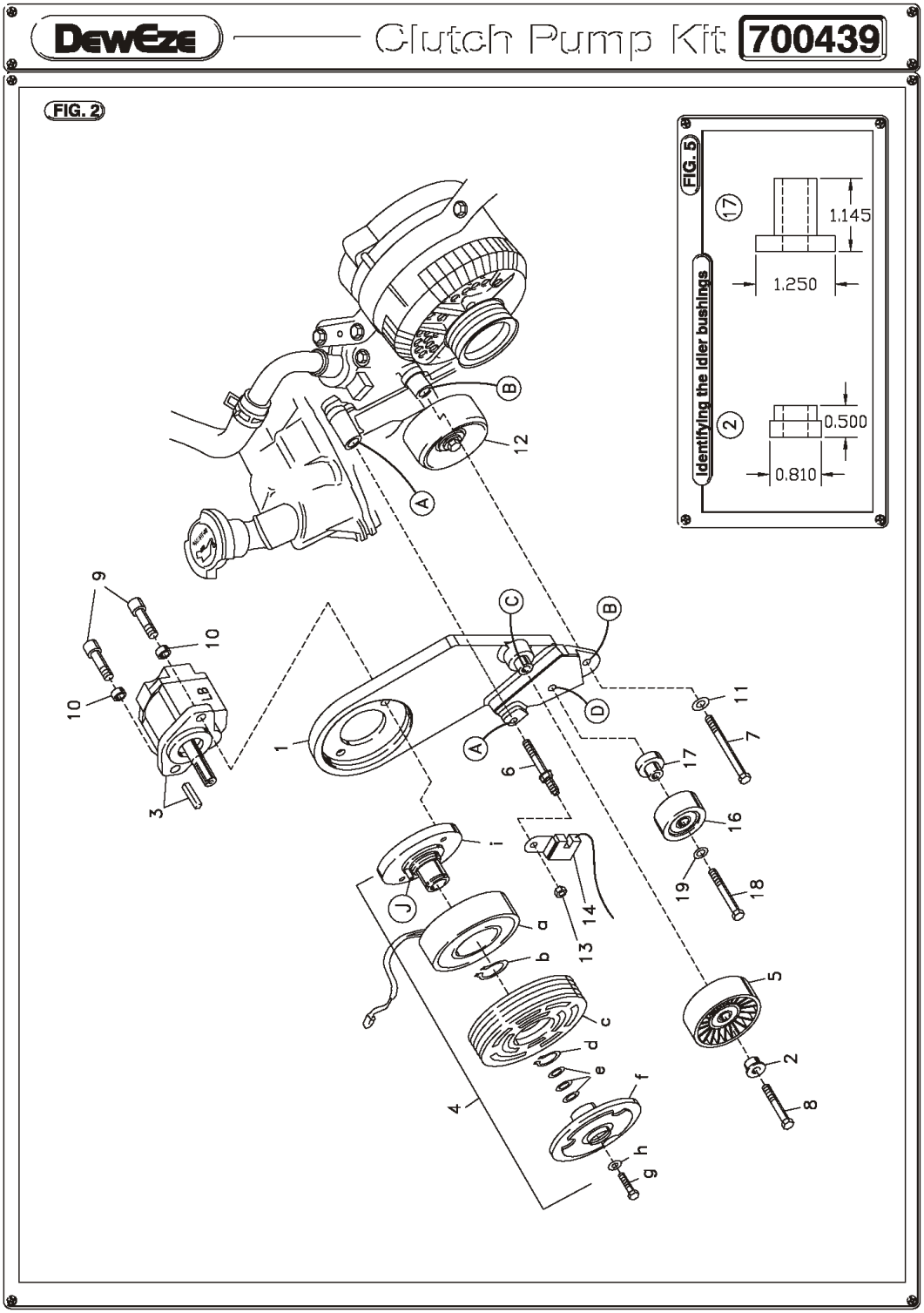
Item	Part No.	Description
1.	711677	Pump bracket
2.	711072	Idler bushing
3.	*	Pump (rear port)
4.	740162	Clutch
5.	740389	Idler pulley
6.	OEM	Stud bolt
7.	110140	M8 x 1.25 x 60 Bolt
8.	110479	M10 x 1.5 x 30 Bolt
9.	110465	3/8 x 1 1/4 Socket head bolt
10.	110271	3/8 Lock washer, .55 O.D. x .13 thick
11.	110703	M8 Flat washer
12.	OEM	Idler pulley
13.	OEM	Nut
14.	OEM	Wire
15.	740357	Belt, Gates 6K126.68
16.	740339	Idler pulley
17.	711688	Idler bushing
18.	110488	M10 x 1.5 x 45 Bolt
19.	110676	3/8 Flat washer

FIG. 1
BELT DIAGRAM



Ⓐ,Ⓑ,Ⓒ... Denotes bolt holes in engine to locate corresponding holes in Pump Brkt.

DeWeeze Pump Kit w/Clutch F350 V8, Gas, 2008+



DeWeeze Pump Kit w/Clutch F350 V8, Gas, 2008+

DEWEEZE

Clutch Pump Kit
#700439
Ford 5.4L
with A/C
'AA' mount
2005+

INSTALLATION INSTRUCTIONS

1. Disconnect the battery.
2. Remove the OEM belt. Remove the fan shroud and fan.
3. Remove OEM idler pulley (12) to gain access to mounting bolt at location B. Keep the pulley and bolt.
4. Remove nut (13) holding wire at location A. Remove stud bolt (6) at location A. Remove OEM bolt at location B.
5. Hold pump (3) onto back of bracket (1) and clutch hub (4i) onto front of bracket, making sure anti-rotation pin (D) on front of hub is on top. Place two 3/8 x 1 1/4 socket head bolts (9) and 3/8 high collar lock washers (10) through pump, through mounting plate and thread into hub. Torque to 20 lb-ft.
6. Slide coil (4a) over hub, aligning hole in the back plate of coil with the anti-rotation pin (D) in the hub. The wires from the coil should be on the same side as the pin (D). Install large snap ring (4b) to hold coil in place.
   NOTE: THE BEVEL ON BOTH SNAP RINGS MUST FACE AWAY FROM THE PUMP. REFER TO INSTRUCTION SHEET FOR THE CLUTCH FOR CORRECT INSTALLATION OF SNAP RINGS.
7. Slide clutch pulley (4c) onto hub. Install small snap ring (4d) to hold pulley in place.
8. Place the key (3) onto the pump shaft. Slide the hub/armature (4f) onto the pump shaft aligning the keyways.
   NOTE: SET THE AIR GAP BETWEEN THE HUB/ARMATURE AND THE PULLEY USING SHIMS (4e) ACCORDING TO INSTRUCTION SHEET FOR CLUTCH.
9. Thread bolt (4g) and lock washer (4h) into pump shaft. Torque to value in clutch instruction sheet.
10. Install the fittings on the pump.
11. Insert the short idler bushing (2) into the 3" dia. idler pulley (5) and attach the other side to the boss on the front of the pump mount bracket (1) at Location C with the M10 x 30 shoulder bolt (8). Torque to 19-25 ft-lb.
12. Insert the longer idler bushing (17) into the beveled side of the 2" dia. idler pulley (16) and attach to the pump bracket at Location D with the M10 x 45 (18) bolt with a 3/8 flat washer (19). Torque to 19-25 ft-lb.
13. See Fig. 3. Disconnect the wiring from the alternator, pull it from the attachment points on the valve cover and push it back on top of the valve cover. Make sure the alternator wiring will not be pinched between the engine and the pump bracket when it is installed.
14. Attach the pump mount bracket (1) to the engine with the OEM stud bolt (6) at Location A and the M8 x 60 bolt at Location B. Torque these bolts to 19-25 ft-lb.
15. Replace the wire (14) on the stud bolt (9) rotating it 180 degrees from the OEM position so it points away from the pump bracket so it is not in the belt line. See Fig. 4. Reconnect wires to the alternator.
16. Reinstall OEM idler (12) using the OEM bolt in its original location. Torque to 19-25 ft-lb.
17. Install the serpentine pump drive belt (15) per diagram.
18. Connect the battery.
19. Run the engine and check for any clearance or alignment problems. Adjust as needed.

DeWeeze Pump Kit w/Clutch F350 V8, Gas, 2008+

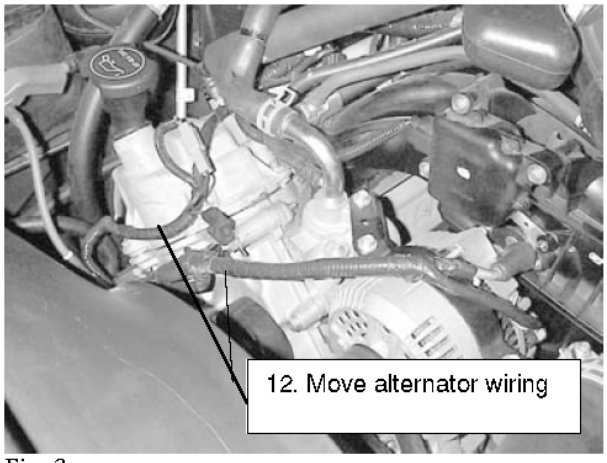


Fig. 3

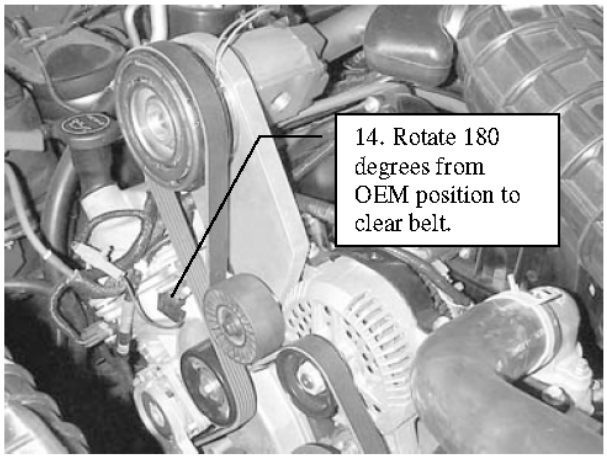


Fig. 4