



WELCOME TO HYDROSTEER

Australia's Largest Heavy Vehicle Power Steering Specialist

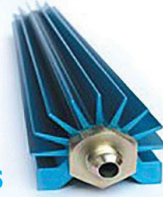
Hydrosteer Pty Ltd was established in June 1981 and has since become a vital link between Australia's heavy vehicle manufacturing and maintenance industries, we carry Australia's largest range of heavy vehicle power steering and commercial vehicle power steering products.

The range includes the following:

- New and re-manufactured power steering gears, R.H. Sheppard, TRW/ Ross, ZF Steering Systems, Bosch, JKC, Aisin Seiki and Koyo
- Steering pumps to suit all makes and models. (ZF, TRW, Vickers and more)
- IMMI (Formerly VIP) steering wheels
- Steering slip shafts
- Mitre boxes and drag link assemblies that are made to OEM's stringent quality specifications
- Oil reservoirs filters and parts



POWER STEERING FLUID TEMPERATURES



Keep them cool with Hydrosteer Cool Flo Coolers

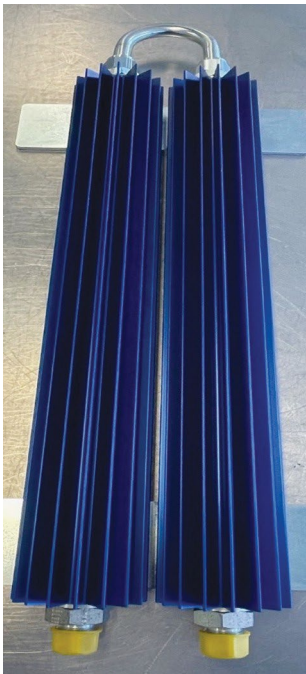
The weather bureau predicts a very hot summer ahead.

We are now at the start of another summer and many operators will face the effects of high ambient temperatures, and the resulting high under hood temperature.

The load on vehicle radiators is immense with air passing through air conditioning condensers then probably through transmission coolers, then air to air inter-coolers and then the engine radiators. Once outside air passes through this maze it's in no fit state to cool anything.



Added to this, high output engines generate a lot of under-hood heat, in fact sometimes high enough to boil water in windscreen washer bottles.



Power steering systems will generate 300 watts of heat energy just driving down the highway and normally, the only way to get rid of this heat is via the reservoir or from the steering gear itself. With high under-hood temperatures the reservoir often absorbs heat rather than getting rid of it to air. The steering gear is often tucked away behind the bull bar and gets very little cooling air.

The symptoms of high heat are the premature failure of seals in power steering pumps, power steering gears and hydraulic hoses.

Hydrosteer has developed a rugged cooler for steering and other applications. Typically, most for steering applications. We sell cooler kits which includes fittings and mounting brackets. We don't supply the hoses, however usually a short additional hose is required for the installation.

The cooler needs to be mounted where it will get cool air, in fact it can be mounted in areas where conventional coolers cannot be mounted due to its rugged construction.

Hydrosteer coolers are available in single or twin units and a variety of lengths – **Call one of the Hydrosteer team members to discuss your requirements.**



Hydrosteer supports community free-to-air television, check out our commercial.



C31 Melbourne is a free-to-air community television channel in Melbourne, Victoria, Australia. Its name is derived from UHF 31, the frequency and channel number reserved for analogue broadcasts by metropolitan community television stations in Australia.

STEERING COLUMNS & STEERING SHAFTS

Technical Information & Tips

Universal jointed steering shafts and steering columns are almost always overlooked when trouble shooting steering systems.

Yet in Hydrosteer's experience they are one of the most common contributors to faults we encounter.

Effect of Excessive Friction

Excessive friction in the steering column and steering shaft is a major cause of steering faults. To appreciate the effects of excessive friction in the steering column and steering shaft take some time to consider how little steering effort is required to steer a vehicle at highway speeds.

For highway steering corrections or lane changing barely more than ½ a kilo at the steering wheel rim is required. If the total friction in the steering column exceeds this then the accuracy of minor steering corrections will be compromised. This excess friction will mask any road feel resulting in a "dead" feel to the steering. In addition, excessive friction will stop the steering system from self-centering when coming out of a corner.

Bearings

Bearings used in steering columns are generally comprised of pressed metal inner and outer bearing tracks and hardened steel balls. These are mostly unsealed and consequently, over time dust and grit will collect in the ball tracks significantly increasing friction. In addition, sometimes a bearing assembly is used to position a steering shaft away from the turbo charger. In this situation the bearing is subjected to high levels of radiant heat and bearing seals will ultimately break down and as these bearing are under the front wheel arch they are exposed to dust, road grit and water.

Universal Joints

Universal joints are exposed to similar problems as bearings used in steering shafts. In addition, as the steering shaft spends most of its life in a straight-ahead position vibration can cause the universal joint cross journals to be imprinted by the bearing rollers. This imprinting or brinelling will result in high levels of friction.

Before installing a new steering shaft check that each universal joint is free, free enough for the yoke to flop under its own weight as the shaft is rotated. Make sure the universal joint capos are seated against the retaining cir-clips making sure that paint is not allowing contact between the bearing cap and the clip.

Steering Shafts

Steering shafts incorporate a slip assembly to take care of the relative movement between cabs and the frame mounted steering gear. The relative movement can be considerable, particularly on COE vehicles



NOTE – Unlike transmission drive shafts the universal joints are not always aligned.

with soft cab suspensions. If this slip assembly seizes, or partially seizes, considerable load can be applied to the steering gears input shaft thrust bearing and gears shaft bearings.

In many cases this load will cause premature failure of the steering gear. The application of load to the steering gears' input shaft can also cause the input shaft seal to leak.

Some older steering gear designs the input shaft must move in and out as load is applied to the steering wheel in order to move a hydraulic valve to provide hydraulic assistance. If the steering slip shaft is seized, then that steering gears valve may not operate or operate unpredictably.

Phasing

Most of us are familiar with universal jointed transmission drive shafts, or propeller shafts, where it is well known that in almost all cases the universal joint yokes must be in line or in phase. The reason for this is that universal joints change velocity twice in every revolution, a second u joint operating at the same angle will cancel the velocity fluctuations generated by the first universal joint if it is in phase. That is, if both yokes are lined up.

It is most important to understand that this is not always the case with universal jointed steering shafts. This is because that, unlike transmission drive shafts, the steering shaft can operate in multiple planes. Quite often in a 3 u jointed steering shaft each joint will operate in a different plane. Complex calculations will determine the position of the yokes, relative to each other, to eliminate or reduce overall steering shaft velocity fluctuations. Incorrectly phased steering shafts will cause difficulty for the driver when trying to keep the vehicle in line and making minor steering corrections.

Alignment Marks

Where yokes are not aligned by design there will be arrows showing the alignment of the two components of the slip shaft assembly. Make sure that these are aligned as many times mechanics have tried to align yokes as this is what they believe should be the case as it is for transmission prop shafts.

Fire Wall Boots

Fire wall boots often cause high levels of drag. If the boot twists as steering is applied, then it may be a cause of symptoms similar to partially seized u joints or steering shaft / column bearings.

Do not lubricate with a mineral based oil. While offering temporary relief, later the rubber will swell aggravating the condition. Use only silicon-based lubricants.



STEERING SYSTEM SERVICE



Hydrosteer have 4 fully equipped workshops in Bayswater Victoria, Laverton Victoria, Maddington W.A., and Wetherill Park New South Wales.

Workshop services include steering system diagnosis, steering system optimisation, Full driveway service*, steering gear remanufacturing, pump refurbishment, Dual Control Conversions, LHD to RHD conversions, Road – Rail Vehicles. All completed by qualified technicians with years of experience in heavy vehicle power steering systems.

What ever your heavy vehicle steering system needs are Hydrosteer has you covered, and all of our products and services come with a 12 month “No Argument” warranty.

 <p>Hydrosteer TECHNICALLY SUPERIOR</p> <p>Truck & Bus Power Steering Specialist Repair or Replacement (new or refurbished) Steering Gears & Pumps, Drag Links, Slip Shafts, Rod Ends, Seal Kits, Coolers and MORE. Drive in Drive Out Workshop* including steering system optimisation service.</p> <p><small>*Not at all locations</small></p>	 <p>NEW & EXCHANGE STEERING GEARS</p>	 <p>POWER STEERING PUMPS & PARTS</p>	 <p>DRAGLINK ASSEMBLIES & ROD ENDS</p>	 <p>SLIP SHAFTS & PARTS</p>
	 <p>STEERING WHEELS</p>	 <p>OIL COOLERS</p>	 <p>KITS</p>	 <p>MITRE GEARS</p>

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