

ADJUSTABLE STEERING FEEL
FOR COMPETITIVE STEERING ADVANTAGE EVERY TIME
BISHOP VARIABLE BOOST VALVE



 **BISHOP**
Steering Technology Pty Ltd

 **BISHOP**
Steering Technology Inc.

 **MVO GmbH**
Metallverarbeitung Ostalb

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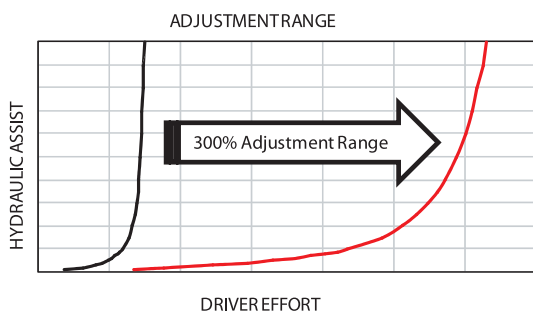
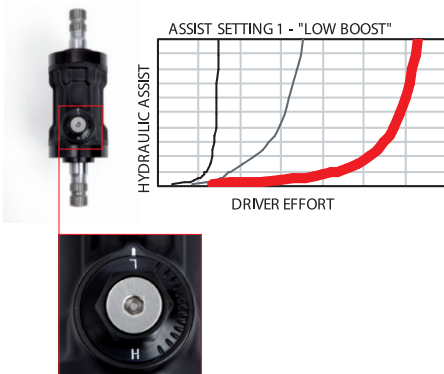
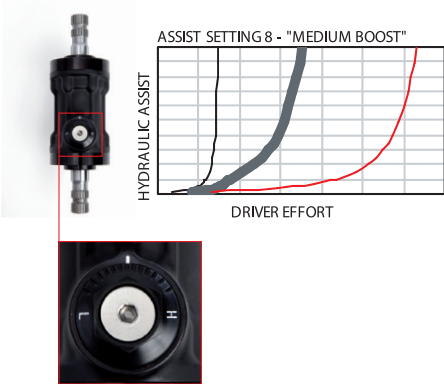
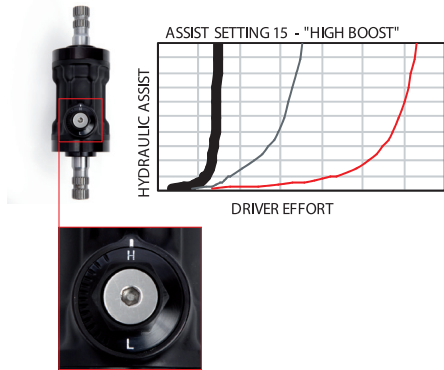
The steering feel of a car is influenced by the suspension, setup, tires, track surface, weather, etc...etc. Added to this list of variables is the need to accommodate the preferences of the individual driver. This means that for motorsports applications a steering system should be easily adjustable "AT THE TRACK – ON THE DAY".

These steering feel changes are frequently accomplished by changing components in the steering system to obtain a different steering assistance characteristic (SAC). The SAC dictates the amount of assistance the driver receives relative to the torque he inputs at the steering wheel. The higher the level of assistance, the lower the steering input torque (or effort) needed from the driver.

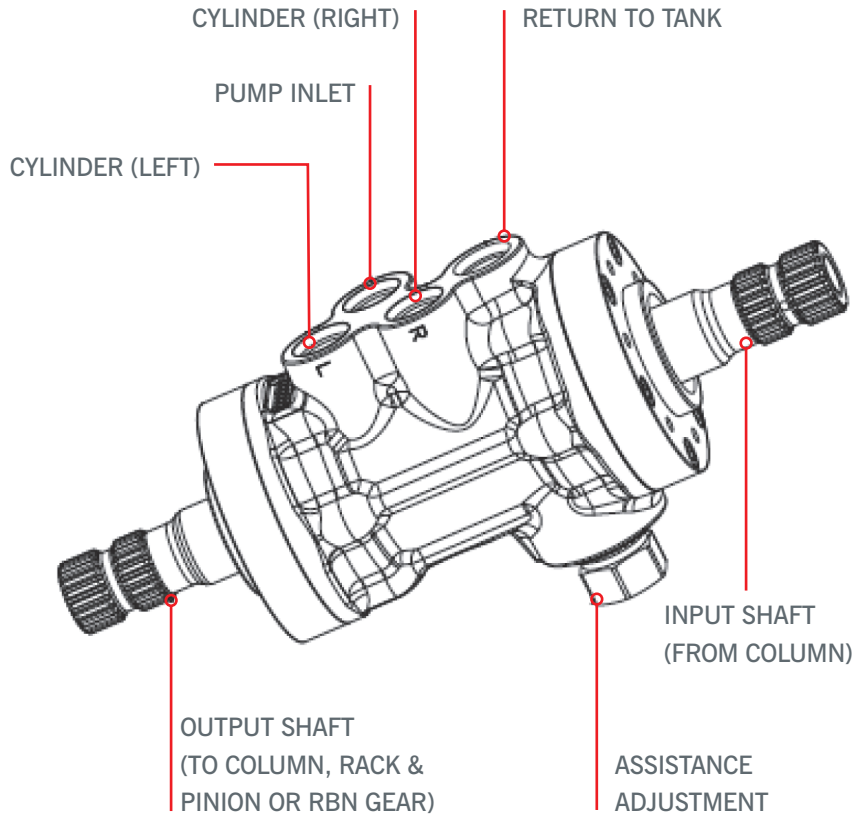
Traditionally there are two methods of changing the SAC on a steering system. Either the pump flow rate is adjusted or the valve components are changed. These changes require the disassembly of the power steering pump and/or the steering gear. Once disassembled, the components can be changed. In the case of the steering valve, once the parts are reassembled, the valve should be "balanced" using a hydraulic test bench.

In order to overcome these deficiencies, Bishop has applied its in-house valve technology expertise to develop a steering valve that can be tuned via a single external adjustment.

The Bishop Variable Boost Valve has 15 boost settings from finger-tip light to near manual steering feel. Adjustments can be made in less than 5 minutes, while the steering gear, column and u-joints remain untouched. No changing of parts is required. Consequently, no rebalancing is required after adjustment.



EASY INSTALLATION USING NORMAL PORTING



FEATURE	BISHOP	COMPETITOR ⁽¹⁾	COMPETITOR ⁽²⁾
Adjustable Boost	Yes	Yes	No
Ease of Adjustment	Easy	Difficult ⁽¹⁾	None
Rebalance After Boost Adjustment	No	Yes ⁽²⁾	N/A
Number of Unique Boost Settings	15	15 ⁽³⁾	1
Number of Unique Boost Settings @ Base Valve Price	15	1	1
Adjustable Steering Bias	No	Yes	No

Notes: 1) Requires disassembly and reassembly | 2) Requires test equipment | 3) Requires purchase of additional components

ABOUT BISHOP STEERING

Bishop Steering Technology is a part of the GMH Group, and a world leader in the development of automotive steering systems and their production techniques. As the inventor of variable ratio racks for use with conventional helical pinion, Bishop specializes in the design and supply of leading edge rack and pinion steering technologies. More than 23% of all vehicles produced globally each year contain components based on Bishop technology.

ABOUT VARIABLE RATIO (VR) RACK & PINION STEERING

Bishop is synonymous with VR steering. Arthur Bishop, founder of Bishop Steering Technology, invented VR steering first for aircraft nose wheels, then for motor vehicles and was granted the first variable ratio rack and pinion patent for cars in 1958. Bishop VR was used in the first variable ratio rack & pinion application to go into production in 1981. Since then VR steering has become increasingly common in a range of motor vehicle applications around the world, ranging from Formula 1 race cars to standard passenger cars through to SUV and light van applications where increased safety is required.



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GMH Group:**

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