

HYDRAU-FLO®

Safety Solutions for Liquid Filling

Mechanical and Non-Pressurised
Fuel Filling Valves

Excellent
Minerals
Solutions



Safer, Cleaner and More Reliable



Hydrau-Flo[®] fuel filling valves

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.

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.



Hydrau-Flo[®]
float control valve
HF1008Z0001



Hydrau-Flo[®]
fuel filling black valve
HF1105Z0001

The Hydrau-Flo[®] fuel filling system incorporates robustly designed fuel filler safety valves and float control valves to provide a reliable, hydraulically operated arrangement which depends on fluid level rather than pressure. The system is designed to be used in conjunction with existing "fast fill" systems.

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

Hydrau-Flo® fuel filling valves are available in three 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.



*Hydrau-Flo®
fuel filling black valve
HF1105Z0001*

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.



*Hydrau-Flo®
fuel filling blue valve
HF1105Z0003*

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.



*Hydrau-Flo®
fuel filling red valve
HF1105Z0002*

Hydrau-Flo® float control valves are also available in different configurations designed to suit varying applications and filling requirements.

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.

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.



*Hydrau-Flo®
float control valve
HF11008Z0001*



*Hydrau-Flo®
lever control valves
HF11007Z0001 110mm
HF11007Z0002 250mm*

Hydrau-Flo® fuel filling valves

non-pressurised fuelling operation

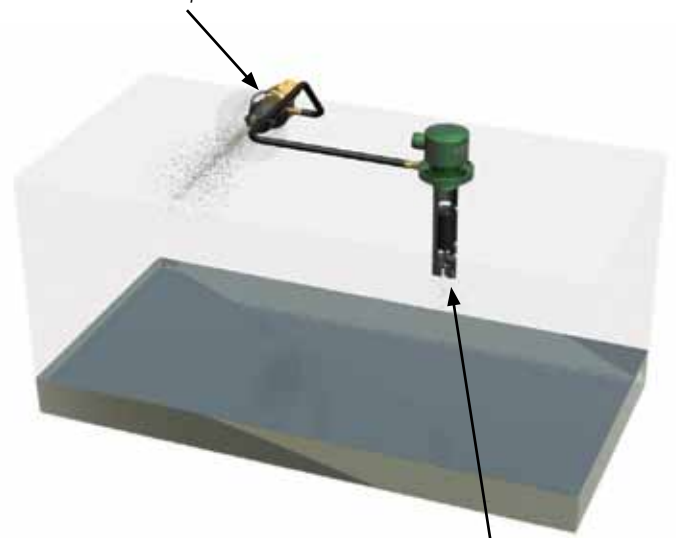
Hydrau-Flo® fuel filling valves for refuelling

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.

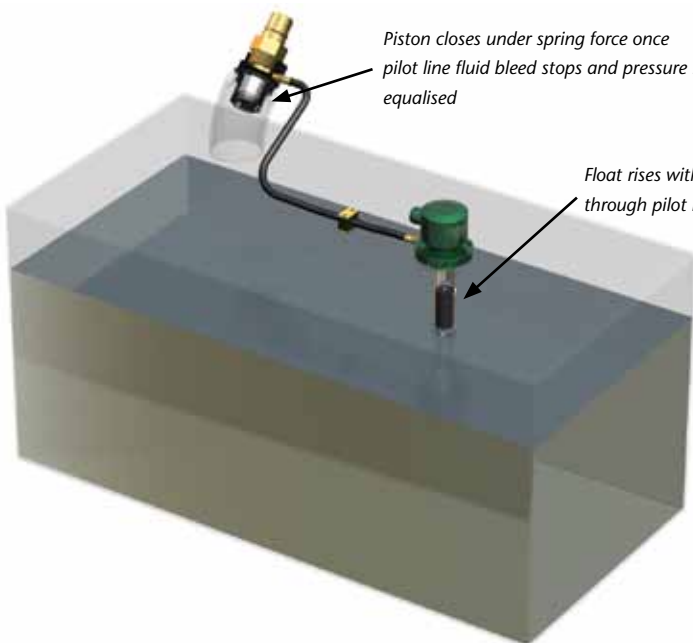
With higher pressure on top of the piston the valve remains open



When the float is down fluid bleeds into the tank through the pilot line

Piston closes under spring force once pilot line fluid bleed stops and pressure is equalised

Float rises with fluid level shutting off bleed through pilot line



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[®] valve - dimensions

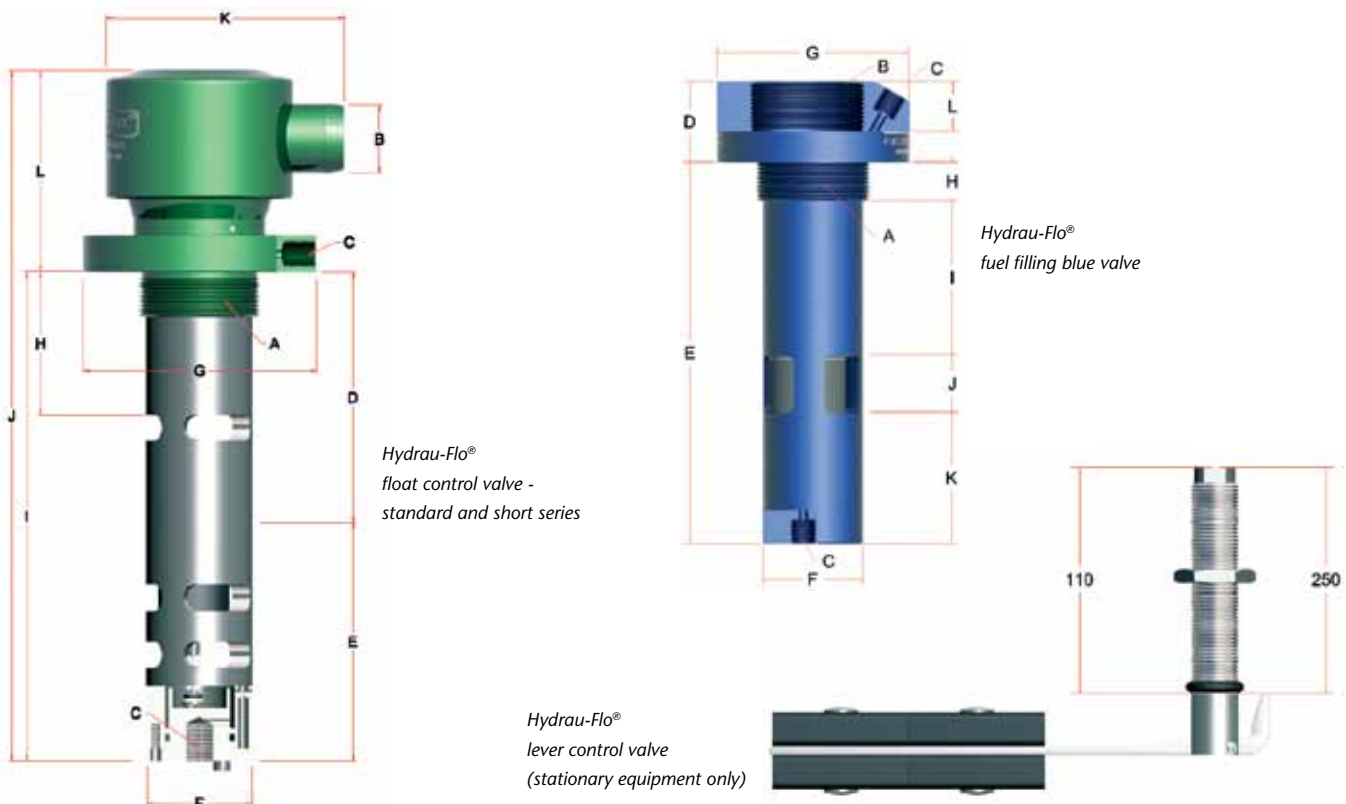
Hydrau-Flo[®] fuel filling valves

Model Code	Colour Mounting	A Coupling Thread	B Pilot Line Thread	C mm Thread	D mm	E mm	F mm	G mm	H mm	I mm	J mm	K mm	L mm	Mass kg.
HF1105Z0001	Black	75NPS	2"NPT	1/4" BSP	47 (1.85)	70 (2.76)	70 (2.76)	100 (3.94)	20 (0.79)	20 (0.79)	17 (0.67)	33 (1.30)	25 (0.98)	1.34 (2.95)
HF1105Z0003	Blue	2" NPT	2"NPT	1/4" BSP	42 (1.65)	198 (7.80)	52 (2.05)	100 (3.94)	20 (0.79)	80 (3.15)	30 (1.18)	68 (2.68)	25 (0.98)	1.26 (2.78)
HF1105Z0002	Red	2" NPT	2"NPT	1/4" BSP	72 (2.83)	198 (7.80)	52 (2.05)	84 (3.31)	20 (0.79)	80 (3.15)	30 (1.18)	68 (2.68)	25 (0.98)	1.56 (3.44)

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

Model Code	Colour Mounting	A Exhaust Thread	B Pilot Line Port OD	C Fuel Thread	D mm Cut Off Point	E mm	F mm	G mm	H mm	I mm	J mm	K mm	L mm	Mass kg.
HF1008Z0001	Green (Standard)	2" NPT	34 (1.34)	1/4" BSP	120 (4.72)	122 (4.80)	52 (2.05)	115 (4.53)	69 (2.72)	242 (9.53)	340 (13.39)	118 (4.65)	100 (3.94)	1.8 (3.97)
HF1008Z0006	Green (Short)	2" NPT	34 (1.34)	1/4" BSP	74 (2.91)	122 (4.80)	52 (2.05)	115 (4.53)	25 (0.98)	196 (7.72)	300 (11.81)	118 (4.65)	100 (3.94)	1.66 (3.66)

Notes: Dimensional data is metric with imperial shown in (inches / lbs).
This information is a guide only and should be confirmed by your Weir Minerals representative before using.



Hydrau-Flo® valve - hardware

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 and provide customers with the fully packaged solution. Some of the many accessories available are shown below.

Hydrau-Flo® fuel filling valve adaptors



HF1102Z0001
Adapts Hydrau-Flo® fuel filling black valve to fit to a 2" NPT (male) socket.



HF1102Z0004
Adapts HF1105Z0001 to a 2" hose tail.



HF1102Z0002
Weld-on threaded ring to mount HF1105Z0001 directly into tank.



HF1102Z0012
HF1102Z0013
Weld-on threaded stand pipe. Used to mount HF1105Z0001 to top tank. (150mm, 310mm).



HF1102Z0005
Adapts HF1105Z0001 to fit to a 2 1/2" hose tail.



HF1102Z0010
Weld-in flush mount to suit HF1105Z0001.



HF1103Z0002
Weld-in flush mount to suit HF1105Z0003.



HF1102Z0003
Bolt-in flush mount to suit Komatsu® tanks. Suits internal mounting of HF1105Z0001 or external mounting of HF1105Z0003.



HF1103Z0003
Adapts CAT® D10R / D11R fuel inlet hose to HF1105Z0003.



HF1103Z0004
Adapts HF1105Z0003 to CAT® D10R / D11R tank.



HF1011Z0002
2" NPT Socket—weld into tank to allow direct mounting of HF1105Z0003.



ZNC3 / ZNC4
Wiggins® Bolt-on / Weld-on flush mount—suits HF1105Z0002.



HF1102Z0007
Adapts HF1105Z0001 and valve adaptor HF1102Z0001 to Liebherr® 994 / 996 excavator.



HF1102Z0008
Adapts HF1105Z0001 to CAT® fuel tanks.



HF1012Z0002
Lever Float / Breather mounting flange—fits to HF1103Z0001 & HF1012Z0001.



HF1103Z0001
Lever / Float breather screw-in flange. Fits to 2" NPT socket.



HF1102Z0009
Adaptor fuel supply hose to HF1105Z0001 valve to Liebherr® 994 & 996.



HF1011Z0001
Adapts Hydrau-Flo® float control valve HF1008Z0001 to CAT® D10R / D11R tank.



HF1012Z0003
Lever Float mounting flange fits to HF1103Z0001 & HF1012Z0001.



HF1012Z0001
Lever Float / Breather weld-in flange.

Hydrau-Flo® float control valve components



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



HFS27-1212
Nipple 3/4" to 3/4" BSP. Used to connect HF1204Z0014 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.



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



HF0304Z0003
Rain Cap Breather.



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




HF1008Z0003
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.

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.


Hoses




HF1215Z0002
1/2" Pilot Line hose - standard.




HHP112
3/4" Breather hose—suits rain cap breather.



HF1215Z0003
1" Breather hose.




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



HF1215Z0005
3/8" Single wire hose 'Survivor' for inside tank installation.




HHT16A
3/8" Single wire hose 'Ryco' for inside tank installation.



HF1215Z0003
1" Oil Resistant hose.


Pilot line fittings




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




HFS50-060606
3/8" BSP 'tee'.




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



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 liquid filling valves. Eg highwall applications.




FS72-0406
Adaptor Female 1/4" BSP to male 3/8" BSP.




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




HFS27-0804
Reducing Nipple 1/4" x 1/2".



HF58-0409
Elbow 1/4" BSP x 9/16" JIC."



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



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

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



HF1105Z0002
Hydrau-Flo® fuel filling red valve



HF1105Z0003
Hydrau-Flo® fuel filling blue valve



ZNC3/ZNC4
Existing Wiggins®



HF1103Z0002
Weld in recessed
adaptor



HF1011Z0002
2" NPT Socket



HF0304Z0003
Breather



HF1014Z0002
Weld on bracket



HFS27-1212
Nipple



HF802-1212
Swivel tail hose
connector



Connection hose



HF802-1212
Swivel tail hose
connector



FBS-58 Nipple



HF1014Z0001
Breather Stand Pipe



HF1008Z0003
Anti-Surge
breather mount



HF1011Z0002 2" NPT Socket
to be welded onto the Tank

Receivers

HF1113Z0002
Wiggins® 5PSI receiver.

HF1113Z0001
Spring to convert a Wiggins®
receiver to a nominal 13 psi.

HF1113Z0003
Banlaw receiver (light)

**Hydrau-Flo®
fuel filling
valves**

HF1105Z0001
Hydrau-Flo® fuel filling black valve

**Valve to tank
adaptors**

HF1102Z0010
Black Valve
recessed adaptor

HF1102Z0002
Weld on
ring adaptor

HF1102Z0004
4" - 2" Hose
adaptor

HF1102Z0001
75mm NPT
Female to 2" male

209304
Weld on aluminum
adaptor

HF1102Z0012
Stand pipe
HF1102Z0013

Pilot Line

HF1007Z0001 110mm
HF1007Z0002 250mm
Hydrau-Flo® lever floats
(not warranted when
used in mobile
equipment)

HF1008Z0001
Hydrau-Flo®
float control
valve

**Pilot line
actuators**

HF1012Z0002
Bolt on Float and
Breather Mount

HF1012Z0003
Bolt on Float
Mount

**Pilot line/
breather,
mounting
accessories**

HF1103Z0001
Screw on
Breather Mount

HF1012Z0001
Weld on
Breather

HF1011Z0002
2" NPT Socket to be
welded onto the tank

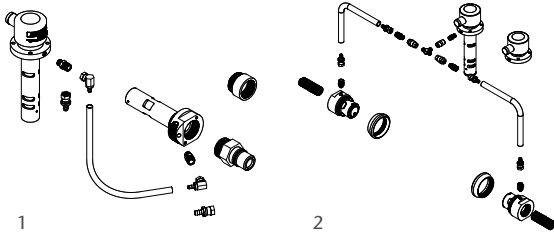
Breather Anti-Surge
HF1008Z0002

**For special adaptors
and applications see
the following page.**

Hydrau-Flo® valve - kits and applications

Hydrau-Flo® valve kits are manufactured to suit a wide range of industrial applications in the mining and construction 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

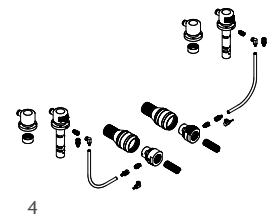
2: Also dual fuel 830E & 930E kits available



Bucyrus® (Terex®) RH200 Excavator

3: Kit number 102536 (dual fill)

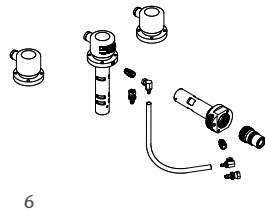
4: Kit number HF1400K0008 suits RH340 Excavator



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

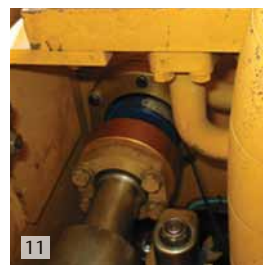
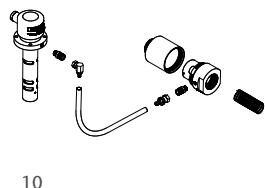
8: Kit number HF1400K0007 Liebherr® 282B Truck



Hitachi® Excavators

9: Kit number HF1400K0002 to suit EX1900

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



First class quality



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 equipments 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® 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



2



3

- 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

WARMAN®
Centrifugal Slurry Pumps

GEHO®
PD Slurry Pumps

LINATEX®
Rubber Products

VULCO®
Wear Resistant Linings

CAVEX®
Hydrocyclones

FLOWAY® PUMPS
Vertical Turbine Pumps

ISOGATE®
Slurry Valves

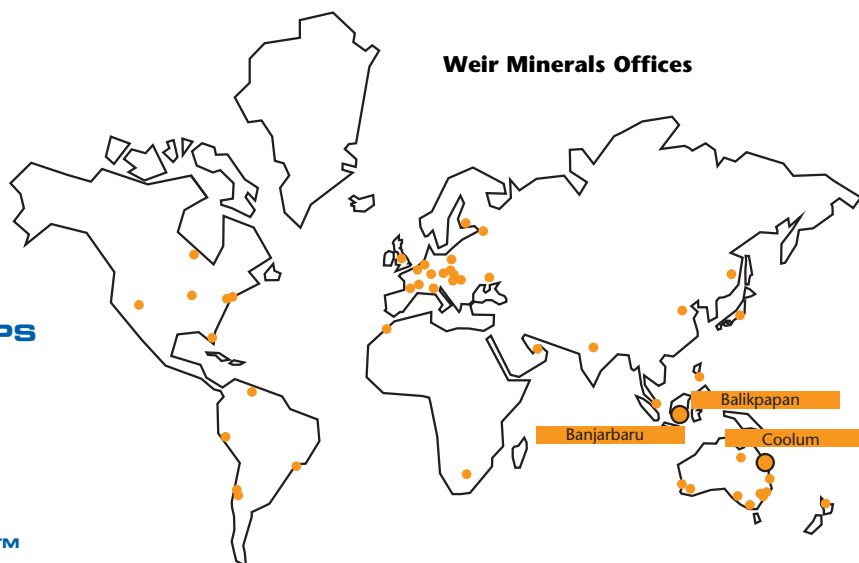
MULTIFLO®
Mine Dewatering Solutions

HAZLETON®
Specialty Slurry Pumps

LEWIS PUMPS™
Vertical Chemical Pumps

BEGEMANN PUMPS™
Centrifugal Process Pumps

WEIR MINERALS SERVICES



Weir Minerals Offices

The Weir Group PLC, founded in Scotland in 1871, is a leading global engineering company with more than 9,000 employees worldwide and is listed in the FTSE 100 on the London Stock Exchange.

Weir Minerals Multiflo is part of the Weir Minerals Division and has primary global design responsibility for the Multiflo® self-prime dewatering pump product range and Hydrau-Flo® fuel filling valves.

www.weirminerals.com/hydrau-flo

Weir Minerals Multiflo and PT Weir Minerals Multiflo are business units of Weir Minerals Australia Ltd.

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Excellent
Minerals
Solutions



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