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GUIDELINES FOR RETROFITTING R-12 VEH. TO R-134A #43-12-07E - (Jan 1, 1997)

REVISION: 07/21/94

THIS BULLETIN IS BEING REVISED TO: 1) ADD THE 1991-93 C CARS AND THE PONTIAC H CAR; 2) CLARIFY WHEN COMPRESSORS NEED TO BE REPLACED (GENERAL INFORMATION, #2); 3) ADD P/N FOR CADILLAC A/C COMPRESSOR; 4) CLARIFY A/C CONTROL SETTINGS (PROCEDURE, STEP 2.B); 5) ADD A HOOD SEAL TO THE PONTIAC H CAR (PROCEDURE, STEP 2.E); 6) CLARIFY THE LABOR TIME INFORMATION, AND 7) REVISE PART AVAILABILITY DATE. PLEASE DISCARD BULLETIN 431207 (GROUP REFERENCE 1 - HVAC). -----

REVISION: 10/26/94 DIVS: 1 2 3 4 5 6 7

THIS BULLETIN IS BEING UPDATED. THE CHANGES ARE 1) ADDING THE 1991-93 M/L VANS; 2) ADDING A NEW PARAGRAPH UNDER "RETROFIT COVERAGE"; 3) ADDING P/N FOR M/L VAN A/C COMPRESSOR; 4) ADDING P/N'S FOR SADDLE CLAMP VALVES IN STEP 3.B OF THE RETROFIT PROCEDURE; 5) ADDING A HPCOS TO THE M/L VAN IN STEP 3.C.; 6) ADDING A PARTS LIST AT THE END; AND 7) UPDATING THE LABOR TIME INFORMATION. PLEASE DISCARD BULLETIN 431207A (GROUP REFERENCE 1 - HVAC). ATTACHMENT (1) REMAINS THE SAME. -----

REVISION: 03/06/95

THIS BULLETIN IS BEING REVISED TO INCLUDE THE FOLLOWING CHANGES:

1. ADDING THE 1991-93 E/K/V CARS.
2. NEW INFORMATION ON RETROFITTING OUT OF WARRANTY VEHICLES, UNDER "RETROFIT PILOT PROGRAM".

PLEASE DISCARD BULLETIN 43-12-07B (SECTION 1 - HVAC). ATTACHMENT (1) REMAINS THE SAME. -----

REVISION: 02/01/96

THIS BULLETIN IS BEING REVISED TO INCLUDE THE FOLLOWING CHANGES:

1. ADDING THE 1991-93 A AND W CARS.
2. RELEASE OF A NEW RETROFIT OIL FOR V5 COMPRESSORS, COVERED IN GENERAL INFORMATION, ITEM II, AND RETROFIT PROCEDURE, STEP 5. THIS OIL WILL BE USED

ONLY FOR RETROFITTED VEHICLES WHICH RETAIN THE ORIGINAL COMPRESSOR, NOT FOR OE APPLICATIONS.

3. THE NEW V5 OIL WILL REQUIRE 9 OZ. TO BE ADDED FOR A RETROFIT, INSTEAD OF 8 OZ. FOR THE PAG OIL.

4. ADDED REQUIREMENT TO CHANGE THE A/D ON VEHICLES MORE THAN 5 YEARS OLD (GENERAL INFORMATION, ITEM IV, AND RETROFIT PROCEDURE, STEP 3.E.).

5. COMPRESSORS IN THE FUTURE WILL BE SHIPPED WITH NO ADDED OIL. THIS WILL CHANGE THE NEED TO ADD OIL IF THE COMPRESSOR IS REPLACED. SEE "IMPORTANT" IN GENERAL INFORMATION, ITEM II.

PLEASE DISCARD BULLETIN 43-12-07C (SECTION 1 - HVAC).

REVISION: 12/20/96

THIS BULLETIN IS BEING REVISED WITH THE FOLLOWING CHANGES:

1) ADDITION OF ALL REMAINING GM VEHICLES, AS LISTED. 2) FORMAT REARRANGED FOR EASIER USE.

PLEASE DISCARD CORPORATE BULLETIN NUMBER 43-12-07D (SECTION 1 - HVAC).

SUBJECT: INFORMATION - GUIDELINES FOR RETROFITTING R-12 VEHICLES TO R-134A

MODELS: 1984-94 PASSENGER CARS AND TRUCKS (SEE LIST BELOW)

CAR/TRUCK PLATFORM COVERAGE STARTS:

1984 - A, B, D, E, F, J, K, P, Y CARLINES 1985 - C, M, N, R, S CARLINES 1986 - H CARLINE 1987 - L, V (ALLANTE) CAR LINES; M/L, G, R/V, S/T, P TRUCK LINES 1988 - T (LEMANS), E (REATTA), W CAR LINES; C/K, MED. DUTY TRUCK LINES 1989 - TRACKER 1990 - U VAN

VEHICLES NOT COVERED: T (CHEVETTE AND T1000), G RWD, C RWD, AND X CAR

IF A VEHICLE IS NOT COVERED IN THE LIST ABOVE, GM'S RECOMMENDATION IS THAT THE VEHICLE CONTINUE TO BE SERVICED WITH R-12.

THIS BULLETIN OUTLINES THE DETAILED RETROFIT PROCEDURES, AS WELL AS PROVIDING BACKGROUND INFORMATION ON MANY COMPONENTS AND PROCEDURES. IT IS IMPORTANT TO FOLLOW THE BULLETIN, SINCE EACH CAR AND TRUCK LINE HAS UNIQUE PARTS AND PROCEDURES. HOWEVER, THE BASIC PROCEDURE IS SIMPLE, AND WILL BECOME EASIER AS YOU COMPLETE MORE RETROFITS.

RETROFIT REQUIREMENTS

THE CUSTOMER SHOULD BE REMINDED THAT THERE IS NO REQUIREMENT IN THE U.S. TO RETROFIT ANY VEHICLE PRODUCED WITH R-12. VEHICLES BUILT WITH R-12 CAN BE

SERVICED WITH R-12 AS LONG AS IT IS AVAILABLE (EXCEPT IN CERTAIN CANADIAN PROVINCES). GM HAS TAKEN STEPS TO EXTEND THE SUPPLY OF R-12 AND RECOMMENDS THAT ALL R-12 VEHICLES CONTINUE TO BE SERVICED WITH R-12 AS LONG AS IT IS AVAILABLE.

TRAINING VIDEO

BEFORE DOING A RETROFIT THE FIRST TIME, IT IS RECOMMENDED THAT YOU VIEW THE CERTIFIED PLUS TRAINING VIDEO, PROGRAM NUMBER 51010.15, "R-134A RETROFIT FOR GM CARS AND TRUCKS".

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A. RETROFIT PROCEDURE

IMPORTANT:

BEFORE PROCEEDING WITH ANY RETROFIT, MAKE SURE YOU HAVE ALL COMPONENT PARTS REQUIRED ON HAND TO PERFORM A PROPER AND COMPLETE REPAIR WITH MINIMAL DOWNTIME.

R-12 REMOVAL PRIOR TO RETROFIT

TO PREPARE A SYSTEM FOR RETROFITTING, THE R-12 MUST BE RECOVERED AND THE SYSTEM MUST BE COMPLETELY EVACUATED. EVACUATION IS NECESSARY TO INSURE THAT SMALL AMOUNTS OF R-12 AND AIR REMAINING IN THE SYSTEM ARE REMOVED. THIS WILL PREVENT CROSS CONTAMINATION OF THE TWO REFRIGERANTS, WHICH COULD LEAD TO REDUCED A/C SYSTEM RELIABILITY AND PERFORMANCE.

IT IS VERY IMPORTANT THAT THE SPECIFIED TIMES FOR WAITING AFTER RECOVERY

AND EVACUATION NOT BE REDUCED. THIS TIME IS REQUIRED TO SUFFICIENTLY REMOVE RESIDUAL R-12 FROM THE OIL IN THE SYSTEM.

A CONSIDERABLE AMOUNT OF TESTING HAS DETERMINED THAT THE FOLLOWING PROCEDURE IS REQUIRED TO ACHIEVE SATISFACTORY RESULTS AND CONFORM TO SAE J1661:

1. INSPECT CONDITION OF VEHICLE

INSTALL THE GAGE SET ON THE HIGH AND LOW SIDE PORTS.

USE NORMAL DIAGNOSTIC PROCEDURES TO FIND THE CAUSE OF THE VEHICLE'S REPORTED CONDITION. ONE OF THREE CONDITIONS WILL EXIST WITH THE REFRIGERANT SYSTEM:

A) SYSTEM PRESSURE CORRECT, NO LEAKS - PROCEED TO STEP 2 (RECOVERY). THIS WOULD NORMALLY APPLY WHEN:

1) THE SYSTEM MUST BE RECOVERED/RECHARGED FOR A REPAIR TO A SYSTEM OTHER THAN THE A/C SYSTEM, OR

2) WHERE THE A/C SYSTEM CONDITION DID NOT INVOLVE LEAKS, BUT REQUIRES RECOVERY/RECHARGE TO REPLACE A COMPONENT.

B) COMPRESSOR NOT OPERATING, BUT SOME CHARGE. LEAK TEST TO FIND THE LEAK, COMPLETE STEP 2 (RECOVERY), THEN CORRECT THE LEAK BEFORE PROCEEDING WITH STEP 3 (CONVERSION PORT INSTALLATION).

C) NO CHARGE IN SYSTEM - PROCEED WITH THE CONVERSION PORT INSTALLATION IN STEP 3. USE THE ACR4 TO EVACUATE FOR 5 MINUTES. IF THE LEAK CAN BE HEARD, REPAIR THE LEAK. IF THE LEAK CANNOT BE HEARD, CHARGE WITH 1/2 POUND OF R-134A. LEAK TEST WITH THE J39400 LEAK DETECTOR, RECOVER THE R-134A, REPAIR ANY ADDITIONAL LEAKS FOUND, AND PROCEED WITH THE EVACUATION IN STEP 5.

2. RECOVER THE R-12 FROM THE SYSTEM

NOTICE:

THIS PROCEDURE IS DIFFERENT THAN THE NORMAL (NON-RETROFIT) RECOVERY PROCEDURE. R-12 WILL BE RECOVERED THROUGH THE HIGH SIDE SERVICE PORT ONLY, WITH THE ENGINE RUNNING. RECOVERY THROUGH THE LOW SIDE WILL NOT EFFECTIVELY REMOVE THE R-12 FROM THE ACCUMULATOR, RESULTING IN POSSIBLE DAMAGE TO THE RETROFITTED SYSTEM.

IMPORTANT:

VEHICLE MUST BE ABOVE 50 DEGREES F (10 DEGREES C) TO ALLOW FOR COMPLETE RECOVERY OF THE R-12. IF IT IS NOT, EITHER ALLOW IT TO WARM UP IN THE SHOP OVERNIGHT, OR INCREASE THE EVACUATION TIME IN STEP 5.A) TO 30 MINUTES.

A) CONNECT THE RECOVERY HOSE FROM THE R-12 RECOVERY CART (ACR3) TO THE MIDDLE PORT OF THE A/C GAGE SET. OPEN THE OIL DRAIN VALVE ON THE ACR3 CART LONG ENOUGH TO DRAIN THE OIL. FAILURE TO DO SO COULD CAUSE EXCESSIVE AMOUNTS OF OIL TO BUILD UP IN THE SEPARATOR, RESULTING IN DAMAGE TO THE RECOVERY CART COMPRESSOR.

B) START THE ENGINE. LEAVE THE HOOD UP, AND THE WINDOWS OPEN. ON VEHICLES WITH MANUAL A/C CONTROLS, SET THE A/C CONTROLS TO NORMAL A/C MODE, HIGH BLOWER, AND TEMPERATURE CONTROL TO FULL COLD. ON CARS WITH AUTOMATIC A/C CONTROLS, SET THE TEMPERATURE TO 75 DEGREES F, "AUTO" MODE, AND MANUALLY SELECT HIGH BLOWER.

MAKE SURE THE VEHICLE COMPRESSOR IS ENGAGED. TURN THE CART ON AND START THE RECOVERY CYCLE. OPEN ONLY THE HIGH SIDE VALVE ON THE GAGE SET. THE VEHICLE SYSTEM SHOULD EVENTUALLY SHUT THE COMPRESSOR OFF. IF THE LOW SIDE PRESSURE DROPS BELOW 15 PSI, AND THE COMPRESSOR DOES NOT TURN OFF, TURN IT OFF NOW (GO TO "VENT" OR "ECON" MODE), BUT LEAVE THE ENGINE RUNNING AND THE BLOWER ON "HIGH".

C) AFTER THE RECOVERY CART SHUTS OFF THE FIRST TIME, WAIT 5 MINUTES. IF THE PRESSURE ON EITHER THE HIGH OR THE LOW SIDE RISES ABOVE 0 PSI, RESTART THE RECOVERY PROCESS. AFTER THE SECOND SHUTOFF, WAIT 2 MINUTES. IF THE PRESSURE AGAIN RISES ABOVE 0 PSI, RESTART, AND AFTER SHUTOFF, AGAIN WAIT 2 MINUTES. THE PROCESS CAN BE STOPPED WHEN THE PRESSURE DOES NOT RISE ABOVE 0 PSI AFTER 2 MINUTES. THE ENGINE CAN BE SHUT OFF AT THIS TIME.

D) REMOVE THE R-12 RECLAIM HOSE AND THE GAGE SET FROM THE VEHICLE.

ANY REPAIRS NEEDED SHOULD BE DONE AT THIS TIME. IF ANY COMPONENTS OTHER THAN THE COMPRESSOR ARE REPLACED, THEY SHOULD BE INSTALLED DRY, AND NO EXTRA OIL SHOULD BE ADDED.

3. INSTALL THE SERVICE PORT CONVERSION FITTINGS

IMPORTANT:

FOR GEO VEHICLES, SKIP TO STEP 4. FITTING INSTALLATION IS COVERED IN THAT STEP. FOR VEHICLES THAT REQUIRE A HPCOS, SEE STEP 4. SOME OF THESE VEHICLES USE A SPECIFIC COMBINATION FITTING TO MOUNT THE HPCOS, WHICH INCLUDES THE HIGH SIDE SERVICE PORT FITTING AND THE HPCOS PORT. THE LOW SIDE FITTING IS INSTALLED AS DETAILED BELOW. SEE "PLATFORM DETAILS" FOR FURTHER INFORMATION.

IMPORTANT:

A NEW TOOL KIT, P/N J39500-250, HAS BEEN RELEASED. THIS KIT CONTAINS THE FOLLOWING ITEMS:

- J39500-71 OIL INJECTION BOTTLE CONVERSION KIT (INCLUDES 3 12 OZ. BOTTLES, AN EXTENDER TUBE, CAPS, AND FITTINGS)

- J39500-275 TOOL KIT, INCLUDING THE FOLLOWING: (SEE FIGURE 2) - J34611-A DOUBLE ENDED VALVE CORE REMOVER - J25498-A HIGH SIDE ADAPTER FITTING - J38702 DEEP VALVE CORE ADAPTER FITTING - J41265 THREAD CLEANING WIRE BRUSH - J41266 LOW SIDE PORT THREAD RESTORER - J41267 HIGH SIDE PORT THREAD RESTORER - J39037 HIGH SIDE OCTAGON SOCKET - J41256 LOW SIDE OCTAGON SOCKET

NEW LOW PROFILE, QUICK CONNECT COUPLERS, J39500-20A (HIGH SIDE), AND J39500-24A (LOW SIDE), HAVE BEEN RELEASED AS ESSENTIAL TOOLS, TO ATTACH TO THE ACR4 (SEE FIGURE 3). THESE ARE MUCH SMALLER COUPLERS THAN THE EXISTING ONES, AND WILL ALLOW ATTACHMENT TO THE PORT FITTINGS IN MUCH TIGHTER QUARTERS.

SELECT AND INSTALL THE PROPER R-134A FITTINGS (SHOWN IN FIGURE 4) FROM THE CHART BELOW, BASED ON HOW THE ACR4 COUPLERS WILL ATTACH. ALSO, REMEMBER TO CHECK FOR PROPER HOOD CLEARANCE WITH THE CONVERSION FITTINGS. TRY THE STRAIGHT FITTINGS FIRST. THE TWO-PIECE HIGH SIDE FITTING IS USED WHEN THE EXISTING FITTING IS SCREWED INTO THE PIPE FITTING (SOME 1992, AND NEARLY ALL 1993 MODELS, USE THESE FITTINGS). USE THE 90 DEGREE ELBOW IF THE STRAIGHT FITTING DOES NOT ALLOW THE ACR4 COUPLERS TO CONNECT.

FITTING TYPE HIGH SIDE / LOW SIDE =====

STRAIGHT 52467941 52467943 STRAIGHT TWO-PIECE 52467324 N/A 90 DEGREE ELBOW
52469054 52469055

THE FITTINGS SHOULD BE INSTALLED AS FOLLOWS:

A) REMOVE THE CAPS FROM THE R-12 FITTINGS. REMOVE ANY DIRT OR GREASE FROM THE PORT THREADS USING THE THREAD CLEANING WIRE BRUSH, J41265. INSPECT THE FITTINGS FOR THREAD DAMAGE. IF ANY DAMAGE IS FOUND, USE THE PORT THREAD RESTORER (J41266 LOW SIDE, J41267 HIGH SIDE) TO REPAIR THE THREAD.

FOR THE TWO-PIECE FITTING, REMOVE THE EXISTING R-12 FITTING AND DISCARD IT. USE TOOL J38704A (PREVIOUSLY RELEASED, NOT PART OF THE ABOVE KIT) TO REMOVE THE FITTING. MAKE SURE TO HOLD THE LINE SECURELY TO PREVENT DAMAGE WHEN REMOVING THE EXISTING FITTING. IF THE FITTING CANNOT BE REMOVED EASILY, USE THE SADDLE CLAMP VALVE LISTED BELOW AND SEAL THE R-12 PORT AND CAP PERMANENTLY.

B) INSTALL THE SELECTED FITTING ONTO THE EXISTING R-12 FITTING. LEAVE THE VALVE CORE IN THE STRAIGHT FITTINGS, AND REMOVE THE VALVE CORE WHEN USING THE 90 DEGREE FITTINGS.

IF THE VALVE CORES NEED TO BE REMOVED AT A LATER TIME, THEY CAN BE REMOVED WITH THE STRAIGHT CONVERSION FITTINGS IN PLACE. ON THE LOW SIDE STRAIGHT FITTING, USE THE J34611-A TOOL TO REMOVE THE CORE PIN IN THE CONVERSION FITTING, THEN REMOVE THE CORE VALVE FROM THE ORIGINAL R-12 FITTING. ALWAYS RECOVER THE CHARGE BEFORE VALVE CORE REMOVAL.

USE THE OCTAGON SOCKETS ON THE STRAIGHT FITTINGS (J39037 HIGH SIDE, AND

J41256 LOW SIDE). TORQUE THE NEW FITTING UNTIL IT SEATS. THE FITTING SHOULD SEAT FULLY BEFORE REACHING 11 N.M (8 LB FT). IF 11 N.M (8 LB FT) OF TORQUE IS REACHED AND THE FITTING HAS NOT SEATED, IT IS PROBABLE THAT THE THREADS HAVE BEEN DAMAGED. IN THIS CASE, REMOVE THE FITTING AND USE THE THREAD RESTORER LISTED ABOVE. REINSTALL THE FITTING, ADDING ONE DROP OF A THREAD LOCKING COMPOUND SUCH AS LOCTITE(R) 242.

THE FITTINGS (EXCEPT THE TWO-PIECE) HAVE A THREAD LOCKING COMPOUND APPLIED TO THE THREADS. THIS COMPOUND WILL SET UP ENOUGH TO RESTRICT REMOVAL OF THE FITTING IN ABOUT 15 MINUTES. THE FITTINGS CAN NOW BE USED TO EVACUATE THE SYSTEM (SEE STEP 5).

AN ADDITIONAL TYPE OF CONVERSION PORT FITTING HAS BEEN DEVELOPED. THIS FITTING IS CALLED A SADDLE CLAMP VALVE (SEE FIGURE 5). IT CAN BE CLAMPED DIRECTLY ON A METAL REFRIGERANT LINE, AND WILL BE USED IF THE EXISTING FITTING IS DAMAGED OR IS INACCESSIBLE. A DROP OF A THREAD LOCKING COMPOUND, SUCH AS LOCTITE(R) 242, SHOULD BE USED ON EACH BOLT TO PREVENT THE THREADS FROM LOOSENING.

THE R-134A SADDLE CLAMP VALVE PART NUMBERS ARE:

52471115 HIGH SIDE (3/8" LINE DIAMETER) 52471116 HIGH SIDE (1/2" ") 52471117 LOW SIDE (5/8" ") 52471118 LOW SIDE (3/4" ")

IF AN EXISTING R-12 SERVICE PORT IS NOT USED, IT MUST BE RENDERED INOPERATIVE. PLACE SEVERAL DROPS OF A THREAD LOCKING COMPOUND, SUCH AS LOCTITE(R) 243, IN THE VALVE CORE, AND ONTO THE CAP THREADS. SECURE THE CAP AND LET IT SET FOR 15 MINUTES.

4. INSTALL ANY ADDITIONAL PARTS NEEDED

SEE "PLATFORM DETAILS" AFTER STEP 6. IF A VEHICLE IS LISTED AS A "BASIC RETROFIT", NO ADDITIONAL PARTS ARE REQUIRED (EXCEPT FOR COMPRESSORS, SEE THE COMPRESSOR REPLACEMENT CHART AT THE BEGINNING OF PLATFORM DETAILS). IF NO PARTS ARE REQUIRED, PROCEED TO STEP 5.

COMPRESSORS

COMPRESSORS DO NOT NEED TO BE REPLACED AS PART OF A NORMAL RETROFIT, UNLESS INDICATED IN THE COMPRESSOR REPLACEMENT CHART. AN R-12 COMPRESSOR THAT IS OPERATING PROPERLY CAN, IN MOST CASES, BE LEFT IN THE VEHICLE WHEN IT IS RETROFITTED TO R-134A. HOWEVER, IF A COMPRESSOR FAILURE IS THE REASON THE VEHICLE IS IN FOR SERVICE, AND THE VEHICLE WILL BE RETROFITTED, OR IF A VEHICLE HAS ALREADY BEEN RETROFITTED WITH R-134A AND THE COMPRESSOR FAILS AT SOME TIME IN THE FUTURE, NEW COMPRESSORS FOR USE WITH R-134A ARE AVAILABLE. SEE THE GMSPO PARTS CATALOG FOR SPECIFIC PART NUMBERS. DO NOT USE A REPLACEMENT R-12 COMPRESSOR FOR ANY VEHICLE RETROFITTED TO R-134A (UNLESS IT IS THE NEW "OIL-LESS" DESIGN). SEE "COMPRESSOR AVAILABILITY" AT THE END OF THE COMPRESSOR REPLACEMENT CHART.

ACCUMULATOR/DRYER

IF THE VEHICLE IS MORE THAN 5 YEARS OLD, THE ACCUMULATOR/DRYER (A/D) SHOULD BE REPLACED TO ENSURE THAT MOISTURE IS REMOVED FROM THE SYSTEM. SEE THE INSTRUCTIONS FOR PROPER A/D IDENTIFICATION IN GENERAL INFORMATION.

HIGH PRESSURE CUT-OFF SWITCH (HPCOS)

MOST TRUCKS, AND SOME 1984-93 B AND D CARS, REQUIRE THAT A HPCOS BE ADDED TO PROTECT THE REFRIGERANT SYSTEM DURING LONG IDLES AT HIGH TEMPERATURE. THE HPCOS KIT (P/N 15981985) CONTAINS THE SWITCH, WIRE HARNESS, HEAT SEALING SPLICE CONNECTORS, SWITCH "O" RING, AND INSTALLATION INSTRUCTIONS. A SADDLE CLAMP ADAPTER (P/N 15985307), OR A SPECIAL DUAL FITTING, IS MOUNTED TO THE HIGH PRESSURE LINE, AND PROVIDES THE PORT TO MOUNT THE SWITCH. A DROP OF A THREAD LOCKING COMPOUND, SUCH AS LOCTITE(R) 242, SHOULD BE USED ON EACH BOLT OF THE SADDLE CLAMP TO PREVENT THE THREADS FROM LOOSENING.

SOME VEHICLES PRODUCED DURING THE SECOND HALF OF THE 1993 MODEL YEAR WILL ALREADY HAVE A FACTORY INSTALLED HPCOS. CHECK THE BACK OF THE COMPRESSOR FOR THIS SWITCH. IF PRESENT, THE ABOVE SWITCH WILL NOT HAVE TO BE ADDED.

5. EVACUATE THE SYSTEM, AND RECHARGE WITH PAG OR V5 RETROFIT OIL AND R-134A

NEWLY DESIGNED LOW PROFILE QUICK CONNECT COUPLERS FOR THE ACR4, J39500-20A AND J39500-24A, HAVE BEEN RELEASED. THESE SHOULD BE INSTALLED BEFORE PROCEEDING WITH THE EVACUATION. SEE STEP 3, AND FIGURE 3.

A. CONNECT THE R-134A CART (ACR4) TO THE SYSTEM. OPEN THE COUPLER VALVES ON THE HOSES SO THAT THE PRESSURES CAN BE READ ON THE GAUGES. ON THE CART, OPEN THE HIGH SIDE VALVE ONLY. DO NOT OPEN THE LOW SIDE VALVE! PROGRAM THE CART FOR A 15 MINUTE EVACUATION.

IMPORTANT:

IF THE VEHICLE HAS BEEN AT OUTSIDE TEMPERATURES OF LESS THAN 50 DEGREES F (10 DEGREES C), OR AT HIGH ALTITUDES (ABOVE 3000 FT.), USE A 30 MINUTE EVACUATION TO INSURE COMPLETE REMOVAL OF THE R-12.

IF THE VACUUM PUMP WILL NOT START AND A "HI-P" READING IS INDICATED ON THE ACR4 DISPLAY, LOOSEN THE FITTING AT THE HIGH SIDE LINE CONNECTION TO THE ACR4 TO RELIEVE PRESSURE IN THE LINE. TIGHTEN THE FITTING AFTER PRESSURE HAS BEEN RELIEVED. DO NOT USE THE RECOVERY MODE TO RELIEVE LINE PRESSURE.

B. START THE EVACUATION. FOR A PROPER EVACUATION, THE CART MUST PULL DOWN TO 28-29 IN. HG. AT SEA LEVEL (REDUCE BY 1 IN. FOR EACH 1000 FT. ABOVE SEA LEVEL). CHECK THE LOW SIDE GAGE FOR PROPER VACUUM LEVEL, TO MAKE SURE THE NEW FITTINGS ARE OPERATING PROPERLY.

WHILE THE EVACUATION IS BEING DONE, THE RETROFIT LABEL CAN BE FILLED OUT AND INSTALLED (SEE STEP 6).

IMPORTANT:

IF THE COMPRESSOR WAS REPLACED AT THE SAME TIME AS THIS RETROFIT, AND THE NEW COMPRESSOR WAS SHIPPED WITH THE CORRECT AMOUNT OF PAG OIL ALREADY IN IT, DO NOT ADD ANY ADDITIONAL OIL TO THE SYSTEM! GO TO STEP D. IF AN "OIL-LESS" COMPRESSOR WAS INSTALLED, ADD OIL IN STEP C.

A NEW RETROFIT OIL FOR USE WITH V5 COMPRESSOR VEHICLES HAS BEEN RELEASED. THIS OIL WILL BE USED ONLY FOR RETROFITTED VEHICLES IN WHICH THE ORIGINAL V5 COMPRESSOR IS RETAINED. IT WILL NOT BE USED IF A COMPRESSOR IS REPLACED AT THE TIME OF THE RETROFIT. FAILURE TO USE THIS OIL MAY SIGNIFICANTLY SHORTEN THE USEFUL LIFE OF THE COMPRESSOR.

IMPORTANT:

IF THE V5 RETROFIT OIL IS NOT AVAILABLE FROM GMSPO, THE COMPRESSOR MUST BE REPLACED!

TO SUMMARIZE THE CORRECT RETROFIT OIL USAGE: - COMPRESSOR REPLACED DURING RETROFIT - NO OIL ADDED IF NEW COMPRESSOR SHIPPED WITH OIL - 8 OZ. OF PAG OIL (9 OZ. OF PAG OIL WITH V5 COMPRESSOR) ADDED IF COMPRESSOR SHIPPED WITHOUT OIL ("OIL-LESS" DESIGN) - PAG OIL USED FOR FUTURE SERVICE IF NEEDED (MARK PAG ON BOX ON LABEL, FIGURE 6). - HR6 OR R4 ORIGINAL COMPRESSOR RETAINED - ADD 8 OZ. PAG OIL TO SYSTEM - V5 ORIGINAL COMPRESSOR RETAINED - ADD 9 OZ. V5 RETROFIT OIL TO SYSTEM. IF V5 RETROFIT OIL IS NOT AVAILABLE FROM GMSPO, REPLACE THE COMPRESSOR.

C. BASED ON THE ABOVE CHART, ADD OIL IF NEEDED. USE THE NEW OIL BOTTLE AND THE EXTENDED TUBE KIT, J39500-71. FILL THE BOTTLE WITH AT LEAST 10 OZ. OF OIL. ATTACH THE NEW BOTTLE TO THE BACK OF THE ACR4, AND OPEN THE OIL FILL VALVE. ALLOW THE CORRECT AMOUNT OF OIL TO BE DRAWN INTO THE SYSTEM. DO NOT ALLOW THE OIL LEVEL TO DROP BELOW THE END OF THE PICKUP TUBE. THIS WILL PREVENT ANY AIR FROM BEING DRAWN INTO THE SYSTEM. IF ANY OIL WAS REMOVED DURING THE R-12 RECOVERY EVACUATION STEPS, DO NOT ADD ADDITIONAL OIL TO REPLACE IT.

D. DETERMINE THE CORRECT AMOUNT OF R-134A TO USE. CHECK THE EXISTING LABEL OF THE VEHICLE FOR THE R-12 CHARGE AMOUNT.

→ USE THE FORMULA $\{(R12 \times .9) - .25 \text{ LB} = R-134A\}$ TO DETERMINE THE CORRECT CHARGE. THIS CAN ALSO BE STATED AS: TAKE 90% OF THE R12 CHARGE, AND SUBTRACT 1/4 LB. ←

FOLLOW THE DIRECTIONS FOR THE ACR4 CART TO RECHARGE THE SYSTEM. AT THE END OF THE PROCESS, "CPL" WILL BE DISPLAYED. CLOSE THE HIGH SIDE VALVE.

E. START THE VEHICLE, TURN ON THE A/C SYSTEM, AND CONFIRM THAT PRESSURES ARE WITHIN NORMAL OPERATING RANGES, AS SHOWN IN THE 1994 SERVICE MANUAL.

THE 1994 SERVICE MANUALS CAN BE USED AS A REFERENCE FOR DIAGNOSIS AND SPECIFICATION OF RETROFITTED SYSTEMS.

ON SOME VEHICLES WITH AUTOMATIC A/C CONTROLS OR LOW CHARGE DIAGNOSTICS, THE A/C COMPRESSOR MAY NOT ENGAGE IF ANY DIAGNOSTIC CODES WERE SET DURING THE RETROFIT. CHECK TO SEE IF ANY CODES WERE SET IN EITHER THE HVAC OR ENGINE CONTROL SYSTEMS. IF THEY WERE, CLEAR THE CODES FOLLOWING THE DIRECTIONS IN THE SERVICE MANUAL.

F. TO INSURE AN ACCURATE CHARGE AMOUNT, IT IS IMPORTANT TO CLEAR THE ACR4 OF ANY REMAINING REFRIGERANT. CLOSE THE HIGH SIDE COUPLER VALVE AND REMOVE THE HIGH SIDE HOSE FROM THE VEHICLE. THEN, OPEN BOTH THE HIGH AND LOW SIDE VALVES ON THE ACR4. AFTER THE PRESSURES ON BOTH GAGES ARE AT LOW SIDE PRESSURE, CLOSE THE LOW SIDE COUPLER VALVE. SEE STEP G BELOW, THEN REMOVE THE LOW SIDE HOSE FROM THE VEHICLE. SHUT OFF THE ENGINE. INSTALL THE SERVICE PORT CAPS ON THE NEW FITTINGS. THESE SERVE AS A SEAL AND CAN PREVENT SYSTEM LEAKS.

G. IN THE UNLIKELY EVENT THAT THE LOW SIDE FITTING LEAKS WHEN THE COUPLER IS REMOVED, USE THE FOLLOWING PROCEDURE:

1) IMMEDIATELY REINSTALL THE COUPLER ON THE FITTING. 2) FIND THE VALVE CORE REMOVER J34611-A. 3) REMOVE THE COUPLER. 4) USE THE DOUBLE-ENDED VALVE CORE REMOVER TO TURN THE VALVE CORE PIN COUNTER-CLOCKWISE UNTIL THE LEAK STOPS. 5) INSTALL THE CAP.

IF THE LEAK WAS SUBSTANTIAL OR CONTINUED FOR AN EXTENDED PERIOD OF TIME, IT IS HIGHLY RECOMMENDED TO EVACUATE AND RECHARGE THE SYSTEM TO INSURE PROPER PERFORMANCE. IF THERE IS ANY QUESTION, THE SYSTEM CAN BE RECHECKED BY REPEATING STEP E.

H. LEAK TEST ANY NEW PORT FITTINGS, ADAPTERS, OR VALVES THAT WERE INSTALLED, AND ANY JOINTS THAT WERE OPENED OR REPAIRED DURING THE RETROFIT PROCESS, USING TOOL J39400.

6. INSTALL THE RETROFIT LABEL

THE RETROFIT LABEL (P/N 21030857, ROLL OF 250) HAS BEEN DEVELOPED FOLLOWING SAE SPECIFICATIONS TO INSURE A SMOOTH TRANSITION FROM R-12 TO R-134A, AND TO INSURE A PROFESSIONAL APPROACH TO THE RETROFIT AND A QUALITY REPAIR. FOLLOWING THE INSTRUCTIONS IN THIS BULLETIN WILL INSURE THAT THE RETROFIT MEETS THE SAE STANDARDS.

FILL IN THE NEW LABEL USING A TYPEWRITER OR A BALL-POINT PEN (SEE FIGURE 6). SELECT A LOCATION FOR THE LABEL THAT WILL BE EASILY VISIBLE. SOME SUGGESTED AREAS ARE THE RADIATOR SUPPORT PANEL, AN AREA NEAR THE EXISTING R-12 CHARGE LABEL, OR A FLAT SURFACE NEAR THE HIGH OR LOW SIDE SERVICE PORTS. THE AREA SELECTED SHOULD BE A CLEAN, UNDERHOOD, PAINTED SHEET METAL SURFACE, AND SHOULD BE DEGREASED AND WIPED DOWN WITH A NON-PETROLEUM BASED CLEANER. DO NOT INSTALL THE LABEL ON A RUBBER

SURFACE. APPLY THE LABEL, THEN APPLY THE CLEAR OVERLAY TO THE LABEL.

DO NOT REMOVE, COVER, OR RENDER UNREADABLE THE EXISTING R-12 CHARGE LABEL. DO COVER THE R-12 REFRIGERANT CHARGE AMOUNT ON THE EXISTING LABEL WITH AN INDELIBLE, PREFERABLY BLACK, MARKER.

PLATFORM DETAILS:

FOR ALL VEHICLES EXCEPT GEO, SEE THE "COMPRESSOR REPLACEMENT CHART" AT THE END OF THIS SECTION. COMPRESSOR REPLACEMENT REQUIREMENTS ARE NOT LISTED IN THE PLATFORM DETAILS (EXCEPT FOR APPLICATION DETAILS), EXCEPT AS NOTED BELOW FOR Y CAR AND P AND MEDIUM DUTY TRUCK.

COMPRESSOR REPLACEMENT CHART

IMPORTANT:

IT IS IMPORTANT TO CHECK THE DATE CODE ON THE COMPRESSOR. ANY VEHICLE MAY HAVE HAD A COMPRESSOR REPLACED EITHER DURING OR AFTER THE WARRANTY PERIOD. THE DATE CODE WILL DETERMINE WHETHER OR NOT THE COMPRESSOR MUST BE REPLACED.

1. V5 COMPRESSORS - USE V5 RETROFIT OIL IF RETAINING THE ORIGINAL COMPRESSOR DURING A RETROFIT. IF THE V5 RETROFIT OIL IS NOT AVAILABLE FROM GMSPO, REPLACE THE COMPRESSOR.

1984-87 - OK 1988-89 - CHECK DATE CODE IS IT BETWEEN 1/88 AND 8/89? YES - IS LABEL ROYAL BLUE? YES - REPLACE NO - OK NO - OK 1990-93 - OK

2. R4 COMPRESSORS

1984-89 - OK 1990-93 - CHECK DATE CODE IF BETWEEN 1/1/90 AND 6/18/93, REPLACE 1994 - OK

3. 6 CYLINDER COMPRESSORS

ALL A6 COMPRESSORS - OK

ALL DA6 COMPRESSORS - REPLACE CHECK DATE CODE - IF AFTER 1988, THE UNIT IS AN HR6, AND IS OK

ALL HR6 COMPRESSORS - OK

COMPRESSOR AVAILABILITY

A NEW COMPRESSOR FOR USE WITH R-134A SYSTEMS WILL BE SHIPPED WITH THE CORRECT AMOUNT OF PAG OIL INSTALLED (SEE "IMPORTANT" BELOW). DO NOT ADD ANY ADDITIONAL OIL IN STEP 5 OF THE RETROFIT PROCEDURE IF A COMPRESSOR IS TO BE REPLACED WITH A NEW R-134A COMPRESSOR AT THE SAME TIME THE INITIAL RETROFIT IS BEING DONE.

IMPORTANT:

DURING 1996, "OIL-LESS" COMPRESSORS BEGAN TO BE SERVICED WITH NO ADDED OIL. NEW PART NUMBERS WILL BE ISSUED, AND BOTH THE BOX AND THE COMPRESSOR WILL BE CLEARLY MARKED TO INDICATE THAT NO OIL IS PRESENT. IF YOU RECEIVE ONE OF THESE NEWER COMPRESSORS, SIMPLY ADD THE NORMAL AMOUNT OF OIL TO THE SYSTEM IN STEP 5 OF THE RETROFIT PROCEDURE (8 OZ. OF PAG OIL, OR 9 OZ. OF PAG OIL WITH V5 COMPRESSOR). THESE "OIL-LESS" COMPRESSORS ARE COMPATIBLE WITH EITHER R12 OR R-134A.

CAR PLATFORMS

A COVERED: 1984-93, BASIC RETROFIT

COMPRESSOR USAGE: ALL V5 EXCEPT: 84-85 2.5L - R4 84-85 4.3L DIESEL - R4 84-86 2.8L - DA6 84-87 3.0/3.8L - DA6 88-93 3.3/3.8L - HR6

B COVERED: 1984-93, ADDITIONAL PARTS NEEDED:

91-93 - 22134515 FAN ASM. * 91-93 - 10254709 KIT, FAN MOUNTING * 84-90 - HPCOS KIT 15981985, SADDLE CLAMP 15985307

* REQUIRED IF BEING DONE UNDER WARRANTY. STRONGLY RECOMMENDED IF VEHICLE WILL BE USED IN HOT CLIMATES, OR WILL ENCOUNTER LONG PERIODS OF IDLE WITH A/C RUNNING. IF THIS FAN IS NOT USED, ADD THE HPCOS KIT 15981985, AND SADDLE CLAMP 15985307.

COMPRESSOR USAGE: ALL R4

C COVERED: 1985-93, FWD ONLY, BASIC RETROFIT

COMPRESSOR USAGE:

85-87 - DA6 88-93 - HR6

D COVERED: 1984-93, ADDITIONAL PARTS NEEDED:

1993 WITH V08, USE FAN SAME AS 93 B * 1984-92 - HPCOS KIT 15981985, SADDLE CLAMP 15985307

* REQUIRED IF BEING DONE UNDER WARRANTY. STRONGLY RECOMMENDED IF VEHICLE WILL BE USED IN HOT CLIMATES, OR WILL ENCOUNTER LONG PERIODS OF IDLE WITH A/C RUNNING. IF THIS FAN IS NOT USED, ADD THE HPCOS KIT 15981985, AND SADDLE CLAMP 15985307.

COMPRESSOR USAGE: ALL R4

EKV COVERED: 1984-93, BASIC RETROFIT

COMPRESSOR USAGE:

84-85 - R4 86-87 - DA6 88-93 - HR6

F COVERED: 1984-92, BASIC RETROFIT

COMPRESSOR USAGE: ALL R4 EXCEPT: 84-86 2.5L - DA6

H COVERED: 1986-93, BASIC RETROFIT, EXCEPT:

92-93 PONTIAC - ADD HOOD SEAL 25616378, PER BULLETIN #200103

COMPRESSOR USAGE:

86-87 - DA6 88-93 - HR6

J COVERED: 1984-94, BASIC RETROFIT (1994 J CARS BUILT AFTER 1/1/94 ALREADY USE R-134A)

COMPRESSOR USAGE: ALL V5 EXCEPT: 84 ALL - DA6 85 ALL EXC. LQ5 - DA6 86 LA5/LB6 - DA6 87 LT3 - DA6 88-90 LT3 - HR6

L COVERED: 1987-93

1987-91 BASIC RETROFIT 1992-93 ADDITIONAL PARTS NEEDED: TXV KIT 52477714

COMPRESSOR USAGE: ALL V5

N COVERED: 1985-93

1985-91 BASIC RETROFIT 1992-93 ADDITIONAL PARTS NEEDED: TXV KIT 52477714

COMPRESSOR USAGE: ALL V5 EXCEPT: 85-86 3.0L - DA6 87-89 2.0L(T) - HR6

P COVERED: 1984-88, BASIC RETROFIT

COMPRESSOR USAGE:

84-85 ALL - DA6 86-88 2.5L - V5 86-87 2.8L - DA6 88 2.8L - HR6

T COVERED: 1988-93, BASIC RETROFIT

COMPRESSOR USAGE: V5

W COVERED: 1988-93, BASIC RETROFIT

COMPRESSOR USAGE: ALL V5 EXCEPT: 3.8L - HR6

Y COVERED: 1984-93

1984-87 BASIC RETROFIT; COMPRESSOR USAGE: R4 1988-93 ADDITIONAL PARTS NEEDED:

10 PA
NIPPONDENSO COMPRESSOR REPLACEMENT 88-93 L98/LT1 - 10243781 90-93 LT5 - 10243783

IMPORTANT:

FOR 1993, CHECK PART NUMBER ON OEM COMPRESSOR. P/N 10238383 IS OK, 10135691 NEEDS REPLACEMENT.

TRUCK PLATFORMS

C/K COVERED: 1988-93, ADDITIONAL PARTS NEEDED:

88-93 ALL ENGINES - HPCOS KIT 15981985, CYCLE SWITCH 52465555 88-89 SADDLE CLAMP 15985307 90-93 HS FITTING - 15982611; 15984039 ADAPTER, NEEDED ON ALL 91-93 ENGINES, AND ON 7.4L ONLY, IN 1990 91-93 4.3*/6.2(D)/7.4L - CONDENSER 52469067 CONDENSER REQUIRES (2) 15956322 AND (2) 15956553 INSULATORS, AND (2) 15956321 BRACKETS *4.3L ONLY: CONDENSER NOT REQUIRED IF VEHICLE HAS HEAVY-DUTY RADIATOR

COMPRESSOR USAGE: ALL R4

R/V COVERED: 1987-91, ADDITIONAL PARTS NEEDED: (R/V INCLUDES BLAZER, SUBURBAN, AND CREW CAB)

87-91 HS FITTING 15982611, HPCOS 15981985

COMPRESSOR USAGE: ALL R4 EXCEPT: 87 7.4L/6.2L(D) - DA6 88-91 7.4L/6.2L(D) - HR6

G COVERED: 1987-92, ADDITIONAL PARTS NEEDED:

87-92 HPCOS KIT - 15981985 87-91 HS FITTING - 15982612 92 HS FITTING - 15982611 91-92 C69 - ACCUM./DRYER 2724836 87-92 DIODE 12126487 W/6.2L (D) - SEE 1993 SERVICE MANUAL SECTION 8A FOR INSTALLATION

COMPRESSOR USAGE: ALL R4 EXCEPT: 87-92 6.2L(D) - HR6

M/L COVERED: 1987-93, ADDITIONAL PARTS NEEDED:

1987-EARLY 93 HPCOS KIT 15981985, SADDLE CLAMP 15985307 LATE 93 HAS OEM HPCOS

COMPRESSOR USAGE:

87-90 - R4 91-93 - HR6

S/T COVERED: 1987-94, ADDITIONAL PARTS NEEDED: (1994 S/T UTILITY {BLAZER, BRAVADA, JIMMY} USE R-12)

87-94 - UTIL. - CONDENSER 52479563 87-EARLY 93 - HPCOS KIT 15981985, SADDLE CLAMP 15985307 - LATE 93 HAS OEM HPCOS

COMPRESSOR USAGE: ALL R4 EXCEPT: 87-93 2.5L - V5 91 2.8/4.3L - V5

P COVERED: 1987-93

87-93 - MOTORHOME CHASSIS - BASIS RETROFIT 1) CHECK FOR HPCOS. IT SHOULD BE MOUNTED ON THE HIGH PRESSURE LINE. ADD ONE IF NEEDED. 2) BOTH FITTINGS ARE THE LOW SIDE TYPE. 3) VEHICLES USED IN HIGH AMBIENTS MAY ADD CONDENSER BOOSTER FAN 12546082.

87-93 COMMERCIAL CHASSIS - CHECK REAR OF COMPRESSOR FOR HPCOS. ADD ONE IF THERE IS NO SWITCH IN THE HEAD.

COMPRESSOR USAGE:

MOTORHOME CHASSIS: SANDEN, OK TO RETROFIT COMMERCIAL CHASSIS: R4

U COVERED: 1990-92, BASIC RETROFIT

COMPRESSOR USAGE:

90-91 ALL - V5 92 3.1L W/O REAR AIR - V5 92 3.8L, 3.1L W/REAR AIR - HR6

MEDIUM DUTY COVERED: 1988-93, ADDITIONAL PARTS NEEDED:

88-93 HPCOS KIT 15981985, CYCLING SW. 52465555, HS FITTING 15982612

90-93 LX0 ENGINE, SANDEN COMP. 15956082 REQUIRES ADAPTER BLOCK 15980006 AND BOLT 15980005 88-90 (EXCEPT GMT530) CONDENSER 52469967 CAN BE USED FOR IMPROVED PERFORMANCE ON LF5/L34/L86/LH3/LH4 ENGINES; WITH RPO T50 (TILT FRONT) USE 52469957 88-93 RECEIVER 15505227 SHOULD BE REPLACED WHEN THE ACCUMULATOR IS REPLACED

COMPRESSOR USAGE:

90-93 LX0 DIESEL - SANDEN (SEE ABOVE) 88-93 GAS ENGINES - HR6 88-90 DIESELS EXC. LX0 - HR6

GEO MODELS

COMPRESSORS DO NOT HAVE TO BE REPLACED AS PART OF THE RETROFIT. NEW COMPRESSORS ARE SHIPPED WITH ENOUGH OIL TO ACCOMMODATE THE ENTIRE A/C SYSTEM. DO NOT ADD ADDITIONAL PAG OIL TO THE SYSTEM IF THE COMPRESSOR IS BEING REPLACED.

1985-88 NOVA, 1989-93 PRIZM (S)

1. USING THE SERVICE MANUAL, REMOVE THE FOLLOWING COMPONENTS IN THE ORDER GIVEN:

A. RECEIVER/DRYER. B. LOOSEN EVAPORATOR TO COMPRESSOR (SUCTION) PIPE (TO BE

REINSTALLED) C. 1985-92 ONLY: LOOSEN COMPRESSOR TO CONDENSER (COMPRESSOR DISCHARGE) PIPE (TO BE REINSTALLED). D. 1985-88 ONLY: SERVICE VALVE & EXTENSION HOUSING ON COMPRESSOR (TO BE INSTALLED). E. COMPRESSOR (ONLY IF BEING REPLACED).

2. USING THE SERVICE MANUAL, INSTALL THE FOLLOWING COMPONENTS IN THE ORDER GIVEN. BE SURE TO USE NEW O-RINGS WHENEVER A REFRIGERANT CONNECTION HAS BEEN DISCONNECTED.

A. COMPRESSOR (IF BEING REPLACED). B. HIGH AND LOW SIDE ADAPTER FITTINGS (SEE STEP 3 OF THE RETROFIT PROCEDURE FOR DETAILED INSTALLATION INSTRUCTIONS). C. 1985-88 ONLY: SERVICE VALVE & EXTENSION HOUSING ON COMPRESSOR USING NEW O-RINGS. SIX SMALL O-RINGS AND ONE LARGE O-RING ARE REQUIRED. D. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE O-RING. E. 1985-92 COMPRESSOR TO CONDENSER (DISCHARGE) HOSE O-RING. F. RECEIVER/DRYER AND O-RINGS.

R-134A AMOUNT: 85-92 - 650 GRAMS (1.43 LBS.) 93 - 700 GRAMS (1.54 LBS.) PAG OIL AMOUNT: 100 CC (3.0 OZ.)

PARTS REQUIRED:

RECEIVER/DRYER: 85-88 - 94855761 89-93 - 94855762 ADAPTER FITTINGS: LOW SIDE - 94855760 HIGH SIDE - 94855759 O-RINGS: 85-88 COMPRESSOR - SMALL O-RINGS (6 REQUIRED) - 94857336 - LARGE O-RING- 94857337 85-93 RECEIVER/DRYER (2) - 94845949 85-93 SUCTION HOSE - 94855765 85-92 DISCHARGE HOSE - 94845943

1985-88 SPRINT, 1989-93 METRO (M)

1. USING THE SERVICE MANUAL, REMOVE THE FOLLOWING COMPONENTS IN THE ORDER GIVEN:

A. RECEIVER/DRYER. B. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE. C. COMPRESSOR TO CONDENSER (COMPRESSOR DISCHARGE) PIPE. D. JOINT SERVICE CONNECTOR ON COMPRESSOR (TO BE REINSTALLED). E. COMPRESSOR (ONLY IF BEING REPLACED).

2. USING THE SERVICE MANUAL, INSTALL THE FOLLOWING COMPONENTS IN THE THE ORDER GIVEN. BE SURE TO USE NEW O-RINGS WHENEVER A REFRIGERANT CONNECTION HAS BEEN DISCONNECTED.

A. COMPRESSOR (IF BEING REPLACED). B. HIGH AND LOW SIDE ADAPTER FITTINGS (SEE STEP 3 OF THE RETROFIT PROCEDURE FOR DETAILED INSTALLATION INSTRUCTIONS). C. JOINT SERVICE CONNECTOR TO COMPRESSOR. USE NEW O-RINGS. SIX SMALL O-RINGS AND ONE LARGE O-RING ARE REQUIRED. D. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE, AND NEW O-RING. E. COMPRESSOR TO CONDENSER (DISCHARGE) HOSE AND NEW O-RING. F. RECEIVER/DRYER AND O-RING.

R-134A AMOUNT: 500 GRAMS (1.10 LBS.) PAG OIL AMOUNT: 100 CC (3.0 OZ.)

PARTS REQUIRED:

RECEIVER/DRYER: 85-86 - 91172081 87-88 - 91172079 89-93 - 96068480 ADAPTER FITTINGS: LOW SIDE - 91172092 85-88 - HIGH SIDE - 91172094 89-93 - HIGH SIDE - 52467941 O-RINGS: COMPRESSOR - SMALL O-RINGS (6 REQUIRED) - 91172095 - LARGE O-RING - 96068915 RECEIVER/DRYER (2) - 96068488 89-93 - SUCTION HOSE - 96068490 89-93 - DISCHARGE HOSE - 96068489 SUCTION HOSE: 85-86 - 91172086 85-86 DEALER INSTALLED: 91172087 87-88 - 91172088 89-93 - W/TURBO - 96069121 - W/O TURBO - 91172089 DISCHARGE HOSE: 85-86 - 91172082 85-86 DEALER INSTALLED: 91172083 87-88 - 91172084 89-93 - 96069024

1989-93 TRACKER

1. USING THE SERVICE MANUAL, REMOVE THE FOLLOWING COMPONENTS IN THE ORDER GIVEN:

A. RECEIVER/DRYER. B. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE. C. COMPRESSOR TO CONDENSER (COMPRESSOR DISCHARGE) PIPE. D. JOINT SERVICE CONNECTOR ON COMPRESSOR (TO BE REINSTALLED). E. COMPRESSOR (ONLY IF BEING REPLACED).

2. USING THE SERVICE MANUAL, INSTALL THE FOLLOWING COMPONENTS IN THE ORDER GIVEN. BE SURE TO USE NEW O-RINGS WHENEVER A REFRIGERANT CONNECTION HAS BEEN DISCONNECTED.

A. COMPRESSOR (IF BEING REPLACED). B. HIGH AND LOW SIDE ADAPTER FITTINGS (SEE STEP 3 OF THE RETROFIT PROCEDURE FOR DETAILED INSTALLATION INSTRUCTIONS). C. JOINT SERVICE CONNECTOR TO COMPRESSOR. USE NEW O-RINGS. SIX SMALL O-RINGS AND ONE LARGE O-RING ARE REQUIRED. D. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE, AND NEW O-RING. E. COMPRESSOR TO CONDENSER (DISCHARGE) HOSE AND NEW O-RING. F. RECEIVER/DRYER AND O-RING.

R-134A AMOUNT: 550 GRAMS (1.21 LBS.) PAG OIL AMOUNT: 100 CC (3.0 OZ.)

PARTS REQUIRED:

RECEIVER/DRYER - 91172080 ADAPTER, LOW SIDE - 91172092 ADAPTER, HIGH SIDE - 91172093 O-RINGS: COMPRESSOR - SMALL (6) - 91172095 - LARGE - 96068915 RECEIVER/DRYER (2) - 96068488 SUCTION HOSE - 96068490 DISCHARGE HOSE - 96068489 SUCTION HOSE - 91172091 DISCHARGE HOSE - 91172085

1985-89 SPECTRUM AND 1990-93 STORM (R)

1. USING THE SERVICE MANUAL, REMOVE THE FOLLOWING COMPONENTS IN THE ORDER GIVEN:

A. CONDENSER (STORM) OR RADIATOR GRILLE (SPECTRUM) (TO BE REINSTALLED). B. TRIPLE SWITCH (STORM) OR DUAL PRESSURE SWITCH (SPECTRUM) (TO BE REINSTALLED). C. RECEIVER/DRYER. D. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE. E. CHECK VALVE FROM HIGH SIDE SERVICE VALVE (DISCARD). F. COMPRESSOR (ONLY IF BEING REPLACED).

2. USING THE SERVICE MANUAL, INSTALL THE FOLLOWING COMPONENTS IN THE

ORDER GIVEN. BE SURE TO USE NEW O-RINGS WHENEVER A REFRIGERANT CONNECTION HAS BEEN DISCONNECTED.

A. COMPRESSOR (IF BEING REPLACED). B. HIGH SIDE ADAPTER FITTING (SEE STEP 3 OF THE RETROFIT PROCEDURE FOR DETAILED INSTALLATION INSTRUCTIONS). LOW SIDE - PART OF SUCTION HOSE C. EVAPORATOR TO COMPRESSOR (SUCTION) PIPE, AND NEW O-RINGS. D. RECEIVER/DRYER AND O-RINGS. E. TRIPLE SWITCH OR DUAL SWITCH, AND NEW O-RING. F. CONDENSER OR RADIATOR GRILLE.

R-134A AMOUNT: 91 - 500 GRAMS (1.10 LBS.) 92-93 - 600 GRAMS (1.32 LBS.) PAG OIL AMOUNT: 150 CC (4.50 OZ.)

PARTS REQUIRED:

RECEIVER/DRYER: 85-89 - 97104795 90-91 - 97104797 92-93 - 97104798 ADAPTER, HIGH SIDE: 85-89 - 97104794 90-93 - 97104793 ADAPTER, LOW SIDE: PART OF HOSE ASM. O-RINGS: RECEIVER/DRYER - 85-91 - 94154048 92-93 - 94461700 SWITCH/PIPE - 94461902 SUCTION HOSE: 85-86: 1.5L - 97104799; 1.6L - 97104800 90-93: 1.6L - 97104801; 1.8L - 97104803

B. GENERAL INFORMATION

SEVERAL ITEMS AFFECTING THE PERFORMANCE AND DURABILITY OF THE SYSTEM SHOULD BE CONSIDERED:

1. PERFORMANCE

WHEN PERFORMED PROPERLY, THE RETROFIT FROM R-12 TO R-134A WILL HAVE MINIMAL EFFECT ON THE SYSTEM'S PERFORMANCE IN MOST CLIMATIC CONDITIONS FOUND IN THE UNITED STATES AND CANADA.

2. LEAKAGE

EXPERIENCE HAS SHOWN THAT MOST LEAKAGE IN AN A/C SYSTEM IS DUE TO LEAKS AT THE JOINTS, OR THROUGH A SMALL LEAK IN A HOSE, USUALLY AT THE COUPLING. THE R-134A MOLECULES ARE SMALLER THAN R-12, AND A SMALL LEAK MAY RESULT IN A FASTER LOSS OF REFRIGERANT WITH R-134A. BECAUSE OF THIS, IT IS VERY IMPORTANT TO LEAK CHECK ALL VEHICLES USING THE J-39400 LEAK DETECTOR, BEFORE THE RETROFIT IS PERFORMED, AND REPAIR ANY LEAKS FOUND.

→ "O" RINGS AND HOSES USED IN MOST GM VEHICLES ARE COMPATIBLE WITH R-134A AND DO NOT NEED REPLACEMENT DURING A RETROFIT. "O" RINGS OR HOSES ←
INSTALLED IN PREVIOUS REPAIRS MAY HAVE BEEN OF NON-COMPATIBLE MATERIALS IF GM PARTS WERE NOT USED AND WILL BE MORE LIKELY TO DETERIORATE AND LEAK THAN THE ORIGINAL EQUIPMENT MATERIALS. ALL "O" RINGS AND HOSES AVAILABLE THROUGH GMSPO ARE COMPATIBLE WITH R-134A. REMEMBER THAT THE NORMAL POLICY IS TO REPLACE THE "O" RINGS WHENEVER A JOINT IS OPENED FOR ANY REASON.

3. DESICCANT

YOU MAY HAVE HEARD THAT THE CURRENTLY USED DESICCANT IN THE ACCUMULATOR IS NOT COMPATIBLE WITH R-134A. EXTENSIVE TESTING HAS SHOWN THAT IT IS, IN FACT, SUITABLE FOR USE WITH R-134A, ONCE IT HAS BEEN IN SERVICE IN AN R-12 SYSTEM. THE ACCUMULATOR IN THESE MODELS WILL NOT HAVE TO BE CHANGED DURING THE RETROFIT PROCEDURE, UNLESS THE VEHICLE IS MORE THAN 5 YEARS OLD. VEHICLES MORE THAN 5 YEARS OLD SHOULD HAVE THE A/D REPLACED TO ADD NEW DESICCANT FOR PROPER SYSTEM DRYING.

IN THE EVENT THAT AN ACCUMULATOR/DRYER (A/D) NEEDS TO BE REPLACED ON A RETROFITTED SYSTEM IN THE FUTURE, ONLY A/D'S WITH XH-7 DESICCANT SHOULD BE USED. THE SERVICE PARTS FOR THE 1993 VEHICLES CONTAIN ONLY XH-7 DESICCANT. THE PARTS FOR THE 1992 AND OLDER VEHICLES MAY CONTAIN EITHER XH-5 OR XH-7. PARTS CONTAINING XH-7 CAN BE IDENTIFIED (SEE FIGURE 1) BY 1) AN "A" PRINTED ON THE TOP OF THE A/D; OR 2) IF THERE IS A LABEL ON TOP OF THE A/D, THERE WILL BE A SQUARE WITH AN "A" INSIDE; OR 3) IF THERE IS A TIME CODE AND DATE PRINTED ON TOP OF THE A/D JUST UNDER THE "HARRISON" LOGO, THE A/D CONTAINS XH-7. A/D'S CONTAINING XH-5 CAN STILL BE USED ON R-12 VEHICLES.

4. IMPROVED COOLING PERFORMANCE

THERE HAVE BEEN SERVICE BULLETINS ISSUED IN THE PAST WITH INFORMATION IMPROVING THE COOLING PERFORMANCE OF EXISTING R-12 SYSTEMS. THESE BULLETINS CAN ALSO BE USED TO IMPROVE THE PERFORMANCE OF RETROFITTED VEHICLES IN HIGH AMBIENT TEMPERATURE CLIMATES.

5. PAG OR V5 OIL COMPATIBILITY

→ CONTRARY TO INFORMATION PUBLISHED TO DATE OUTSIDE OF GENERAL MOTORS, MINERAL OIL AND PAG OR V5 OIL ARE CHEMICALLY COMPATIBLE. THE MINERAL OIL LEFT IN THE SYSTEM AFTER RECLAIMING THE R-12 CAN REMAIN IN THE SYSTEM WITH NO HARMFUL EFFECTS. HOWEVER, THE MINERAL OIL WILL NOT MIX WITH THE R-134A, AND SO WILL NOT CIRCULATE AND PERFORM ITS LUBRICATING FUNCTION. TESTING HAS SHOWN THAT MOST OF THE MINERAL OIL WILL EVENTUALLY COLLECT IN THE ACCUMULATOR. THE SYSTEM WILL OPERATE PROPERLY AS LONG AS REFRIGERANT CHARGE AMOUNTS ARE STRICTLY ADHERED TO. ←

6. REFRIGERANT CHARGE LEVEL

THE RETROFIT R-134A CHARGE LEVEL IS MORE CRITICAL THAN WITH R-12 SYSTEMS. OVERCHARGING MAY PUSH THE MINERAL OIL OUT OF THE A/D, AND CAUSE IT TO CIRCULATE AS A LIQUID. THIS IS MORE LIKELY TO RESULT IN COMPRESSOR DAMAGE. UNDERCHARGING MAY LEAD TO LOSS OF PERFORMANCE. IT IS VERY IMPORTANT TO CLEAR THE HOSES DURING THE CHARGING OPERATION, TO INSURE THAT ALL THE REFRIGERANT IS DELIVERED TO THE VEHICLE A/C SYSTEM. THIS IS COVERED IN STEP 6D OF THE RETROFIT PROCEDURE.

C. PARTS INFORMATION

IMPORTANT:

ALL OF THE FOLLOWING PARTS ARE NOT NEEDED FOR A NORMAL RETROFIT. FOLLOW THE BULLETIN PROCEDURES TO DETERMINE WHICH PARTS YOU NEED! INDIVIDUAL VEHICLE KITS ARE NOT NECESSARY, SINCE MOST OF THE PARTS ARE GENERIC AND ONLY A FEW PARTS ARE NEEDED FOR MOST VEHICLES.

GEO PARTS ARE LISTED IN "PLATFORM DETAILS".

DESCRIPTION P/N

GENERIC PARTS LABELS, RETROFIT (ROLL OF 250) 21030857 FITTING, R-134A STRAIGHT HIGH SIDE PORT 52467941 FITTING, R-134A STRAIGHT LOW SIDE PORT 52467943 FITTING, R-134A STRAIGHT TWO-PIECE HIGH SIDE 52467324 FITTING, R-134A 90 DEGREE HIGH SIDE PORT 52469054 FITTING, R-134A 90 DEGREE LOW SIDE PORT 52469055 VALVE, SADDLE CLAMP PORT - 3/8" HIGH SIDE 52471115 VALVE, SADDLE CLAMP PORT - 1/2" HIGH SIDE 52471116 VALVE, SADDLE CLAMP PORT - 5/8" LOW SIDE 52471117 VALVE, SADDLE CLAMP PORT - 3/4" LOW SIDE 52471118 PAG OIL - 16 OZ. BOTTLE 12345923 V5 RETROFIT OIL - 16 OZ. BOTTLE 12346305

SPECIFIC PARTS - CARS B/D FAN MOUNTING KIT - 91-93 10254709 B/D FAN ASM. - 91-93 22134515 HOOD SEAL KIT - PONTIAC H ONLY 25616378 L/N THERMAL EXPANSION VALVE (TXV) KIT 52477714 Y COMPRESSOR, L98/LT1 (88-93) 10243781 Y COMPRESSOR, LT5 (90-93) 10243783

SPECIFIC PARTS - TRUCKS HPCOS KIT 15981985 ADAPTER, SADDLE CLAMP - HPCOS PORT - 3/8" 15985307 ADAPTER, SADDLE CLAMP - HPCOS PORT - 1/2" 15987428 TRUCKS, CYCLING SWITCH 52465555 TRUCKS, HIGH SIDE FITTING (DUAL PORT) 15982611 TRUCKS, HIGH SIDE FITTING (DUAL PORT) 15982612 TRUCKS, HIGH SIDE FITTING ADAPTER 15984039 C/K TRUCK CONDENSER, 4.3/7.4/6.2D 52469067 C/K TRUCK INSULATOR (2) 15956322 C/K TRUCK INSULATOR (2) 15966553 C/K TRUCK BRACKET (2) 15956321 G VAN A/D WITH C69 2724836 G VAN DIODE, WITH DIESEL 12126487 S/T TRUCK CONDENSER (UTILITY) 52479563 P CHASSIS, CONDENSER BOOSTER FAN 12546082 MEDIUM DUTY COMPRESSOR (SANDEN) 15956082 MEDIUM DUTY COMPRESSOR ADAPTER BOLT 15980005 MEDIUM DUTY COMP. ADAPTER BLOCK 15980006 MEDIUM DUTY CONDENSER (EXC. GMT530) 52469967 WITH TILT FRONT USE: 52469957 84-93 MEDIUM DUTY - RECEIVER 15505227

PARTS ARE CURRENTLY AVAILABLE FROM GMSPO.

D. WARRANTY INFORMATION

1. VEHICLE STILL WITHIN THE ORIGINAL NEW VEHICLE LIMITED WARRANTY PERIOD

WHEN GM MODELS FOR THE YEARS LISTED IN THE BULLETIN REQUIRE REPAIRS TO THE REFRIGERANT SYSTEM AND THE VEHICLES ARE STILL COVERED UNDER THE NEW VEHICLE LIMITED WARRANTY, DEALERS ARE INSTRUCTED TO PROCEED AS FOLLOWS:

IMPORTANT:

ON VEHICLES EQUIPPED WITH A/C SYSTEMS NOT PRODUCED BY GM (I.E., REAR A/C SYSTEMS IN VAN CONVERSIONS), CONSULT THE MANUFACTURER OF THAT A/C

SYSTEM FOR RETROFIT GUIDELINES.

- OFFER THE CUSTOMER THE OPTION OF REPAIRING AND RECHARGING THE SYSTEM WITH R12, OR RETROFITTING AFTER REPAIR AND RECHARGING WITH R-134A AT NO ADDITIONAL CHARGE.
- PROVIDE THE OWNER WITH, AND REVIEW THE INFORMATION CONTAINED IN, THE "CONVERTING YOUR AUTO AIR CONDITIONING SYSTEM TO USE THE NEW REFRIGERANT" BROCHURE. (BROCHURE, FORM GM-0011, CAN BE ORDERED FREE OF CHARGE FROM GM FULFILLMENT HQ, PHONE 1-800-269-5100).
- RECORD THE CUSTOMER'S CHOICE ON THE REPAIR ORDER AND, AS WITH ALL PROPERLY COMPLETED REPAIR ORDERS, ASK THE CUSTOMER TO SIGN ON THE APPROPRIATE LINE ACKNOWLEDGING THE REPAIRS REQUESTED.
- UNDER NO CIRCUMSTANCES SHOULD THE RETROFIT TO R-134A BE PERFORMED UNLESS THE CUSTOMER HAS HAD THE OPTION EXPLAINED PRIOR TO REPAIR. ONCE THE VEHICLE HAS BEEN RETROFITTED TO R-134A, A SIGNIFICANT EXPENDITURE WOULD BE INCURRED TO GO BACK TO R-12, IN THE EVENT THE CUSTOMER HAS CHANGED HIS/HER MIND.

THIS OFFER APPLIES ONLY TO VEHICLES REQUIRING A/C REFRIGERANT SYSTEM REPAIRS UNDER THE TERMS OF THE NEW VEHICLE LIMITED WARRANTY. IT IS NOT A SPECIAL POLICY, AND ANY EXISTING DEDUCTIBLES STILL APPLY. THIS IS SIMPLY AN OPTION BEING OFFERED TO THE CUSTOMER DURING THE WARRANTY PERIOD AT THIS TIME. GM RESERVES THE RIGHT TO TERMINATE THIS OFFER AT ANY TIME.

IF THE R-12 REFRIGERANT SYSTEM DOES NOT REQUIRE DISCHARGING FOR A WARRANTY REPAIR, BUT THE CUSTOMER REQUESTS A RETROFIT TO R-134A, THE RETROFIT WOULD BE PERFORMED AT THE CUSTOMER'S EXPENSE, EVEN DURING THE WARRANTY PERIOD.

2. CUSTOMER PAID RETROFITTING COSTS

IF THE CUSTOMER REQUESTS A RETROFIT TO R-134A, FOR A SPECIFIC VEHICLE WHOSE RETROFIT PARTS AND PROCEDURES HAVE BEEN RELEASED IN THIS BULLETIN, THE CUSTOMER WOULD BE EXPECTED TO PAY THE COSTS TO RETROFIT UNDER THE FOLLOWING CONDITIONS:

- THE VEHICLE IS NO LONGER COVERED BY THE TERMS OF THE NEW VEHICLE LIMITED WARRANTY.
- THE VEHICLE IS COVERED BY WARRANTY, BUT THE REPAIR COVERED UNDER THE WARRANTY DOES NOT REQUIRE EVACUATING AND RECHARGING THE REFRIGERANT SYSTEM.

3. LABOR TIME INFORMATION

FOR VEHICLES REPAIRED UNDER WARRANTY:

USE EXISTING LABOR OPERATIONS FOR CORRECTING THE ORIGINAL CONDITION. THE QUANTITY OF R-134A USED SHOULD BE CHARGED TO THE NORMAL LABOR OPERATION (NOT D4500), JUST AS IF IT WERE R-12.

USE D4500, 0.3 HR., TO CHARGE FOR PARTS AND LABOR, FOR ALL OF THE FOLLOWING ITEMS:

- ADDITIONAL TIME FOR RECOVERY OF R-12 TO MEET SAE STANDARDS; - INSTALL HIGH AND LOW SIDE SERVICE PORT CONVERTER FITTINGS; - ADD PAG OR V5 RETROFIT OIL; - COMPLETE LABEL INFORMATION AND INSTALL.

ADD 0.2 HOURS TO D4500 FOR INSTALLATION OF THE HPCOS.

USE T5321, 0.3 HR., FOR THE PONTIAC BONNEVILLE HOOD SEAL INSTALLATION.

ANY PARTS OR LABOR TIME OTHER THAN THOSE LISTED ABOVE SHOULD BE CHARGED TO THE REGULAR LABOR OPERATION CORRESPONDING TO THE ORIGINAL CONDITION THAT IS BEING REPAIRED.

FIGURES: 06 ATTACHMENTS: 00

FIGURE 6: 1. TYPE: MANUFACTURER OF OIL (GM) 2. GM PART NUMBER 3. REFRIGERANT AMOUNT IN LBS. OR KG 4. LUBRICANT AMOUNT IN OUNCES OR CC/ML 5. CHECK "PAG" BOX 6. DATE RETROFIT WAS PERFORMED 7. NAME AND ADDRESS OF FACILITY THAT PERFORMED THE RETROFIT

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

GENERAL MOTORS BULLETINS ARE INTENDED FOR USE BY PROFESSIONAL TECHNICIANS, NOT A "DO-IT-YOURSELF". THEY ARE WRITTEN TO INFORM THOSE TECHNICIANS OF CONDITIONS THAT MAY OCCUR ON SOME VEHICLES, OR TO PROVIDE INFORMATION THAT COULD ASSIST IN THE PROPER SERVICE OF A VEHICLE. PROPERLY TRAINED TECHNICIANS HAVE THE EQUIPMENT, TOOLS, SAFETY INSTRUCTIONS AND KNOW-HOW TO DO A JOB PROPERLY AND SAFELY. IF A CONDITION IS DESCRIBED, DO NOT ASSUME THAT THE BULLETIN APPLIES TO YOUR VEHICLE, OR THAT YOUR VEHICLE WILL HAVE THAT CONDITION. SEE A GENERAL MOTORS DEALER SERVICING YOUR BRAND OF GENERAL MOTORS VEHICLE FOR INFORMATION ON WHETHER YOUR VEHICLE MAY BENEFIT FROM THE INFORMATION.

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