

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-82
Relating to Exemptions under Section 27156
of the Vehicle Code

MANCINI MACHINE CORP.
"AIR CONDITIONING COMPRESSOR CUT-OUT SYSTEM"

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 "Air Conditioning Compressor Cut-Out System" manufactured by Mancini Machine Corp., 20943 Brant St., Long Beach, California 90810, has been found to not 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 installation on 1978 and older model year gasoline powered vehicles equipped with air conditioning systems.

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

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 "AIR CONDITIONING COMPRESSOR CUT-OUT SYSTEM."

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

MANCINI MACHINE CORP.
"AIR CONDITIONING COMPRESSOR CUT-OUT SYSTEM"

EXECUTIVE ORDER D-82
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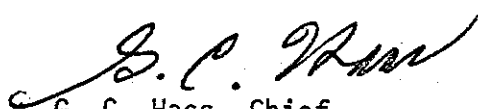
Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

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.

Executed at El Monte, California, this 7 day of August, 1978.



G. C. Hass, Chief
Vehicle Emissions Control Division

State of California

AIR RESOURCES BOARD

August 2, 1978

Staff Report

Evaluation of the Mancini Machine Corp.
"Air Conditioning Compressor Cut-Out System"
in Accordance with Section 2222,
Title 13 of the California Administrative Code

I. Introduction

Mancini Machine Corp., of 20943 Brant Street, Long Beach, California 90810, has submitted an application requesting an exemption from the prohibitions of Section 27156 of the Vehicle Code for its "Air Conditioning Compressor Cut-Out System" for installation on 1978 and older model year gasoline powered vehicles equipped with air conditioning systems (Exhibit A).

II. System Description and Function

The device is a pressure sensing switch designed to shut off the electric circuit to the automotive air conditioning unit when the engine is operating at low manifold vacuum conditions (0-4 inches of Hg vacuum). The device is connected in series with the electromagnetic clutch of an automotive air conditioning compressor (Exhibit B). The pressure signal line is connected with a "T" to any intake manifold vacuum source. When the vehicle is near full throttle acceleration, the intake manifold vacuum will decrease to about 4 inches Hg. triggering an open circuit in the pressure switch thereby deactivating the air conditioning compressor. The circuit will be reconnected when the engine is at manifold vacuum of 4 inches or higher.

III. System Evaluation

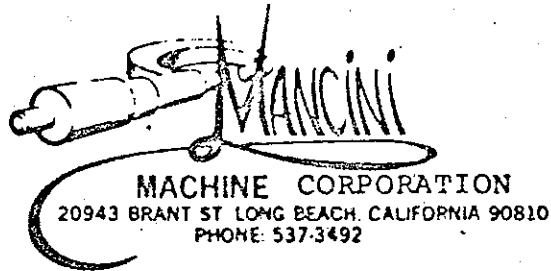
The applicant did not submit any emission data to demonstrate that the device will not have any adverse effect on the emission control system.

Since the device acts as a switch to the air conditioning unit only and does not affect the operation of any other emission control system it is the staff's judgment that an emissions test is not necessary.

The ARB Laboratory tested the operation of the system and was satisfied that the device operates as claimed by the applicant.

IV. Conclusion and Recommendation

Based on the evaluation of the device and the installation instructions, it is the opinion of the staff that the "Air Conditioning Compressor Cut-Out System" would not adversely affect the performance or operation of the OEM exhaust emission control systems. The staff therefore recommends that Mancini Machine Corp. be granted an exemption from the prohibitions of Vehicle Code Section 27156 for its "Air Conditioning Cut-Out System" for installation on 1978 and older model year gasoline powered vehicles equipped with air conditioning systems.



June 7, 1978

Air Resources Board Laboratory
9528 Telstar Ave.
El Monte, CA 91731

Attn: G. L. Hass

Gentlemen:

We are contemplating the production and sale of an automotive aftermarket device on a California as well as national basis. My understanding of the requirements of 27156 are such that it is necessary to apply to the CARB for a specific exemption to allow legitimate sale in the state of California. Accordingly, the following information is submitted:

General Description: The device involved consists of a pressure switch connected in series electrically with the electromagnetic clutch of an automotive air conditioning compressor; a manifold (intake) pressure signal connection; and necessary wiring and hardware for installation.

Function: The pressure switch involved is preset to remain in the "open" (no circuit) condition for all intake manifold pressures above 4"Hg (26"Hg Abs.). This specification results in the air conditioner compressor being disengaged during full or near full throttle acceleration conditions where intake manifold pressures may exceed approximately the 4"Hg switch setting. Depending on the model and manufacturer of the compressor involved, this action will result in an additional 4-8 HP available to the rear wheels of a vehicle during heavy engine loading. In the case of some smaller displacement vehicles, this can represent as much as 10-20% additional acceleration power for passing maneuvers as well as other driving conditions calling for full engine power potential. The drivability and safety aspects of this system are obvious.

Emissions Interface: As previously stated, this device requires a manifold pressure signal to actuate the electrical switch. Typically, installation instructions will call for the installation of a "tee" fitting in any existing manifold pressure sensing line (such as the distributor vacuum advance manifold line, air conditioning controls vacuum source line, air cleaner inlet bypass actuator line, direct manifold connection, etc.) and the connection of the leg of the "tee" to the pressure switch. By design, this line is static and will not create any interruption or anomaly in the signal line

selected. Accordingly, no operational interface with the emission control system of the candidate vehicle would exist. Based on this, it is our opinion that no adverse effect on the vehicle's emission control system will result. If anything, some intangible benefit will be derived from the deactivation of the air conditioning compressor during heavy vehicle power demand.

Failure Mode Analysis: Two types of failure are possible in this system as in any system:

1. The first, of course, is physical failure due to externally induced actions or material design deficiency. The former is relatively unpredictable while the latter is satisfied by proper design specification of the device components. In this case, the materials and hardware employed are identical to similar materials utilized by the vehicle manufacturers. In fact, some of the sources are identical.

2. The second type of failure to consider is operational. In this case we have two possibilities:

- a. If the pressure switch should fail in the closed position, the air conditioning compressor would revert to the original electrical schematic configuration.

- b. If the switch should fail in the open position, the air conditioning compressor would simply not engage - obviously not adversely affecting the engine emission control system.

Regarding the switch itself, the manufacturer of this unit is currently an OE supplier of similar devices to many engine companies with an extremely high reliability and durability record. Even if the diaphragm in the switch should fail, the case itself is hermetic and no leakage path for the vacuum signal line exists.

Installation: Per instructions to be supplied with the device, (not currently available) the installer will be instructed to select a suitable mounting location for the pressure switch/mounting bracket combination (such as a carburetor stud). Connecting the electrical portion of the switch will consist of locating the electromagnetic clutch power lead, cutting it, and joining the splice-equipped leads supplied with the device. Installation of the manifold pressure sensing "tee" consists of locating a suitable line (see Emissions Interface), cutting the line and installing the supplied "tee" fitting and hose connection to the pressure switch. No customer adjustments on the engine or device are required.

Sales Approach: Two methods of distribution are currently being considered. One is direct mail order via a number of automotive aftermarket publications. The second is direct sales to

fleet accounts such as taxi companies and law enforcement agencies.

It is my hope that the above information is sufficient for you to pass judgement on the validity of sale of this device in the state of California under 27156. If you require additional information or have any questions, please contact me at the address shown. If you so desire, sample systems can be provided upon request for evaluation.

Yours truly,

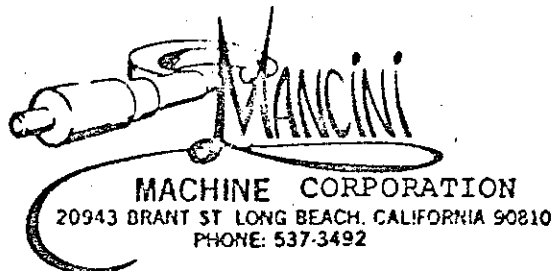


R. A. Keller, Chief Engineer
Mancini Machine Corp.

cc: R. Kenny

encl
RAK/bk

PS: For the record, this device is proprietary and is currently being processed for patent protection.



July 18, 1978

Air Resources Board Laboratory
9528 Telstar Ave.
El Monte, CA 91731

Ref: A-78-155

Attn: Mr. Norman Kayne, Aftermarket Parts and Modifications
Evaluation Section

Dear Mr. Kayne:

This will acknowledge receipt of Mr. Drachand's letter of June 23, 1978, referring our requested response to you.

Regarding the additional information requested, the following is submitted:

1. "...name of device, copies of advertizing materials and installation instructions".

a. Device Name: As we discussed on the telephone, it is contemplated that the subject device will be sold under more than one name depending on the marketing sources employed. One name already determined by a mail-order house is: "POWER PLUS A/C CONTROL VALVE". Another being considered is: "AC³S" (for Air Conditioning Compressor Cut-Out System). For fleet sales, the device will be sold by its generic name: "Air Conditioning Compressor Cut-Out System". Regardless of the sales name utilized, the generic name will appear on all descriptive materials, installation instructions, and the device itself (see facsimili exemption label). A statement specifying that the device has been approved by the CARB for California sale under its generic name will be included in any descriptive material. (See Enclosure A) Note: This approach is quite common in the aftermarket sales industry. An example that should be familiar to you is the automotive instrument field where a small group of manufacturers produce such products for dozens of outlets under many trade names.

b. Advertizing Materials: Since Mancini Machine Corporation will not be involved with the retail marketing of this device, we cannot respond directly to this request. Advertizing copy will be the proprietary ownership of the marketing outlets utilizing factual information regarding the product supplied by Mancini Machine Corporation. In its agreements with any marketing outlets, Mancini Machine will reserve the right to review and edit any material it feels is erroneous or misleading. Information supplied to marketing groups will include technical descriptions, functional information, "features and benefits", performance results, etc. (See Enclosure A)

- c. Installation Instructions: See Enclosure B
2. Sample for evaluation: Shipped under separate cover.
3. Facsimile identification plate: The following will appear on a pressure sensitive nameplate on the device itself:

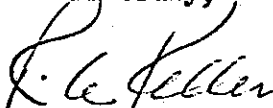
AIR CONDITIONING COMPRESSOR CUT-OUT SYSTEM
CALIF. AIR RESOURCES BD. EXEMPTION #XXXX

See sample on evaluation unit.

4. Per Section II.B.8, Mancini Machine Corporation states the following:
- a. This device shall not cause the emission into the ambient air of any noxious or toxic matter that is not emitted in the operation of such motor vehicle without said device.
- b. This device shall not result in any unsafe condition endangering the motor vehicle, its occupants, other persons, or property in close proximity to the vehicle, in accordance with the safety requirements specified for the original vehicle.

I trust that the above satisfies your requests and I look forward to a prompt approval of our device. If you have any additional questions please contact me directly so that they may be resolved as quickly as possible.

Yours truly,



R. A. Keller, Chief Engineer
MANCINI MACHINE CORPORATION

cc: K. D. Drachand, ARB Laboratory
T. R. Mancini

Encl
RAK/bk

"POWER AND COMFORT TOGETHER THROUGH PRACTICAL TECHNOLOGY"

"AC³S" *

*Air Conditioning Compressor Cut-Out System

DESCRIPTION: The "AC³S" consists of a specially designed and calibrated vacuum switch which is installed in electrical series with the power lead of air conditioning compressor electromagnetic clutch. The switch is activated by a manifold pressure sensing line connected directly to the intake manifold of the engine.

FUNCTION: The "AC³S" disengages the electromagnetic clutch of the air conditioning compressor during heavy vehicle power demands such as during acceleration maneuvers or steep grade climbing. The clutch is re-engaged as soon as the heavy power demand is removed; i.e. steady cruising or driving conditions only requiring moderate power levels. This action results in the total horsepower requirement of the air conditioning compressor being made available as usable acceleration power for added safety and vehicle response in normal driving situations. In the case of some smaller displacement vehicles, the "AC³S" can result in as much as a 20% increase in rear wheel horsepower while accelerating with the air conditioner on. When applied to larger displacement engines, the rear wheel power improvement is proportionately less.

The net result of installing the "AC³S" is that now you can continue to drive your economical small displacement vehicle in air conditioned comfort and still retain its FULL POWER POTENTIAL for driving situations requiring maximum acceleration. No longer is it necessary to sacrifice comfort to insure adequate passing power!

An additional practical advantage of the "AC³S" is that it will not permit the air conditioning compressor to engage unless the engine is running. This means that should the previous driver forget to shut-off the dash air conditioner switch when he turned the engine off, the power drag of the compressor will be eliminated when the engine is re-started - resulting in faster, easier starts! As soon as the engine is running, the "AC³S" will permit the compressor to engage.

In practise, the usual vehicle demand for heavy or full power is for a few seconds at a time. Accordingly, the vehicle driver and his passengers will never notice the momentary dis-engagement of the air conditioning compressor by the "AC³S" and their comfort will be maintained while the vehicle's "POWER RESERVE" is significantly increased! Note: The operation of the dash blower is not affected by the "AC³S".

APPLICATION: The "AC³S" is applicable to any automotive air conditioning system, domestic or foreign, equipped with an electromagnetic compressor clutch. Note: The system is not operational with diesel engines.

The "AC³S" has been approved for sale in the State of California by the California Air Resources Board as an "Air Conditioning Compressor Cut-Out System"

CALIFORNIA AIR RESOURCES BOARD EXEMPTION NUMBER: XXXXX

INSTALLATION INSTRUCTIONS

IMPORTANT! READ ALL INSTRUCTIONS BEFORE PROCEEDING WITH INSTALLATION!!!!!!

Installation of the "AC³S" consists of mounting the special vacuum switch; connecting the sensing port of the switch assembly to a suitable vacuum source; and finally, splicing the electrical contacts of the switch in series with the electromagnetic clutch power lead.

KIT CONTENTS: Refer to the enclosed drawing for kit contents and physical identification.

TOOLS REQUIRED: The following hand tools are required for installation of the "AC³S":

1. Standard medium size screwdriver
2. Medium size adjustable crescent wrench or appropriate hand wrenches - metric or US depending on vehicle
3. Wire crimping tool or narrow-nosed pliers
4. Wire cutters or sharp knife
5. Electricians tape

INSTALLATION:

1. Mounting of Switch Assembly: Select a location approximately midway between the air conditioning compressor and the carburetor and locate a suitable mounting bolt or stud. This may be on the engine or body as necessary. Do not locate on the exhaust manifold or any exhaust component. The hole in the switch mounting bracket is sized to fit most carburetor mounting studs and this is an excellent location. If required, the mounting hole may be enlarged as necessary.

NOTE: Check first to be sure selected location does not interfere with any carburetor linkage motion.

Using a crescent or suitable hand wrench, remove the nut or bolt selected for mounting the switch assembly. Place the switch assembly over the bolt or stud selected and re-secure "finger tight".

NOTE: The switch assembly may be installed in any position and does not require an electrical ground for operation.

2. Pressure Sensing Line: Locate an intake manifold pressure (vacuum) sensing source such as a direct manifold connection or a suitable vacuum connection on the carburetor.

NOTE: Whatever vacuum source connection is selected, this connection must see full intake manifold vacuum at ALL times for proper "AC³S" operation. If in doubt, refer to your vehicle manual or a competent mechanic. Hint: Most late model vehicles include a schematic of the various manifold connections on a decal located in the engine compartment or on the inside of the hood.

Many vehicles have a "spider" connection on the intake manifold with several ports for accessory and emission control connections. Frequently, several of these ports are not used and one of these may be used for the "AC³S".

A "tee" fitting and a length of sensing hose are provided in the "AC³S" kit to facilitate the pressure sensing connection to the switch assembly. If an appropriate "spider" connection is utilized, the "tee" may be discarded. The sensing source selected must have a length of hose suitable for the installation of the "tee" fitting. Inside hose diameter must be no greater than 3/16" for proper fit of the "tee" fitting.

Before cutting the selected source hose for installation of the "tee" fitting, determine the routing for the supplied sensing hose to be sure of adequate length. If the supplied hose is not long enough to reach the switch assembly, select a new vacuum source location or relocate the switch assembly. If neither of these is possible, longer lengths of sensing hose may be purchased at any automotive parts store.

NOTE: Be sure hose is not in contact or in close proximity to any hot exhaust components or moving parts.

Once the above has been accomplished, cut the selected source line with either a sharp knife or wire cutter, insert the "tee" fitting (if "spider" connection is not used) and connect the sensing line to the switch assembly. Orient the position of the switch assembly for the most direct hose connection and tighten the switch assembly mounting. The sensing line may be cut to any length desired to facilitate routing.

3. Electrical Connections: Attach the two supplied splice leads to the switch assembly using a standard screwdriver. Be sure these connections are not in contact with any metal surfaces. Locate the electromagnetic clutch power lead. This lead is a single line coming from the back of the pulley assembly on the air conditioning compressor. Determine a location in the clutch power lead that can be reached conveniently by the two splice leads. Cut the power lead, strip approximately $\frac{3}{8}$ " of insulation from both ends, insert into each splice lead and crimp tightly. The switch assembly is now in electrical series with the electromagnetic clutch power lead. Be sure the routing of the spliced connection does not come in contact with any exhaust components and does not interfere with any moving parts (fan, carburetor linkage, etc.). Use electrical tape to secure the spliced connection and insure a "neat" installation.

This completes the installation of the "AC³S".

4. System Test: Remove all tools from the engine compartment before proceeding.

a. With hood up, start engine and allow engine to attain normal operating temperature.

NOTE: Do NOT run engine in a closed garage - be sure of adequate ventilation to avoid exhaust gas inhalation.

b. Observe electromagnetic clutch while engine is running. Note that while the pulley is turning, the face of the clutch assembly is not - this is the normal disengaged operation with the air conditioning dash controls in the "off" position.

c. Turn dashboard air conditioning control to the "on" position and set for coldest operation. Observe that the compressor clutch is now engaged and the entire assembly is now rotating.

d. To check for proper operation of the "AC³S", rapidly depress the accelerator pedal to a full throttle position and then off while simultaneously observing the clutch face. Note that the clutch face will stop for a brief instant while the accelerator was depressed. This action simulates the vacuum conditions present in the engine intake manifold during full acceleration or heavy power demand. Another check of proper operation is the audible detection of a metallic "click" when the clutch disengages and another "click" when it re-engages.

This completes your system test. Your "AC³S" is now ready for use.

NOTE: No adjustments are ever required.

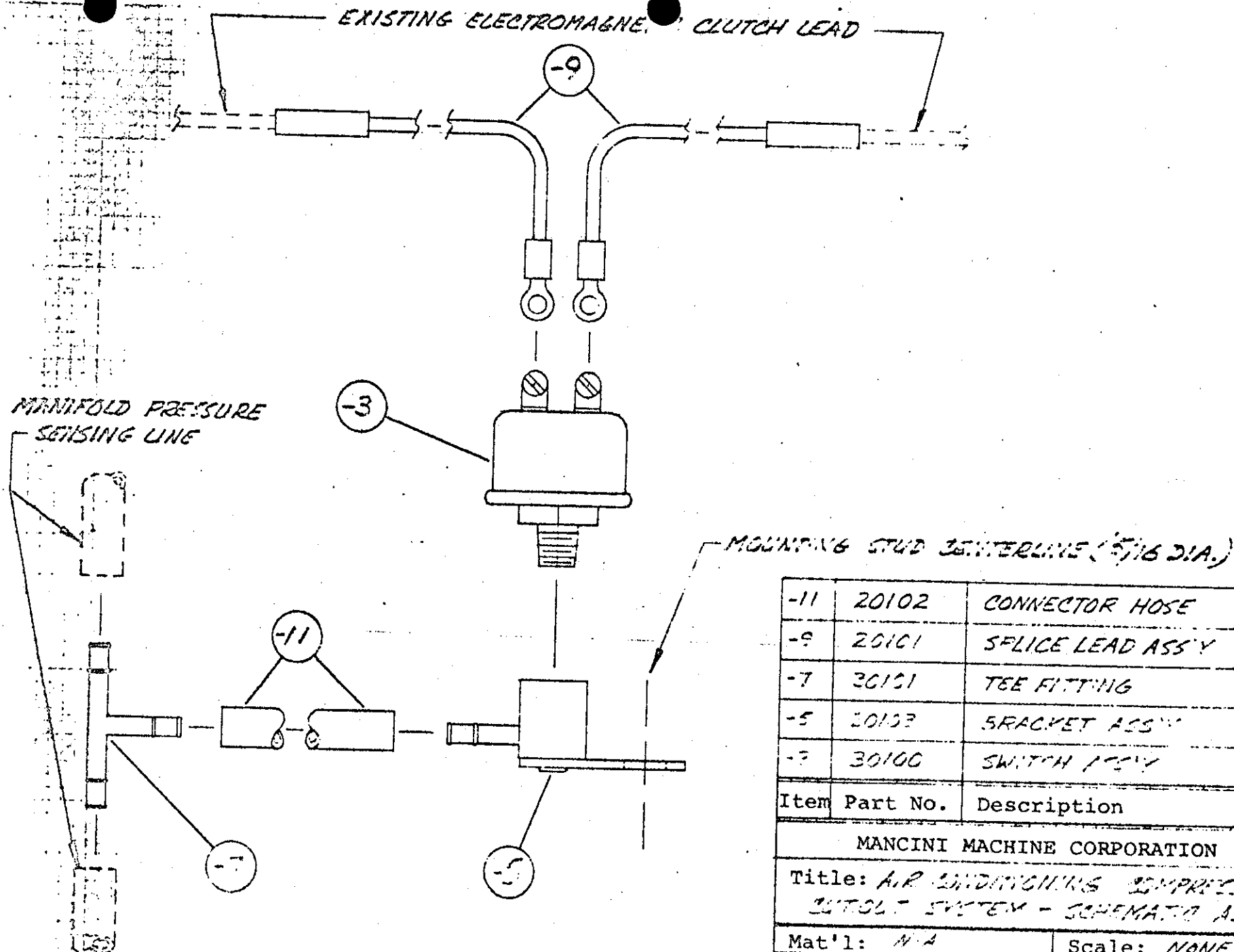
5. Troubleshooting: If the system does not perform as described above, recheck all electrical and pressure sensing connections. The switch is not adjustable and is hermetically sealed - do NOT attempt to open. If after re-checking and verifying all instruction procedures the "AC³S" is still not functional, refer to the enclosed "Limited Warranty" statement.

LIMITED WARRANTY

The "AC³S" is warranted for all defects in manufacture and workmanship for a period of two years from date of purchase. Warranty will not be honored for improper installation, misuse, unauthorized repairs or alterations, or externally induced physical damage. To apply for warranty consideration, send complete system along with dated proof of purchase and brief description of malfunction to the address listed below. Warranty is limited to repair or replacement of components at manufacturer's discretion.

"AC³S" Customer Service Department
20943 Brant Ave.
Long Beach, CA 90810

NOTE: All warranty shipments must be prepaid. No collect shipments will be accepted.



-11	20102	CONNECTOR HOSE	1
-9	20101	SPLICE LEAD ASS'Y	1
-7	30101	TEE FITTING	1
-5	20103	BRACKET ASS'Y	1
-3	30100	SWITCH ASS'Y	1
Item	Part No.	Description	Qty
MANCINI MACHINE CORPORATION			
Title: AIR CONDITIONING COMPRESSOR CONTROL SYSTEM - SCHEMATIC ASS'Y			
Mat'l: N/A		Scale: NONE	
Finish: N/A		Tol: N/A	
Drawn: R. A. [Signature]		10100	
Approved: [Signature]			