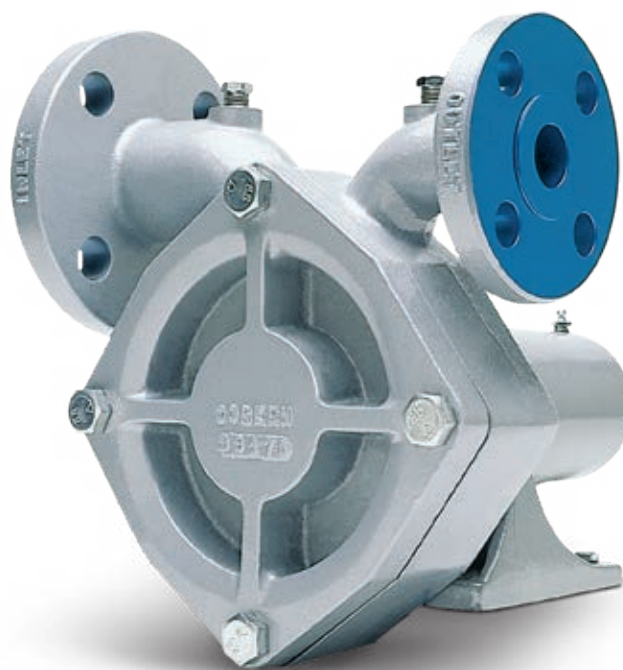


# European Union Addendum

## For Corken's Liquid Pumps—All Models



Model Z4500 Pump



Model FF150 Pump

**This ADDENDUM covers the following European Union Directives:**

**Machinery Directive 2006/42/EC**

**and**

**ATEX Directive 2014/34/EU**

**Applies to Corken's Installation, Operation & Maintenance (IOM) Manuals with the following document numbers:**

**IC101, ID105, ID107, ID108, ID108-1, IF101, IF102, IF103, IP100**

Warning: (1) Periodic inspection and maintenance of Corken products is essential. (2) Inspection, maintenance, and installation of Corken products must be made only by experienced, trained, and qualified personnel. (3) Maintenance, use, and installation of Corken products must comply with Corken instructions, current applicable laws, and safety standards. (4) Transfer of toxic, dangerous, flammable, or explosive substances using Corken products is at user's risk and equipment should be operated only by qualified personnel according to applicable laws and safety standards.

*Solutions beyond products...*

**CORKEN®**

---

# Table of Contents

<b>Manufacture</b> .....	<b>3</b>
<b>General Description</b> .....	<b>3</b>
Coro-Vane® and PT/PS/RVP Pumps .....	3
Coro-Flo® Pumps .....	3
<b>UE-CE Declaration of Conformity/Declaration of Incorporation</b> .....	<b>4</b>
<b>Labeling</b> .....	<b>8</b>
<b>Specification Section</b> .....	<b>8</b>
Storage Condition Ranges: .....	9
Inlet and Discharge Temperatures: .....	9
Inlet, Differential, and Discharge Pressures: .....	9
Maximum Speed: .....	9
Machine Mass: .....	10
Allowable Pump Nozzle Loads: .....	11
Noise Level: .....	12
Pump Centers of Gravity: .....	12
<b>Safety Section</b> .....	<b>12</b>
Warnings/Information: .....	12
Other Warnings, Precautions, and Information: .....	12
Safe Lifting, Transporting, and Handling: .....	13
Dismantling, Assembling, and Installation: .....	13
<b>Installation/Incorporation Section</b> .....	<b>13</b>
Installation (Incorporation) Requirements and Procedures: .....	13
Cleaning: .....	14
Maintenance Section: .....	14
Spare Parts Lists: .....	14
Language: .....	14

---

## Addendum for European Union

This addendum applies to all of Corken's pumps using Installation, Operation, & Maintenance (IOM) Manuals with the following document numbers:

IC101, ID105, ID107, ID108, ID108-1, IF101, IF102, IF103, and IP100

Document numbers are located in the upper right-hand corner of the front cover.

This addendum to Corken's Installation, Operating, and Maintenance (IOM) Manuals and Important Instructions for pumps provides additional information required under the European Union Machinery Directive 2006/42/EC and ATEX Directive 2014/34/EU.

## Manufacture

**Corken, Inc.** 9201 North I-35 Service Road  
Oklahoma City, OK 73131  
U.S.A.

### **IDEX India Pvt. Ltd. (IDEX India)**

Survey No. -256; G.I.D.C. Manjusar; Savli Road  
Near Bombardier Circle; Dist. – Vadodara-391 770  
Gujarat, India

### **Sampi S.p.A**

Via A. Vespucci, 1  
55011 Altopascio (LU) - Italy

## General Description

### **Coro-Vane® and PT/PS/RVP Pumps**

Coro-Vane® (PT/PS/RVP) is a special type of rotary vane positive displacement pump known as a sliding vane pump. A sliding vane pump has many of the positive displacement advantages of gear pumps, plus the ability to compensate for wear and operate at a lower noise level.

Sliding vane pumps comprise a rotor turning inside a cam (liner) machined eccentrically in relation to the rotor. As the rotor rotates it displaces liquid trapped between the rotor, cam, and vanes. The vanes are made with advanced polymers that exhibit extremely low coefficients of friction and self-adjust for wear extending the pump life.

The pumps have the following construction variations:

- Case, mounting, and drive options depend on the type of service (stationary and mobile) and the liquid to be pumped

- O-ring material options
- Relief valve options on some models
- Inlet and outlet flanges with multiple types and sizes

### **Coro-Flo® Pumps**

Coro-Flo® are a special type of rotary pump, known as a regenerative turbine pump. The liquid flows into the inlet nozzle and into a passageway on each side of an impeller (the rotating element) and is recirculated constantly between the vanes (or teeth) of the impeller and this passageway as the impeller rotates. As the liquid makes a complete revolution in the pump case, it is diverted through the outlet nozzle. The horsepower requirement increases as the differential pressure increases but the pump capacity decreases at the same time. Differential pressure is the difference between the pressure at the inlet and outlet of the pump.

The impeller is the only moving part and has no contact with the casing. Practically no wear occurs to the impeller, even when pumping low viscosity volatile liquids such as LP-gas or anhydrous ammonia that have very little lubricating qualities.

Corken's Coro-Flo® pumps have the following construction variations:


- Case, mounting, and drive options depend on the type of service and the liquid to be pumped
- Impeller, seal sleeve, shaft, and seal housing material options
- O-ring material options

# UE-CE Declaration of Conformity/Declaration of Incorporation


Any Corken pump exported to European Union communities must be accompanied by the respective pump Declaration of Conformity/Declaration of Incorporation. These documents are shown on the next three pages. They include: (a) range of Coro-Flo and Coro-Vane pump models, (b) specific Pump Model, (c) pump Serial Number(s), (d) Date of Manufacturer, and (e) applicable Machine Directive (MD) and ATmosphere EXplosibles (ATEX) compliance standards and European Norms (EN).

Corken's Coro-Flo, Coro-Vane, and PT/PS/RVP pumps eligible for EU-CE export include:

- Coro-Flo: (Direct Mount Models) DL, DLD, and DLF; (Frame Mount Models) F, FD, and FF.
- Coro-Vane: (Z Models) Z, ZH, ZX, and ZXH; (Standard Models) CDBN; (PZ Models) PZ and PZH; PT/PS and RVP.


<b>EU DECLARATION OF CONFORMITY FOR ATEX DIRECTIVE 2014/34/EU &amp; DECLARATION OF INCORPORATION FOR MACHINERY DIRECTIVE 2006/42/EC</b>			
<b>Issue Details:</b>	<b>Date:</b>	<b>Place:</b> Oklahoma City, OK, USA	<b>DoI Number:</b>
<b>Conforming: "Partly Completed Machinery"</b>	Coro-Flo Pump Series DL, DLD, DLF, DS, DSD, DSF, F, FD, FF for Ammonia, LPG, and Similar Fluids.		
<b>Model:</b>	<b>Serial No(s):</b>	<b>Date of Manufacture (MM/YYYY):</b> -- / ----	
<b>Manufacturer:</b>	<b>Corken Inc.</b> , 9201 North I-35 Service Road, Oklahoma City, OK. 73131, USA		
<b>Machinery Directive 2006/42/EC</b>			
<b>Person, established within the Community, responsible for compiling the Technical Documentation:</b>	Andrea Puccini, Engineering Manager SAMPI S.p.A, Via A. Vespucci, 1 55011 Altopascio-Italy		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied or Referenced:</b>	EN 809:1998+A1:2009, EN ISO 14120: 2015, EN ISO 12100:2010, EN 12162:2001+A1:2009, EN ISO 13732-1:2008, EN ISO 13857:2008, EN 61310-1:2008, EN 61310-2:2008, EN 61310-3:2008		
<b>We hereby declare that the partly assembled machinery described above must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.</b>			
<b>ATEX Directive 2014/34/EU</b>			
<b>ATEX Classification</b>	Group II Cat 2G Ex h IIB T4 Gb X		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied:</b>	EN 1127-1:2011, EN ISO 80079-36:2016, EN ISO 80079-37:2016		
<b>Technical Documentation</b>	Technical Dossier: CTF1-B, Issue 6 Held by: DNV GL Presafe Certification AS (NB #2460) Veritasveien 3 NO-1363 Hovik Norway Tel +47 67 57 8800 Acknowledgement #: 13717-2018-CE-USA-PRE X		
We declare that the machinery described above conforms with the essential health and safety requirements of Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres. This declaration is issued under the sole responsibility of the manufacturer.			
<b>PED 2014/68/EU</b>			
Equipment is excluded from the Scope of the Pressure Equipment Directive (PED) 2014/68/EU under Article 1.2.j.ii			
<b>Signed:</b>			
<b>Signatory:</b>	Godwill Mushonga – Regulatory Coordinatorr – Corken, Inc.		

**Coro-Flo® Pump Declaration of Conformity/Incorporation.**

<b>EU DECLARATION OF CONFORMITY FOR ATEX DIRECTIVE 2014/34/EU &amp; DECLARATION OF INCORPORATION FOR MACHINERY DIRECTIVE 2006/42/EC</b>			
<b>Issue Details:</b>	<b>Date:</b>	<b>Place:</b> Oklahoma City, OK, USA	<b>DoI Number:</b>
<b>Conforming: "Partly Completed Machinery"</b>	Coro-Vane Pump Series Z, ZH, ZX, ZXH, CDBN, Models 521 to 4500 for Ammonia, LPG and Similar Liquids; refined Petroleum Products and Industrial Solvents		
<b>Model:</b>	<b>Serial No(s):</b>	<b>Date of Manufacture (MM/YYYY):</b> --/--	
<b>Manufacturer:</b>	<b>Corken Inc</b> , 9201 North I-35 Service Road, Oklahoma City, OK. 73131, USA		
<b>Machinery Directive 2006/42/EC</b>			
<b>Person, established within the Community, responsible for compiling the Technical Documentation:</b>	Andrea Puccini, Engineering Manager SAMPI S.p.A, Via A. Vespucci, 1 55011 Altopascio-Italy		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied or Referenced:</b>	EN 809:1998+A1:2009, EN ISO 14120: 2015, EN ISO 12100:2010, EN 12162:2001+A1:2009, EN ISO 13732-1:2008, EN ISO 13857:2008, EN 61310-1:2008, EN 61310-2:2008, EN 61310-3:2008		
<b>We hereby declare that the partly assembled machinery described above must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.</b>			
<b>ATEX Directive 2014/34/EU</b>			
<b>ATEX Classification</b>	Group II Cat 2G Ex h IIB T4 Gb X		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied:</b>	EN 1127-1:2011, EN ISO 80079-36:2016, EN ISO 80079-37:2016		
<b>Technical Documentation</b>	Technical Dossier: CTF1- C, Issue 5 Held by: DNV GL Presafe Certification AS (NB #2460) Veritasveien 3 NO-1363 Hovik Norway Tel +47 67 57 8800 Acknowledgement #: 13717-2018-CE-USA-PRE X		
We declare that the machinery described above conforms with the essential health and safety requirements of Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres. This declaration is issued under the sole responsibility of the manufacturer.			
<b>PED 2014/68/EU</b>			
Equipment is excluded from the Scope of the Pressure Equipment Directive (PED) 2014/68/EU under Article 1.2.j.ii			
<b>Signed:</b>			
<b>Signatory:</b>	Godwill Mushonga – Regulatory Coordinator - Corken, Inc.		

**Coro-Vane® Pump Declaration of Conformity/Incorporation (excluding PZ Models)**

**EU DECLARATION OF CONFORMITY FOR ATEX DIRECTIVE 2014/34/EU &  
DECLARATION OF INCORPORATION FOR MACHINERY DIRECTIVE 2006/42/EC**

<b>Issue Details:</b>	<b>Date:</b>	<b>Place:</b> Oklahoma City, OK, USA	<b>DoI Number:</b>
<b>Conforming: "Partly Completed Machinery"</b>	Coro-Vane Pump Series PZ7, PZH7, PZ10 and PZH10 for refined fuel oil and similar liquids.		
<b>Model:</b>	<b>Serial No(s):</b>	<b>Date of Manufacture (MM/YYYY):</b> --/----	
<b>Manufacturer:</b>	<b>Corken Inc,</b> 9201 North I-35 Service Road, Oklahoma City, OK. 73131, USA		
<b>Machinery Directive 2006/42/EC</b>			
<b>Person, established within the Community, responsible for compiling the Technical Documentation:</b>	Andrea Puccini, Engineering Manager SAMPI S.p.A, Via A. Vespucci, 1 55011 Altopascio-Italy		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied or Referenced:</b>	EN 809:1998+A1:2009, EN ISO 14120: 2015, EN ISO 12100:2010, EN 12162:2001+A1:2009, EN ISO 13732-1:2008, EN ISO 13857:2008, EN 61310-1:2008, EN 61310-2:2008, EN 61310-3:2008		
<b>We hereby declare that the partly assembled machinery described above must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.</b>			
<b>ATEX Directive 2014/34/EU</b>			
<b>ATEX Classification</b>	Group II Cat 2G Ex h IIB T3 Gb X		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied:</b>	EN 1127-1:2011, EN ISO 80079-36:2016, EN ISO 80079-37:2016		
<b>Technical Documentation</b>	Technical Dossier: CTF1- D, Issue 5 Held by: DNV GL Presafe Certification AS (NB #2460) Veritasveien 3 NO-1363 Hovik Norway Tel +47 67 57 8800 Acknowledgement #: 13717-2018-CE-USA-PRE X		
We declare that the machinery described above conforms with the essential health and safety requirements of Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres. This declaration is issued under the sole responsibility of the manufacturer.			
<b>PED 2014/68/EU</b>			
Equipment is excluded from the Scope of the Pressure Equipment Directive (PED) 2014/68/EU under Article 1.2.j.ii			
<b>Signed:</b>			
<b>Signatory:</b>	Godwill Mushonga – Regulatory Coordinator - Corken, Inc.		

**Coro-Vane® Pump Declaration of Conformity/Incorporation (PZ Models Only)**

<b>EU DECLARATION OF CONFORMITY FOR ATEX DIRECTIVE 2014/34/EU &amp; DECLARATION OF INCORPORATION FOR MACHINERY DIRECTIVE 2006/42/EC</b>			
<b>Issue Details:</b>	<b>Date:</b>	<b>Place:</b> Oklahoma City, OK, USA IDEX India, Vadodara. India SAMPI, Altopascio-Italy	<b>DoI Number:</b>
<b>Conforming: "Partly Completed Machinery"</b>	PT or PS Pump Series PS20, PSH20, PT20, PTH20, PS25, PSH25, PT25, PTH25, PS30, PSH30, PT30, PTH30, RVP20, RVP25 and RVP30 for refined fuel oil and similar fluids.		
<b>Model:</b>	<b>Serial No(s):</b>	<b>Date of Manufacture (MM/YYYY):</b> -- / ----	
<b>Manufacturer:</b>	<b>Corken Inc</b> 9201 North I-35 Service Road, Oklahoma City, OK. 73131, USA	<b>IDEX India</b> Survey No.-256; G.I.D.C. Manjusar; Savli Road; Near Bombardier Circle; Dist.- Vadodara-391 770 Gujarat, India	<b>SAMPI S.p.A,</b> Via A. Vespucci, 1 55011 Altopascio-Italy
<b>Machinery Directive 2006/42/EC</b>			
<b>Person, established within the Community, responsible for compiling the Technical Documentation:</b>	Andrea Puccini, Engineering Manager SAMPI S.p.A, Via A. Vespucci, 1 55011 Altopascio-Italy		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied or Referenced:</b>	EN 809:1998+A1:2009, EN ISO 14120: 2015, EN ISO 12100:2010, EN 12162:2001+A1:2009, EN ISO 13732-1:2008, EN ISO 13857:2008, EN 61310-1:2008, EN 61310-2:2008, EN 61310-3:2008		
<b>We hereby declare that the partly assembled machinery described above must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of Directive 2006/42/EC on machinery.</b>			
<b>ATEX Directive 2014/ 34/ EU</b>			
<b>ATEX Classification</b>	Group II Cat 2G Ex h IIB T3 Gb X		
<b>Harmonised Standards &amp; Other Technical Standards/Specifications Applied:</b>	EN 1127-1:2011, EN ISO 80079-36:2016, EN ISO 80079-37:2016		
<b>Technical Documentation</b>	Technical Dossier CTF1-F, Issue 2 Held by: DNV GL Presafe Certification AS (NB #2460) Veritasveien 3 NO-1363 Hovik Norway Tel +47 67 57 8800 Acknowledgement #: 13717-2018-CE-USA-PRE X		
We declare that the machinery described above conforms with the essential health and safety requirements of Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres. This declaration is issued under the sole responsibility of the manufacturer.			
<b>PED2014/68/EU</b>			
Equipment is excluded from the Scope of the Pressure Equipment Directive (PED) 2014/68/EU Article 1.2.j.ii			
<b>Signed:</b>			
<b>Signatory:</b>			

**PT/PS/RVP Pump Declaration of Conformity/Incorporation**

# Labeling

The following warning labels are affixed to each pump:



General Danger Label IS6014 is affixed on a visible surface (black symbol on yellow background).



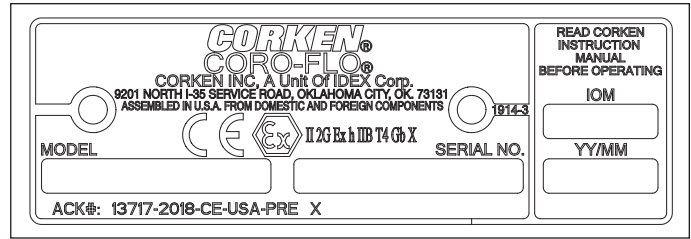
Cutting of Fingers/Impeller Blade Label IS1046 is affixed on the cover of all Coro-Flo® regenerative turbine pumps (black symbol on yellow background).



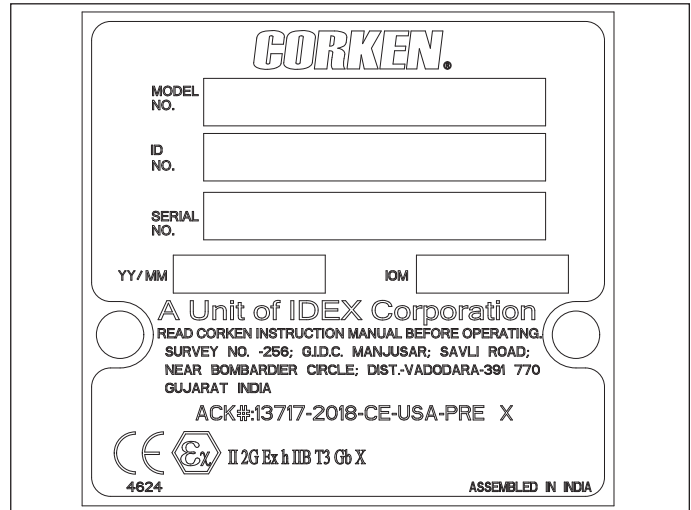
Read Operators Manual Label IS6017 is affixed on a visible surface (white symbol on blue background).

# Specification Section

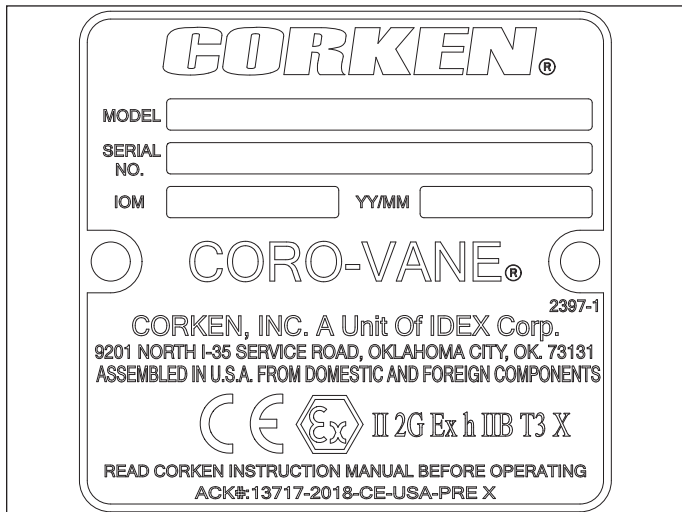
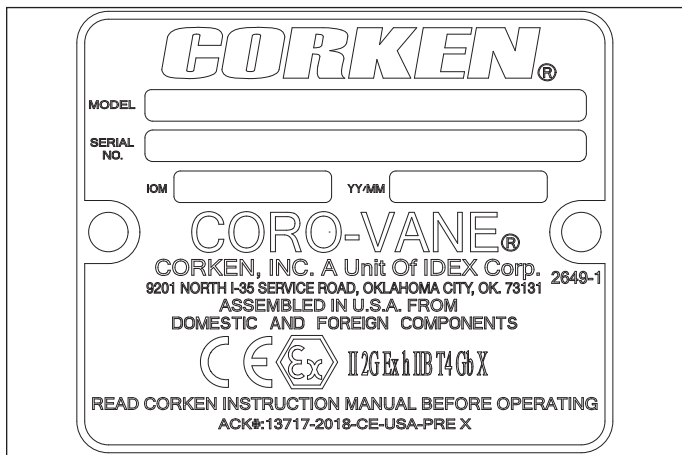
One of the following Corken nameplates is attached to the pump:



Coro-Flo® Pump Nameplate Sample



PT/PS Pump Nameplate Sample



Coro-Vane® Pump Nameplate Sample

## A Pump Nameplate Includes the Following Information:

- Identification of Corken or IDEX India Pvt. Ltd. as the manufacturer with full address
- Model number
- Serial number
- YY/MM: Year and date of manufacture
- IOM: Document number for the Installation, Operation, and Maintenance Manual
- Statement to “READ CORKEN INSTRUCTION MANUAL BEFORE OPERATING”
- Acknowledgement number: 13717-2018-CE-USA-PRE X

ATEX Classification and Symbol: These products are classified under the ATEX directive as Equipment – Group II – Category 2 – equipment that is intended for use in areas where explosive atmospheres caused by gases or vapors (G) may be present.

- Coro-Flo: ATEX Rating II 2G Ex h IIB T4 Gb X: ATEX Technical File Number CTF1-B
- Coro-Vane: ATEX Rating II 2G Ex h IIB T4 Gb X: ATEX Technical File Number CTF1-C



- PZ: ATEX Rating II 2G Ex h IIB T3 Gb X:  
ATEX Technical File Number CTF1-D

- PT/PS/RVP: ATEX Rating II 2G Ex h IIB T3 Gb X:  
ATEX Technical File Number CTF1-F

The maximum surface temperatures reached on the pumps are directly related to the temperature of the process fluid. Factors affecting the process fluid temperatures include but are not limited to the following:

- Physical properties of the fluid
- Fluid temperature entering the pump
- Elevation (above seal level) of the process location

For European Union (EU) CE marking requirements, a Corken pump nameplate also includes the following information:

- Year of construction (YY/MM)
- Document number of the Installation, Operation, and Maintenance (IOM) manual

**Storage Condition Ranges:**

- Recommended storage temperature range: -32°C to 54°C
- Recommended storage humidity range: < 80%
- Recommended storage altitude range: No Limitations

**Inlet and Discharge Temperatures:**

Operating fluid temperature range for:

- Coro-Flo and Coro-Vane (Except PZ-Series): -32°C to 107°C
- PT/PS/RVP and PZ-Series: -32°C to 149°C

**Inlet, Differential, and Discharge Pressures:**

Pump inlet pressure can vary depending on the construction of its associated inlet piping. For most applications where the liquid being pumped is a liquefied gas, the inlet pressure is the same as the vapor pressure at ambient temperature less a normally small amount of pressure losses through the inlet portion of the piping system.

Pump differential pressure is the difference between the inlet and outlet pressures.

The differential and discharge pressures vary with the pump model and are shown in the following tables:

**Coro-Vane® Pumps**

Models	Maximum Differential Pressure (Bars)	Maximum Outlet Pressure (Bars gauge)
521, 1021	8.6	24.1
Z/ZH2000	8.6	24.1
ZX/ZXH2000	10.3	24.1
Z/ZH3200	8.6	24.1
Z3500	8.6	24.1
Z/ZH4200	8.6	24.1
Z4500	8.6	24.1
PZ/PZH7	8.6	13.8
PZ/PZH10	8.6	13.8
PT/PS/RVP 20	8.6	13.8
PT/PS/RVP 25	8.6	13.8
PT/PS/RVP 30	8.6	13.8

**Coro-Flo® Pumps**

Models	Maximum Differential Pressure (Bars)	Maximum Outlet Pressure (Bars gauge)
F/DL10	8.6	24.1
F/DL12	8.6	24.1
F/DL13	8.6	24.1
F/DL14	8.6	24.1
F/DL16	13.8	24.1
F/DL17	13.8	24.1
F/DL18	13.8	24.1
F/DL19	13.5	24.1
FF/FD/DLF/DLD060	10.3	24.1
FF/FD/DLF/DLD075	13.8	24.1
FF/FD/DLF/DLD150	17.2	24.1

**Maximum Speed:**

The maximum pump speed varies with the pump model as shown in the following table:

**Vane Pumps**

Models	Maximum Speed (RPM)	Models	Maximum Speed (RPM)
521, 1021	950	Z/ZH4200	800
Z/ZH3200	800	ZX/ZXH2000	800
PZ7, PZ10	800	Z4500	800
Z3500	800	PT/PS/RVP 20/25	780
Z/ZH2000	800	PT/PS/RVP 30	640

---

## Coro-Flo® Pumps

Models	Maximum Speed (RPM)
All	3450

## Machine Mass:

The machine mass varies with the pump model as shown in the following tables:

## Coro-Vane® Pumps

Coro-Vane® Pump Model	Machine Mass (Kg)
521	59.9
CDBN1022	77.1
1021	90.7
CDBN1522	88.0
Z2000, ZH2000, ZX2000, ZXH2000	45.4
PZ7	44
Z3200, ZH3200	63.5
PZ10	55
Z3500, ZH3500	88.5
PT/PS/RVP 20	31
Z4200, ZH4200	124.7
PT/PS/RVP 25	40
Z4500, ZH4500	120.2
PT/PS/RVP 30	63
CDBN0522	54.9

## Coro-Flo® Pumps

Coro-Flo® Pump Model	Machine Mass (Kg)
F10, F12, F13, F14, F16, F17, F18, F19	21.8
DL10, DL12, DL13, DL14, DL16, DL17, DL18, DL19	28.1
FF060, FD060, FF075, FD075, FF150, FD150	28.6
DLF060, DLD060, DLF075, DLD075, DLF150, DLD150	13.0

## Allowable Pump Nozzle Loads:

The maximum allowable pump nozzle Load for Corken's pumps varies with the pump model as shown in the following tables:

### Coro-Vane® Pump Nozzle Torque Values

Model	Inlet		Outlet		Auxiliary Outlet	
	Size	Torque	Size	Torque	Size	Torque
0521 and CDBN 0522	2" NPT	186 N-m	2" NPT	186 N-m	2-1/2" NPT	198 N-m
0521 and CDBN 0522	50 mm	186 N-m	50 mm	186 N-m	65 mm	198 N-m
1021 and CDBN and 1022	3" NPT	203 N-m	3" NPT	203 N-m	4" NPT	215 N-m
1021 and CDBN and 1022	80 mm	203 N-m	80 mm	203 N-m	100 mm	215 N-m
CDBN1522	4" NPT	215 N-m	4" NPT	215 N-m	NA	NA
CDBN1522	100 mm	215 N-m	100 mm	215 N-m	NA	NA
Z2000	2" NPT	186 N-m	2" NPT	186 N-m	NA	NA
Z3200	3" ASME Class 300 RF	203 N-m	2" NPT	186 N-m	2" NPT	186 N-m
Z3500	3" NPT	203 N-m	3" NPT	203 N-m	NA	NA
Z4200	4" ASME Class 300 RF	215 N-m	2" NPT	186 N-m	2" NPT	186 N-m
Z4500	4" ASME Class 300 RF	215 N-m	3" ASME Class 300 RF	203 N-m	NA	NA
PZ7	2" NPT	186 N-m	2" NPT	186 N-m	NA	NA
PZ10	2" NPT	186 N-m	2" NPT	186 N-m	NA	NA
PT/PS/RVP 20	2" NPT	186 N-m	2" NPT	186 N-m	2" Weld	186 N-m
PT/PS/RVP 25	2-1/2" NPT	198 N-m	2-1/2" NPT	198 N-m	2" NPT or weld	186 N-m
PT/PS/RVP 30	3" NPT	203 N-m	3" NPT	203 N-m	3" Weld	203 N-m

### Coro-Flo® Pump Nozzle Torque Values

Model	Inlet		Outlet		Auxiliary Outlet	
	Size	Torque	Size	Torque	Size	Torque
F/DL 10, 16, 17	1-1/4" NPT	164 N-m	1" NPT	136 N-m	3/4" NPT	113 N-m
F/DL 12, 13, 14, 18, 19	1-1/2" NPT	175 N-m	1" NPT	136 N-m	3/4" NPT	113 N-m
FF/DLF060, 075, 150	1-1/2" ASME Class 300 RF	175 N-m	1" ASME Class 300 RF	136 N-m	NA	NA
FD/DLD060, 075, 150	40 mm, 40 PN, DIN 2635	175 N-m	25 mm, 40 PN, DIN 2635	136 N-m	NA	NA

## Noise Level:

The noise level generated by the pump unit on its own is < 85 dB(A) at 1 meter.

End user must take all necessary precautions dependent on the noise levels generated by the complete system.

If the pump is used for loading or unloading silos or tanks on trucks noise directive 2004/14/EC must be met.

## Pump Centers of Gravity:

Pump units are for incorporation into larger final systems, so the center of gravity of the final system is dependent on all of the constituent assemblies and their orientation. Therefore, a pump is partly completed machinery, and the center of gravity of the pumps is not essential for safe use.

## Safety Section

### Warnings/Information:

For more information on the warning stickers for **General Danger, Cutting of Fingers by Impeller Blade, and Read Operators Manual**, see the Labeling section of this manual.



**General Danger Warning:** Pumps are industrial machines and thus have inherent general dangers.



**Cutting of Fingers by Impeller Blade Warning:** Caution should be taken with Coro-Flo® regenerative turbine pumps prior to installing into a pumping system. Blades on the impellers in these pumps are visible and accessible and theoretically accessible by fingers when the pump is not installed into inlet and/or outlet piping.



**Read Operators Manual:** Pumps should not be installed, started, or operated before reading the Installation, Operation & Maintenance (IOM) Manual provided with the pump and this addendum to the IOM Manual.

### Other Warnings, Precautions, and Information:

1. If the end user **repaints** the pump unit on incorporation they must ensure that all nameplates, warning labels, and supplemental information stickers remain visible and legible.

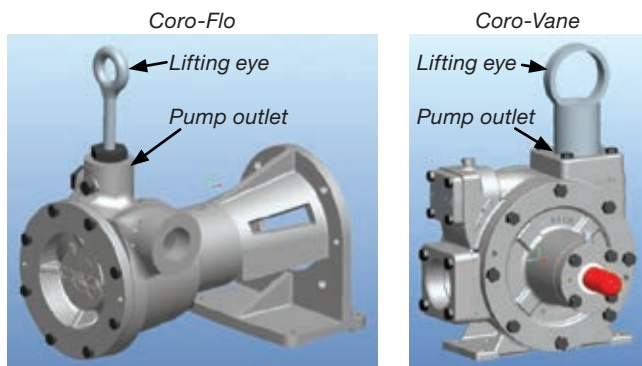
2. The pumps are designed for pumping liquids with the following exceptions:
  - a. Liquids that react with iron
  - b. Are at temperatures > 107 °C / 225 °F (for all Coro-Vane and Coro-Flo except for PT and PZ series).
  - c. Are at temperatures > 149°C / 300°F (for PT and PZ series)
3. The end user must take all necessary precautions for their selected process liquid—hazardous/flammable/explosive/toxic/PPE etc.
4. The end user must take all necessary precautions for their system in order to prevent ignition sources.
5. The end user must take all necessary precautions for the selected bearing grease. This must include references to the MSDS and requisite PPE.
6. Only trained operators and maintenance technicians are to work on the system. Training for such personnel should include conventional training as a mechanic and additional training in the installation, operation, and maintenance of rotating positive displacement and turbine pumps.
7. Pumps are not to be accessed, adjusted, or maintained during operation. Units must be immobilized before undertaking any such activities.
8. Pump housings, covers, and coupling guards should not be removed once the pump is stopped.
9. Do not step on the pump.
10. Use access aids/step ladders when repairing or cleaning components out of reach.
11. Single man safe lift limit is 18 kg. Pumps with a greater mass must be lifted using lifting equipment. See Safe Lifting, Transporting, and Handling below.
12. PPE requirements for the various maintenance, adjustment, and cleaning operations are as follows:
  - a. Pumps used on flammable liquids, use fire protective clothing
  - b. Hard hat for head protection
  - c. Gloves as necessary
  - d. Eye protection
  - e. Steel toed footwear
  - f. Hearing protection as necessary

13. The noise level generated by the pump Unit on its own is < 85 dB(A). The end user must take the following precautions dependent on the noise generated by the complete system:

- a. If applicable end user must meet noise directive 2004/14/EC.
- b. Take all necessary precautions to reduce noise emissions.
- c. Specify hearing protection if required.

### Safe Lifting, Transporting, and Handling:

- 1. Lifting Coro-Flo and Coro-Vane Pumps:
  - a. Securely attach a load-rated lifting device, such as a lifting eye, to the outlet opening of the pump unit (see illustrations below):



- b. Connect a lifting apparatus, such as a hoist, forklift, or sling, to the lifting device. The end user must ensure the lifting apparatus has a load capacity at least as large as the weight of the pump unit to be lifted.
- 2. All pump units should be securely bolted in a crate or on a pallet prior to transporting or otherwise handling the pump unit away from the installation site.

### Dismantling, Assembling, and Installation:

- 1. Instructions for dismantling, assembling, and installing pumps are provided in the corresponding IOM Manual for the particular pump unit.
- 2. When installing the pump unit the end user must ensure it is properly anchored for stability by bolting it in position with bolts installed through all of the mounting holes in the feet of the case, mounting bracket, or frame. Use the largest size bolts that will fit through the mounting holes.

## Installation/Incorporation Section

### Installation (Incorporation) Requirements and Procedures:

Detailed installation (Incorporation) instructions including illustrated requirements and procedures are included in the pump's respective IOM Manual.

- 1. The end user must provide suitable pressure relief for their system, within which the pump unit is incorporated, including the system overall pressure relief.
- 2. The end user must guard the pump drive system and the external portion of the pump shaft in accordance with EN 953 and EN 13857 or the applicable latest standard.
- 3. End user must ensure that the pump unit is incorporated correctly within a pump system that complies with all relevant directives and standards including:
  - a. Machinery Directive 2006/42/EC
  - b. EN 809 Safety of Pumps and Pump Units
- 4. End user must ensure pumps are grounded, via their metal mounting plate, in accordance with ATEX requirements and local regulations
- 5. End user must take all necessary precautions on incorporation of the pump to prevent access to surfaces at hazardous touch temperatures including:
  - a. Safeguarding
  - b. Insulation
  - c. Labeling with hot surface/burn hazard ISO pictogram



- 6. Permitted moments on pipe connections (see page 11 in this addendum)
- 7. On Coro-Flo and F-Models (frame mount), the pump shaft must be coupled with a minimum length of shaft from the motor case.

- 
8. Tightening torques for screw threads: Bolt torque is not normally specified except for the following:

**Models Z2000, Z3200, Z3500, Z4200 and Z4500:**

Bearing cap bolts: 34 N-m.

**Models FF060, FF075 and FF150:**

Head Bolts: 81 N-m.

9. The end user must incorporate the pumps in an ergonomic manner.
10. The end user must ensure that there are no slip, trip, or fall hazards once the pump is installed.

**Cleaning:**

1. Prior to any cleaning operations, Lock Out and Tag Out all electrical power and controls for electrical motor-driven pump units and all starters and other controls for fuel-powered engine-driven pump units.
2. Pumps should be cleaned with a non-toxic, non-flammable cleaning agent that is non-corrosive to iron. Most pump components are made of iron or steel so if a water-based cleaning agent is used, thoroughly dry all surfaces on the pump immediately after cleaning to avoid rust.
3. Follow all safety precautions such as use of gloves, eye protection, special clothing, breathing equipment etc. that are recommended for any cleaning agent being used.
4. Be sure to check all surfaces for sharp edges that could cut skin or damage any safety clothing or apparatus.

**Maintenance Section:**

1. Prior to any maintenance operations, Lock Out and Tag Out all electrical power and controls for electrical motor-driven pump units and all starters and other controls for fuel-powered engine-driven pump units.
2. Maintenance only to be undertaken by trained personnel.
3. Inspection plates/access plates are only to be removed once the pump unit is isolated.
4. Adjustment and maintenance operations to be carried out by the end user and the preventive maintenance measures that should be observed are provided in the IOM Manual.
5. Maintenance instructions for periodic inspections, indicating parts subject to wear/replacement that can increase vibration/noise hazards etc. are provided in the IOM Manual.

**Spare Parts List:**

1. Coro-Flo pump replacements parts are generally limited to seal assemblies and occasionally the impeller.
2. Vane pump repair kits typically include blades (vanes), seal assemblies, bearings, grease seals, and miscellaneous O-rings and gaskets.

**Language:**

1. The original Declaration of Conformity/Incorporation related to all pumps is in English. Any copy in a language that is not English is a copy of the original.
2. All original Installation, Operation & Maintenance Manuals or Important Instructions, including this addendum, are in English and are defined as "ORIGINAL INSTRUCTIONS." Any copy of any of these documents that is not in English is defined as a "TRANSLATION OF THE ORIGINAL INSTRUCTIONS."

---

*Solutions beyond products...*

**CORKEN**®

CORKEN, INC. • A Unit of IDEX Corporation

9201 North I-35 Service Road, Oklahoma City, OK. 73131

Phone (405) 946-5576 • Fax (405) 948-7343

Website: [www.corken.com](http://www.corken.com)

E-mail: [cocsalesdept@idexcorp.com](mailto:cocsalesdept@idexcorp.com)

