



Wanner International

Special conditions of use for hazardous area

G & D Series pumps

Zone 1 and Zone 2 requirements

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2. Wanner International and the Directive 2014/34/EU


Directive 2014/34/EU is implemented by the European Union (EU) to harmonize the technical and legal requirements in the Member States for products intended for use in potentially explosive atmospheres. The Directive covers electrical and non-electrical equipment and is mandatory within the EU.

The Directive is known as **ATEX** from the French - **AT**mospheres **EX**plosibles.

Wanner also claims compliance with the UK legislation 'The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016'. Legislation 2016 no. 1107 in accordance with UKCA marking requirements.

Wanner International claims compliance and marks the pumps in accordance with the requirements of the 'The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016' No. 1107

Hydra-Cell pumps are approved for use in Hazardous area environments - Zone 1 - when installed with an oil level monitor unit.

The book symbol  on the equipment marking plates and 'X', indicates there are special conditions of use, and that all conditions in this manual must be adhered to.

2.1. CE Marking

In accordance with the Machinery Directive and ATEX requirements, all Hydra-Cell pumps are CE marked.

2.2. UKCA Marking

In accordance with the requirements of UK legislation, pumps for hazardous area operation in the UK are UKCA marked.



3. Operating Conditions

The normal operating environment is any above ground environment in which flammable gas and/or dust could be present.

The intended external ambient operating temperature range is (minus) -10°C to 40°C.

The intended internal operating temperature range is (minus) -10°C to +90°C.

This is the maximum temperature range for Hydra-Cell pumps with ATEX. Certain diaphragm materials have operating limits within this temperature range. Contact Wanner International for more information and assistance.

By designing equipment suitable for use in Zone 1 areas, operation in a Zone 2 area is also permitted.

Zone 2 only - Where the end-user will take responsibility to ensure oil is always present in the pump hydraulic end, a simple 'oil level sight bowl' can be fitted (see appendix 6). The user must never start or continue to run the pump when oil is not visible.

The pump is not intended to pump dusts but is intended for use in dust hazardous atmospheres.

Care should be taken in dust environments, and maintenance of the equipment should be routinely carried out to prevent any buildup of dust on the outer casing of the equipment.

There is a small risk of electrostatic charge build up, so any cleaning shall be done with a **damp cloth only** and no rubbing stronger than by hand force to take place.

4. Drive Motors

The installation of the drive motor and controls must provide adequate protection to shut down the pump before the motor produces more than 85% of the input power of the hydraulic end.

The input power limit can be calculated using the Hydra-Cell standard power requirements formula at maximum speed and pressure for any given pump (see appendix 2). See the product specification sheets on the website.

This is necessary to ensure that the bearings are operating within their allowable parameters.

5. Oil Level Monitor Unit

The protection concept applied to the G/D series pumps is liquid immersion 'k' and control of ignition sources 'b1' control system, according to BS EN ISO 80079-37:2016.

5.1. Zone 1

An oil sight bowl will be supplied for Zone 1 applications and must be fitted to facilitate a visual check that the oil is present and monitor its level. (See appendix 3, 4, 5 and 6).

An oil level monitoring device available from Wanner International is

Zone (Outside of the pump)	Material being pumped	Measures required
1	Flammable	Monitoring Oil bowl
	Non-flammable but toxic / corrosive	
	Non-hazardous	
2	Flammable	Oil level sight bowl
	Non-flammable but Toxic / corrosive	
	Non-hazardous	



recommended to be installed in accordance with BS EN 60079-25 to ensure that the current absorbed is limited. The switches supplied are considered simple devices in accordance with BS EN 60079-11. The switches are magnetically actuated hermetically sealed devices whose continuity should be monitored by a control system.

The Wanner 'Oil Level Monitor' is included in the ATEX Type Certification for Zone 1 applications (See appendix 3&4).

INTRINSICALLY SAFE (IS) CIRCUIT

The two Low and High level switches must be wired independently to current limiting Zener barriers (See appendix 4).

All switches should operate from a normally closed position: -

LL - low level opens when oil level decreases

LH - high level opens when oil level rises

No current is required to operate the switches.

5.2. Zone 2

A simple 'oil level sight bowl' can be fitted. (See appendix 5 and 6).

In this case the end-user must take responsibility to ensure oil is always present in the pump hydraulic end by monitoring the level in the sight bowl daily.

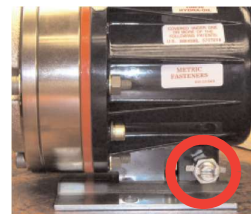
6. Earth and bonding

Every Hydra-Cell ATEX certified pump, with Oil Level Monitor or Oil Level Sight Bowl mounted in position, is tested for earth continuity before dispatch.

An earth stud is fitted to each Hydra-Cell ATEX certified pump and should be connected to ground during installation.

6.1. Electrostatic discharge

The earth stud must always be installed and effective during operation in a hazardous area, to prevent buildup of isolated electro-static charge. No cleaning stronger than manual rubbing should be carried out, and always use a damp cloth.




7. Marking

All ATEX plates are permanently fixed to the main pump housing. The pump serial number and model configuration are permanently affixed to the pump.

7.1. Zone 1

ATEX nameplates contain the following markings:

 II 2 G Ex h IIC T4 Gb
II 2 D Ex h IIIC T135°C Db
-10°C Ta +40°C



For zone 1 hazardous area certification under CE marking, it is necessary to lodge a technical file with a European registered office.

For eligibility under the UKCA marking scheme and hazardous area certification to zone 1 in the UK, a file must be lodged in the UK. These numbers are as follows: -

Intertek Italia SpA = ITS-I21ATEX29414X

Intertek Testing & Certification Ltd = ITS21UKEX0070X

Hydra-Cell pumps are supplied with nameplate as follows:


WI-ATEX-1035 3/4/10/12/15/17/25/35/66 series

WI-ATEX-1036 3/4/10/15/25/35 series

WI-ATEX-2021 20series markings

7.2. Zone 2

ATEX nameplates contain the following markings:

 II 3 G Ex h IIC T4 Gc
II 3 D Ex h IIIC T135°C Dc
-10°C Ta +40°C

8. Pumpable fluids

Preventing the formation of explosive atmospheres both within the pump and external to it is not within the control of Wanner International. It is the users responsibility for ensuring that pumps are not allowed to pump air or potentially explosive atmospheres.

The chemicals to be pumped are defined by the user and outside of the control of Wanner International. However, the following is a list of material categories that are suitable for use in a Hydra-Cell pump. These pumps are designed to handle flammable liquids and other liquid chemicals.

Acetone	Gasoline
Acetate	Heptane
Ethanol	Propylene Oxide
Ethylene	Pentane
Methyl Ethyl Ketone	Kerosene
Butane	Benzene
Turpentine	Pitch Oil
Stoddard Oil	Propanol
Xylene	Toluene
Methanol	Tall Oil
White Spirit	Degassed Crude Oil
N-Hexane	Lubricating Oil

Please note: Wanner International must be informed in writing if other chemicals are to be pumped. An 'Application Questionnaire' should be completed and returned to Wanner International with details of the process liquid composition.

Hydrogen Peroxide shall NOT be pumped.

The mixing of corrosive and or aggressive chemicals should be avoided.

9. Maintenance

As part of the regular maintenance procedure the following routine checks must be made:

9.1. Schedule

- 9.1.1. Wanner Oil Level Monitoring Unit - check oil level periodically
- 9.1.2. Wanner Oil Level Monitoring Unit - check is functioning as intended
- 9.1.3. Wanner Oil Level Sight Bowl - check oil level daily
- 9.1.4. Pressure relief / by-pass valve is functioning as intended
- 9.1.5. All head and casing bolts are secured (refer to torque values)
- 9.1.6. Check for electrical earth continuity
- 9.1.7. Check the integrity of the external shaft seals and pump head O-rings
- 9.1.8. Change oil in accordance with maintenance manual, and analysis oil in accordance with instructions in appendix 8
- 9.1.9. Check the hydraulic end to determine whether replacement bearings are required

Only persons specifically authorized by Wanner International are permitted to replace cam assemblies and perform the required cam bedding procedure. After cam replacement, cams must be fully bedded in and oil temperatures must have stabilized before the pump can be released for use in an ATEX zone.

10. General Notes

Lubricating oil should be changed in accordance with guidelines stated in the pump Installation/Service manual. The type of oil recommended, and the frequency of oil change will vary in accordance with the pump materials of construction, model, duty, speed, pressure, and liquid temperature.

Hydra-Cell Pumps are not suitable for total immersion in liquid and should be installed in a horizontal plane according to the installation instructions.

Only genuine replacement parts and mechanical components must be used, because only genuine parts will have the chemical and mechanical properties that have been developed to achieve explosion safety.

When commissioning the pump for the first time, and when pumping a potentially flammable or explosive process medium, the pumps shall be fully primed to prevent atmospheric air being present inside the pump.

Appendix 1 - Declaration of conformity



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DECLARATION OF CONFORMITY

Manufacturer's Name: Wanner International
Manufacturers Address: 8&9 Fleet Bus. Pk., Sandy Ln., Church Crookham,
GU52 8BF
Technical File held at: Intertek, Cleeve Rd, Leatherhead, KT227SA
Notified body number: NB 2575, AB 0359
File number: Intertek Testing & Certification Ltd - ITS21UKEX0070X
Intertek Italia SpA - ITS421ATEX29414X
Equipment Description: Hydra-Cell, hydraulically balanced, seal-less,
reciprocating positive displacement pumps.
Equipment model designation F/G20 Series, D/G03 Series, D/G04 Series, D/G10
series, D/G15 Series, H/G25 Series, D/G35 Series,
D/G66 Series
Designation (CAT 2, Zone 1)
II 2 G Ex h IIC T4 Gb
II 2 D Ex h IIIC T135°C Db
-10°C Ta +40°C
Designation (CAT 3, Zone 2)
II 3 G Ex h IIC T4 Gc
II 3 D Ex h IIIC T135°C Dc
-10°C Ta +40°C

Compliance with EN ISO 80079-36 2016 and EN ISO 80079-37 2016



2014/34/EU: Relating to equipment and protective systems intended for use in potentially explosive atmospheres.



Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016.



2006/42/EC: Relating to the machinery directive.

I the undersigned, hereby declare that the equipment specified above confirms to the Directive and Standards.

Paul Davis

Date: 20 March 2021

Managing Director

Registered Office:
8 & 9, Fleet Business Park
Sandy Lane,
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GU52 8BF

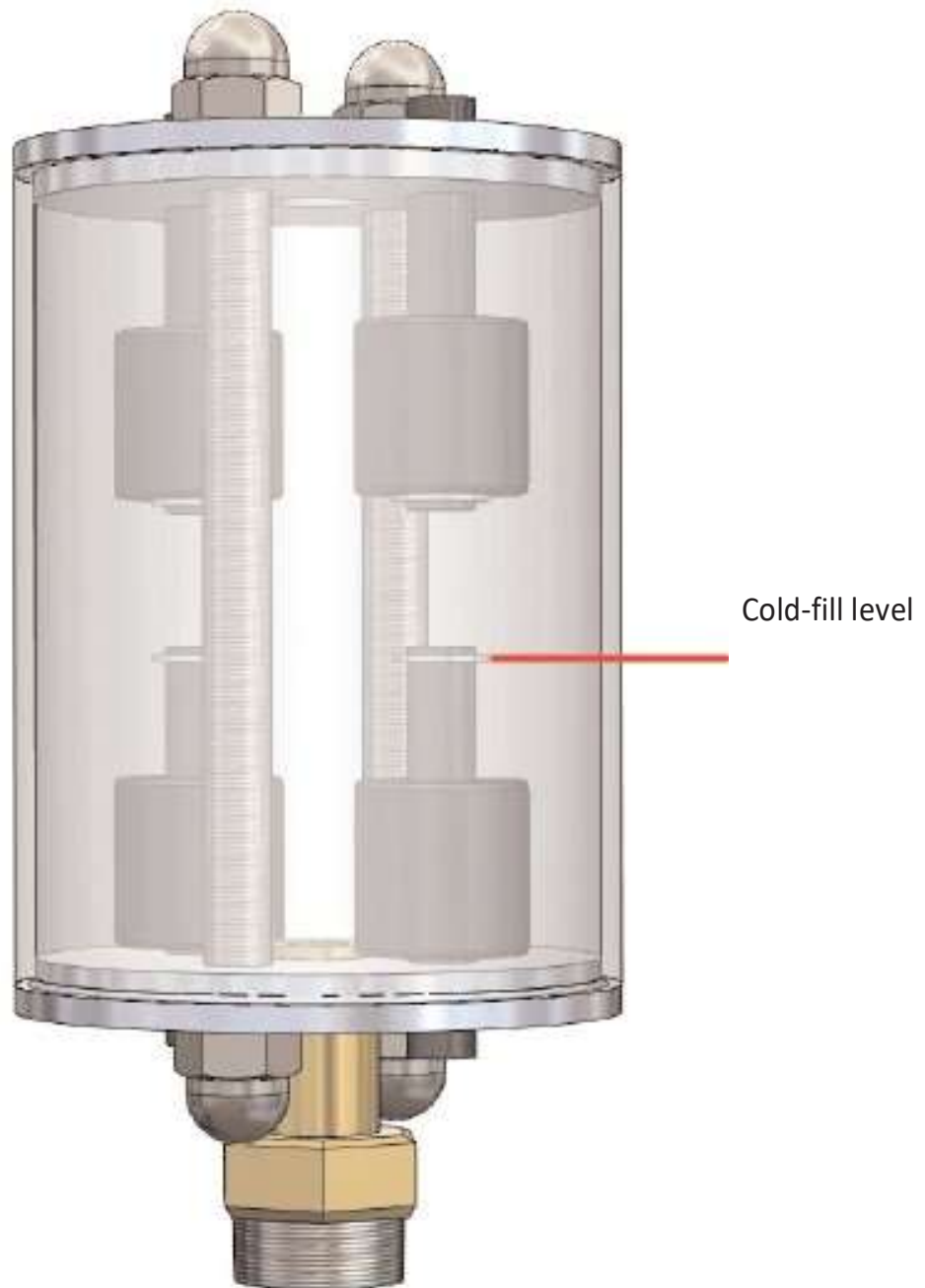
Registered No: 1784976
VAT Reg No: GB 64114679



Appendix 2 - Max pressure, all models

Models (any prefix letter)	Discharge Pressure	Inlet Pressure
20 Series	103 bar 69 bar max G20/F20	7 bar
3 Series	83 bar 69 bar max X-cams	17 bar
4 Series	172 bar	34 bar
10/12 Series	103 bar max 790rpm 69 bar max 1750rpm, (1450rpm x-cam only)	17 bar
15/17 Series	138 bar 172 bar Max 1150rpm X-cam only	34 bar 34 bar
25 Series	69 bar	17 bar
35 Series	83 bar 103 bar Max 700rpm	35 bar 17 bar
66 Series	48 bar	17 bar

Appendix 3 - Oil bowl for zone 1



Part numbers WI-00000097, WI-00000098.

Approximate capacities: To cold-fill level 180ml (additional oil to fill the bowl).

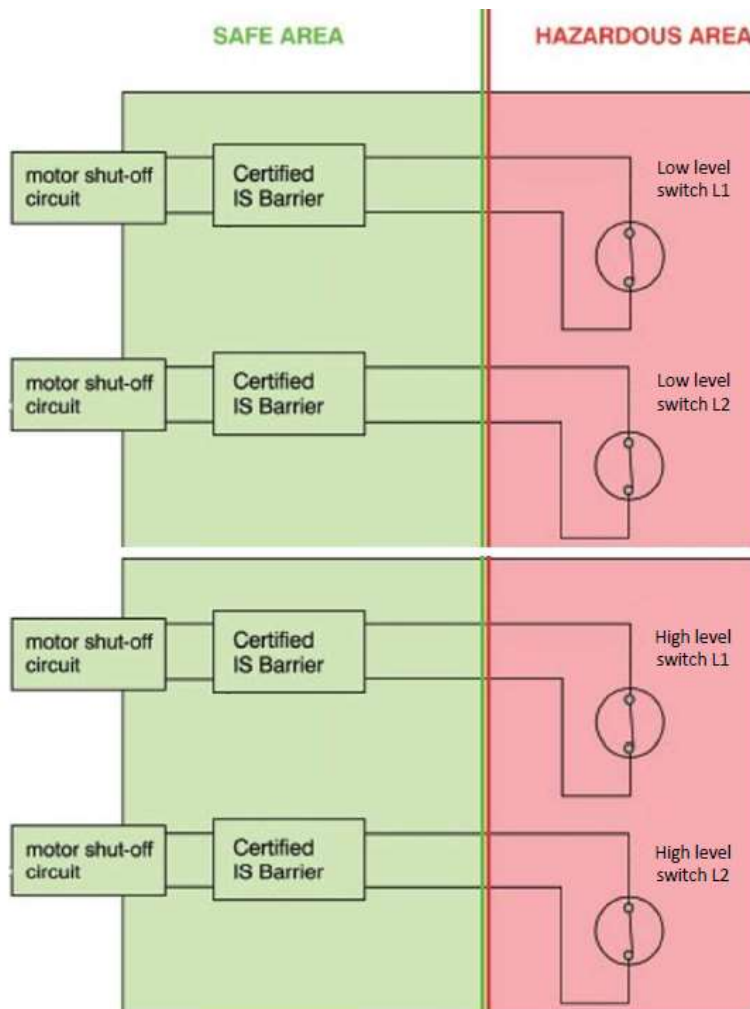
Appendix 4 - Zone 1 requirements

Recommended installation diagram of level switches. The high and low level switches are supplied with flying leads for customer installation.

IS - Intrinsically Safe Installation in accordance with BS EN 60079-25

Note 1. Any Zener diode barrier, certified by an EEC approved body to (Ex ia) IIC and having the following or lower output parameters: -

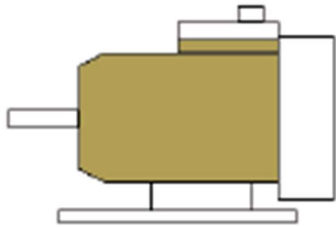
$U_o = 15V$ $I_o = 150mA$ $P_o = 0.56W$



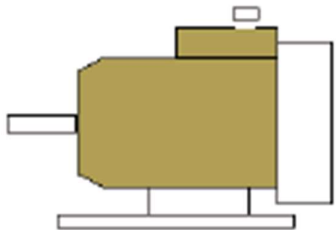
Inspection and testing of this alarm system shall be performed annually and/or at oil change intervals (whichever the more frequent).

Appendix 5 - Oil filling procedure

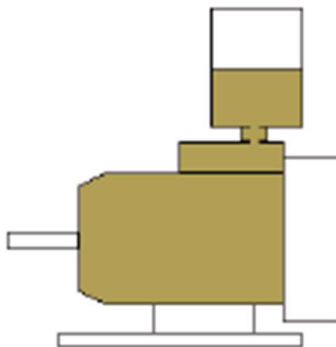
Suggested procedure for fitting and filling oil reservoir bowl



1. Typical mean oil level in pump reservoir.



2. When fitting oil reservoir bowl, remove red oil filler cap, fill the pump housing to max. capacity and replace with oil level monitor unit WI-00000097, WI-00000098 or A01-116-COND. Screw into pump body until sealed against O-ring.



3. Fill to level indicated on the oil level label. Note this is a guide only and allowance should be made for expansion and contraction of oil during operation.

Appendix 6 - Oil bowl for zone 2

Category 3 (zone 2)

An oil reservoir sight bowl assembly is available for Hydra-Cell pumps from Wanner International for use in ATEX applications. This oil bowl will easily screw into the pump where the oil fill cap is located.



16 oz (474 ml) volume
sight bowl.
A01-116-COND



Appendix 7 – Oil Compatibility

Oil code (digit 13 of pump model code)	Description	Suitable use with diaphragm materials	Re-ordering part numbers
A	10w30 standard duty	All except EPDM	A01-114-3430 A01-114-3431 A01-114-3432 A01-114-3433
B	40wt	All except EPDM	A01-114-3440 A01-114-3441 A01-114-3442 A01-114-3443
C / D	30/40wt (ISO VG 150) EPDM compatible	All	A01-114-3402 A01-114-3403
J	20wt (ISO VG 100) EPDM compatible	All	A01-114-3407 A01-114-3408
E / F / K	Food contact	All except EPDM	A01-114-3410 A01-114-3411
H	15w50 high-temp severe-duty synthetic oil	All except EPDM	A01-114-3416 A01-114-3421

Appendix 8 - Oil change and sampling

To always ensure safe and effective lubrication of the pump, an oil sampling and analysis for contamination regime must be implemented.

Oil is to be replaced in accordance with the Wanner pump maintenance instructions, with the used oil sampled and analyzed for iron content. This is to ensure good condition of the internal components and the ability to help predict potential maintenance issues.

If an iron content of greater than or equal to (either) 300ppm or 0.2ppm/hr of iron in oil be returned from the oil analysis, Wanner International should be consulted and the pump be stopped at the earliest opportunity (not more than a further 500hrs running). If iron content is above 500ppm stop immediately.

A means of recording date, hours run, oil change interval and records of oil contamination shall be maintained at all times for the G-series pumps range, when used in any hazardous area.

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