

Rear Suspension

GMC FRONT WHEEL DRIVE MOTOR HOME

GMC – Motor Home Chassis

DESCRIPTION

Air Bellows type rear suspension consists of air bags, height control valves, control arms, an air compressor, an air reservoir, and shock absorbers. Compressed air for system is supplied by an air compressor and stored in an air reservoir. An air bellows is mounted on each side, between two control arms. Air is supplied to air bellows from air reservoir through height control valves. Air bellows absorb road shocks, and also control rear vehicle height. Double-acting, gas filled shock absorbers are mounted to the frame at the bottom and to the top of the control arms. Height control valves automatically maintain constant vehicle height by controlling flow of air into and out of suspension system air bellows. Optional Power Level system is available which allows driver to manually override automatic leveling action.

ADJUSTMENT

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

See *Wheel Alignment Specifications & Procedures* in *WHEEL ALIGNMENT* Section.

HEIGHT CONTROL VALVE

NOTE – Silicone fluid should be drained from valve before making adjustments.

Overtravel Lever Center Position – 1) With height control valve mounted in a vise, remove cover from valve. Remove exhaust fitting and screen from control valve, and scribe a line $1\frac{3}{8}$ " below plug end on overtravel lever. Attach vacuum supply hose to exhaust port and an air supply hose to inlet port. Mount a dial indicator to unit with contact tip of indicator touching overtravel lever at scribed mark.

2) Move overtravel lever to full exhaust position (delay piston at top of bore) without overtraveling, and zero dial indicator at this point. Move overtravel lever to full air intake position (delay piston at bottom of bore) and note indicator reading. Divide travel dimension by two, then move lever back this amount to center lever.

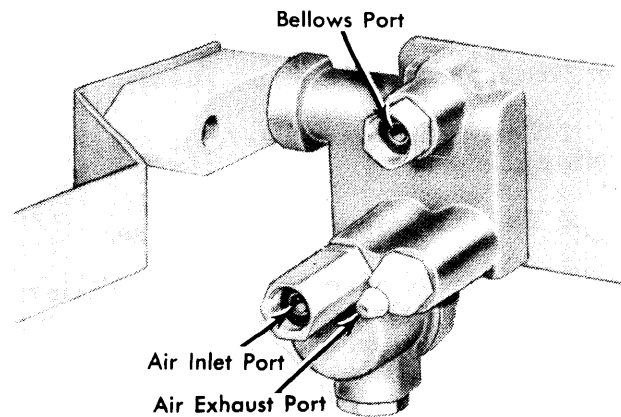


Fig. 1 Height Control Valve Port Identification

Air Intake & Exhaust Valve Lever – With overtravel lever center position adjusted, apply 80-110 psi air pressure and vacuum of 15 inches of mercury to control valve. Starting at true center, slowly move overtravel lever until air intake valve just begins to open. Lever movement should be $.025-.027$ ". Bend lever to adjust. Repeat procedure for exhaust valve. Lever movement for exhaust valve should be $.035-.037$ ". Bend lever to adjust.

Air Inlet Time Delay Check – With air intake and exhaust valve lever properly adjusted, refill valve assembly with silicone fluid and connect air supply hose to valve air inlet port. Move overtravel lever upward quickly and measure time before air starts to escape from bellows port. Delay should be 4-18 seconds. If not within range, repeat valve lever adjustment.

Air Exhaust Time Delay Check – With air intake and exhaust valve lever properly adjusted, refill valve assembly with silicone fluid and connect vacuum supply hose to air exhaust port. Adjust vacuum supply to 15 inches of mercury. Move overtravel downward quickly and measure time before vacuum gauge begins to drop off. Delay should be 10-50 seconds. If not within range, repeat valve lever adjustment.

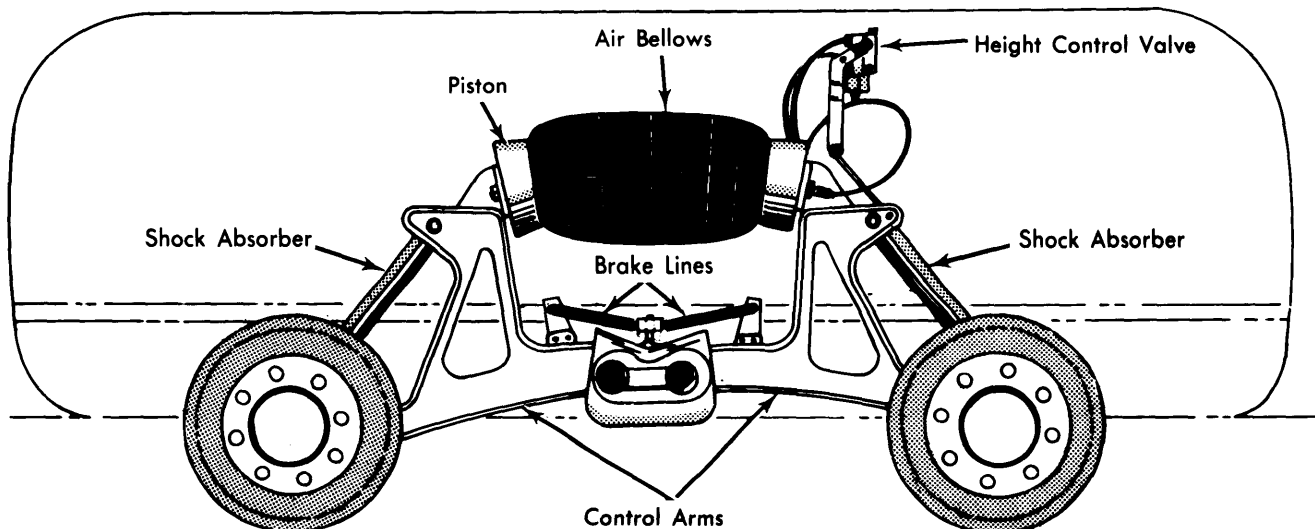


Fig. 2 Component Identification of GMC Motor Home Rear Suspension

GMC FRONT WHEEL DRIVE MOTOR HOME (Cont.)

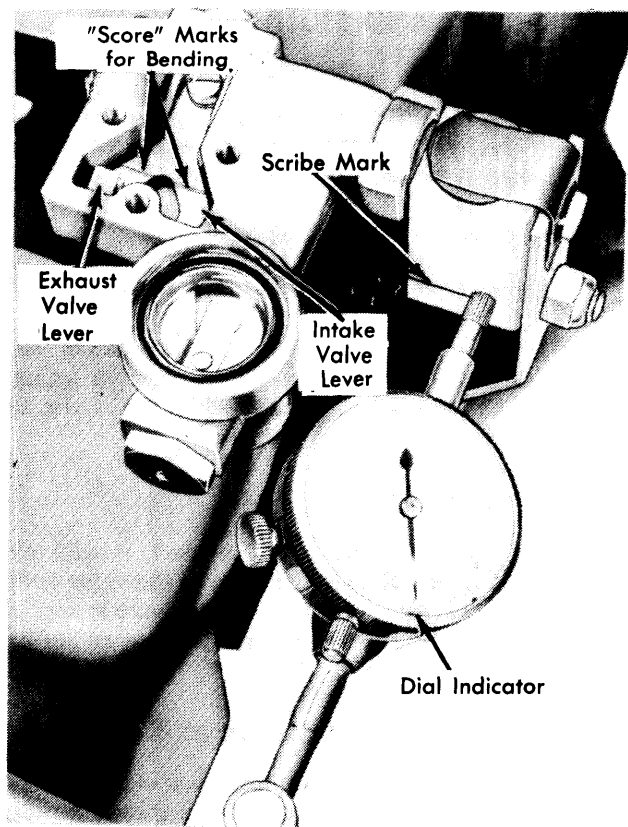


Fig. 3 Adjusting Air Valve Lever Gaps

REMOVAL & INSTALLATION

AIR COMPRESSOR

Removal (Single Piston Compressor) — Open Schrader valve at reservoir and release air pressure. Disconnect air line at piston dome and hose at back of compressor. Disconnect wire at overheat switch on top of compressor. Remove four compressor mounting bolts and remove compressor.

Removal (Double Piston Compressor) — Open Schrader valve at reservoir and release air pressure. Disconnect electrical connections at rear of compressor. Disconnect air lines at back and at top of compressor. Remove three compressor mounting bolts and remove compressor.

Installation (All Compressors) — To install, reverse removal procedure.

HEIGHT CONTROL VALVE

Removal — Raise vehicle slightly, and support under frame to prevent vehicle from lowering when air is released from suspension system. Expel all air from air supply system by opening drain cock on air reservoir. Disconnect overtravel lever from valve link. Hold lever down until air is released from air bellows. Disconnect air lines from height control valve, remove control valve attaching nuts, and remove valve from vehicle.

Installation — **CAUTION** — Do not use sealing compound on threads, as it may cause valves to stick. To install, reverse removal procedure, build up air pressure in system, and check riding height.

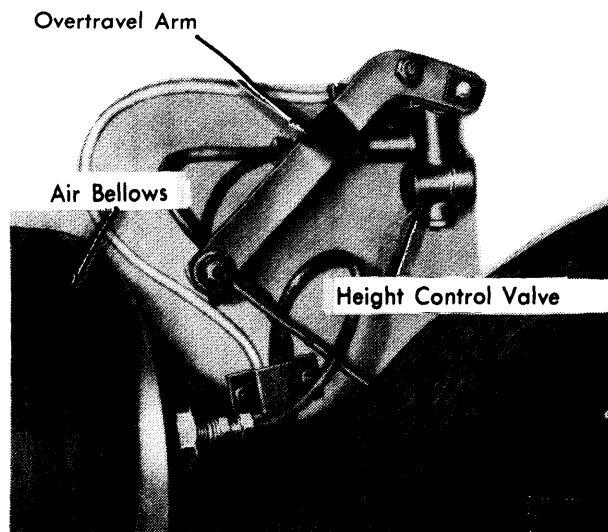


Fig. 4 Location of Height Control Valve

AIR BELLOWS

Removal — Raise and support vehicle under frame. Disconnect height control valve link, and hold overtravel lever down to release all air from air bellows. Disconnect air supply line at bellows, and remove two air bellows retaining nuts and washers from ends of bellows. Remove bellows from vehicle.

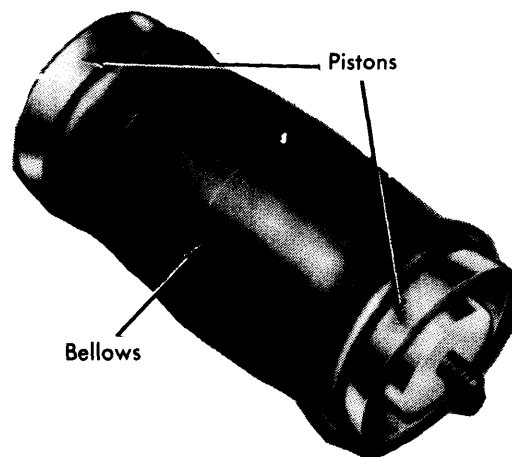


Fig. 5 Air Bellows Assembly

Installation — If pistons were removed from air bellows, proceed as follows: Place air bellows piston on floor with cone section pointing up. Position air bellows in piston with open end pointing up. Place air nozzle in open end of bellows and apply air while pushing down on bellows. Release air pressure, and bellows should fold over piston. Position second piston over top of bellows and repeat procedure. Raise rear wheels to bring tops of control arms close together and block in this position. Place air bellows into position and install washers and lock nuts. Connect air line to bellows and raise overtravel lever to fill bellows. Connect height control valve link to overtravel lever, lower vehicle and check riding height.

Rear Suspension

GMC FRONT WHEEL DRIVE MOTOR HOME (Cont.)

CONTROL ARMS

Removal - 1) Raise and support vehicle, and remove wheels. Remove air bellows (see Air Bellows Removal), and disconnect shock absorber from control arm mounting. Disconnect brake lines at center mounting bracket and each brake backing plate, and unbolt lines from all control arm mounting points. Remove brake drum dust cap, cotter pin, and castilated nut, then remove drum, hub, and bearings as a unit.

2) Remove brake backing plate retaining nuts and remove backing plate from control arm. Support control arm mounting bracket with a suitable jack and remove two bolts holding mounting bracket to crossmember. Remove four bolts holding mounting bracket to frame rail, and lower suspension unit to floor. Remove mounting pin nuts from mounting brackets, and remove Allen head retaining screws from back side of bracket. Press out control arm mounting pins, and remove control arms. Press spindles from control arms.

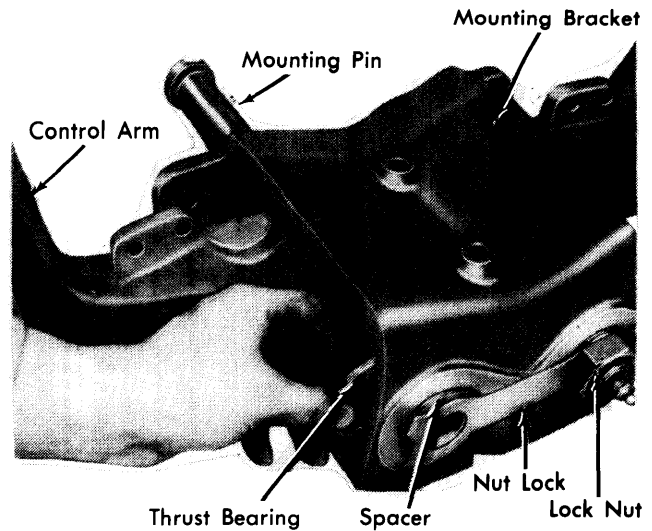


Fig. 6 Installation of Control Arm Thrust Washers

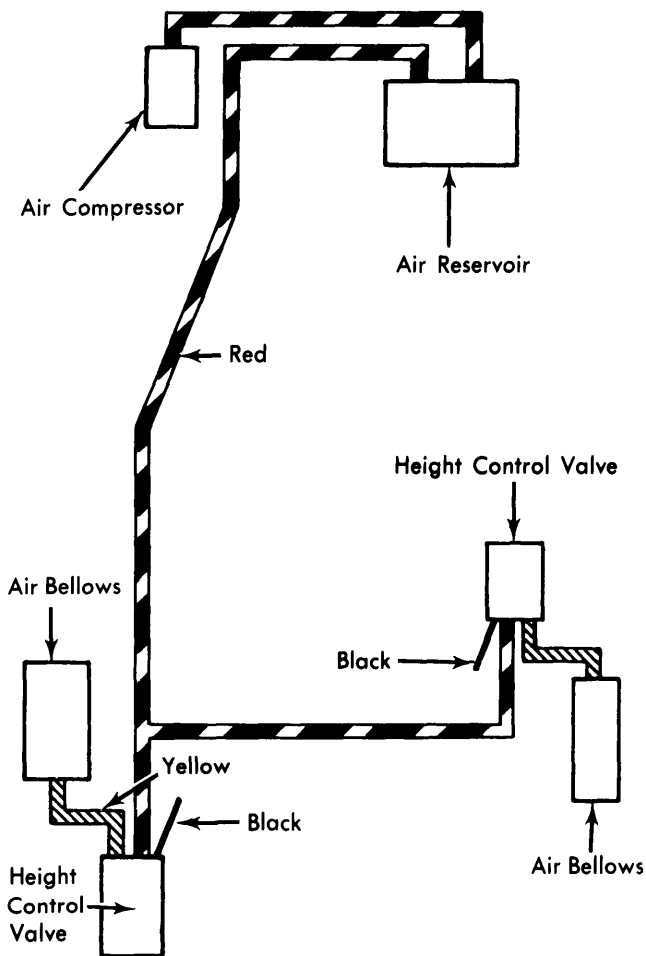


Fig. 7 Air Line Arrangement W/O Power Level

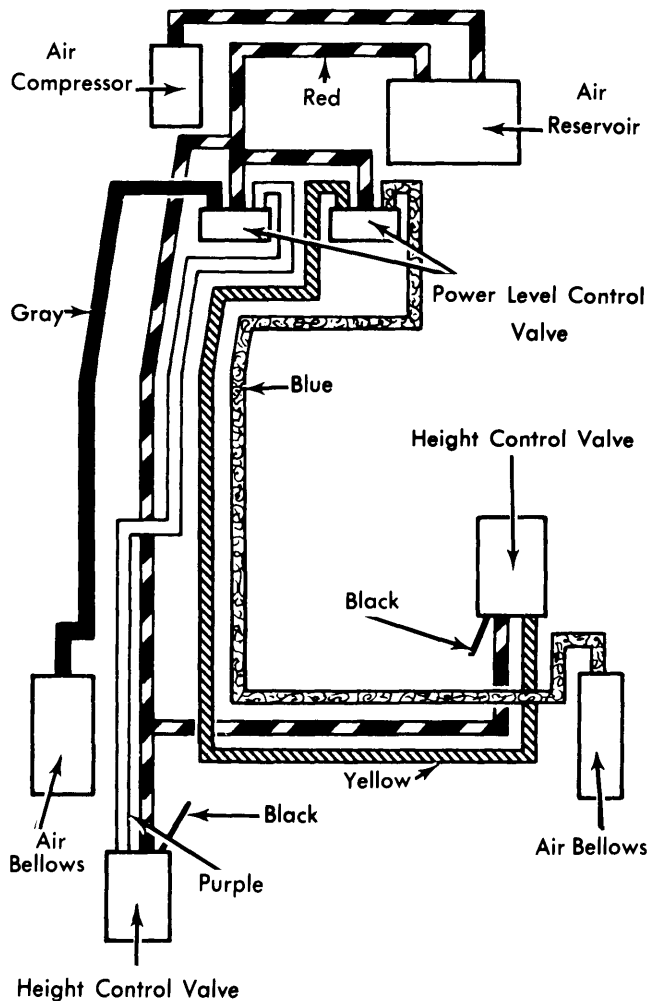
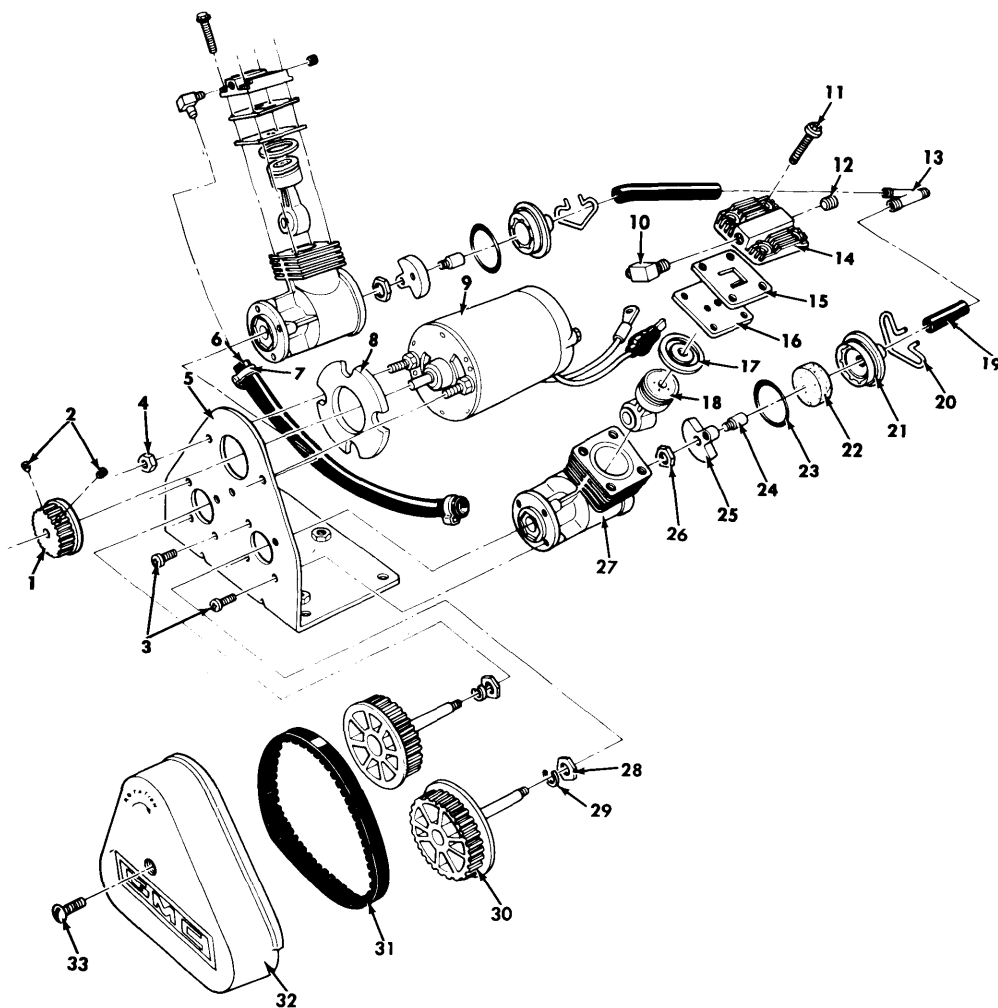


Fig. 8 Air Line Arrangement W/Power Level

GMC FRONT WHEEL DRIVE MOTOR HOME (Cont.)



1 - Motor Pulley
 2 - Screw
 3 - Screw
 4 - Nut
 5 - Mounting Bracket
 6 - Hose
 7 - Clamp
 8 - Spacer

9 - Motor
 10 - Connector
 11 - Screw
 12 - Plug
 13 - Tee
 14 - Head
 15 - Exhaust Valve
 16 - Head Plate

17 - "O" Ring
 18 - Piston & Rod Assy.
 19 - Tubing
 20 - Filter Retainer
 21 - Intake
 22 - Filter
 23 - "O" Ring
 24 - Crank Pin

25 - Crank
 26 - Thrust Washer
 27 - Cylinder Housing
 28 - Thrust Washer
 29 - Retaining Ring
 30 - Pulley
 31 - Belt
 32 - Belt Guard
 33 - Screw

Fig. 9 Exploded View of Double Cylinder Compressor Assembly

Installation - 1) Using a hammer, tap hat section spacers back in mounting bracket to provide additional clearance for control arms. Position control arms in mounting bracket, and install thrust pack journal bearing between arms and mounting bracket. Press control arm mounting pins into position, place nut locks on mounting pins, and install control arm lock nuts. Tighten control arm lock nuts to press hat section spacers into correct position, then back off nuts until control arms move freely, and retighten lock nuts. Press spindles into position.

2) Using a suitable jack, position control arm and bracket assembly on vehicle, and install mounting bracket-to-frame attaching bolts. Install brake backing plates on control arms, and install brake drums and hubs on spindles. Attach shock absorbers to control arms, connect all hydraulic brake lines, and install brake line mounting brackets. Install air bellows

assembly, connect height control valve link, and apply air pressure to air bellows. Install wheel, then lower vehicle, and check riding height. Bleed brakes. See *Hydraulic Brake Bleeding* in BRAKE SYSTEMS Section.

POWER LEVEL VALVE

Removal - Expel all air from air reservoir and place control valve in "LOWER" position. Remove mounting panel from vehicle, and remove control knobs from panel. Remove valve-to-panel attaching screws, disconnect fittings from back of each valve, and remove valves from vehicle.

Installation - To install, reverse removal procedure, and run compressor to pressurize suspension system. Check riding height.

GMC FRONT WHEEL DRIVE MOTOR HOME (Cont.)

OVERHAUL

AIR COMPRESSOR

Disassembly (Single Piston Compressor) – 1) With compressor removed from vehicle, remove piston dome. Remove valve plate and gasket, then remove exhaust valve from valve plate, and intake valve from top of piston. Remove piston sleeve from top of compressor, and air filter from end of housing. Rotate eccentric until piston is at bottom of stroke, and loosen Allen screw at top of eccentric.

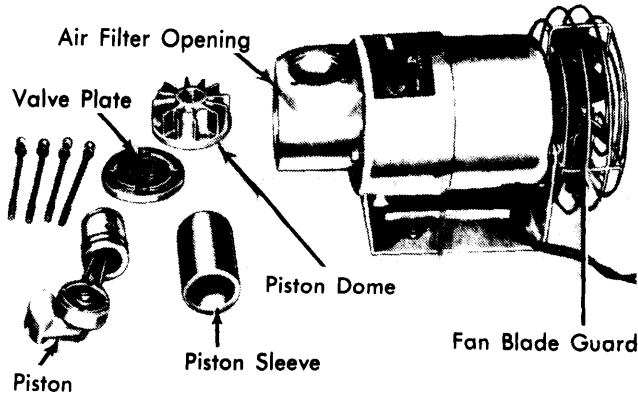


Fig. 10 Single Cylinder Compressor Components

2) Remove eccentric from output shaft, and remove piston assembly through air filter opening. Remove piston rings and expanders from piston. Remove fan blade guard from compressor, and remove fan blade from compressor shaft.

Disassembly (Double Piston Compressor) – 1) Remove belt guard screw and remove belt guard. Rotate compressor by hand and gradually work belt off pulleys. Remove air intake tubes from intake assemblies at rear of housing. Remove filter spring retainers. Remove intake assemblies with "O" rings and filter assemblies.

2) Remove two set screws in motor pulley and slide pulley off motor shaft. Remove motor mounting bolts and remove motor. Remove four screws securing valve heads to top cylinder housing. Lift head, exhaust valve and head plate assembly off as a unit. **NOTE – Mark relationship of red silicone exhaust reed to valve holes in head plate to ensure correct assembly.**

3) Remove "O" ring from groove in top of cylinder housing. Remove round red silicone intake valve from top of piston by working off of center rivet. Remove crankpin using an Allen wrench. Hold crank pulley by hand while loosening crankpin. With crankpin removed, push piston and rod assembly up through top of cylinder housing. Use a screwdriver to wedge crankshaft and unscrew pulley and shaft. Slide pulley and shaft assembly out of housing.

Reassembly (All Compressors) – Replace any components as necessary. Make sure all components are clean before reassembly. To assemble, reverse disassembly procedure. On double piston compressors, timing belt must be correctly timed. Proceed as follows: With intake assembly removed, rotate compressor pulleys so that one piston is at top of stroke and the other is at bottom of stroke. Position belt over pulley with flange in front and engage on other pulleys as much as possible. Rotate compressor by hand until timing belt is completely on pulleys. Install belt guard and intake assembly.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Control Arm Mounting Bracket-to-Frame.....	65-85
Control Arm Mounting Bracket-to-Crossmember.....	50-60
Height Control Valve Link-to-Arm Nut.....	60-90
Control Arm Lock Nut.....	15-20
Air Bellows Retaining Nut.....	50-60
Height Control Valve Mounting Bolt.....	80-120