Safer, Cleaner and More Reliable Overfill Protection Systems
The Hydrau-Flo® valve system is a safer, cleaner and more reliable fuel filling valve arrangement which removes the risk of overfilling, spillage and tank rupture while minimising safety and environmental hazards associated with fuel transfer.

**Hydrau-Flo® system overview**

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**Traditional Refuelling Systems**
With flow rates up to 1,000 litres per minute and pressures up to 100 kilopascals, overfilling, spillage and tank rupture are common problems associated with refuelling.

**Hydrau-Flo® valves provide safer solutions for fuel filling**
The Hydrau-Flo® fuel filling valve system overcomes these problems without the need for electronics or complex arrangements prone to blockage and failure.

**The Hydrau-Flo® fuel filling valve system:**
- Prevents overfilling
- Prevents fuel spillage and wastage
- Removes the risk of tank rupture due to pressure build up during and after filling
- Minimises the risk of fire as a result of fuel spillage
- Reduces costs associated with fuel wastage and equipment damage
- Significantly improves safety and environmental outcomes
- Ground level refuelling
**Hydrau-Flo® fuel filling valves**

**for refuelling**

Fuel enters the system through a conventional “fast fill” receiver and then flows into the Hydrau-Flo® fuel filling valve body. Fuel pressure forces the shut off piston open against spring pressure and then flows through porting into the tank.

An orifice in the piston directs fuel through a capillary line to the float control valve which allows a constant bleed into the tank until filling is complete.

This ensures that the pressure under the piston remains lower than that above.

When fuel reaches the required level the Float Valve is closed and the bleed into the tank is shut off. This equalises the pressure on both sides of the piston in the Hydrau-Flo® fuel filling valve body.

With the pressure balanced the spring will then close the piston and stop fuel flow.

Using the Hydrau-Flo® valve system the fuel nozzle cannot be overridden and an air space is maintained in the tank, based on the set point of the float valve. The operation of the system depends on fluid level and not tank pressure.

This removes the potential for overfilling and pressurisation of the tank and prevents fuel loss through air vents which can be caused by expansion in liquid volume as a result of increased ambient temperatures.

**Conventional Systems**

Using conventional systems, overfilling, spillage and tank rupture can be common occurrences. At 1,000 litres per minute, every second of spillage equates to more than 15 litres of diesel wasted and released into the environment while the cost to repair or replace ruptured fuel tanks is significant in terms of materials, labour and equipment down time.
Hydrau-Flo® fuel filling valves

Hydrau-Flo® fuel filling valves are available in five configurations to suit the majority of equipment types and applications.

The standard Hydrau-Flo® fuel filling black valve is ideal for all new equipment applications and existing equipment that has suitable fittings. The compact design delivers the highest flow rate capacity in the range.

The most commonly used retro fit Hydrau-Flo® fuel filling blue valve fits directly into truck and loader fuel tanks using the same thread (2” NPT) as the conventionally used dry break fittings (which are screwed back into the Hydrau-Flo® fuel filling valve). These valves fit into typical CAT® and Komatsu® fuel tank recesses.

This retro fit Hydrau-Flo® fuel filling red valve is designed to fit into tanks using the Wiggins® ZNC3 recess. These are typically used on CAT® 776 and 773 trucks.

The 1½” version of the Hydrau-Flo® fuel filling blue valve has being designed for the compact machinery market and underground applications where 1½” NPT mounting are required. Stainless steel versions are also available for underground coal mining applications.

This Hydrau-Flo® fuel filling gold valve has been designed to fit into compact installations which make it suitable for the bunded fuel tank market where space limitations apply.
Hydrau-Flo® float control valves are now available in stainless steel to suit the underground market.

The Hydrau-Flo® float control valve has a robust design for use on mobile equipment which ensures reliable pilot operation of the Hydrau-Flo® fuel filling valve. It also incorporates roll over shut off protection and an anti-surge fuel breather vent to prevent spillage that can occur as a result of vehicle motion when using “conventional” valves.

The newest edition to the Hydrau-flo® float control range is the float control valve with breather option. Capable of environmental filtering to 3μm while filling the tank at 1,000lpm.

The integrated breather has been engineered on request from major OEM’s looking to further enhance diesel engine life in dusty environments.

The Hydrau-Flo® float control valve is now available in a 1½” NPT mounting option. This has being designed for the compact and underground fuel markets where 1½” NPT mounting are required.

The breather retains all the original anti-surge functions of the standard green float control valve but has additional check valves built into the design to allow venting at 1,000lpm and one way breathing to prevent any contaminants from being drawn into the fuel tank.

For existing systems the float control valve is able to be retrofitted without removing the original valve from the fuel tank, providing a cost effective solution to upgrade your existing Hydrau-flo® system.
Hydrau-Flo® anti-surge breathers and lever control valves

The Hydrau-flo® anti-surge breather is used in applications where additional breathers are required. For example dual tank installations.

The anti-surge breather has all the same functions as the float control valve including roll over protection.

This type of control valve is typically used on stationary equipment including skid mounted pump sets, generators and lighting plants. The simple and robust design provides a lower cost option for stationary equipment and is available in two different lengths.

The Hydrau-flo® anti-surge breather with filter option is used in the same applications as the original anti-surge breather but provides the benefits of filtered air to prevent fuel contamination.

This control valve is typically used in remote fuelling and gravity filled applications where assets are fuelled from an auxiliary fuel tank (stationary equipment only).
Hydrau-Flo® valve - dimensions

Hydrau-Flo® float control valves

Hydrau-Flo® float control valves (standard and short series)

Hydrau-Flo® fuel filling valves (including dimensions on fuel receivers)

Notes: Dimensional data is metric. This information is a guide only and should be confirmed by your Weir Minerals representative before using.
A range of Hydrau-Flo® valve adaptors and accessories are available for simple and easy installation into most types of mobile and stationary equipment. Hydrau-Flo® fuel filling valve kits provide customers with the fully packaged solution. Some of the many accessories available are shown below.

### Hydrau-Flo® fuel filling valve adaptors

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF1102Z0004</td>
<td>Adapts HF1105Z0001 to a 2&quot; hose tail. Available in aluminum see HF1102Z0014.</td>
</tr>
<tr>
<td>HF102Z0002</td>
<td>Weld-on threaded ring to mount HF1105Z0001 directly into tank.</td>
</tr>
<tr>
<td>HF1102Z0001</td>
<td>Adapts Hydrau-Flo® fuel filling black valve to fit to a 2&quot; NPT (male) socket.</td>
</tr>
<tr>
<td>HF1102Z0005</td>
<td>Adapts HF1105Z0001 to fit to a 2 1/2&quot; hose tail. Available in aluminum see HF1102Z0015.</td>
</tr>
<tr>
<td>HF102Z00010</td>
<td>Weld-in flush mount to suit Komatsu® tanks. Suits internal mounting of HF1105Z0001 or HF1105Z0003.</td>
</tr>
<tr>
<td>HF1102Z0007</td>
<td>Adapts HF1105Z0001 and valve adaptor HF1102Z0001 to Liebherr® 994 &amp; 996.</td>
</tr>
<tr>
<td>HF1008Z0002</td>
<td>Bolt-in flush mount to suit Cat® tanks. Suits internal mounting of HF1105Z0001 or HF1105Z0003.</td>
</tr>
<tr>
<td>HF1012Z0002</td>
<td>Lever Float / Breather mounting flange—fits to HF1103Z0001 &amp; HF1012Z0001.</td>
</tr>
<tr>
<td>HF1102Z0003</td>
<td>Adapts Hydrau-Flo® float control valve HF1008Z0001 to Cat® D10R / D11R tank.</td>
</tr>
<tr>
<td>HF1012Z0001</td>
<td>Lever / Breather weld-in flange. Fits to 2&quot; NPT socket. 2&quot; BSP Z21479</td>
</tr>
<tr>
<td>HF1012Z00003</td>
<td>Lever float mounting flange fits to HF1012Z0001 &amp; HF1012Z00003.</td>
</tr>
</tbody>
</table>
Hydrau-Flo® fuel filling valve and float control valve adaptors are available in a number of configurations designed for new equipment manufacture or fitment to most makes of existing mobile and stationary equipment.

Hydrau-Flo® float control valve components

HF1014Z0001
Barrel Nipple—For mounting HF0304Z0003 rain cap breather to HF1012Z0002.

HF0304Z0003
Rain Cap Breather.

HF1008Z0002
Adapts Anti Surge breather to HF1012Z0002 lever float / breather mounting flange.

HF1011Z0002
2” NPT Socket—Weld into tank wall to suit anti-surge breather HF1008Z0001, HF1008Z0006, and HF1008Z0002.

HF1008Z0002
Anti-Surge Breather—Fits 2” NPT socket or HF1102Z0002 weld-in flange.

HF0304Z0003
Rain Cap Breather.

HF1014Z0002
Weld-on Bracket to suit rain cap breather HF0304Z0003.

HF527-1212
Nipple 3/4” to 3/4” BSP. Used to connect HF1204Z0004 swivel tail to HF1012Z0002 breather mount or HF1014Z0002 weld-on bracket.

HF802-1212
Swivel hose tail 3/4” BSP to 3/4” hose. Connects 3/4” nipple to breather hose.

106042
Nylon Breather with 3 micron replaceable element. Built in restriction indicator

106040
3 Micron steel air breather. 3/4 NPT steel connection.

106048
90° elbow 3/4 inch male to female

106409
3/4 inch hose tail adaptor

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Hydrau-Flo® valve - hardware

Hydrau-Flo® pilot line fittings and hoses are available for varying applications

**Pilot line fittings**

- **HF1204Z0003**
  1/4" BSPT Brass plug. Used to plug unused pilot line ports.

- **HF1204Z0001**
  Pilot line Check Valve. 3/8" BSP female to 3/8" BSP female, use where 1 x Lever Float Valve is connected to 2 x fuel filling valves. Eg. highwall applications.

- **HF527-0804**
  Reducing Nipple 1/4" x 1/2".

- **HF802-0808**
  Swivel Hose tail straight 1/2" x 1/2".

- **HF1204Z0012**
  3/8" BSP ‘tee’.

- **HF805-0808**
  Swivel Hose tail 90˚ 1/2" x 1/2".

- **HF527-0409**
  1/4" BSPT Male 9/16” JIC Male nipple

- **HF57-0406**
  Adaptor Female 1/4” BSP to male 3/8” BSP.

- **HFS27-0806**
  Nipple 3/8” up to 1/2” BSP. Used to connect push-on fittings to check valves.

- **HF1204Z0002**
  Pilot Line Check Valve. 3/8” BSP female to 3/8” BSP female. Used where 2 x Hydrau-Flo® fuel filling valves are connected to 1 x float control valve. Includes balancing port.

- **HF1204Z0005**
  3/8” Single wire hose ‘Survivor’ for inside tank installation.

- **HHT16A**
  3/8” Single wire hose ‘Ryco’ for inside tank installation.

- **HF1215Z0003**
  1” Breather hose.

- **HFP112**
  3/4” Breather hose—suits rain cap breather.

- **HF1215Z0004**
  1 1/4” Breather hose—suits HF1008Z0001 float control valve & HF1008Z0002 anti-surge breather.

- **HF1215Z0005**
  1” Oil Resistant hose.

- **RSC-4347**
  Hose clamp to suit HF1215Z0004
Hydrau-Flo® valves utilise patented technology, innovation and quality in meeting the fast filling needs of heavy industry. Hydrau-Flo® valves are designed and manufactured under the ISO 9001 certification using quality materials that are built to last. With hi-grade, anodised aluminium bodies, brass plugs and stainless steel fasteners, you can be confident that Hydrau-Flo® valves will compliment your equipment’s reliability.

Whether you are investing in your equipment or taking steps to protect the environment, Hydrau-Flo® valves offer a safer, cleaner and more reliable solution for your operations fast filling requirements.

Testimonials

Many of our major Australian customers and business partners endorse the Hydrau-Flo product through an expert local distributor network.

“Hydrau-Flo® valves have become a major part in assisting our clients to comply with zero-spill policies.”

John Bondi
Equipment Placement

“Safer, cleaner and more reliable - that’s what Hydrau-Flo® valves deliver.”

Sally Garland
Garland Engineering

“I have fitted and had experience with a lot of non pressurising fast fill systems over the last 16 years and truly believe that Hydrau-Flo® valves would be the simplest and most reliable system available.”

Clive Gray
Australian Diversified Engineering

“Hydrau-Flo® helped our customers achieve greater than 80% improvement in fuel filling times and vastly improved operator safety during refuelling operations.”

Steven Finn
VFP Fuelling & Filtration
Hydrau-Flo® valve - selection guide

**Installation Tools**

200629
Hydrau-Flo® float control valve install tool - side entry

201240
Hydrau-Flo® fuel filling (blue and black) valve install tool - side entry

202125
Hydrau-Flo® fuel filling red valve install tool

101023
Hydrau-Flo® fuel filling (blue and black) valve install tool - top entry

103628
Hydrau-Flo® Tool - Kit

HF1105Z0002
Hydrau-Flo® fuel filling red valve

ZNC3/ZNC4
Existing Wiggins®

HF1103Z0002
Weld in recessed adaptor

HF1011Z0002
2" NPT Socket

HF0304Z0003
Breather

HF1014Z0003
Breather Stand Pipe

HF014Z0001
Breather Stand Pipe

HF1014Z0002
Weld on bracket

HF802-1212
Swivel tail hose connector

FBS-58 Nipple

HF1008Z0003
Anti-Surge breather mount

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Hydrau-Flo® valve - kits and applications

Hydrau-Flo® valve kits are manufactured to suit a wide range of industrial applications in the mining, construction & maritime sectors. These configurations are designed for individual equipment needs using our professional engineering design service.

Examples of Hydrau-Flo® valve kits and applications are shown below.

Komatsu® 830E Truck
1: Kit number HF1401K0002 single fill
2: Also dual fuel 830E & 930E kits available

Kalmar® Rubber Tyred Gantry
3: Kit number 102908
4: Cargotec® Kalmar® RTG with Hydrau-Flo® Banlaw solution

Komatsu® Trucks and Loaders
5: Kit number 101439 to suit Komatsu® 785 Truck (also suits CAT® 773 Truck)
6: Kit number 101444 to suit Komatsu® WA1200 Loader

Liebherr® Excavators and Trucks
7: Liebherr® 996 Shovel
8: Kit number HF1400K0007 Liebherr® 282B Truck

Hitachi® Excavators
9: Kit number HF1400K0002 to suit EX1900 and EX3600-6
10: Kit number 101912 to suit EX5500

Caterpillar® Dozers & Graders
11: Kit number HF1401K0001 to suit CAT® D11R Dozer
12: CAT® 16H and 16M Graders
Hydrau-Flo® installations

Hydrau-Flo® valve kits are manufactured to suit a diverse selection of industrial applications in the mining, construction & maritime sectors.

**Mining Trucks**

1: Komatsu® 930e fitted with Hydrau-Flo® fuel filling red valve HF1105Z0002

2: Komatsu® 930e with custom breather setup

3: Liebherr® TA230 Dump Truck fitted with Hydrau-Flo® float control valve HF1008Z0007 including breather option

**Service Trucks**

4: Hydrau-Flo® kits are available for mobile equipment such as service trucks

5: Hydrau-Flo® service panel set up on a service truck

6: Service truck fitted with Hydrau-Flo® fuel filling black valve HF1105Z0001

**Mine Dewatering Pumps**

7: Multiflo® MF420E fitted with Hydrau-Flo® black fuel filling valve and lever float

8: Hydrau-Flo® fuel filling blue valve HF1105Z0003

9: Hydrau-Flo® fuel filling black valve HF1105Z0001

**Excavators**

10: Hitachi® Excavator fitted with Hydrau-Flo® filling valve

11: Lighting plant fitted with Hydrau-Flo® fuel filling kit

12: Hydrau-Flo® green float control valve HF1008Z0001

**Lighting Plants**

**Haulage Trucks**
Hydrau-Flo® valve - history

In 1997, a few Multiflo® customers were experiencing challenges with fuel tank over-pressurisation during and following refuelling, leading to tank fatigue, rupture and fuel spillage. These environmental and personal safety risks prompted those customers to request that the OEM investigate safer fuel filling solutions for use on the Multiflo® range of mine dewatering pumps. We listened.

In 1999, Weir Minerals Multiflo engineered a fuel filling valve and introduced a safer, cleaner and more reliable fuel filling solution. The Hydrau-Flo® fuel filling system is mechanical and non-pressurised, delivering up to 1,000 litres per minute of diesel fuel into the tanks of mine dewatering pumps.

Today, Weir Minerals Multiflo produces Hydrau-Flo® fuel filling valves for use on thousands of mining and construction machines including all major brands and models. This reliable, solid state design enables end users to have confidence in both fuel delivery and tank integrity, with increased machine availability at minimal economic or environmental cost. Operator safety is vastly improved because traditional fuelling methods and their risks are eliminated.

Weir Minerals Multiflo continues to expand the reach of Hydrau-Flo® fuel filling valves throughout Australia and around the world. If you are looking for a safer, cleaner and more reliable fuel filling solution, please contact us today. We listen.

1: First generation fuel filling safety valve
2: 2nd generation fuel filling safety valve
3: Hydrau-Flo® fuel filling valves, your Safety Solution for Liquid Filling

For more information contact:
Ground Force Worldwide
5650 E. Seltice Way
Post Falls, ID 83854 U.S.A.
Tel: 208-664-9291
www.gfworldwide.com

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