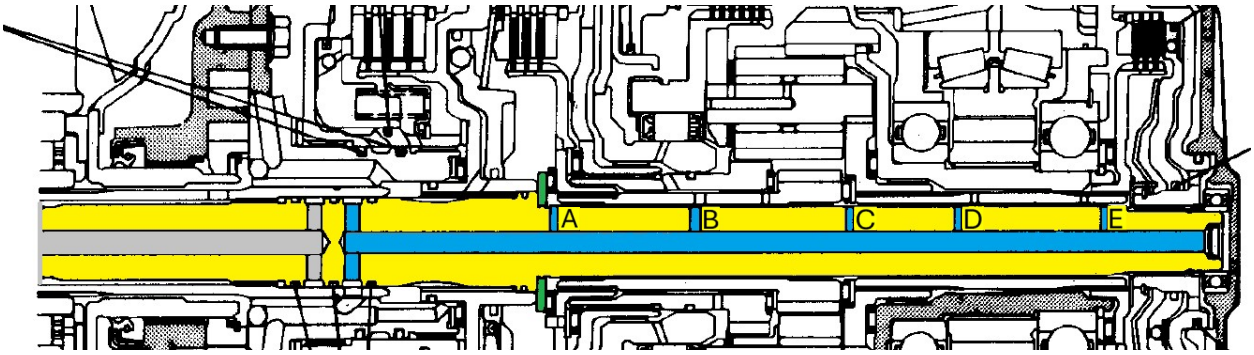
Critical points for Straight Cut Planetary Gear usage

1. These gears are a stronger material than OEM with a larger tooth profile and wider lower sun and planets to reduce gear bending stress. The straight cut gears also distribute load significantly better across their face width. To properly utilize this added gear strength, good oil film strength and planetary cooling are critical.
2. Adequate lubrication flow is critical
    a. Minimum 50psi as measured at the rear port on the transmission, this can drop at high rpm so datalogging is necessary vs just a shop measurement.
    b. Supply fluid should be as cool as possible, directly lubricate from the RD circuit rather than the OEM flow path from the converter.
        i. An additional cooler can be added on this line to help oil temperature to the gears
    c. Confirm the input shaft has all lubrication holes, some aftermarket shafts were missing a feed hole to the planetary (hole C in figure below)
3. High film strength fluid is essential
    a. Many people use John Deere Hy Gard, which is a hydraulic fluid that is also a GL4 gear oil and provides good scuffing protection
    b. Some very high-power applications have experimented with blending GL5 hypoid gear oil for ultimate gear scuffing protection. Only modern GL5's that are non-corrosive to yellow metals should be used.



Input shaft oiling

- Input Shaft = Yellow with washer in Green
- Blue = lube oil flow path, feeds from top of trans to the planetary (and other items)
- Hole B feeds the sun gear bushings and some to the lower sun mesh
- Hole C can be missing and feeds the lower sun gear mesh
    - Add this hole if it is missing!!!

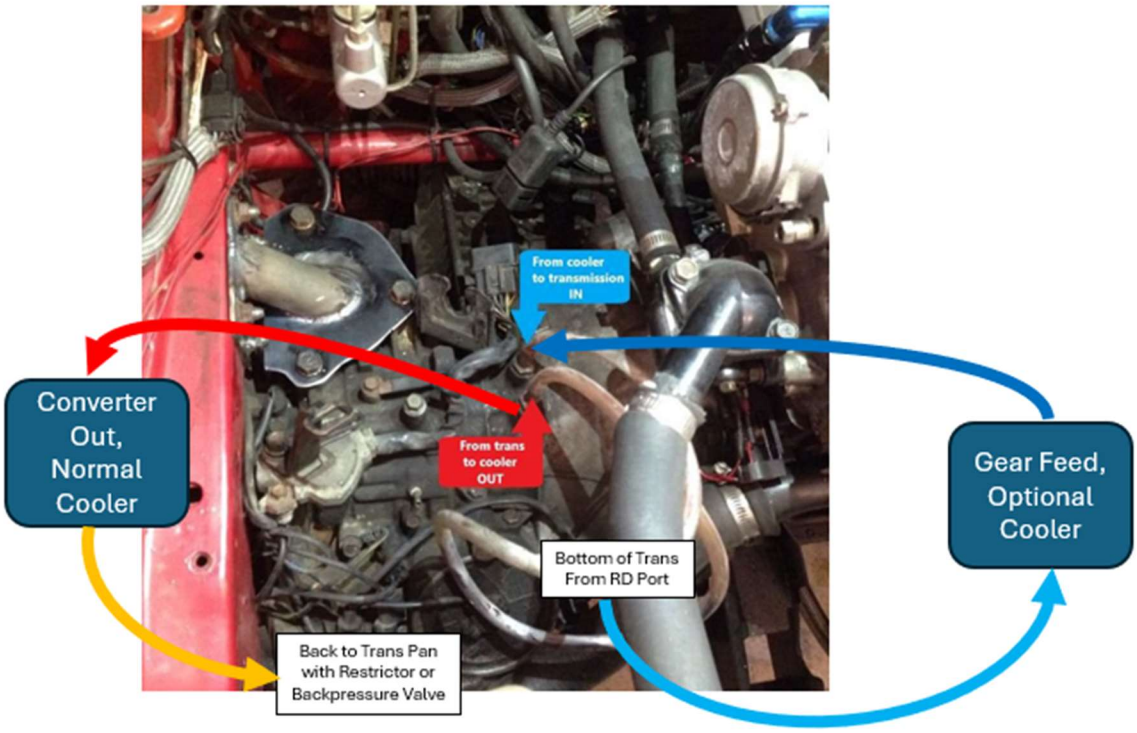
Preferred lubrication method: RD port lubrication

Important: the valvebody reducing pressure regulator valve must be locked in the closed position by replacing the reducing pressure regulating spring with a tube. This sets reducing pressure to be the same as transmission line pressure and is required when using reducing for lubrication oil flow. Details are on the following page.

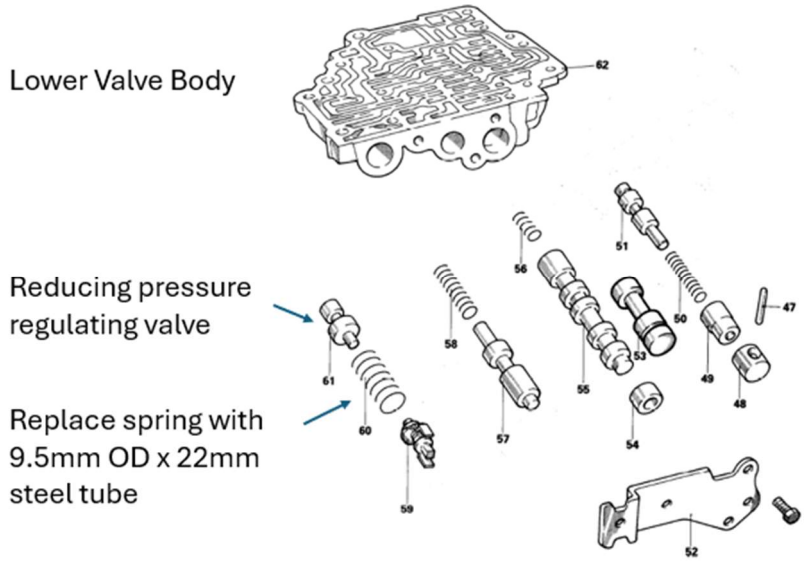
6AN lines are adequate in all locations

Oil flows from the RD port on the bottom of the bell housing, feeding the transmission lubrication inlet port, which is the rearward port (closer to the firewall). Measure pressure here. Confirm the case flow paths, some cases have restrictive hole intersections looking up from the valvebody and the RD port. A cooler can also be used in this flow path. Running 180-200psi line pressure can generate 50-60psi lubrication pressure.

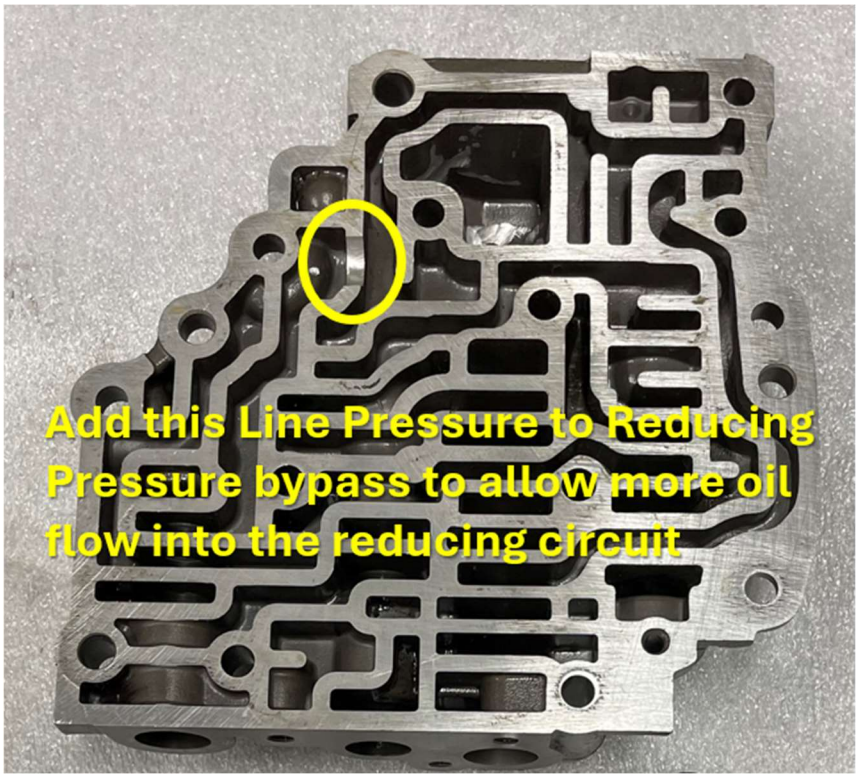
Converter discharge oil exits the forward port on top of the transmission. This must be cooled and returned to the pan with an appropriate level of restriction to maintain backpressure and keep the converter filled. This is generally 20-40psi and can be achieved with any various aftermarket flow restrictors (0.100-0.125" range worked on test cars) or an Enderle 6AN inline adjustable pressure fuel check valve (preferred). Flow back to the pan without a restriction has created excessive converter slip in some cases.



Required Valve body Reducing Pressure modification for RD Port Lubrication



Replace the reducing pressure regulator valve spring with a tube to lock the reducing valve in the closed position. The image below opens additional flow into the reducing circuit.



After these modifications, lubrication pressure should be over 50psi when running 180-200psi line pressure.