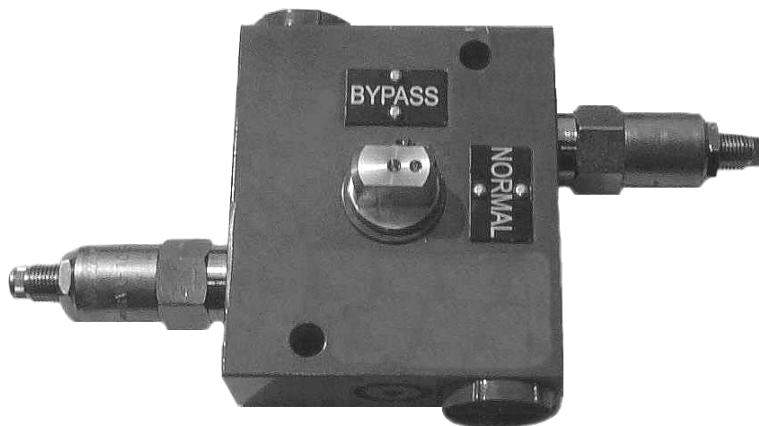




# Component Manual

**Double Acting Relief Bypass Valve  
Model: DARB 10/20/30**



**Document No.: MAN00401W  
Revision: -**

This manual is subject to change without prior notice.



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# 1 INTRODUCTION

## 1.1 Description

The Double Acting Relief and Bypass Valve (DARB) has two modes of operation:

In “Normal” mode the DARB automatically protects the steering system against hydraulic shock and over-pressurization. If impact occurs between the rudder and an underwater object or if there is an internal pressure build-up which causes the hydraulic pressure to exceed a preset limit the DARB allows oil to bypass from the pressurized line to the non-pressurized, preventing possible damage to the steering gear, its lines and flexible hoses.

In the “Bypass” mode the DARB allows for emergency steering capability by way of tiller or block and tackle steering, if such secondary means of steering are provided for.

A DARB valve is mandatory if the steering system is subject to classification approval.

Flow rate (max):	
P/N 401003-1	10 gpm (38 L/min.)
P/N 401003-2	30 gpm (116 L/min.)
P/N 401003-3	20 gpm (76 L/min.)
Pressure (max):	1875 psi (125 bar)
Weight:	8 lbs (3.6 kg)

# 2 INSTALLATION

## 2.1 Mounting

Refer to Figure 1 for overall dimensions, mounting details and line connections.

The DARB should be installed as close as possible to the cylinder.

In the case where a single equal displacement cylinder steering system is used, the DARB should be secured firmly between the cylinder ports. In a multiple cylinder steering system the DARB should be installed between the cylinders.



The use of flexible hoses between the DARB and the cylinder ports is not recommended.

While the DARB will allow excessive pressure to bypass the hydraulic system, it is recommended that external rudder stops be installed to prevent mechanical damage to the cylinders and rudder when the system hits the hardover position.

Once installed the DARB must be secured in the Normal position. Care should be taken that the DARB is not shifted accidentally into the Bypass position.

After installation the system should be filled with ISO Grade 32 oil.

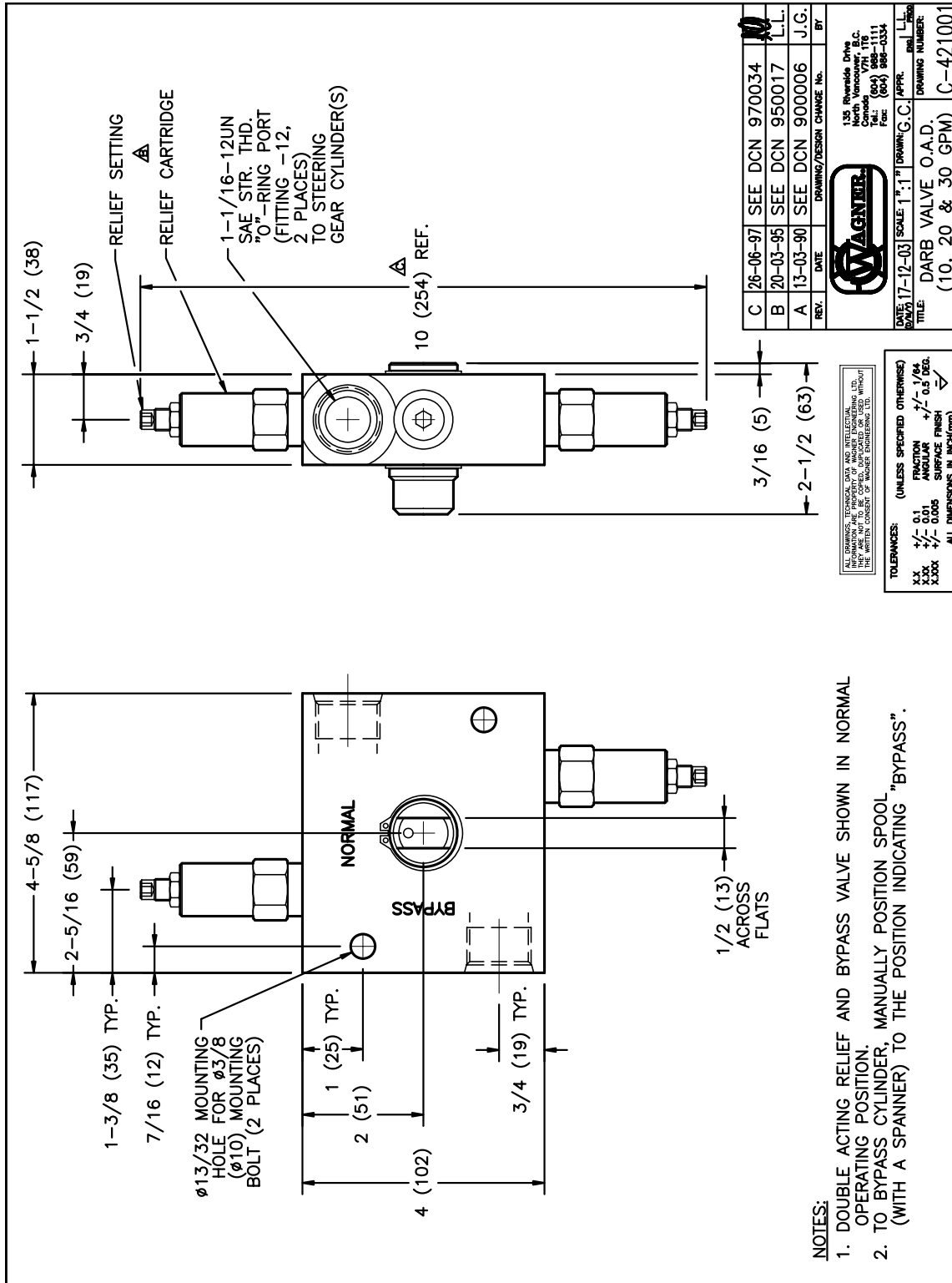


Figure 1 – D.A.R.B. Valve Overall Dimensions



### 3 SETUP AND TESTING

**WARNING: ALL SET UP AND TESTING PROCEDURES MUST BE PERFORMED WHILE THE VESSEL IS STATIONARY AND NOT UNDERWAY.**

The DARB is factory preset at 1250 psi. When supplied as part of a complete steering system the setting will be preset at the actual system working pressure times 1.25, to a maximum of 1875 psi.

Turning the relief valve clockwise will increase the relief setting. Turning the valve counter clockwise will reduce the pressure setting. Be certain to set both relief valves to the same pressure rating.

**WARNING: DO NOT CHANGE PRESSURE SETTINGS UNLESS THE NEW PRESSURE RELEASE CAN BE VERIFIED WITH A PRESSURE GAUGE.**

Check for oil leaks at all connecting ports and system piping.

### 4 MAINTENANCE AND PARTS LISTS

**WARNING: ALL INSPECTION AND MAINTENANCE MUST BE PERFORMED WHILE THE VESSEL IS STATIONARY AND NOT UNDERWAY.**

The DARB is virtually maintenance free; however, over time parts may become worn and require replacement.

Once a year, do a visual inspection of the DARB and check the operating pressure of the relief valves. If there is an O-ring leaking or if there is any other sign of wear, replace the worn or faulty components.



## 5 TROUBLESHOOTING

**WARNING: FAILURE TO CORRECT ANY PROBLEM CAN CAUSE SUDDEN LOSS OF STEERING.**

The chart below gives some general solutions for simple problems. If a problem cannot be resolved, contact the factory.

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>CORRECTION</b>
No steering	DARB is in Bypass position.	Switch to Normal position.
Cylinder moves, then stops, then moves again	Relief pressure setting too low.	Adjust pressure setting.

