

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-191-1
Relating to Exemptions Under Section 27156
of the Vehicle Code

SAGEBRUSH INDUSTRIES, INC.
DUALFILL DEVICE

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the DualFill device manufactured by SageBrush Industries, Inc. of P.O. Box 1944, 4116 Prairieview, Colstrip, MT 59323, has been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore is exempt from the prohibitions of Section 27156 of the Vehicle Code for the following applications:

<u>Model</u>	<u>Application (for all commonly used fuels)</u>
DF2002	1973-1978 model year GM 1/2 to 1 ton trucks all engines
DF3002	1979-1981 model year GM 1/2 to 1 ton trucks all engines
DF4002	1982-1990 model year GM 1/2 to 1 ton trucks all engines
DF6002	1982-1987 model year GM 1/2 to 1 ton trucks all engines

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board, that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of a device shall not be construed as an exemption to sell, offer for sale, or advertise any component of a kit as an individual device.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE DUALFILL DEVICE.

No claim of any kind, such as "Approved by the Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

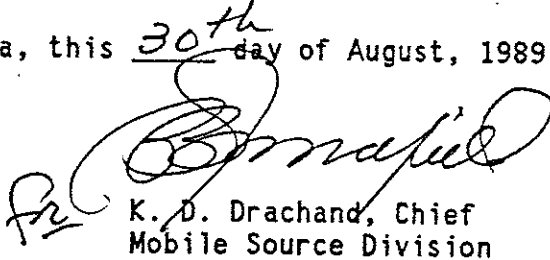
Section 43644 of the Health and Safety Code provides as follows:

"43644, (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

Executive Order D-191, dated May 5, 1989, is superseded and of no further force and effect.

Executed at El Monte, California, this 30th day of August, 1989.


K. D. Drachand, Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF SAGEBRUSH INDUSTRIES, INC. DUALFILL DEVICE
MODEL NOS. DF2002, DF3002, DF4002, AND DF6002 FOR EXEMPTION FROM THE
PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222,
TITLE 13, OF THE CALIFORNIA ADMINISTRATIVE CODE

September 1989

State of California
AIR RESOURCES BOARD

EVALUATION OF SAGEBRUSH INDUSTRIES, INC. DUALFILL DEVICE
MODEL NOS. DF2002, DF3002, DF4002, AND DF6002 FOR EXEMPTION FROM THE
PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222,
TITLE 13, OF THE CALIFORNIA ADMINISTRATIVE CODE

by

Mobile Source Division
State of California
Air Resources Board
9528 Telstar Avenue
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

SageBrush Industries, Inc. has requested an update to Executive Order (E.O.) No. D-191 for their DualFill device. Under E.O. D-191 the DualFill device was applicable on 1973-1986 model year General Motors (GM) 1/2 to 1 ton trucks for all engines and all fuels. They have requested that the exemption from the prohibitions of Vehicle Code Section 27156 be updated to include 1987-1990 GM 1/2 to 1 ton trucks.

The DualFill device is used to connect the two fuel tanks so that both tanks may be filled from one side of the truck. With the update, the DualFill device will be made available for use on the following model year categories of GM 1/2 to 1 ton trucks: (1) model #DF2002 for 1973-1978, (2) model #DF3002 for 1979-1981, (3) model #DF4002 for 1982-1990 and (4) model #DF6002 for 1982-1987.

E.O. D-191 was approved based on the fact that (1) there are no modifications to the fuel tank vent lines, the fuel supply lines or to the fuel return lines, (2) the materials used for the DualFill device are compatible with commonly used fuels and (3) there is no significant evaporative loss from the connection points of the DualFill device. To make the DualFill device available for the 1987-1990 model years, SageBrush Industries, Inc. offers four models as described above. The four models are functionally identical and only accomodate any structural differences of the GM trucks. Based on these facts, the staff believes that the DualFill device will have no adverse emissions effect on the vehicles for which the update is requested.

The staff recommends that SageBrush Industries, Inc. be granted an update as requested and that Executive Order D-191-1 be issued.

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I. INTRODUCTION

SageBrush Industries, Inc. of P.O. Box 1944, 4116 Prairieview, Colstrip, MT 59323, has requested an update to Executive Order (E.O.) No. D-191 for their DualFill device. Under E.O. D-191 the DualFill device was applicable on 1973-1986 model year General Motors (GM) 1/2 to 1 ton trucks for all engines and all fuels. They have requested that the exemption from the prohibitions of Vehicle Code Section 27156 be updated to include 1987-1990 GM 1/2 to 1 ton trucks.

The DualFill device is used to connect the two fuel tanks so that both tanks may be filled from one side of the truck. With the update, the DualFill device will be made available for use on the following model year categories of GM 1/2 to 1 ton trucks: (1) model #DF2002 for 1973-1978, (2) model #DF3002 for 1979-1981, (3) model #DF4002 for 1982-1990 and (4) model #DF6002 for 1982-1987.

II. CONCLUSIONS

E.O. D-191 was approved based on the fact that (1) there are no modifications to the fuel tank vent lines, the fuel supply lines or to the fuel return lines, (2) the materials used for the DualFill device are compatible with commonly used fuels and (3) there is no significant evaporative loss from the connection points of the DualFill device. To make the DualFill device available for the 1987-1990 model years, SageBrush Industries, Inc. offers four models as described above. The four models are functionally identical and only accomodate any structural differences of the of the GM trucks. Based on these facts, the staff believes that the DualFill device will have no adverse emissions effect on the vehicles for which the update is requested.

III. RECOMMENDATION

The staff recommends that SageBrush Industries, Inc. be granted an update as requested and that Executive Order D-191-1 be issued.

IV. DESCRIPTION AND OPERATION

The DualFill device consists of a cross tube and a vent tube made of 16 gauge steel and 18 gauge steel respectively. The exterior of the tubing is plated with .002" of pure zinc with a clear chromate coating.

Following is a description of model #DF4002. The design specifications of model #DF2002, #DF3002, and #DF6002 are provided in appendix C.

The cross tube is used to connect the two fuel tanks at the fill neck so that both tanks may be filled from one side (refer to appendix A). The cross tube has a 2" outer diameter (O.D.) and is 58" in length. At 5" from both ends there is a 1 1/2" vertical tube of 1 1/2" O.D. Each of these tubes is connected to a fuel tank.

In order to maintain proper venting, the vent lines from the fill necks to the tanks are connected by a 56" in length vent tube of 5/8" O.D. At either end of the vent tube there is a 1 1/2" vertical tube which clamps to the vent line from each tank.

V. DISCUSSION

The DualFill device is designed to connect the two independent fuel tanks on GM 1/2 to 1 ton trucks so that both tanks may be filled from one side of the truck. Basically, two modifications are made: (1) the filler hoses which connect the filler necks to the gas tanks are removed from both tanks and replaced with steel tubing thus connecting both fuel tanks and (2) the vent lines are similarly connected through a vent tube.

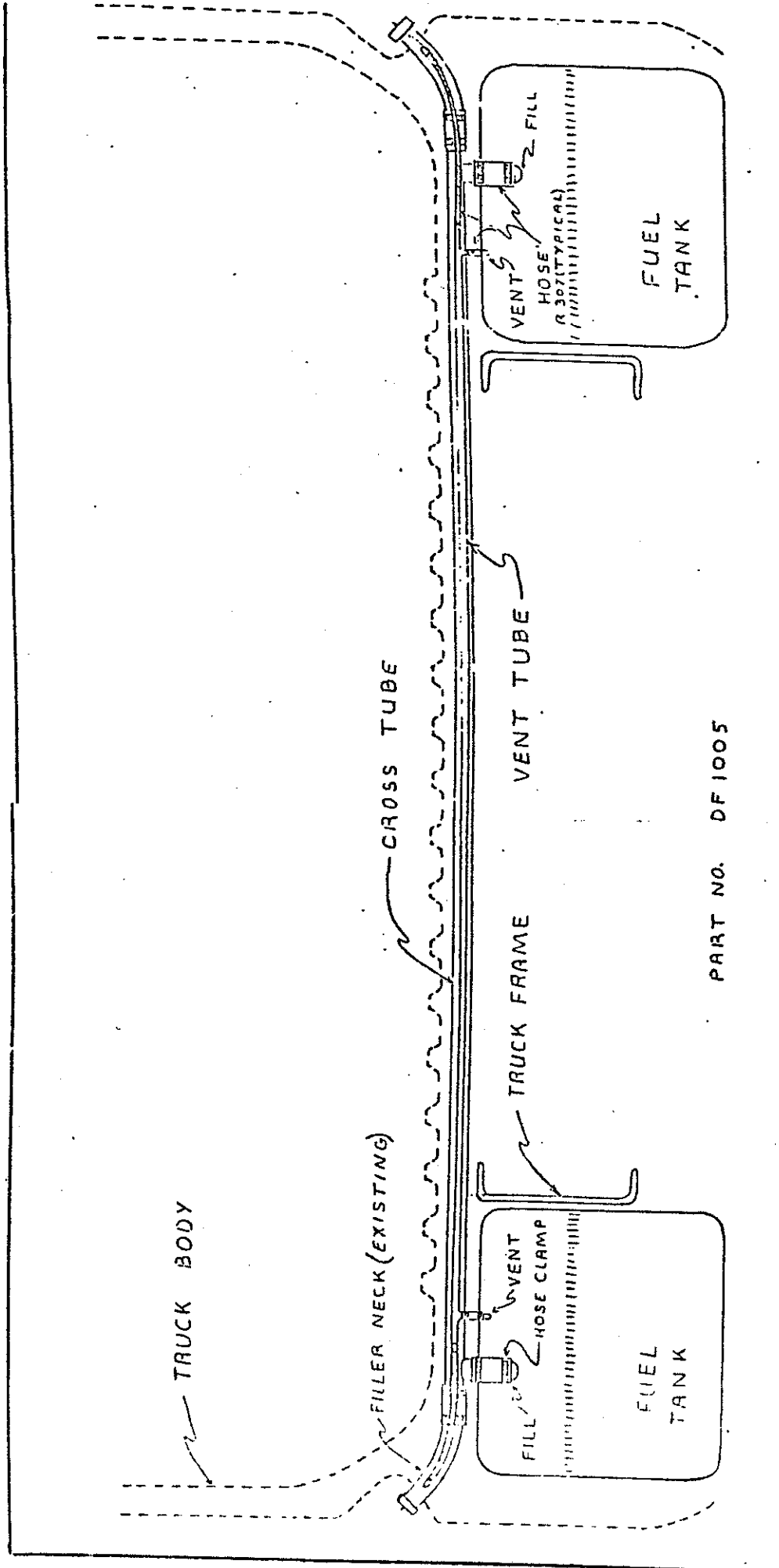
There were no emissions-related concerns since there were no modifications to the fuel tank vent lines, to the fuel supply lines or the fuel return lines.

The DualFill device is designed for all commonly used fuels. A statement has been provided by the vendor indicating that the DualFill device is made of 16 and 18 gauge steel with .002" of pure zinc on the exterior of

the tubing with a clear chromate coating. This material is acceptable for all commonly used fuels.

According to the vendor, no fill problems have been encountered. The existing filler necks and gas caps are used with the device. Appropriate warnings have been placed in the installation instructions (refer to appendix B) for replacement of a malfunctioning gas cap. Hose clamps are used to secure the device to the fill neck, gas tank and vent lines. There are no significant evaporative losses from the connections if the clamps are properly used as described in the installation instructions.

Based on these facts, staff believes that no testing is needed for updating the exemption.



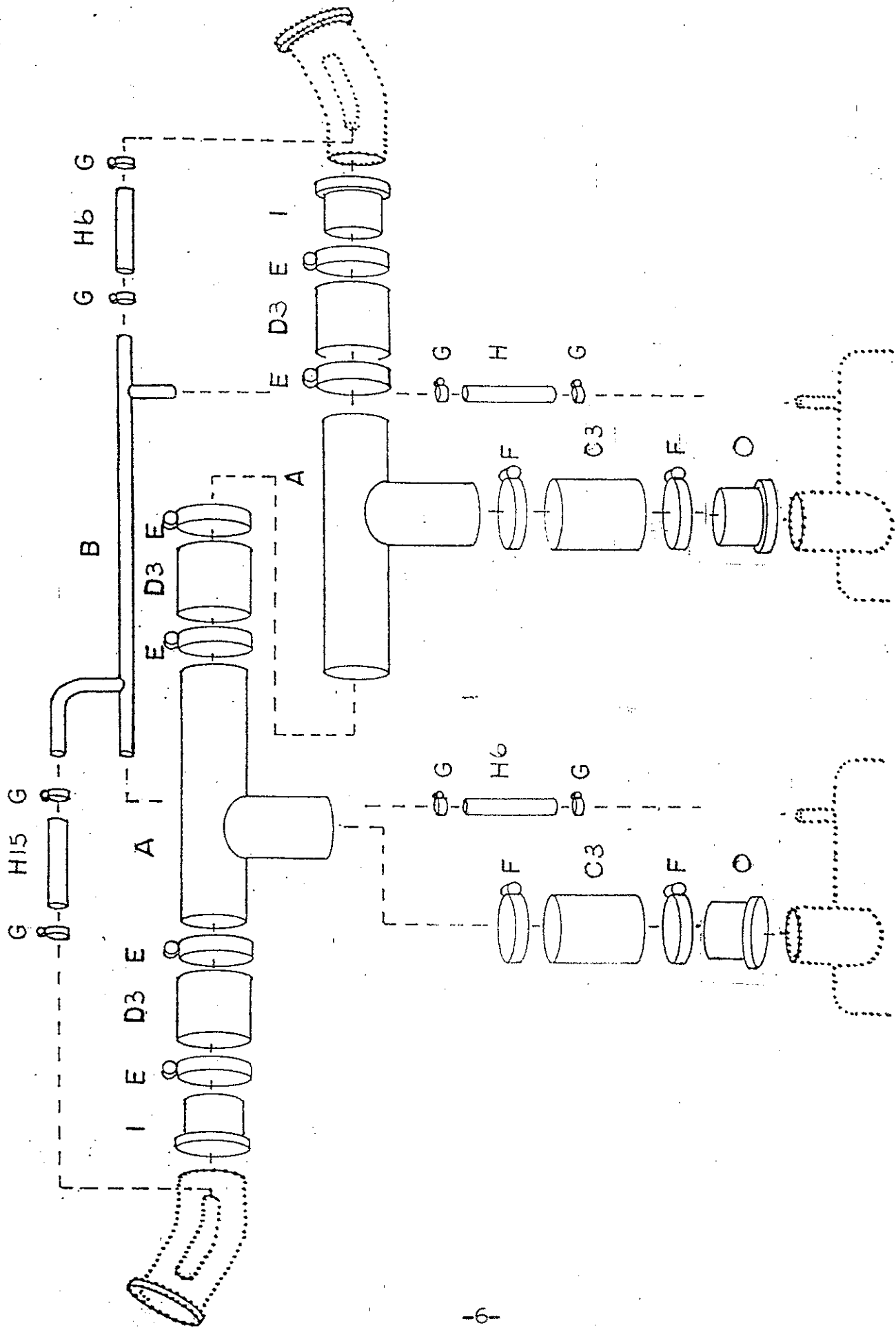
DUALFILL
E-Z INSTALLATION INSTRUCTION FOR DF2002

DUALFILL DF2002 solves the frustration of owners of General Motor trucks with two factory installed fuel tanks. DUALFILL allows both tanks to fill simultaneously from either side of the vehicle.

Your DUALFILL is designed to fit most 1973-1978 GM trucks with two factory mounted tanks with out modification. Due to variations in a few of these trucks the kit may require trimming of some components. Some GM trucks produced during this period have front spring hangers that protrude above the frame. In these trucks the top 3/4" of the hanger must be removed to accommodate the crossover tube. These trucks are quite rare, so if you have one and don't wish to cut the spring hanger (which causes no structural weakening of the vehicle) just return your kit for full refund.

To make the installation easier and cleaner you may want to first, wash around the filler necks and tank inlets to remove loose dirt. Also, do not have tanks full to the top with fuel. Let's Start!

- 1) Remove existing vent and filler hoses from both fuel tanks.
- 2) Remove right filler neck from truck box.
- 3) Insert vent tube (B) thru the filler access hole, between the top of the frame and the bottom of the truck box. Install with bent end towards left side (driver's side), YES IT WILL FIT.
- 4) Slide 3" x 5/8" hose (H3) onto the right vertical vent stub with two #10 clamps (G) on the top and bottom of the short hose, tighten clamps.
- 5) Slide the 6" x 5/8" hose (H6) onto the left side vent stub and connect to tank vent with two #10 clamps (G).
- 6) Slide the 3" x 1 3/4" hose (D3) over both ends of the crosstube, insert the crosstube into the truck body from under the truck. The crosstube should fit between the top of the frame and bottom of the truck box to the rear of the vent tube.
- 7) Slide the 3" x 1 3/4" hose (D3) over the long section of the crosstube and install two #32 clamps (E) over the hose.
- 8) Slide the two 3" x 1 1/2" hoses (C3) onto the vertical stubs on the crosstubes. Slip two #24 clamps (F) over the hose on each side, insert hose reducer (O) into the short hose then onto the tank neck, at this point all crosstube clamps should be loose to allow for correct alignment. (OVER)



DF2002

DUALFILL

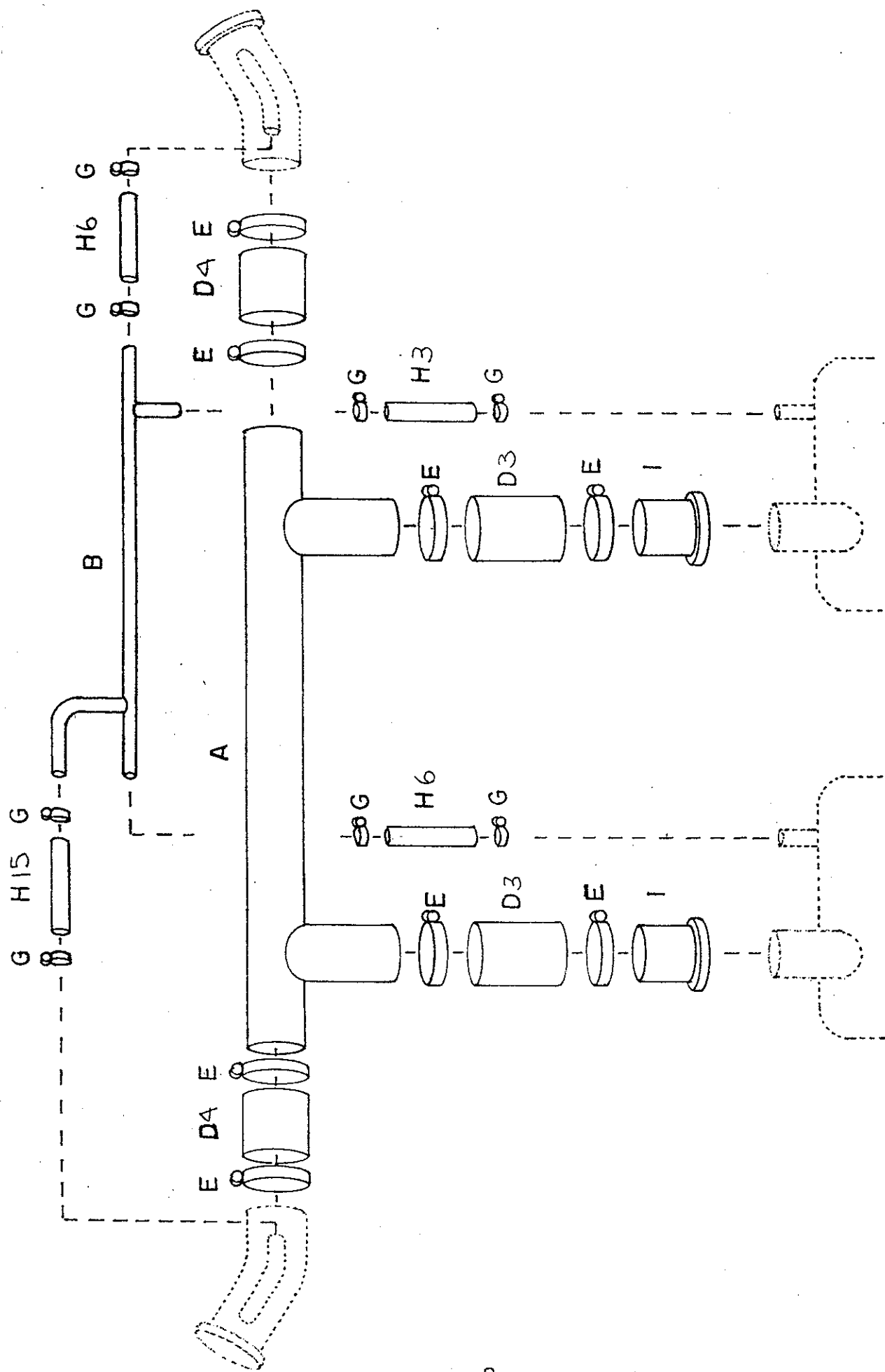
E-Z INSTALLATION INSTRUCTIONS FOR DF3002

DUALFILL DF3002 solves the frustration of owners of General Motor trucks with two factory installed fuel tanks. DUALFILL allows both tanks to fill simultaneously from either side of the vehicle.

Your DUALFILL is designed to fit most 1979-1981 GM trucks equipped with two factory mounted fuel tanks with out modification. Due to variations in a few of these trucks the kit may require trimming of some components. Some GM trucks produced during this period have front spring hangers that protrude above the frame. In these trucks the top 3/4" of the hanger must be removed to accommodate the crossover tube. These trucks are quite rare, so if you have one and don't wish to cut the spring hanger (which causes no structural weakening of the vehicle) just return your kit for full refund.

To make the installation easier and cleaner you may want to first, wash around the filler necks and tank inlets to remove loose dirt. Also, do not have tanks full to the top with fuel. Let's Start!

- 1) Measure centerline of fuel tank filler necks, they should be 48 1/4" on center $\pm$ 1/4", if more or less loosen tank mounts and shift tanks, then retighten.
- 2) Remove existing vent and filler hoses from both fuel tanks.
- 3) Remove right filler neck from truck box.
- 4) Insert vent tube (B) thru the filler access door, between the top of the frame and the bottom of the truck box. Install with bent end towards left side (driver's side).
- 5) Slide 3" x 5/8" hose (H3) onto the right vertical vent stub with two #10 clamps (G) on the top and bottom of the short hose.
- 6) Slide the 6" x 5/8" hose (H6) onto the left side vent stub and connect to tank vent with two #10 clamps (G).
- 7) Slide the 4" x 1 3/4" hose (D4) over both ends of the crosstube, insert the crosstube into the truck body through the filler access door. The crosstube should fit between the top of the frame and bottom of the truck box to the rear of the vent tube.
- 8) Slide the two 3" x 1 3/4" hoses (D3) onto the vertical stubs on the crosstubes. Slip two #28 clamps (E) over the hose on each side, insert the short hose onto the tank neck.
- 9) Loosely install two #28 clamps (E) on each end of the crosstube (A), slide hose (D4) from the crosstube onto the right filler neck an equal distance. Reinstall the left filler neck and slide hose (D4) outward onto it.
- 10) Install the formed 5/8" vent hose (L) with two #10 clamps (G) on the left side, make sure you run the vent tube over the crosstube. (OVER)



DF3002

DUALFILL

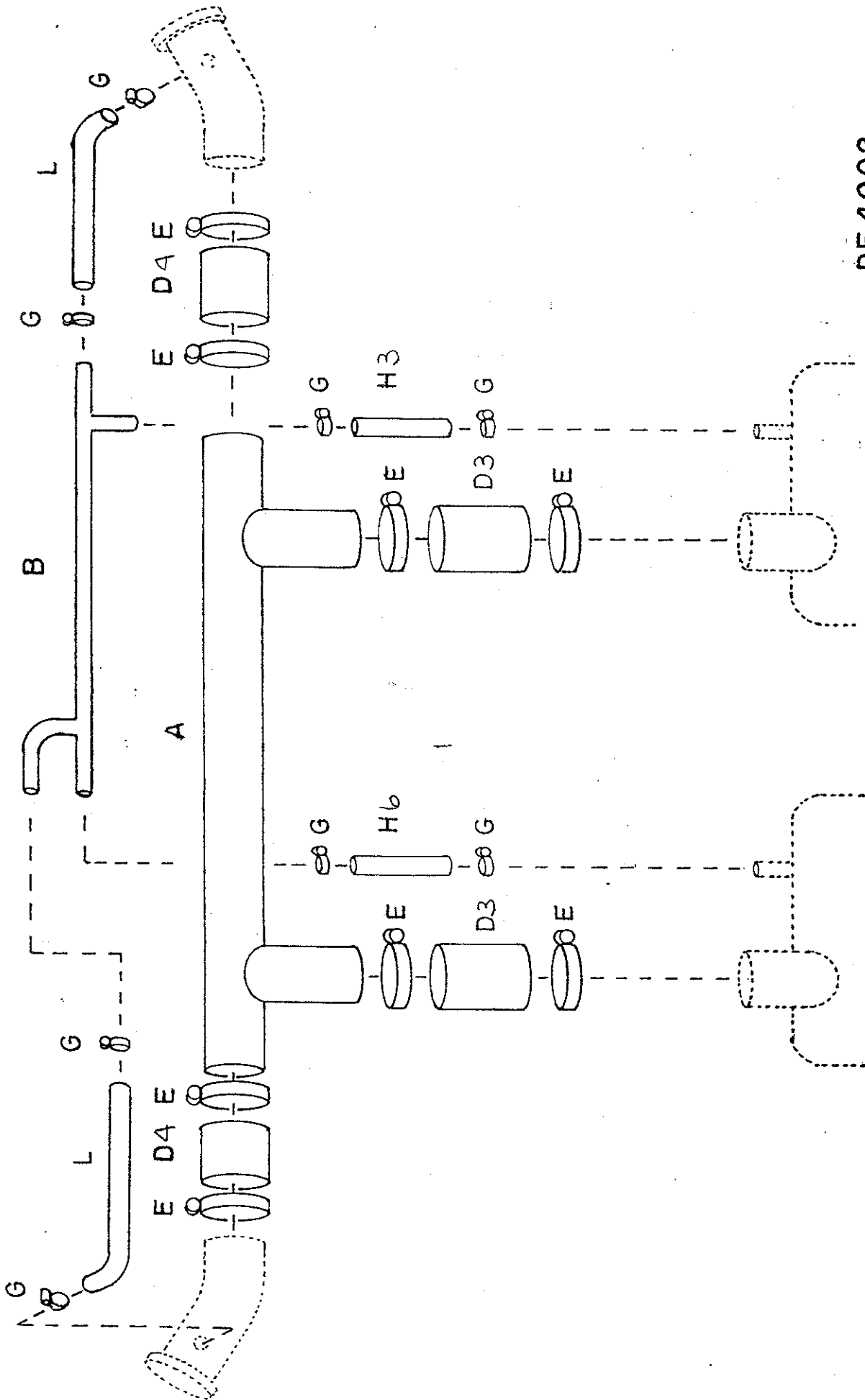
E-Z INSTALLATION INSTRUCTIONS FOR DF4002

DUALFILL DF4002 solves the frustration of owners of General Motor trucks with two factory installed fuel tanks. DUALFILL allows both tanks to fill simultaneously from either side of the vehicle.

Your DUALFILL is designed to fit most 1982-1990 GM trucks equipped with two factory mounted fuel tanks with out modification. Due to variations in a few of these trucks the kit may require trimming of some components. Some GM trucks produced during this period have front spring hangers that protrude above the frame. In these trucks the top 3/4" of the hanger must be removed to accommodate the crossover tube. These trucks are quite rare, so if you have one and don't wish to trim the spring hanger (which causes no structural weakening of the vehicle) just return your kit for full refund.

To make the installation easier and cleaner you may want to first, wash around the filler necks and tank inlets to remove loose dirt. Also, do not have tanks full to the top with fuel. Let's Start!

- 1) Measure center line of fuel tank filler necks, they should be 48 1/4" on center $\pm$ 1/4", if different loosen tank mounting brackets and shift tanks to correct dimensions, then retighten.
- 2) Remove existing vent and filler hoses from both fuel tanks.
- 3) Remove right filler neck and plastic bracket from truck box, loosen the screws on the left filler neck and plastic bracket if equipped with one.
- 4) Insert vent tube (B) thru the filler access door, between the top of the frame and the bottom of the truck box. Install with bent end towards left side (driver's side).
- 5) Slide 3" x 5/8" hose (H3) onto the right vertical vent stub with two #10 clamps (G) on the top and bottom of the short hose.
- 6) Slide the 6" x 5/8" hose (H6) onto the left side vent stub and connect to tank vent with two #10 clamps (G).
- 7) Slide the 4" x 1 3/4" hose (D4) over both ends of the crosstube, insert the crosstube into the truck body through the filler access door. The crosstube should fit between the top of the frame and bottom of the truck box to the rear of the vent tube.
- 8) Slide the two 3" x 1 3/4" hoses (D3) onto the vertical stubs on the crosstubes. Slip two #32 clamps (E) over the hose on each side, insert the short hose onto the tank neck. At this point all hose clamps on the crosstube SHOULD BE LOOSE. On some models alignment may appear to be off by 1" or more. However as you tighten the hose clamps, the filler neck will raise, the crosstube will roll forward on the frame as the hose contours to the tank position. If this misalignment is more than one inch you must loosen your tank mounting brackets and slide the tank or tanks toward the front or back of the truck. (OVER)



DF 4002

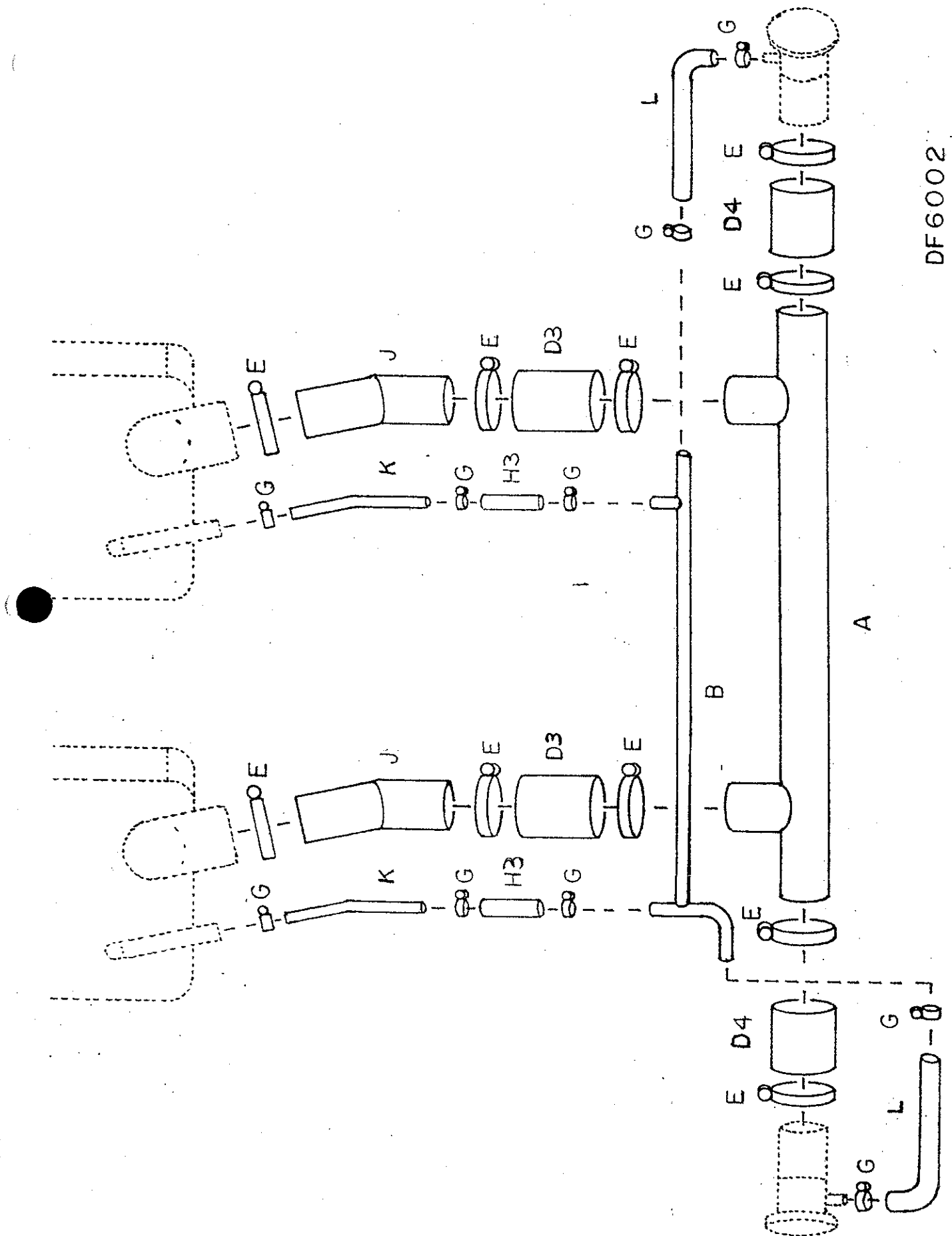
DUALFILL
E-Z INSTALLATION INSTRUCTIONS FOR DF6002

DUALFILL DF6002 solves the frustration of owners of General Motor trucks with two factory installed fuel tanks. DUALFILL allows both tanks to fill simultaneously from either side of the vehicle.

Your DUALFILL is designed to fit most 1982-1987 GM trucks equipped with two factory mounted fuel tanks with out modification. Due to variations in a few of these trucks the kit may require trimming of some components.

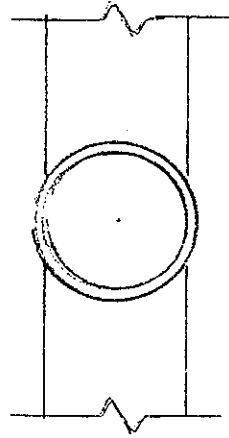
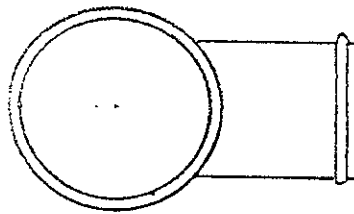
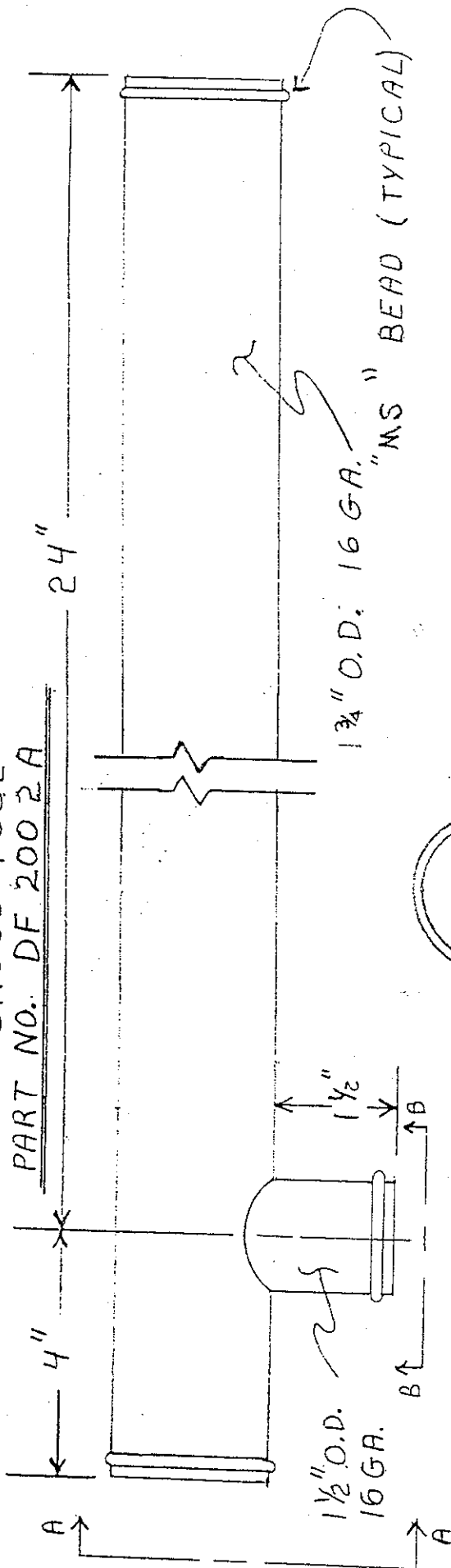
To make the installation easier and cleaner you may want to first, wash around the filler necks and tank inlets to remove loose dirt. Also, do not have tanks full to the top with fuel. Let's Start!

- 1) Measure center line of the fuel tank filler necks, they should be 48 1/4" on center $\pm$ 1/4", if different loosen tank mounting brackets and shift tanks to correct dimensions, retighten brackets.
- 2) Remove existing vent and filler extension tubes from both sides of truck. Tank neck hose and clamp and vent hose and clamp shall remain the tanks, remove the extension tube support bracket.
- 3) Remove right filler neck and plastic mounting bracket from truck box.
- 4) Insert vent tube (B) thru the filler access door, between the top of the frame and the bottom of the truck box. Install with bent end towards left side (driver's side).
- 5) Slide the 4" x 1 3/4" hose (D4) over both ends of the crosstube, insert the crosstube into the truck body through the filler access door. The crosstube should fit between the top of the frame and bottom of the truck box to the rear of the vent tube.
- 6) Loosely install two #32 clamps (E) on each end of the crosstube (A), slide hose (D4) from the crosstube onto the right filler neck an equal distance. Reinstall the left filler neck and slide hose (D4) outward onto it.
- 7) Install the formed 5/8" vent hose (L) with two #10 clamps (G) on the left side, make sure you run the vent tube over the crosstube, cut to desired length.
- 8) Install the formed 5/8" vent hose (L) with two #10 clamps (G) to the vent tube on the right side, cut to desired length.
- 9) Install the new vent extension tube (K) between the tank hose and the vent tube, with the long end towards the tank, connect the 5/8" hose (H3) and two #10 clamps (G).
- 10) Install the new filler neck extension tube (J) between the existing tank and the crosstube, with the short end toward the tank, connect the 1 3/4" x 3" (D3) with two #32 clamps (E).
- 11) Reinstall existing hose extension support strap.
- 12) Tighten all clamps carefully, do not over tighten, fill with fuel, check for leaks, if you find leaks tighten the clamps. Check the gas cap on the opposite side of the truck for leaks while filling, if the cap leaks replace it with a non-vented cap. Remember, DUALFILL works on the gravity flow principle so always fill the tank that is on the high (over)



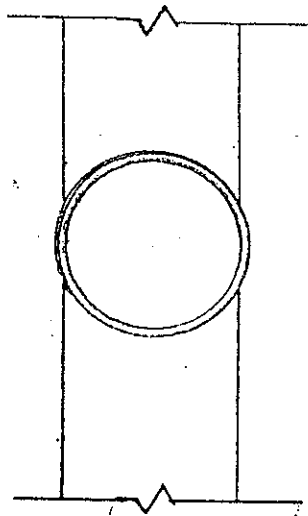
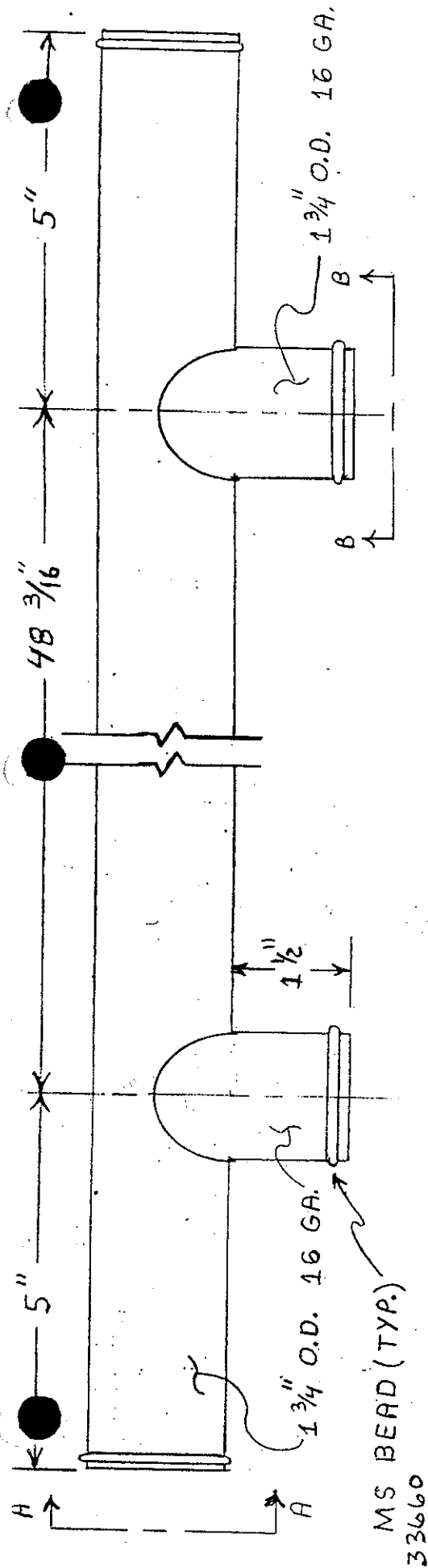
DF6002

APPENDIX C
DESIGN SPECIFICATIONS



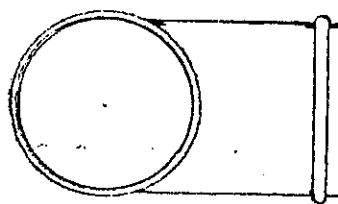
PART NO. DF 2002A
CROSS TUBE
ZINC PLATED

SAGEBRAUSH INDUSTRIES, INC.
P.O. BOX 1944
COLSTRIP, MT. 59323
406-748-4444



SECTION "B-B"

3002A
4002A
PART NO. DF6002A
CROSS TUBE
ZINC PLATED

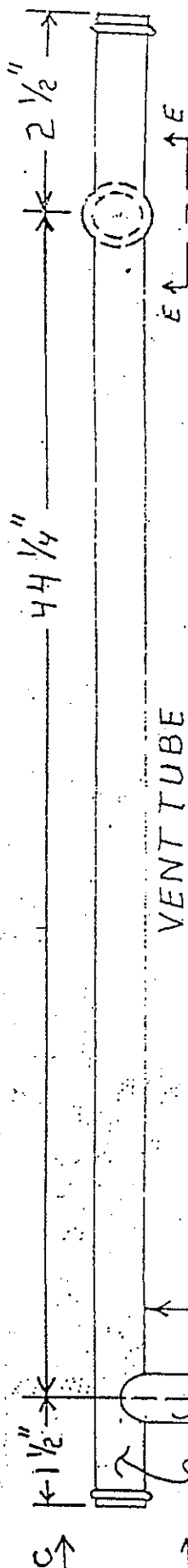


SECTION "A-A"

SAGEBRUSH INDUSTRIES INC.
P.O. BOX 1944
COLSTRIP, MT. 59323
406-748-4444

SECTION "B-B"

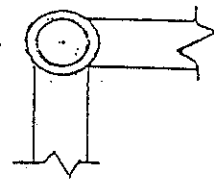
SECTION "A-A"



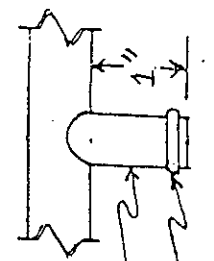
VENT TUBE

PART NO. DF4002B

SECTION "C-C"



SECTION "E-E"



5/8" O.D. 18 GA.
MS BEAD (TYPICAL)

SCALE: 1/8" = 1"

2002B

3002B

PART NO. DF4002B

VENT TUBE

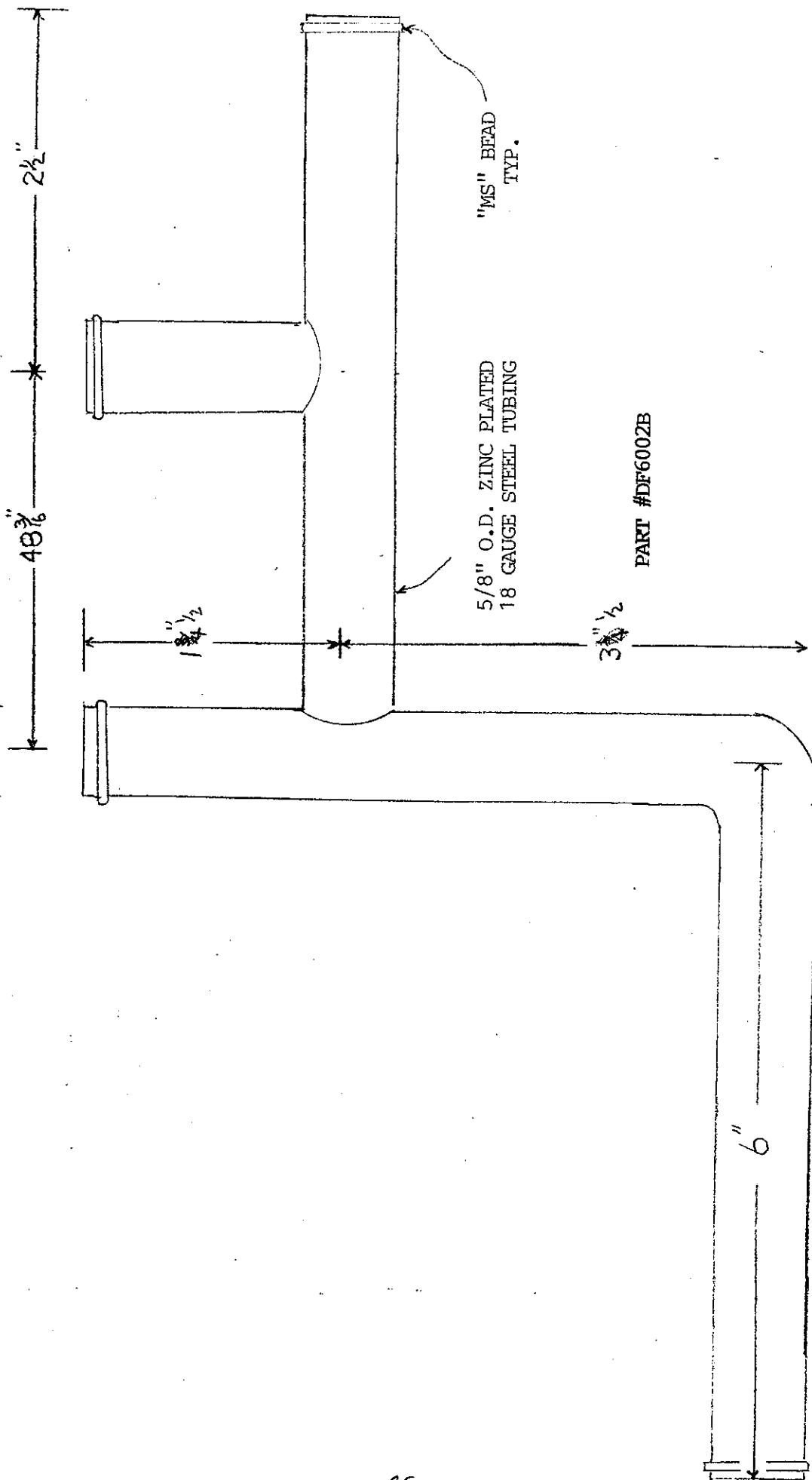
ZINC PLATED

SAGEBRUSH INDUSTRIES INC.

P.O. BOX 1944

COLSTRIP, MT. 59323

406-748-4444

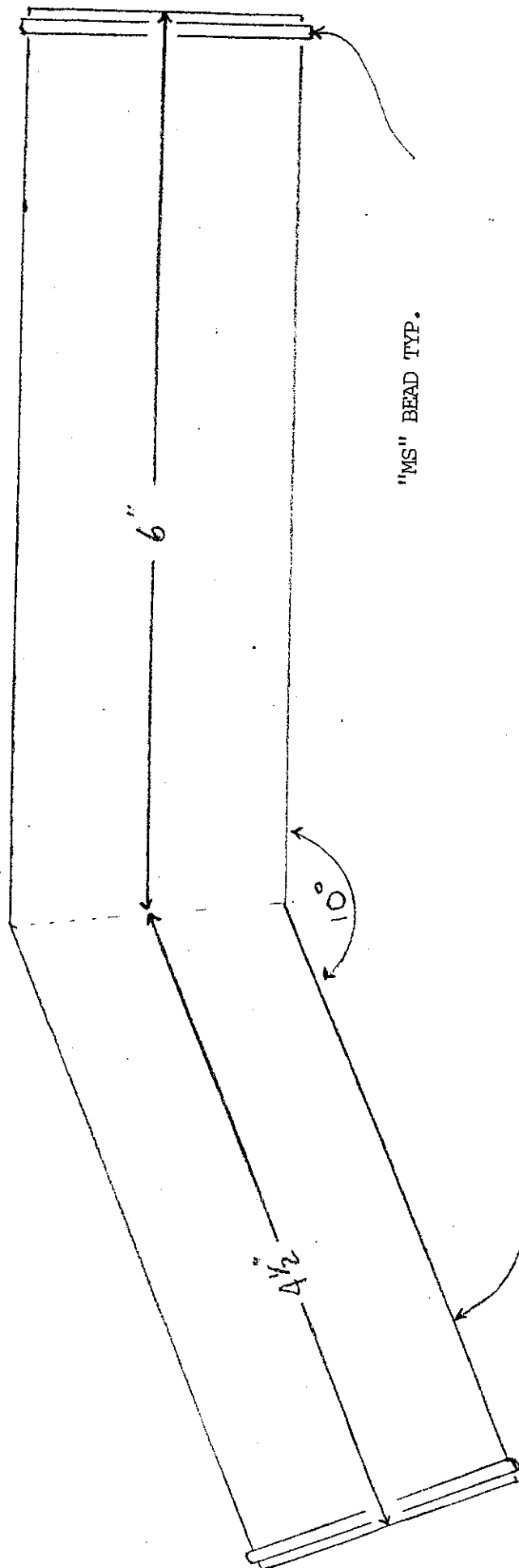


SAGEERUSH INDUSTRIES INC.

P.O. BOX 1944

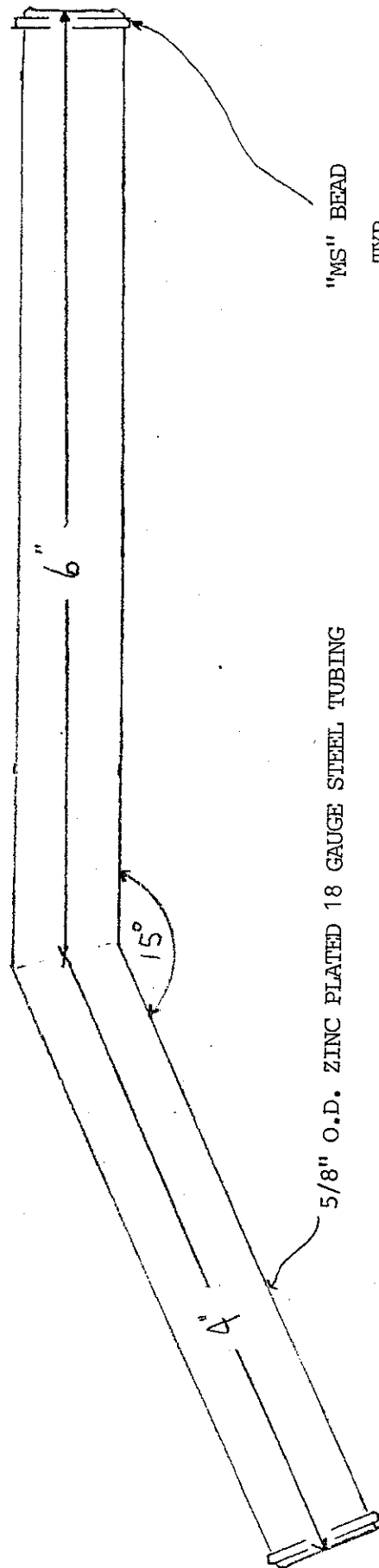
COLSTRIP, MT. 59323

(406) 748-4444



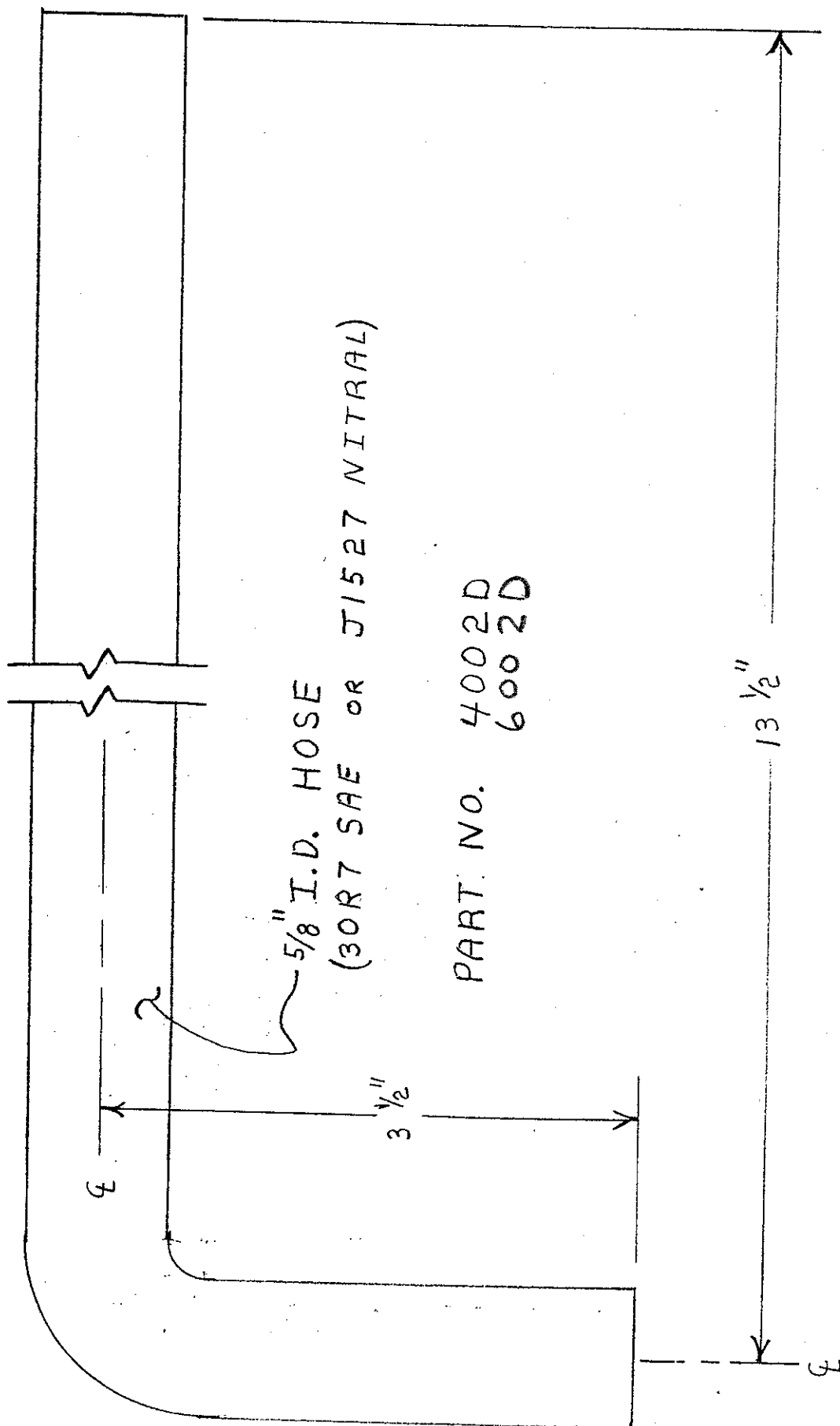
PART # DF6002E

SAGERUSH INDUSTRIES INC.
P.O. BOX 1944
COLSTRIP, MT. 59323
(406) 748-4444



PART# DF6002F

SAGEBRUSH INDUSTRIES INC.
P.O. BOX 1944
COLSTRIP, MT. 59323
(406) 748-4444



SAGEBRUSH INDUSTRIES
P.O. BOX 1944
COLSTRIP, MT. 59323
10061-7400 4111121