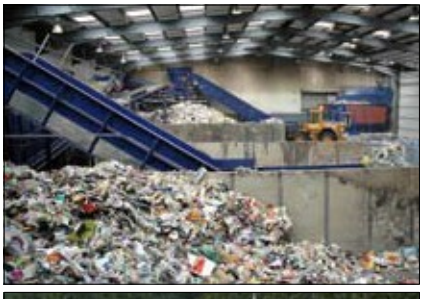
DLHONLINE

The ATEX range.
New. Safe. Competent.

ATEX



PFAFF silberblau

Yale Industrlal Products GmbH

Why explosion protection?

Explosion protection for electrical and mechanical machinery is an important precautionary measure to ensure the safety of persons and all kinds of production, storage and distribution systems, when explosive mixtures of combustible gases, dusts and air may occur.

What does explosion protection achieve?

Explosion protection can mean to generally prevent the occurrence of an explosive mixture. Explosion protection can also be achieved by eliminating potential ignition sources in advance, e.g. high temperatures and sparking by designing components accordingly and by permanent monitoring of operation, or by using a flame-proof enclosure for the source of ignition to protect the surrounding area against possible effects of an internal explosion.

In many trades and industries, combustible gases, vapours and dusts are handled which may cause explosions.

Examples of explosion hazards in various industries:

Chemical industry

In the chemical industry, combustible gases, liquids and solids are converted and processed in various procedures. Explosive mixtures may be created during these processes.

Waste disposal sites

At waste disposal sites, combustible gases may form. Comprehensive technical measures are required to prevent their uncontrolled escaping and possible ignition.

Energy production companies

Coal dust, which may form explosive dust/air mixtures, may occur during production, breaking and drying from coal lumps which themselves are not explosive with air.

Waste management companies

The fermentation gases released during treatment of waste water in waste water treatment plants may form explosive gas/air mixtures.

Gas suppliers

If natural gas escapes through leakages or similar, explosive gas/air mixtures may be created.

Metal processing companies

During the production of formed metal parts, explosive metal dusts may occur during surface treatment (grinding). This applies in particular to light metals. These metal dusts may cause an explosion risk in separators.

Wood-processing companies

When processing wood workpieces, wood dust occurs, which may form explosive dust/air mixtures in filters or silos for example.

Paint shops

Overspray, which may occur during painting of surfaces using spray guns as well as any released solvent vapours, may form an explosive atmosphere with air.

Agriculture

Some agricultural facilities operate systems for the production of biogas. If biogas escapes as a consequence of leakages, for example, explosive biogas/air mixtures may form.

Food and feeding-stuffs industry

During the transportation and storage of grain, sugar, etc. explosive dusts may occur. When these are evacuated and separated using filters, an explosive atmosphere may occur in the filter.

Pharmaceutical industry

In pharmaceutical production, alcohols are frequently used as solvents. Furthermore, active and auxiliary substances with a dust explosion hazard may also be used.

Refineries

The hydrocarbons processed in refineries are all combustible and, depending on their flash point, are capable of causing an explosive atmosphere even at ambient temperatures.

Recycling companies

When processing recycling waste, explosion hazards may be caused by cans which are not completely empty or other containers with combustible gases and/or liquids; explosion hazards may also be caused by paper or plastic dust.

Cooperation of parties involved

Obligations of user, installer and manufacturer

Close cooperation of all parties involved is essential for the safety in potentially explosive areas.
The user is responsible for the safety of the installation. He has to assess possible explosion hazards and assign zones accordingly.
In addition, he is also responsible for ensuring that the equipment is installed in accordance with regulations and is tested before it is put into service for the first time. The equipment must be kept in appropriate condition by regular inspections and maintenance.
The installer must observe the relevant installation requirements and select and install the equipment correctly for its intended use.

Manufacturers of explosion-proof equipment must ensure that each device manufactured complies with the type-tested design.

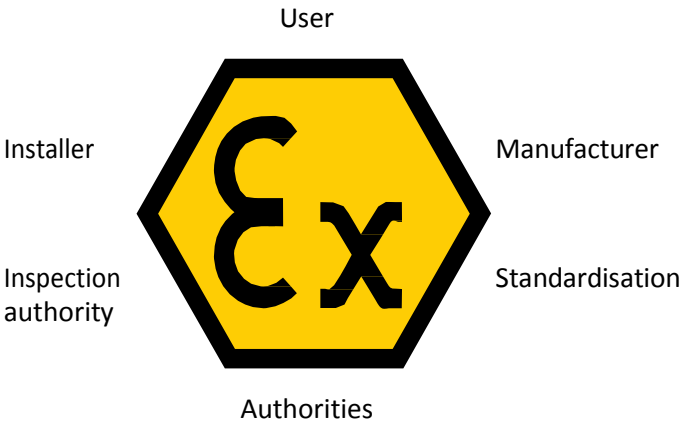
Legal basis

The acronym ATEX is the abbreviation of the French term "Atmosphères explosibles", which means explosive atmospheres.

This designation is currently still used as a synonym for these two directives of the European Union:
94/9/EC (ATEX 95, previously ATEX 100a) and
99/92/EC (ATEX 137, previously ATEX 118a).
Directive 94/9/EC is primarily intended for manufacturers of explosion-proof equipment.
Directive 99/92/EC is primarily intended for users of installations with a potentially explosive atmosphere.

Risk assessment

For taking efficient measures in areas with an explosion hazard, a risk assessment – in accordance with national health and safety regulations taking into account national industrial safety acts as well as hazardous substances ordinances must be carried out first. If this risk assessment shows that the formation of explosive atmospheres is not safely prevented, the likelihood that explosive atmospheres will occur based on their frequency and persistence, the likelihood that ignition sources will be present and become active and effective and the scale of the anticipated effects of explosions must be determined.
The results of the risk assessment must be recorded in the form of an explosion protection document.



Categories and zones

Requirements from the ATEX directives to be fulfilled by manufacturer and user

Essential requirements to be fulfilled by the manufacturer according to 94/9/EC	Essential requirements to be fulfilled by the user according to 99/92/EC
Definition of the area for the use of equipment, specifications of equipment group II/category	Definition of zones in an installation; selection of the appropriate equipment
The equipment must comply with the essential safety and health requirements or the relevant standards	Compliance with the relevant requirements for installation, putting into service and maintenance
Category 1 Category 2 Category 3	Zone 0/20 Zone 1/21 Zone 2/22
Performance of a risk/ignition source assessment for the relevant equipment	Performance of a hazard analysis for the operating area; need for coordination
Compilation of a declaration of conformity	Compilation of an explosion protection document
Appropriate quality assurance	Regular updating

Technical basis

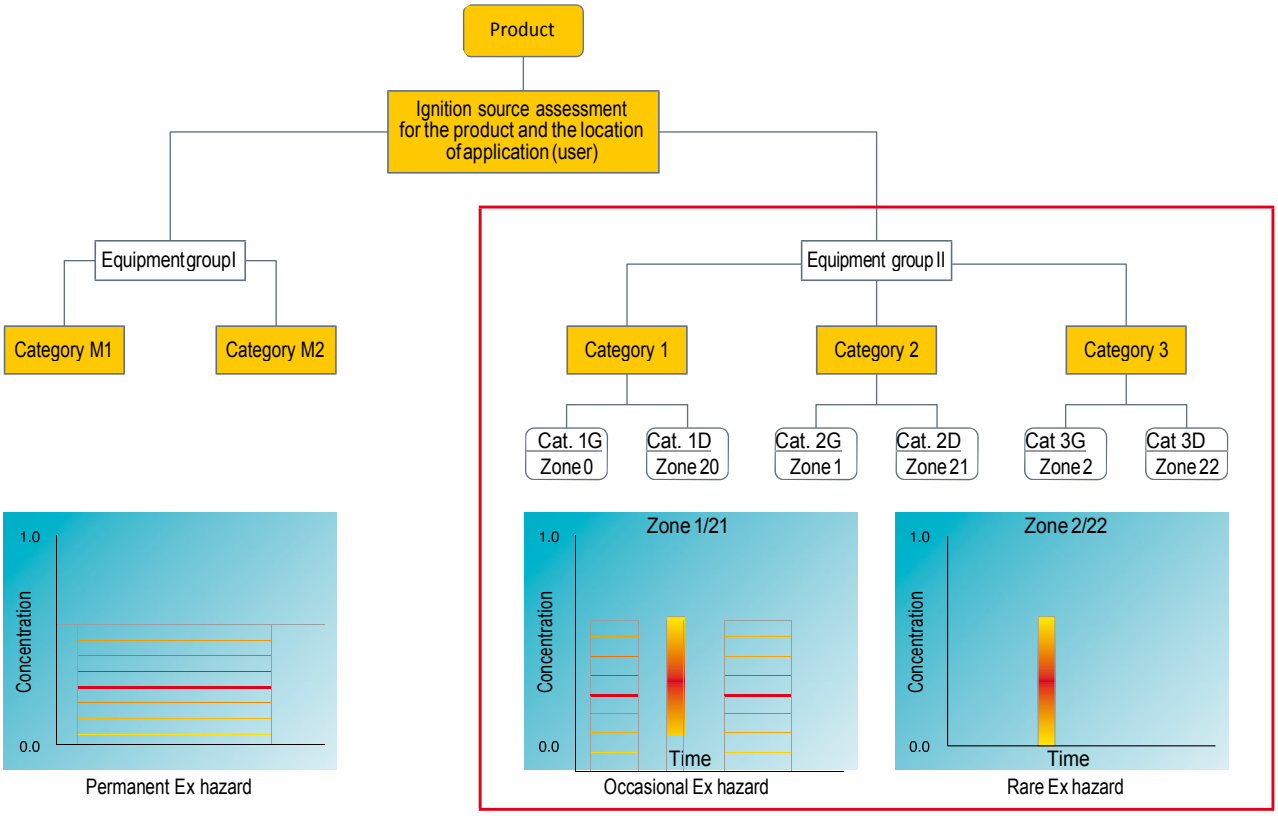
In Directive 94/9/EC, equipment for areas with an explosion hazard is assigned to groups, categories and temperature classes.
This is necessary as the requirements for equipment need not be the same for every application and for every hazard classification.

Equipment group I (mines, firedamp and combustible dusts)

Category M1	Category M2
Very high level of protection: Equipment must feature integrated explosion protection measures	High level of protection: Protection measures must ensure the required level of safety during normal operation also under arduous conditions and in particular heavy handling and under changing ambient conditions
The equipment must continue to operate in an explosive atmosphere even in the event of rare faults	It must be possible to switch off the equipment if an explosive atmosphere occurs

Equipment group II (explosive atmospheres caused by mixtures of gas/air or dust/air, vapours or mists)

Category	Zone		Equipment safety	Explosive atmosphere
	G [Gas]	D [Dust]		
1	0	20	Equipment which ensures a very high level of safety. In the event of rare equipment faults.	Intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.
2	1	21	Equipment which ensures a high level of safety. If equipment faults are to be expected.	Intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are likely to occur occasionally.
3	2	22	Equipment which ensures a normal level of safety. For normal operation	Intended for use in areas in which explosive atmospheres caused by gases, vapours or mists or whirled up dust are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period.


Product
Ignition source assessment for the product and the location of application (user)
Equipment group I
Category M1
Category M2
Equipment group II
Category 1
Category 2
Category 3
Cat. 1G Zone 0
Cat. 1D Zone 20
Cat. 2G Zone 1
Cat. 2D Zone 21
Cat 3G Zone 2
Cat 3D Zone 22
1.0
Concentration
0.0
Permanent Ex hazard
Zone 1/21
Time
Occasional Ex hazard
Zone 2/22
Rare Ex hazard

Preconditions for an explosion

Explosive atmospheres may occur wherever combustible gases, vapours, mists or dusts can form. These are mixtures which produce a chemical reaction when they meet the oxygen in the air; this reaction may trigger an explosion, even if only an extremely small spark occurs.

Combustible material

- Gases
- Vapours
- Mists (aerosols)
- Combustible dusts (whirled up)

+

Oxidizing agent

- Oxygen in the air

+

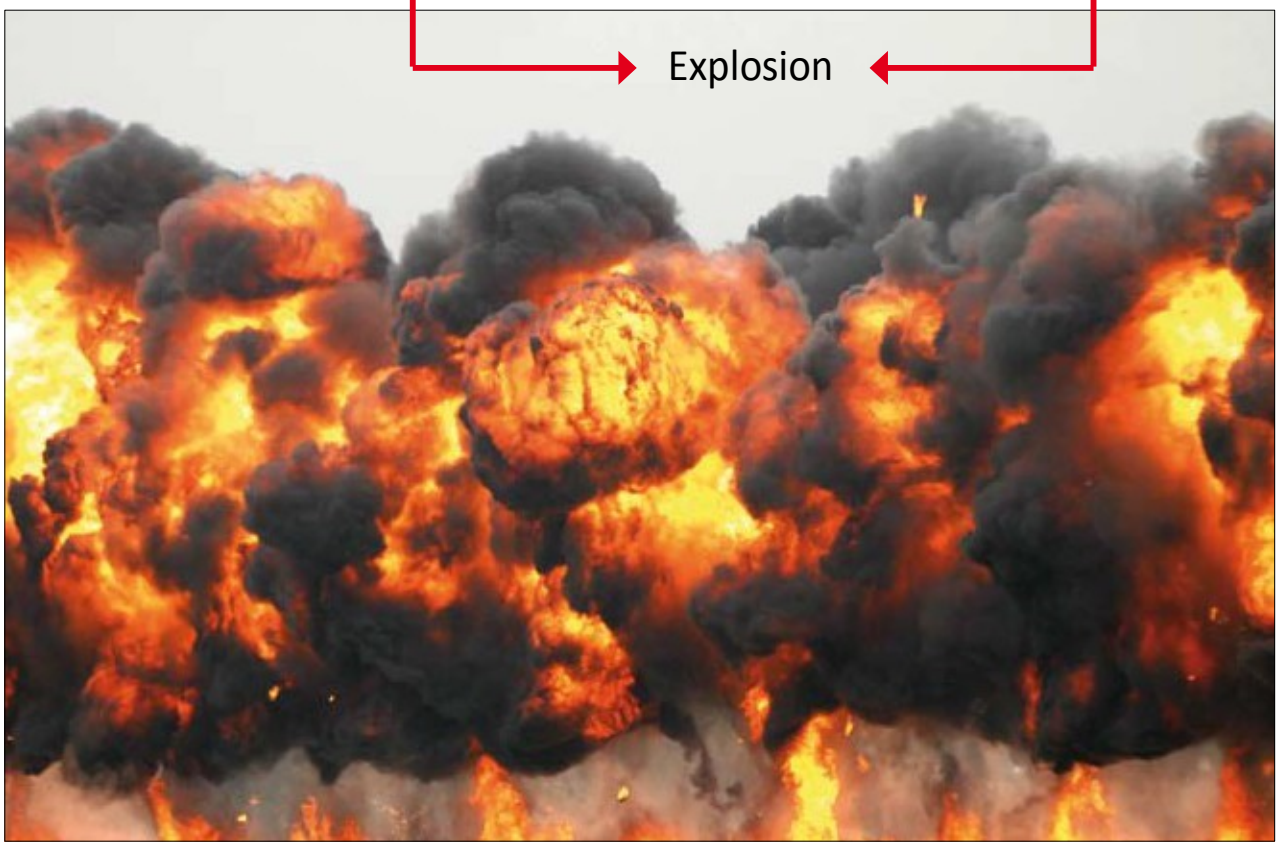
Ignition source

- e.g. sparks, of electrical or mechanical origin
- Hot surfaces
- Electrostatic charges
- Flames

Explosive atmospheres

Mixture in the range between the lower and the upper explosion limit

Explosion



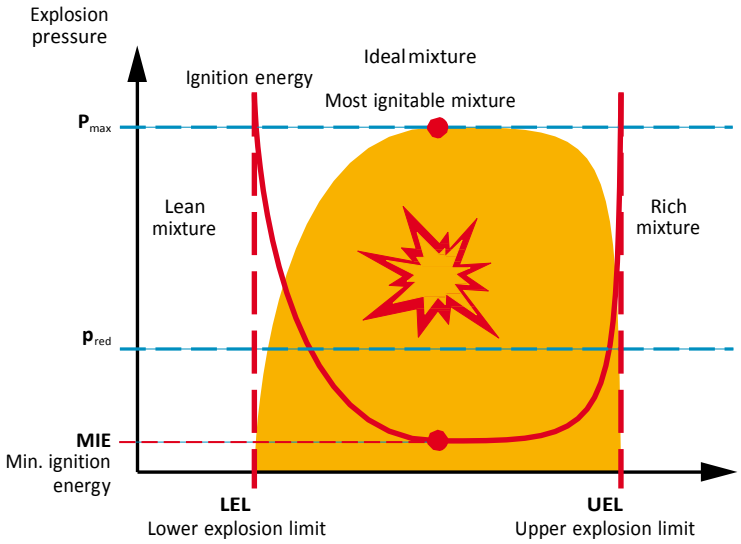
Explosion limits

In order to prevent an explosion, the relevant key data of combustible substances must be observed.

Mixtures can only cause an explosive ignition within a specific range.
This is defined by the lower and the upper explosion limit.

Explosion limits of selected gases and vapours

Substance designation	Explosion limits in air	
	Lower volumes %	Upper volumes %
Acetone	2.5	13.0
Benzol	1.2	8.0
Methane	5.0	15.0
City gas	4.0	30.0
Hydrogen	4.0	75.6



Primary explosion protection	Secondary explosion protection	Tertiary explosion protection
Prevent the formation of potentially explosive atmospheres	Prevent the ignition of potentially explosive atmospheres	Restrict the effects of an explosion
Inerting*	Open flames	Explosion-pressure resistant design
Limit concentration under the lower explosion limit	Hot gases	Pressure compensation surfaces for buildings
	Hot surfaces	Explosion suppression
	Electrical sparks	
	Atmospheric discharge	

*Inerting substances
Inerting substances means their transformation or processing into slow-reacting (inert) substances. Inert substances are, for example, inert gases, glass and porcelain. In refuse dump systems, inerting is used, for example, to render hazardous waste substances harmless.
Substances containing heavy metal, which are radioactive or otherwise detrimental, are, for example, often glazed in order to make it possible to finally dispose of them.

Inerting rooms
Inerting rooms means to displace the oxygen contents in the air or potentially reactive or explosive gases or gas mixtures in rooms by adding inert gases or vapours. When inerting as a protection against fire and explosion (industry example: chemicals storage or production facilities), the oxygen contents in the air are displaced by adding inert gas (e.g. argon, nitrogen, carbon dioxide) in order to prevent an explosive atmosphere. In fire protection, this is also called “active fire prevention by permanent inerting”.

Temperature classes

The ignition temperature is the lowest temperature of a heated surface at which the gas/air or vapour/air mixture ignites. In other words, it represents the lowest temperature value at which a hot surface is capable of igniting the corresponding explosive atmosphere.
Thus the highest surface temperature of any equipment must always be less than the ignition temperature of the gas/air or vapour/air mixture.

Temperature classes

Temperature classes	Permissible max. surface temperature of the equipment	Ignition temperature range of the mixtures
T1	450° C	>450° C
T2	300° C	>300… ≤450° C
T3	200° C	>200… ≤300° C
T4	135° C	>135… ≤200° C
T5	100° C	>100… ≤135° C
T6	85° C	>85… ≤100° C

Explosion groups

Equipment of group II, for appropriate use in explosive gas atmospheres may also be classified by the type of explosive area.

Explosion groups

Explosion group of the explosive atmosphere	Equipment with marking of the explosion group which may be used in these atmospheres
IIA	IIA, IIB, IIC
IIB	IIA, IIB
IIC	IIC

This classification is based on the Maximum Experimental Safe Gap (MESG) and the Minimum Ignition Current (MIC) of the gas mixture (see IEC 60079-12) or the explosion groups can also be used for classification of the equipment based on their inflammability.

Explosion groups and maximum experimental safe gap

Explosion group	Maximum experimental safe gap
IIA	>0.9 mm
IIB	≤0.9 - ≥0,5 mm
IIC	<0.5 mm

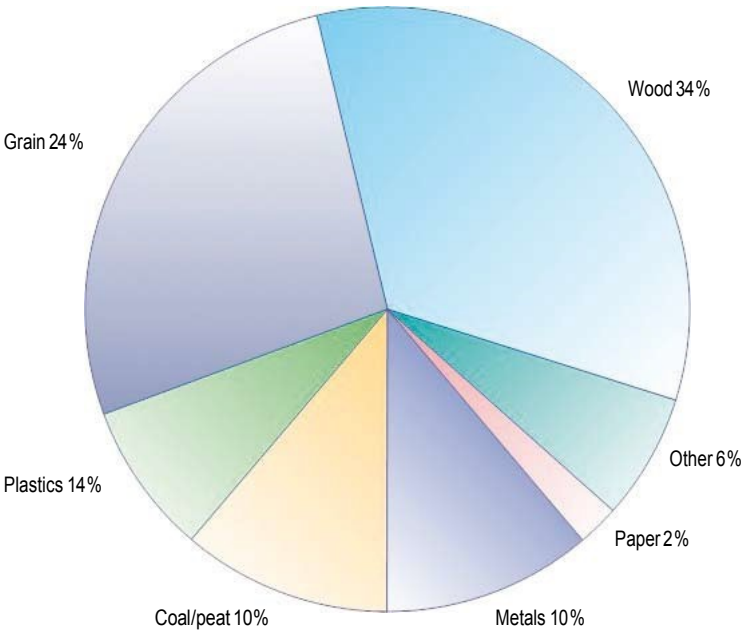


Classification of combustible gases, vapours and mists

Explosion groups and temperature classes of some gases and vapours (selection)

Classification of combustible gases, vapours, mists

Ex group	Temperature classes					
	T1	T2	T3	T4	T5	T6
	Ignition temperature range of the mixtures					
	> 450 °C	> 300 ≤ 450 °C	> 200 ≤ 300 °C			
	Permissible max. surface temperature of the equipment					
	450 °C	300 °C	200 °C	135 °C	100 °C	85 °C
IIA	Acetone	Ethanol	Petrol (general)	Acetaldehyde		
	Ammonium	i-Amyl acetate	Diesel fuels			
	Benzene (pure)	n-Butane	Aircraft fuels			
	Acetic acid	n-Butanol	Fuel oil DIN 51603			
	Ethane	Cyclohexan	n-Hexane			
	Ethyl acetate	Acetic anhydride				
	Ethyl chloride					
	Carbon monoxide					
	Methane					
	Methanol					
	Methyl chloride					
	Naphthalene					
	Phenol					
	Propane					
	Toluene					
IIB	City gas	Ethylene	Ethylene glycol	Ethyl ether		
		Ethylene oxide	Hydrogen sulfide			
IIC	Hydrogen	Acetylene				Carbon disulphide



Dust-explosion protection

Today, in many industries, powder or dust-like products are processed or are by-products of the production process.

The vast majority of all dust-like substances pose a danger of fire or – under certain conditions – even explosion. A dust layer of only 1 mm in a closed room is already sufficient to trigger an explosion when the dust is whirled up and ignited.

The graphic shows that many different industries are affected by the hazard of dust, ranging from the foodstuffs and wood-processing industries, paper and plastic material production to the pharmaceutical industry.

Compared with gas explosions, dust explosions have a different process of propagation which may in some cases be much more devastating. If a gas/air mixture is ignited, the pressure of the resulting explosion causes the gas cloud to dissipate rapidly and thus finally dilutes the gas/air mixture to a concentration lower than that necessary for further combustion. If no further gas is added, the explosion is over after several milliseconds.

With combustible dusts it is different: If, for example, a draft of air whirls up a layer of dust, the dust, together with oxygen, forms a combustible dust/air mixture. If this mixture is ignited by an ignition source, an explosion is triggered.

The resulting blast wave whirls up further dust layers, which are in turn also ignited. This process continues, and, under adverse conditions, “chain reactions” such as these sweep through entire buildings or facilities and destroy them.

As is the case with gases, there are various ignition sources for dusts, such as sparks generated by electrical or mechanical processes, electric arcs, open flames, electrostatic discharges, electromagnetic waves and others.

Permissible equipment IP code by zones and type of dust

Zone 20	Zone 21 Zone 22 electrically conductive dust	Zone 22
IP6X	IP6X	IP5X
Marking II 1 D	Marking II 2 D	Marking II 3 D

Definitions in dust explosion protection

Term	Definition	Remarks
Explosive dust atmosphere	Mixture with air, under atmospheric conditions, of combustible substances in the form of dust or fibres in which, after ignition, combustion spreads throughout the entire unconsumed mixture. (DIN EN 50281-1-1,3.4)	The condition is that the process ends only after one reactant has been entirely consumed.
Atmospheric condition	Range of pressure between 0.8 and 1.1 bar Temperature range between -20° C and +60° C	
Hazardous explosive atmospheres	Explosive atmosphere in hazardous amount. The presence of a hazardous explosive atmosphere must be assumed if ignition causes an exothermal reaction that endangers persons, domestic animals and property.	A thickness of a dust layer of less than 1 mm on the floor of a normal room is sufficient to fill it with a hazardous explosive atmosphere.

Safety characteristics of dusts

Characteristic	Definition/description	Remarks
Particle size	Dust with a particle size larger than 400 µm is not considered to be ignitable. Dust particles are ignitable when they measure less than 20 µm up to 400 µm.	Owing to abrasion, the transportation and processing of coarse dust result in the formation of fine dust.
Explosion limits	As for gases, dusts are also explosive within certain limits: Lower explosion limit: approx. 20… 60 g/m³ air Upper explosion limit: approx. 2… 6 kg/m³ air	This characteristic varies widely over the entire range. Extreme dusts can already form an explosive mixture in concentrations of less than 15 g/m³.
Maximum explosion pressure	In enclosed containers of simple design, combustible dust can reach explosion pressures of 6 to 10 bar.	In exceptional cases, such as with light metal dusts, an explosive pressure of up to 20 bar may develop.
Kst value	This is a classification value which expresses the shattering effect of the combustion. Numerically, it is equal to the value of the maximum rate of explosion pressure rise during the explosion of a dust/air mixture in a 1 m³ vessel.	This value is the basis for calculating explosion pressure relief surfaces.
Moisture	The moisture of a dust is a significant factor for its ignition and explosion behaviour. Although no limits exist yet, it is known that a higher moisture content requires a higher ignition energy and impedes the formation of dust swirls.	
Minimum ignition energy E_{min}	Lowest energy of an electrical spark which is sufficient to effect ignition of the critical (most easily ignitable explosive) dust/air mixture under defined framework conditions.	Not every spark is ignitable. The decisive factor is whether sufficient energy is introduced into the dust/air mixture to initiate a self-sustaining combustion of the entire mixture. A modified Hartmann tube is used to check the minimum ignition energy.
Ignition temperature T_{ig}	The lowest temperature of a heated vertical surface on which the dust/air mixture is ignited after brief contact. The surface temperature must not exceed 2/3 of the ignition temperature in °C of the relevant dust/air mixture, e. g. starch/milk powder/gelatine Ignition temperature 390°C x 2/3 = 260°C max. permissible surface temperature $T_{max} \leq \frac{2}{3} T_{ig}$	The shape of the vessel in which the ignition temperature is determined has proven to be particularly critical. It can be assumed that ignition on differently shaped surfaces is, in practice, only possible at much higher temperatures. In the case of dust from food products and animal feed, this values ranges between 410°C and 500°C, depending on the type.
Smouldering temperature T_{sm}	The lowest temperature of a hot surface on which ignition occurs in a dust layer with a thickness of 5 mm. On surfaces where a dangerous deposit of ignitable dust is not effectively prevented, the surface temperature must not exceed the ignition temperature reduced by 75K of the respective dust. With layer thicknesses over 5 mm, a further reduction of the temperature of the surface is necessary: e.g. wood, grinding dust Ignition temperature 290°C - 75°C = 215°C max. permissible surface temperature $T_{max} \leq T_{sm} - 75K$	This temperature describes the ignition behaviour of thin dust layers. If the layer is thicker, or if the ignition source is completely inundated by dust, the thermal insulation provided by the dust layer increases, resulting in quite different, sometimes significantly lower temperatures, which can trigger an exothermal reaction. Experiments have shown that the smouldering temperature decreases almost linearly with an increase in the layer thickness. T_{sm} is sometimes also considerably lower than T_{ig} of a mixture of the same dust in air. The max. permissible surface temperature of electrical/mechanical equipment may be higher, depending on the thermal conductivity of the dust. Glowing spots may exist unnoticed for long periods in thick layers of dust and can, if the dust is whirled up, become highly effective ignition sources.

ATEX

Explosion characteristics of dusts

Generally applicable values for dust-specific characteristics cannot be specified.
The table shows some limit values for selected products:

Examples of explosion characteristics of dusts

Substance	T_{ic} [°C]	T_{il} [°C]	$ØE_{min}$ [mJ]	min [mJ]
Wood	≥ 410	≥ 200	≥ 100	6
Lignite	≥ 380	≥ 225	–	5
Coal	≥ 500	≥ 240	≥ 1000	13
PVC	≥ 530	≥ 340	≥ 5	< 1
Aluminium	≥ 560	≥ 270	≥ 5	< 1
Sulphur	≥ 240	≥ 250	10	5
Lycopodium	≥ 410	–	–	–

Marking key

Example	CE	123	Ex	II	2	G	Ex	d	T3

CE marking

Code number of the notified body

Identification for protection against explosions (ATEX 100a)

Equipment group
II = Non-mining application

Category
1 = extremely high safety
2 = high safety
3 = normal safety

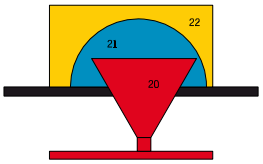
Ex atmosphere
G = Gas
D = Dust

Explosion protection

Protection type
p = pressurized enclosure
d = flame-proof enclosure
e = increased safety
nA = non-sparking
i = intrinsic safety
c = design safety
b = ignition source monitoring
k = liquid immersion

Temperature class
Limit temperature
T1 = max. 450° C
T2 = max. 300° C
T3 = max. 200° C
T4 = max. 135° C
T5 = max. 100° C
T6 = max. 85° C

International comparison of zones in areas with an explosion hazard

Country	Standard	Zone/division		
AS	AS 2430.2:1986	Class II		
GB	BS6467.2:1988	Z	Y	
DE	VDE 0165:1991	10	11	
USA	NEC 500-6: 2002	Div. 1	Div.2	
EU	EN50281-3:2002	20	21	22
INT	IEC 61241-10:2004	20	21	22
EU	EN 61241-10:2005			
		Area in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.	Area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur occasionally in normal operation.	Area in which during normal operation, it is not to be expected that an explosive atmosphere occurs in the form of a cloud of combustible dust in the air, if it does occur, however, only for a brief time.

Protection classification:
II 2 GD c IIB T4

To ensure faultless operation the compressed air supply must be filtered and oiled.

Pneumatic chain hoist model CPA ATEX with suspension hook or with integrated trolley

Capacity 2000 - 10000 kg

The conception is in accordance with the design of the model CPE. With 100 % duty rating and an unlimited number of starts the model CPA is suitable for heavy duty applications. It is insusceptible to contamination, humidity and aggressive mediums from the outside. The hoists are composed of three main components which makes service easy and inexpensive.

Features

- Robust rotating piston motor has an adjustable spring pressure brake that holds the load secure even in the event of an air failure.
- High starting torque due to switching valves in the motor body.
- Sensitive control by means of 2 resp. 4 button pendant control with emergency stop.
- Low noise emission due to large dimension silencer.
- Designed for operating pressures of 4 to 6 bar.
- The standard, oil bath lubricated planetary gearbox is particularly smooth running and enables a low overall height.
- The 5-pocket load chain sheave, manufactured from wear resistant case hardening steel, is matched perfectly to the load chain to guarantee smooth and precise chain motion.
- The assembly of component parts result in a low overall height (up to 3000 kg only one chain fall).
- The replaceable chain guide is robust and precision machined.
- Copper-plated suspension and load hooks.
- The standard case hardened and zinc-plated link chain is matched perfectly to the load chain to guarantee smooth and precise chain motion. All requirements of national and international standards and regulations are fulfilled.

Option

- Pneumatic, push and geared trolleys with solid bronze wheels.
- Rope control
- Load chain from stainless steel.
- Chain container
- Beam locking device for push and geared trolley.

Technical data model CPA ATEX

Model	EAN-No. 4025092*	Capacity in kg/ Number of chain falls	Lifting speed with rated load* m/min	Lifting speed without load* m/min	Lowering speed with rated load* m/min	Hoist motor kW	Weight** suspension hook kg	Weight** push trolley kg	Weight** geared trolley kg	Weight** pneumatic trolley kg
CPA ATEX 20-8	–	2000/1	7.4	9.9	11.0	2.6	121	184	188	199
CPA ATEX 30-6	–	3000/1	6.0	9.9	13.0	3.2	121	184	188	199
CPA ATEX 40-4	–	4000/2	3.7	5.0	5.5	2.6	140	202	206	218
CPA ATEX 50-3	–	5000/2	3.4	5.0	6.0	3.0	140	202	206	218
CPA ATEX 60-3	–	6000/2	3.0	5.0	6.5	3.2	140	202	206	218
CPA ATEX 75-2	–	7500/3	2.0	3.3	4.3	3.2	–	–	–	–
CPA ATEX 100-2	–	10000/4	3.4	5.0	6.0	2 x 3.0	–	–	–	–

*Value for 6 bar (flow pressure), air consumption with rated load 4.7 m^3/min. For CPA 100-2: 9.4 m^3/min.
** Weight for standard 3 m lift. Other lifting heights available.

Technical data trolleys

Capacity kg	Size	Beam flange width b mm	Beam flange thickness t max. mm	Curve radius min. m	Pneumatic trolley travel speed m/min	Pneumatic trolley motor kW
2000 - 6000	A	98 - 180	27	2.0	18	0.55
2000 - 6000	B	180 - 300	27	1.8	18	0.55
7500 - 10000	B	125 - 310	40	1.8	–	–

Yale hoists and trolleys are not designed for passenger elevation applications and must not be used for this purpose.

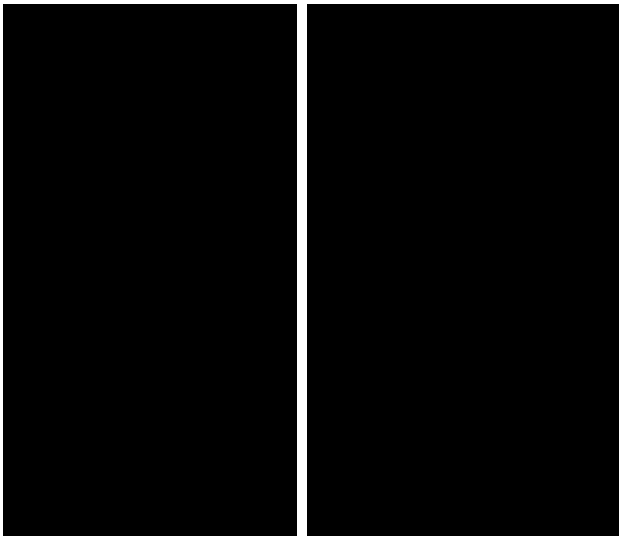
Dimensions model CPA ATEX

Model	CPA ATEX 20-8	CPA ATEX 30-6	CPA ATEX 40-4	CPA ATEX 50-3	CPA ATEX 60-3	CPA ATEX 75-2	CPA ATEX 100-2
A, mm	516	516	681	681	681	950	1.068
A1, mm	286	286	428	428	428	479	651
B, mm	35	35	45	45	47	60	60
C, mm	37	37	46	46	42	52	52
D, mm	24	24	30	30	30	40/45	40/45
F1, mm	160	160	160	160	160	160	160
F2, mm	165	165	165	165	165	165	165
G, mm	220	220	220	220	220	220	581
G1, mm	180	180	140	140	140	268	311
G2 (13 m), mm	258	258	218	218	218	–	–
G2 (21 m), mm	278	278	238	238	238	345	408
H1, mm	110	110	110	110	110	110	110
H2, mm	135	135	135	135	135	307	256
H3, mm	115	115	115	115	115	115	115
K1, mm	100	100	100	100	100	92	92
K2, mm	51	51	51	51	51	62	62
M, mm	50	50	9,6	9,6	9,6	139	181
N, mm	60	60	100	100	100	136	291
Q1, mm	272	272	272	272	272	272	272
Q2, mm	325	325	325	325	325	325	325

Model CPA ATEX with suspension hook, 2000 - 3000 kg, single fall

Model CPA ATEX with suspension hook, 7500 kg, three fall

Model CPA ATEX with suspension hook, 4000 - 6000 kg, double fall



Model CPA ATEX with suspension hook, 10000 kg, four fall

Dimensions model CPA ATEX

Model	CPA ATEX 20-8	CPA ATEX 30-6	CPA ATEX 40-4	CPA ATEX 50-3	CPA ATEX 60-3	CPA ATEX 75-2	CPA ATEX 100-2
A2 (13 m), mm	430	430	430	430	430	–	–
A2 (21 m), mm	530	530	530	530	530	530	530
A4, mm	465	465	615	615	615	855	965
A5, mm	298	298	298	298	298	477	425
A6, mm	190	190	190	190	190	182	182
b, mm	A = 98 - 180/ B = 180 - 300	A = 98 - 180/ B = 180 - 300	A = 98 - 180/ B = 180 - 300	A = 98 - 180/ B = 180 - 300	A = 98 - 180/ B = 180 - 300	125 - 310	125 - 310
F, mm	150	150	150	150	150	113	113
I, mm	142,5	142,5	142,5	142,5	142,5	130	130
L1, mm	209	209	209	209	209	200	200
L2, mm	262,5	262,5	262,5	262,5	262,5	215	215
L3, mm	265	265	265	265	265	265	265
L4, mm	213	213	253	253	253	291	291
L5, mm	312	312	272	272	272	–	–
L6, mm	315	315	275	275	275	–	–
O, mm	125	125	125	125	125	150	150
P, mm	208	208	208	208	208	208	208
P1, mm	284	284	284	284	284	284	284
S, mm	b + 70	b + 70	b + 70	b + 70	b + 70	b + 98	b + 98
t, mm	27	27	27	27	27	40	40
T1 size A	182	182	182	182	182	–	–
T1 size B	242	242	242	242	242	270	270

Model CPA ATEX with integrated manual push or geared trolley

Model CPA ATEX with integrated pneumatic trolley

Hand chain hoist model Yalelift 360 ATEX

Capacity 500 - 20000 kg

The hand chain hoist model Yalelift 360 once again prooves its worth in an environment that far exceeds the requirements of a classical hand chain hoist.
On the basis of the European Directive 94/9/EC this model series has been further developed for the use in potentially explosive atmospheres (ATEX zones).
The temperature of the brake is especially critical for manual hoisting equipment used in explosive zones. Tests have shown that the temperature increases significantly during the load lowering process. After analyzing potential ignition hazards, intensive temperature tests were carried out on the Yalelift 360.
To solve the problem of increased temperatures, a special cooling body was developed for the brake.

Features

- The revolutionary 360° rotating hand chain guide allows the operator to work from virtually any position, in confined spaces or above the load. The Yalelift can even be operated from the side of the load which also makes it possible to use the hoist for horizontal pulling or tensioning. Due to the additional flexibility, the operator is no longer forced to work in the danger zone near the load.
- The enclosed robust stamped steel housing protects all internal components even in the toughest conditions.
- Chain guide and gearbox are almost totally enclosed. Even under the toughest conditions the internal gearbox remains protected.
- The hardened load sheave with four precision machined pockets ensures accurate movement of the load chain.
- The extremely low headroom allows maximum use of the lifting height.
- The surface protected zinc-plated alloy steel load chains fulfil all requirements of current national and international standards and regulations. They are matched perfectly to the load chain sheave and guarantee smooth and precise chain motion.
- Explosion protected version with spark resistant coating.
- Copper-plated suspension and load hooks.

Option

- Load chain from stainless steel.
- Overload prevention device
- Chain container
- Beam locking device

Protection classification:
Ⓔx II 2 GD c IIB T4 T 125°C X,
Ⓔx II 2 GD c IIB T3 T 145°C

Technical data model Yalelift 360 ATEX

Model	EAN-No. 4025092*	Capacity kg	Number of chain falls	Chain dimensions d x p mm	Hand chain overhaul for 1 m lift m	Pull on hand chain at WLL daN	Weight at standard lift (3 m) kg
YL ATEX 500	*206365	500	1	5 x 15	30	21	9
YL ATEX 1000	*206419	1000	1	6 x 18	49	30	13
YL ATEX 2000	*206426	2000	1	8 x 24	71	32	20
YL ATEX 3000	*206440	3000	1	10 x 30	87	38	29
YL ATEX 5000	*206464	5000	2	10 x 30	174	34	38
YL ATEX 10000	*239547	10000	3	10 x 30	261	44	71
YL ATEX 20000	*251846	20000	6	10 x 30	522	2 x 44	196

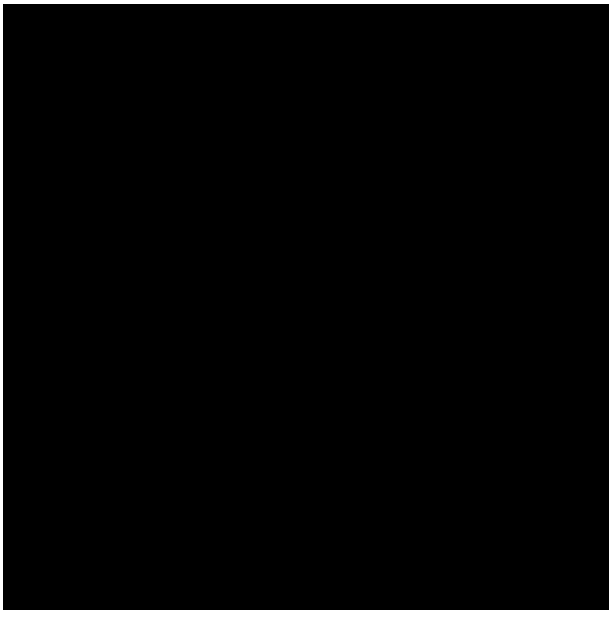
Yale hoists and trolleys are not designed for passenger elevation applications and must not be used for this purpose.

Dimensions model Yalelift 360 ATEX

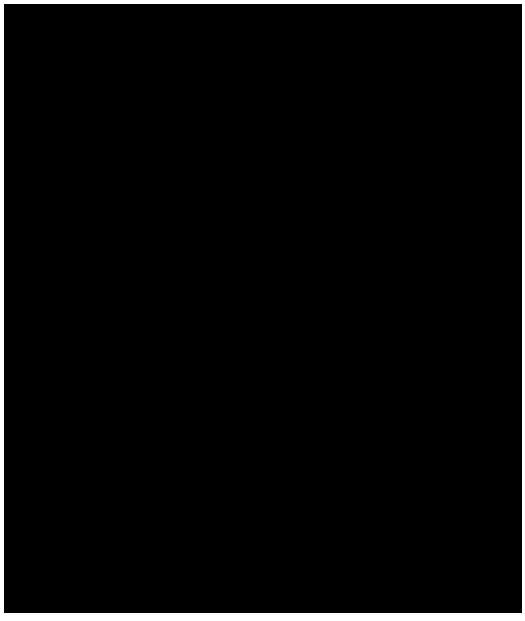
Model	YL ATEX 500	YL ATEX 1000	YL ATEX 2000	YL ATEX 3000	YL ATEX 5000	YL ATEX 10000	YL ATEX 20000
Amin., mm	300	335	395	520	654	825	1.010
B, mm	17	22	30	38	45	68	85
C, mm	24	29	35	40	47	68	64
D, mm	133	156	182	220	220	220	303
E, mm	148	175	203	250	250	383	555
F, mm	139	157	183	204	204	204	250
G, mm	139	164	192	225	242	326	391
H, mm	206	242	283	335	352	436	501
I, mm	24	24	31	34	21	136	–
K, mm	61	70	83	95	95	95	396
L, mm	79	87	100	109	109	109	125
M, mm	110	125	156	178	285	401	471
N, mm	14	19	22	30	37	50	56

Model Yalelift 360 ATEX, 500 - 3000 kg, single fall

Model Yalelift 360 ATEX, 5000 kg, double fall



Model Yalelift 360 ATEX, 10000 kg, three fall



Model Yalelift 360 ATEX, 20000 kg, six fall

Hand chain hoist with integrated push or geared type trolley model Yalelift IT ATEX

Capacity 500 - 10000 kg

The combination of the Yalelift 360 with a low headroom manual trolley provides even more flexibility in the application of the Yalelift 360.

Features

- All units of this series up to a capacity of 3000 kg are provided with single chain fall and the min. headroom has been further reduced. Ideal for applications with low ceilings and limited headroom.
- The proven and almost stepless adjustment system allows quick and easy assembly of the trolley.
- Trolleys up to 5 t are offered for two beam ranges. Range A for a flange width up to 180 mm is standard and covers approx. 80 % of all requirements. Conversion to range B for beam width up to 300 mm can be easily accomplished.
- The solid bronze trolley wheels are designed for a max. beam profile incline of 14 % (DIN 1025 - part 1), excellent rolling features are guaranteed by prelubricated, encapsulated ball bearings.
- Anti-tilt and anti-drop devices are standard.
- Explosion protected version with spark resistant coating.
- Trolleys equipped with rubber buffers.
- Copper-plated load hooks.

Option

- Load chain from stainless steel.
- Overload prevention device
- Chain container
- Beam locking device

Protection classification:
Ⓔx II 2 GD c IIB T4 T 125° C X,
Ⓔx II 2 GD c IIB T3 T 145° C

Technical data model Yalelift ITP ATEX with integrated push type trolley

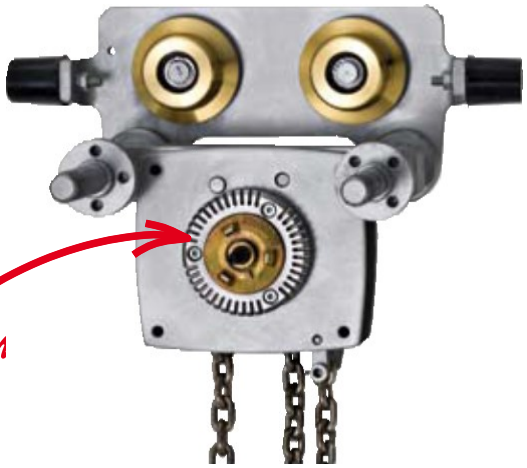
Model	EAN-No. 4025092*	Capacity in kg/ number of chain falls	Size	Beam flange width b mm	Beam flange thickness t max. mm	Min. curve radius m	Weight* kg	Weight* with beam brake kg
YLITP ATEX 500	*205177	500/1	A	50 - 180	19	0.9	20	26
YLITP ATEX 500	–	500/1	B	180 - 300	19	0.9	21	27
YLITP ATEX 1000	*205382	1000/1	A	50 - 180	19	0.9	27	35
YLITP ATEX 1000	–	1000/1	B	180 - 300	19	0.9	29	37
YLITP ATEX 2000	*206310	2000/1	A	58 - 180	19	1.15	44	52
YLITP ATEX 2000	–	2000/1	B	180 - 300	19	1.15	46	54
YLITP ATEX 3000	*206488	3000/1	A	74 - 180	27	1.5	77	86
YLITP ATEX 3000	–	3000/1	B	180 - 300	27	1.4	79	88
YLITP ATEX 5000	*206525	5000/2	A	98 - 180	27	2.0	125	135
YLITP ATEX 5000	–	5000/2	B	180 - 300	27	1.8	129	139
YLITP ATEX 10000	–	10000/3	A	125 - 310	40	1.8	–	–

*Weight for standard 3 m lift. Other lifting heights available.

Technical data model Yalelift ITG ATEX with integrated geared type trolley

Model	EAN-No. 4025092*	Capacity in kg/ number of chain falls	Size	Beam flange width b mm	Beam flange thickness t max. mm	Min. curve radius m	Weight* kg	Weight* with beam brake kg
YLITG ATEX 500	*206334	500/1	A	50 - 180	19	0.9	24	31
YLITG ATEX 500	–	500/1	B	180 - 300	19	0.9	25	32
YLITG ATEX 1000	*206341	1000/1	A	50 - 180	19	0.9	32	40
YLITG ATEX 1000	–	1000/1	B	180 - 300	19	0.9	33	41
YLITG ATEX 2000	*206358	2000/1	A	58 - 180	19	1.15	49	57
YLITG ATEX 2000	–	2000/1	B	180 - 300	19	1.15	50	58
YLITG ATEX 3000	*206549	3000/1	A	74 - 180	27	1.5	82	91
YLITG ATEX 3000	–	3000/1	B	180 - 300	27	1.4	84	93
YLITG ATEX 5000	*206563	5000/2	A	98 - 180	27	2.0	130	140
YLITG ATEX 5000	–	5000/2	B	180 - 300	27	1.8	134	144
YLITG ATEX 10000	*520072	10000/3	A	125 - 310	40	1.8	–	–

*Weight for standard 3 m lift. Other lifting heights available.

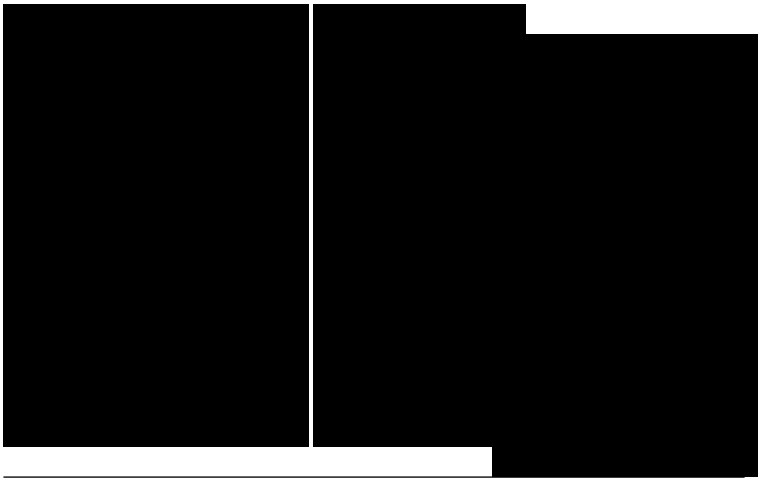


Yale hoists and trolleys are not designed for passenger elevation applications and must not be used for this purpose.

Dimensions model Yalelift IT ATEX

Model	YLIT ATEX 500	YLIT ATEX 1000	YLIT ATEX 2000	YLIT ATEX 3000	YLIT ATEX 5000	YLIT ATEX 10000
Amin., mm	245	272	323	382	550	784
A1, mm	158	178	205.5	252	260.5	380
A2, mm	–	–	–	–	–	–
B, mm	17	22	30	38	45	68
C, mm	24	29	35	40	47	68
D, mm	14	19	22	30	37	50
F (Geared), mm	92	92	91	107	149.5	113
H1, mm	24.5	24	23.5	32	30.5	55
I (Pushed), mm	71.5	71.5	95.5	131	142.5	169
I (Geared), mm	76.5	76.5	98	132.5	148.5	169
L, mm	270	310	360	445	525	430
L1, mm	130	130	150	180	209	200
L2, mm	159	175	207	256	283	261
M, mm	M 18	M 22	M 27	M 30	M 42	M 48
O, mm	60	60	80	112	125	150
P (Geared), mm	108	110	112	112	117	158
T (area A), mm	280	290	305	320	–	–
T (area B), mm	400	410	425	440	484	540

Model Yalelift ITP ATEX, 500 - 3000 kg, single fall



Model Yalelift ITP/ITG ATEX 5000 kg, double fall

Model Yalelift ITG ATEX, 500 - 3000 kg, single fall

Model Yalelift ITG ATEX, 10000 kg, three fall

Hand chain hoist with integrated push or geared type trolley (low headroom) model Yalelift LH ATEX

Capacity 500 - 10000 kg

The hand chain hoist model Yalelift LH with integrated low headroom manual trolley is the consequent further development of the Yalelift IT. Wherever an even smaller headroom is essential, the Yalelift LH is the ideal choice.

Features

- The specially developed chain reeving system and chain guide allow the bottom block to be pulled laterally to the hoist even further up and almost against the beam flange.
- The integrated design of the innovative Yalelift LH uses the same manual trolleys as incorporated in the Yalelift IT series.
- All models of the LH series up to 3000 kg capacity are provided with single chain fall.
- The proven and almost stepless adjustment system allows quick and easy assembly of the trolley.
- The trolleys are offered for two beam ranges. Range A for a flange width up to 180 mm is standard and covers approx. 80 % of all requirements. Conversion to range B for beam width up to 300 mm can be easily accomplished.
- The low headroom version of the Yalelift IT is adjustable to fit a wide range of beam profiles (e.g. INP, IPE, IPB).
- The solid bronze trolley wheels are designed for a max. beam profile incline of 14 % (DIN 1025 - part 1), excellent rolling features are guaranteed by prelubricated, encapsulated ball bearings.
- Anti-tilt and anti-drop devices are standard.
- Explosion protected version with spark resistant coating.
- Trolleys equipped with rubber buffers.
- Copper-plated load hooks.

Option

- Load chain from stainless steel.
- Overload prevention device
- Chain container
- Beam locking device

Protection classification:
II 2 GD c IIB T4 T 125°C X,
II 2 GD c IIB T3 T 145°C

Technical data model Yalelift LH ATEX with integrated push type trolley

Model	EAN-No. 4025092*	Capacity in kg/ number of chain falls	Size	Beam flange width b mm	Beam flange thickness t max. mm	Min. curve radius m	Weight* at standard lift (3 m) -P kg	Weight* at standard lift (3 m) with beam brake -P kg
YLLH ATEX 500	*592291	500/1	A	60 - 180	19	0.9	27	33
YLLH ATEX 500	–	500/1	B	180 - 300	19	0.9	27	34
YLLH ATEX 1000	*592314	1000/1	A	70 - 180	19	0.9	35	43
YLLH ATEX 1000	–	1000/1	B	180 - 300	19	0.9	36	44
YLLH ATEX 2000	*592321	2000/1	A	82 - 180	19	1.15	61	69
YLLH ATEX 2000	–	2000/1	B	180 - 300	19	1.15	62	70
YLLH ATEX 3000	*592338	3000/1	A	100 - 180	19	1.5	107	116
YLLH ATEX 3000	–	3000/1	B	180 - 300	19	1.4	109	118
YLLH ATEX 5000	*592345	5000/2	A	110 - 180	27	2.0	152	162
YLLH ATEX 5000	–	5000/2	B	180 - 300	27	1.8	156	166
YLLH ATEX 10000	–	10000/3	A	125 - 180	40	1.8	on request	on request
YLLH ATEX 10000	–	10000/3	B	180 - 310	40	1.8	on request	on request

Technical data model Yalelift LH ATEX with integrated geared type trolley

Model	EAN-No. 4025092*	Capacity in kg/ number of chain falls	Size	Beam flange width b mm	Beam flange thickness t max. mm	Min. curve radius m	Weight* at standard lift (3 m) -G kg	Weight* at standard lift (3 m) with beam brake -G kg
YLLH ATEX 500	*594592	500/1	A	60 - 180	19	0.9	31	38
YLLH ATEX 500	–	500/1	B	180 - 300	19	0.9	32	38
YLLH ATEX 1000	*594608	1000/1	A	70 - 180	19	0.9	40	48
YLLH ATEX 1000	–	1000/1	B	180 - 300	19	0.9	41	49
YLLH ATEX 2000	*594615	2000/1	A	82 - 180	19	1.15	65	73
YLLH ATEX 2000	–	2000/1	B	180 - 300	19	1.15	67	75
YLLH ATEX 3000	*594622	3000/1	A	100 - 180	19	1.5	112	121
YLLH ATEX 3000	–	3000/1	B	180 - 300	19	1.4	114	123
YLLH ATEX 5000	*594639	5000/2	A	110 - 180	27	2.0	157	167
YLLH ATEX 5000	–	5000/2	B	180 - 300	27	1.8	161	171
YLLH ATEX 10000	–	10000/3	A	125 - 180	40	1.8	230	on request
YLLH ATEX 10000	–	10000/3	B	180 - 310	40	1.8	232	on request

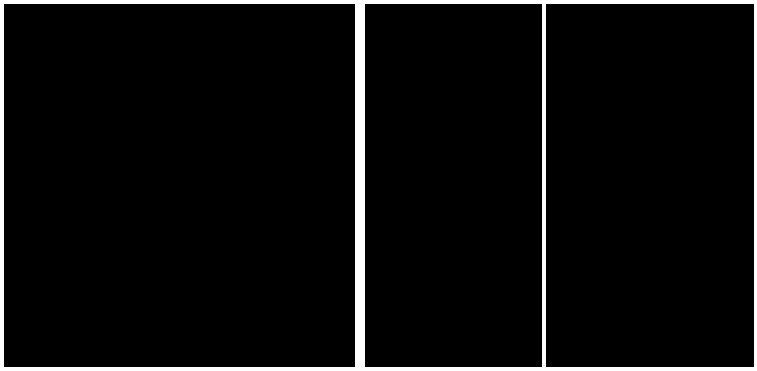
*P = with pushed trolley
*G = with geared trolley

Yale hoists and trolleys are not designed for passenger elevation applications and must not be used for this purpose.

Dimensions model Yalelift LH ATEX

Model	YLLH ATEX 500	YLLH ATEX 1000	YLLH ATEX 2000	YLLH ATEX 3000	YLLH ATEX 5000	YLLH ATEX 10000
Amin., mm	188	211	264	316	425	565
A1, mm	223	250	289	346	345	365
A2, mm	381	427	511	614	612	665
B, mm	17	22	30	38	45	68
C, mm	24	29	35	40	47	68
D, mm	14	19	22	30	37	50
F (Geared), mm	92	92	91	107	150	150
H1, mm	24	24	24	32	31	45
I (Pushed), mm	72	72	96	131	143	170
I (Geared), mm	77	77	98	133	149	170
L, mm	270	310	360	445	525	485
L1, mm	130	130	150	180	209	225
L2, mm	444	488	582	690	720	805
L3, mm	124	135	172	203	175	215
L4, mm	184	201	230	265	283	348
M, mm	M 18	M 22	M 27	M 30	M 42	M 48
O, mm	60	60	80	112	125	150
P (Geared), mm	108	110	112	112	117	165
T (area A), mm	280	290	305	320	364	440
T (area B), mm	400	410	425	440	484	540

Model Yalelift LHP ATEX, 500 - 3000 kg, single fall



Model Yalelift LHP ATEX, 5000 kg, double fall

Model Yalelift LHG ATEX, 500 - 3000 kg, single fall

Model Yalelift LHG ATEX, 10000 kg, three fall


Saipem

No protection classification as no ignition source when utilized according to intended use.

Applicable in zone 1, although the protection classification of the utilized hoist has to be considered.

Push and geared type model HTP/G ATEX

Capacity 500 - 20000 kg

The trolley enables the exact positioning or easy traversing of large loads with either manual or powered hoisting equipment.

Features

- Adjustable to fit a wide range of beam widths and profiles (e.g. INP, IPE and IPB).
- The solid bronze trolley wheels are designed for a max. beam profile incline of 14 % (DIN 1025 - part 1), excellent rolling features are guaranteed by prelubricated, encapsulated ball bearings.
- Adjustments are made by rotating the clevis load bar which also ensures the centred positioning of the hoist in the clevis - no creeping to the left or the right.
- Explosion protected version with spark resistant coating.
- Trolleys equipped with rubber buffers.

Option

- Locking device to secure the trolley in position on the beam (park position e.g. on ships).
- Hand chain from stainless steel

Technical data model HTP ATEX and model HTG ATEX

Model	EAN-No. 4025092*	Capacity kg	Size	Beam flange width b mm	Max. flange thickness t mm	Min. curve radius m	Effort at WLL daN	Weight* kg	Weight** kg
HTP ATEX 500	*573894	500	A	50 - 220	25	0.9	–	8.0	14.5
HTP ATEX 1000	*573900	1000	A	50 - 220	25	0.9	–	9.0	17.0
HTP ATEX 2000	*573917	2000	A	66 - 220	25	1.15	–	16.0	24.0
HTP ATEX 3000	*573924	3000	A	74 - 220	25	1.4	–	32.0	41.2
HTP ATEX 5000	*573931	5000	A	90 - 220	25	1.8	–	48.0	58.5
HTP ATEX 500	–	500	B	160 - 300	40	0.9	–	10.6	17.1
HTP ATEX 1000	–	1000	B	160 - 300	40	0.9	–	12.0	20.0
HTP ATEX 2000	–	2000	B	160 - 300	40	1.15	–	19.3	27.3
HTP ATEX 3000	–	3000	B	160 - 300	40	1.4	–	35.8	45.0
HTP ATEX 5000	–	5000	B	180 - 300	40	1.8	–	52.2	62.7
HTG ATEX 500	*573948	500	A	50 - 220	25	0.9	3	9.7	16.2
HTG ATEX 1000	*573955	1000	A	50 - 220	25	0.9	6	11.2	19.2
HTG ATEX 2000	*573962	2000	A	66 - 220	25	1.15	7	18.0	26.0
HTG ATEX 3000	*573979	3000	A	74 - 220	25	1.4	7	35.4	44.6
HTG ATEX 5000	*573986	5000	A	90 - 220	25	1.8	9	51.8	62.3
HTG ATEX 500	–	500	B	160 - 300	40	0.9	3	12.6	19.1
HTG ATEX 1000	–	1000	B	160 - 300	40	0.9	6	14.1	22.1
HTG ATEX 2000	–	2000	B	160 - 300	40	1.15	7	21.3	29.3
HTG ATEX 3000	–	3000	B	160 - 300	40	1.4	7	39.2	48.4
HTG ATEX 5000	–	5000	B	180 - 300	40	1.8	9	56.0	66.5
HTG ATEX 8000	*573702	8000	B	125 - 310	40	1.8	14	104.0	–
HTG ATEX 10000	*573719	10000	B	125 - 310	40	1.8	14	104.0	–
HTG ATEX 15000	*573726	15000	B	125 - 310	40	5.0	29	230.0	–
HTG ATEX 20000	*573733	20000	B	125 - 310	40	5.0	29	230.0	–

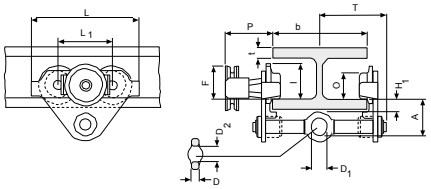
*Weight for HTG ATEX without hand chain **Weight HTG ATEX with locking device without hand chain

Dimensions model HTP ATEX

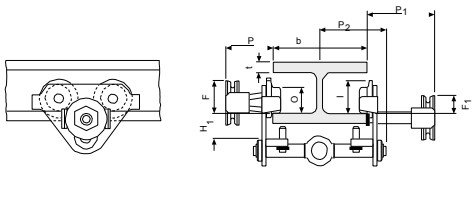
Model	HTP ATEX 500-A	HTP ATEX 1000-A	HTP ATEX 2000-A	HTP ATEX 3000-A	HTP ATEX 5000-A	HTP ATEX 500-B	HTP ATEX 1000-B	HTP ATEX 2000-B	HTP ATEX 3000-B	HTP ATEX 5000-B
A, mm	77	82.5	98.5	114	132.5	92	97.5	113.5	129	147.5
D, mm	16	17	22	26	33	16	17	22	26	33
D1, mm	25	30	40	48	60	25	30	40	48	60
D2, mm	30	35	47	58	70	30	35	47	58	70
F1, mm	46	46	46	46	45.5	46	46	46	46	45.5
H1, mm	30.5	30.5	30.5	30	30	45.5	45.5	45.5	45	45
I (HTP), mm	71.5	71.5	95.5	131	142.5	71.5	71.5	95.5	131	142.5
L, mm	260	260	310	390	450	260	260	310	390	450
L1, mm	130	130	150	180	209	130	130	150	180	209
O, mm	60	60	80	112	125	60	60	80	112	125
P1, mm	168	168	168	168	168	168	168	168	168	168
P2, mm	146	150	155	160	167.5	146	150	155	160	167.5
T, mm	146	150	155	160	167.5	187	187	189.5	191.5	191.5

Dimensions model HTG ATEX

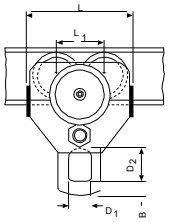
Model	HTG ATEX 500-A	HTG ATEX 1000-A	HTG ATEX 2000-A	HTG ATEX 3000-A	HTG ATEX 5000-A	HTG ATEX 500-B	HTG ATEX 1000-B	HTG ATEX 2000-B	HTG ATEX 3000-B	HTG ATEX 5000-B	HTG ATEX 8000-B	HTG ATEX 10000-B	HTG ATEX 15000-B	HTG ATEX 20000-B
A, mm	77	82.5	98.5	114	132.5	92	97.5	113.5	129	147.5	276	276	270	270
B, mm	–	–	–	–	–	–	–	–	–	–	52	52	70	70
D, mm	16	17	22	26	33	16	17	22	26	33	30	30	35	35
D1, mm	25	30	40	48	60	25	30	40	48	60	80	80	110	110
D2, mm	30	35	47	58	70	30	35	47	58	70	114	114	155	155
F (HTG), mm	91.5	91.5	90.5	107.5	149.5	91.5	91.5	90.5	107.5	149.5	113	113	113	113
F1, mm	46	46	46	46	45.5	46	46	46	46	45.5	–	–	–	–
H1, mm	30.5	30.5	30.5	30	30	45.5	45.5	45.5	45	45	45	45	45	45
I (HTG), mm	76.5	76.5	98	132.5	148.5	76.5	76.5	98	132.5	148.5	170	170	170	170
L, mm	260	260	310	390	450	260	260	310	390	450	430	430	870	870
L1, mm	130	130	150	180	209	130	130	150	180	209	200	200	200	200
L2, mm	–	–	–	–	–	–	–	–	–	–	–	–	115	115
O, mm	60	60	80	112	125	60	60	80	112	125	150	150	150	150
P (HTG), mm	110	110	110	110	110	110	110	110	110	110	163	163	163	163
P1, mm	168	168	168	168	168	168	168	168	168	168	–	–	–	–
P2, mm	146	150	155	160	167.5	146	150	155	160	167.5	–	–	–	–
T, mm	146	150	155	160	167.5	187	187	189.5	191.5	191.5	270	270	270	270



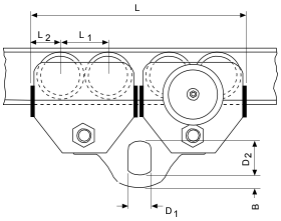
Model HTP/HTG ATEX, 500 - 5000 kg



Model HTP/G ATEX with locking device, 500 - 5000 kg



Model HTG ATEX, 10000 kg



Model HTG ATEX, 20000 kg

Ratchet lever hoist model UNOplus ATEX

Capacity 750 - 6000 kg

Further technical development turns the new ratchet lever hoist into the successor of our proven UNO model.
The versatile tool for lifting, pulling and securing of loads is characterised by its compact design, a robust stamped steel construction and a smooth free chaining device.

Features

- Forged suspension and load hooks, manufactured from non-ageing, high alloy tempering steel, yield under overload instead of breaking.
- Alloy steel link chain with zinc-plated finish, in accordance with national and international standards and regulations.
- Robust chain guide rollers eliminate fouling and jamming of chain on the load sheave.
- Robust chain end stop
- The standard free chaining device serves to quickly attach the load.
- Hand lever with ergonomic rubber grip and optimized bearing seat in the housing cover.
- Due to optimized gearing a minimum effort is required to operate the short hand lever.
- Automatic screw-and-disc type load brake with corrosion protected components.

Option

- Copper plated suspension and load hooks.
- Load chain from stainless steel

Protection classification:
Ex I M2
(Equipment group I is only valid for hoists used in the underground mining industry and their above ground facilities)
Ex II 2 GD c IIB T4 T 120° C X
(Equipment group II is valid for hoists used in all other areas)

Technical data model UNOplus ATEX

Model	EAN-No. 4025092*	Capacity kg	Number of chain falls	Chain dimensions d x p mm	Lift with one full lever turn mm	Handle pull at WLL daN	Weight at standard lift (1.5 m) kg
UNOplus ATEX 750	*168342	750	1	6 x 18	20	20	7.2
UNOplus ATEX 1500	*168359	1500	1	8 x 24	22	35	12.5
UNOplus ATEX 3000	*168366	3000	1	10 x 30	17	40	21.5
UNOplus ATEX 6000	*168380	6000	2	10 x 30	9	40	32.0

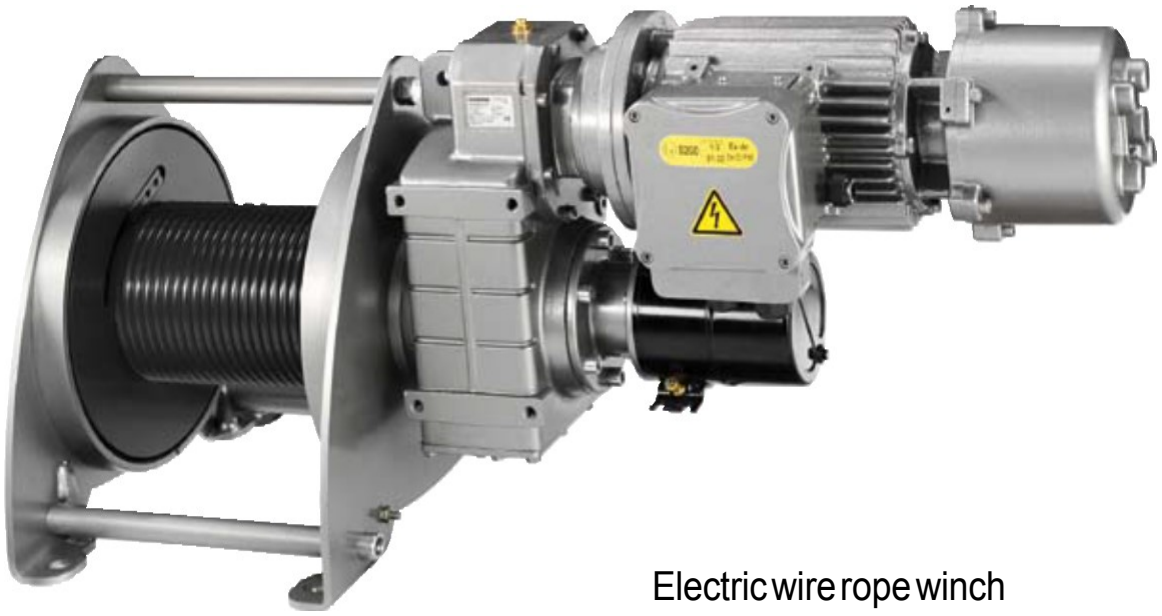
Dimensions model UNOplus ATEX

Model	UNOplus ATEX 750	UNOplus ATEX 1500	UNOplus ATEX 3000	UNOplus ATEX 6000
Amin., mm	340	410	510	690
B, mm	22	28	36	45
C, mm	26	32	40	44
D, mm	16	21	27	33
E, mm	250	330	380	380
F, mm	150	170	220	220
G, mm	70	80	100	100
H, mm	80	90	120	120
J, mm	150	180	210	210
K, mm	60	80	90	90
L, mm	90	100	120	120

Model UNOplus ATEX

Option: Copper-plated suspension and load hooks

Yale hoists and trolleys are not designed for passenger elevation applications and must not be used for this purpose.



Electric wire rope winch model BETA-EX

Lifting capacity 320 - 7500 daN

Wire rope winches of the series BETA-EX are designed according to the EU Directives 94/9/EG and MRL 2006/42/EG. The models are usable in any place, where the risk of ignition of explosive atmosphere exists. (Mixture of air, gases, fumes and dust/air-mixture, respectively). Due to a specially-tailored modular system, the suitable winch for each individual application can be put together easily. The BETA-EX is characterized by the excellent workmanship in connection with the reliable and stable gear motors.

Option

- Different ambient temperatures
- Different operating voltages
- Electric overload protection for winches with a load capacity below 1000 kg
- Infinitely variable speed regulation
- Rope pressure drum
- Slack rope switch
- Gear limit switch
- Special surface coating
- Multi compartment drum or drum extensions for a higher rope capacity.
- Sheaves, pulley blocks (ATEX-compliant Ex II 2 GD IIB T4 135° C IP65).
- Special wire ropes for ATEX-areas with copper-plated load hook.

Features

- Electric control incorporated in a flame-proof housing Ex II 2 GD de IIB T4 T 135° C
- Electric control not ATEX-compliant (Mounting outside of ATEX-area)
- Hand-actuated auxiliary switch in ATEX-design with Up/Down and emergency stop for an enhanced operating safety.
- From a load capacity of 1000 kg equipped as standard with an overload protection.
- Standard operating voltage: 380 - 420 V, 3-phases, 50 Hz - Euro-voltage
- Insulation class F
- Grooved drum and one rope fixation on each flanged wheel.
- Suitable ambient temperature: -20° C to +40° C.

Application area

Chemical or petrochemical industry, biogas plants, paint shops

Protection classification:
Ex II 2 GD de IIB T4 T 135° C

Technical data model BETA-EX

Art.-No.	Size	Pulling force 1st layer kg	FEM classification	Lifting speed m/min	Motor kW	Weight without rope kg	Recommended rope diameter* mm	Useable rope length 1st layer m	Useable rope length Top rope layer/m
040039001	P1	320	2m	5.9	0.37	82.4	5	16.2	77.8
040039003	P1	320	2m	13.8	0.75	89.9	5	16.2	77.8
040039004	P1	320	2m	19.0	1.1	106	5	16.2	77.8
040039020	P1.5	500	2m	6.0	0.55	95.9	6	13.62	67.58
040039021	P1.5	500	2m	13.1	1.1	113	6	13.62	67.58
040039023	C1.5	630	1Am	6.8	0.75	95.9	6	10.76	54.76
040039024	C1.5	630	1Am	14.4	1.5	113	6	10.76	54.76
040039031	P2	800	2m	4.7	0.75	125.9	8	17.1	85.5
040039033	P2	800	2m	11.4	1.5	151.5	8	17.1	85.5
040039034	P2	800	2m	20.5	3	151.5	8	17.1	85.5
040039037	C2	980	1Am	3.4	0.55	125.9	9	11	77.4
040039038	C2	980	1Am	6.7	1.1	143	9	11	77.4
040039039	C2	980	1Am	16.6	3	151.5	9	11	77.4
040039050	P3	1250	2m	5.2	1.1	203.5	12	16.3	61.3
040039051	P3	1250	2m	10.4	2.2	215	12	16.3	61.3
040039052	P3	1250	2m	13.8	3	215	12	16.3	61.3
040039055	C3	1600	1Am	3.9	1.1	203.5	12	12.1	87.7
040039057	C3	1600	1Am	10.3	3	215	12	12.1	87.7
040039058	C3	1600	1Am	19.2	5.5	287.4	12	12.1	87.7
040039059	E3	2000	1Bm	3.1	1.1	203.5	12	9.7	73.7
040039060	E3	2000	1Bm	8.3	3	215	12	9.7	73.7
040039061	E3	2000	1Bm	15.5	5.5	287.4	12	9.7	73.7
040039065	P3.5	2500	2m	4.9	2.2	262	14	13.8	53.9
040039067	P3.5	2500	2m	9.3	4	301.6	14	13.8	53.9
040039068	P3.5	2500	2m	12.9	5.5	338.4	14	13.8	53.9
040039070	C3.5	3200	1Am	4.0	2.2	262	14	11.4	85.6
040039072	C3.5	3200	1Am	7.6	4	301.6	14	11.4	85.6
040039073	C3.5	3200	1Am	10.6	5.5	338.4	14	11.4	85.6
040039081	C4	4000	1Am	5.7	4	502.6	18	12.7	98.3
040039082	C4	4000	1Am	10.4	7.5	539.4	18	12.7	98.3
040039083	C4	4000	1Am	15.5	11	617.5	18	12.7	98.3
040039085	E4	5000	1Bm	4.7	4	502.6	16	11.9	91.5
040039086	E4	5000	1Bm	8.6	7.5	539.4	16	11.9	91.5
040039087	E4	5000	1Bm	12.7	11	617.5	16	11.9	91.5
040039094	C5	6300	1Am	2.9	3	1047.4	20	16.4	123.5
040039095	C5	6300	1Am	6.5	7.5	1111.4	20	16.4	123.5
040039096	C5	6300	1Am	9.6	11	1205.5	20	16.4	123.5
040039097	E5	7500	1Bm	2.3	3	1047.4	20	13.4	104.8
040039098	E5	7500	1Bm	5.3	5.5	1111.4	20	13.4	104.8
040039099	E5	7500	1Bm	7.8	11	1205.5	20	13.4	104.8

*recommended rope nominal strength 1960 N/mm² (available upon request)

Dimensions model BETA-EX

Art.-No.	Size	A mm	B mm	ØC mm	D mm	F mm	G mm	H mm	H1 mm	L mm	ØM mm
040039001	P1	215	300	13.5	6	805	340	320	150	200	175
040039003	P1	215	300	13.5	6	874	340	320	150	200	175
040039004	P1	215	300	13.5	6	944	340	320	150	200	175
040039020	P1.5	215	300	13.5	6	888	340	370	150	200	175
040039021	P1.5	215	300	13.5	6	958	340	370	150	200	175
040039023	C1.5	215	300	13.5	6	888	340	370	150	200	138
040039024	C1.5	215	300	13.5	6	958	340	370	150	200	138
040039031	P2	270	400	18	8	987	465	472	205	250	242
040039033	P2	270	400	18	8	1089	465	472	205	250	242
040039034	P2	270	400	18	8	1089	465	472	205	250	242
040039037	C2	270	400	18	8	987	465	472	205	250	175
040039038	C2	270	400	18	8	1057	465	472	205	250	175
040039039	C2	270	400	18	8	1089	465	472	205	250	175
040039050	P3	320	510	22	10	1160	570	598	260	300	295
040039051	P3	320	510	22	10	1192	570	598	260	300	295
040039052	P3	320	510	22	10	1192	570	598	260	300	295
040039055	C3	320	510	22	10	1160	570	598	260	300	218
040039057	C3	320	510	22	10	1192	570	598	260	300	218
040039058	C3	320	510	22	10	1330	570	598	260	300	218
040039059	E3	320	510	22	10	1160	570	598	260	300	175
040039060	E3	320	510	22	10	1192	570	598	260	300	175
040039061	E3	320	510	22	10	1330	570	598	260	300	175
040039065	P3.5	320	510	22	10	1204	570	672	260	300	295
040039067	P3.5	320	510	22	10	1280	570	672	260	300	295
040039068	P3.5	320	510	22	10	1341	570	672	260	300	295
040039070	C3.5	320	510	22	10	1204	570	672	260	300	242
040039072	C3.5	320	510	22	10	1280	570	672	260	300	242
040039073	C3.5	320	510	22	10	1341	570	672	260	300	242
040039081	C4	380	660	26	12	1418	720	816	325	350	295
040039082	C4	380	660	26	12	1553	720	816	325	350	295
040039083	C4	380	660	26	12	1667	720	816	325	350	295
040039085	E4	380	660	26	12	1418	720	816	325	350	242
040039086	E4	380	660	26	12	1553	720	816	325	350	242
040039087	E4	380	660	26	12	1667	720	816	325	350	242
040039094	C5	430	800	34	15	1752	882	1060	400	400	364
040039095	C5	430	800	34	15	1638	882	1060	400	400	364
040039096	C5	430	800	34	15	1822	882	1060	400	400	364
040039097	E5	430	800	34	15	1752	882	1060	400	400	295
040039098	E5	430	800	34	15	1638	882	1060	400	400	295
040039099	E5	430	800	34	15	1822	882	1060	400	400	295

Wire rope sheave block for BETA-EX electric wire rope winches model DSRB

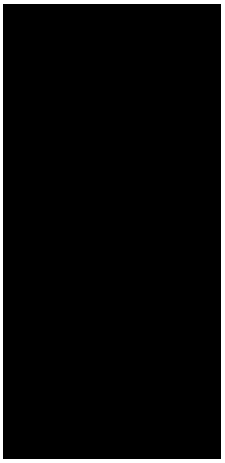
Choose the easy way for rope guidance! - The steel sheave block for wire rope guidance DSRB S for BETA-EX electric wire rope winches. The dynamic all-rounder with variable rope and sheave diameters and cable deflections of up to 180° can move loads of up to 8 t with ease and absolute reliability.
Typical for Pfaff-silberblau is the high standard of quality:
With a sheave block for manual and powered operation, equipped with grease-filled, sealed ball-bearings as standard.
A carefully coordinated system of application-specific cable diameters and matching turned precision cable groove ensures that the unit is also wear-free.

Technical data model DSRBX

Art.-No.	Model	D Ø mm	Rope diameter mm	Dm Ø mm	FEM classification	Max. tensile load (kg) at deflection 90°	180°	Ball bearing
033447103	DSRBX S 90/4	90	4	80	2m	700	500	6004ZZ
033447104	DSRBX S 145/5	145	5	125	4m	1100	800	6205 ZZ
033447105	DSRBX S 145/6	145	6	125	2m	1100	800	6205 ZZ
033447107	DSRBX S 185/8	185	8	160	2m	2300	1630	6306ZZ
033447108	DSRBX S 185/9	185	9	162	1Am	2300	1630	6306ZZ
033447111	DSRBX S 270/12	270	12	246	2m	2500	1800	6208 ZZ
033447117	DSRBX S 325/14	325	14	297	2m	4500	3200	6310 ZZ
033447113	DSRBX S 400/16	400	16	368	3m	5000	3800	6310 ZZ
033447114	DSRBX S 400/18	400	18	364	2m	5000	3800	6310 ZZ
033447115	DSRBX S 490/20	490	20	450	3m	8000	6000	6313 ZZ

Dimensions model DSRBX

Art.-No.	Model	D1 mm	L mm	C mm	H mm	B mm	E mm	S mm	K mm	M/M1 mm
033447103	DSRBX S 90/4	20	120	90	134	85	62	4	65	9/9
033447104	DSRBX S 145/5	25	200	160	224	125	88	6	110	11.5/13
033447105	DSRBX S 145/6	25	200	160	224	125	88	6	110	11.5/13
033447107	DSRBX S 185/8	30	245	195	273	138	106	8	135	13.5/15
033447108	DSRBX S 185/9	30	245	195	273	138	106	8	135	13.5/15
033447111	DSRBX S 270/12	40	360	290	407	191	138	10	202	18/20
033447117	DSRBX S 325/14	50	440	350	490	260	180	12	242	22/25
033447113	DSRBX S 400/16	50	530	430	612	302	212	15	310	26/30
033447114	DSRBX S 400/18	50	530	430	612	302	212	15	310	26/30
033447115	DSRBX S 490/20	65	650	580	694	313	220	16	340	34/40



Protection classification
Ex II 2 GD IIB T4 135° C

Hand winch with load pressure brake model OMEGA-EX

Lifting capacity 630 and 1000 daN

The hand winch OMEGA Ex is a complete new construction and was developed especially for the high safety requirements in potentially explosive atmospheres.
All components of the OMEGA-Ex are designed to avoid effectively an inadmissible heating of the surfaces. Carefully selected materials and the sophisticated construction of the winch prevent the occurrence of mechanically caused sparks, for example by intrusion of foreign materials.

Features

- Winch housing made of aluminum permanent mold casting for a low own weight, rope drum made of steel, chemically nickel-plated for a high versatility.
- Integrated load pressure brake.
- Closed gear with oil bath lubrication. The large oil volume ensures a high cooling effect.
- Equipotential bonding to avoid electrostatic charging.
- Pivotable crank handle.
- Suitable for ambient temperatures of -20° C to +40° C.

Application area

Chemical or petrochemical industry,
biogas plants, paint shops

Protection classification Ex
II 2 GD ck IIB T3 195° C

Technical data model OMEGA-EX

Art.-No.	Model	Pulling force 1st layer daN	Pulling force top rope layer daN	Crank effort 1st layer daN	Rope advance per one crank rotation mm	Weight without rope kg	Recommended rope diameter* mm
040022319	OMEGA-EX 6	630	305	10	21	22	7
040029019	OMEGA-EX 10	1000	500	16	22	22	8

*According to DIN 3060 FE-znk 1770sZ-spa

Dimensions model OMEGA-EX

Model	OMEGA-EX 6	OMEGA-EX 10
A, mm	345	345
B, mm	297	297
C, mm	107	107
D, mm	65	65
E, mm	156	156
F, mm	345	345
G, mm	70	70
H, mm	95	95
I, mm	123	123
J, mm	250	250
ØK mm	26	26
L, mm	107	107
M, mm	82	82
N, mm	88	88
O, mm	310.5	310.5
P, mm	56	56
Q, mm	56	56
R, mm	117.6	117.6
ØS, mm	72	72
T, mm	200	200

Rack and pinion jack model ZWW-EX

Lifting capacity 250 kg

The rack and pinion jack is suitable for lifting, lowering, pulling and pushing, for horizontal displacement, supporting, adjusting or fixing of heavy components or whole appliances and equipment in hazardous areas.

Features

- Carefully selected materials and a high-grade coating prevent the occurrence of mechanically caused sparks.
- No inadmissible heating of the surfaces due to the intelligent design of the individual parts.
- Equipotential bonding and limited surface area to avoid electrostatic charging.
- The grease-lubricated, self-locking worm gear is set into operation by rotations on the crank. It provides not only for easy movement of the load, but also for a reliable safety in every position.

Application area

Plant construction, shipping, wastewater treatment plants, chemical industry and food industry.

Option

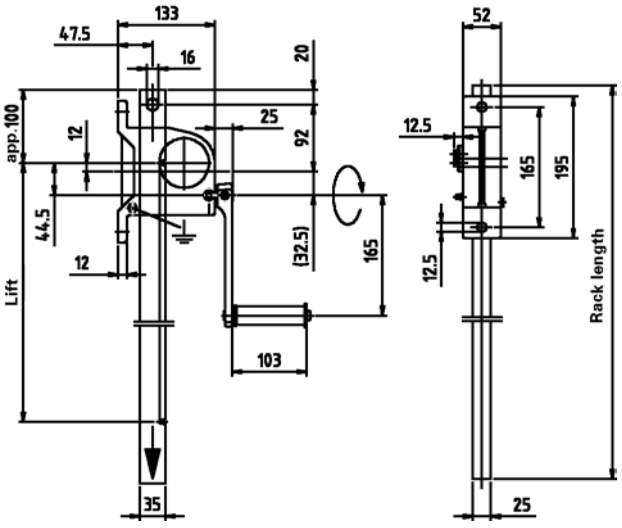
- In stainless steel design.
- With metallic or ceramic coating.

Technical data model ZWW-EX

Art.-No.	Model	Capacity kg	Rack length mm	Lift mm	Weight kg
040024366	ZWW-EX	250	740	550	9

Protection classification

Ex II 2 GD c IIB T3 195° C



Checklist

Pfaff-silberblau develops, produces and sets up system solutions and complete actuator units according to individual customer requirements for different applications:
product technique, transport technique, foundry technique, mining, hydraulic engineering, shipbuilding, research, building service, etc. Of course, also available in accordance with regulation 94/9/EG (ATEX) for the use in areas with an explosion hazard.

Simply ask for our checklist for screw jacks and linear drives!

You would like to know more?

Simply ask for our catalogue.
Of course, we can also contact you personally.

Company: _____ Phone: _____

First name: _____ Fax: _____

Name: _____ e-Mail: _____

Street: _____

Zip Code: _____

Place: _____

Country: _____

☐ Yes, we are interested in your current catalogue „Compendium Lifting & Material Handling Equipment“

☐ Please send your product catalogue „Compendium Screw Jacks“

☐ Yes, we are interested on the checklist for screw jacks and linear drives acc. to regulation 94/9/EG (ATEX) for the use in areas with an explosion hazard.

☐ Yes, we would like a non-binding consultation, resp. do have a specific requirement. Please contact us!

Simply fax to +49 (0)8233/2121-805
or visit us under: www.pfaff-silberblau.com

Place, Date _____ Signature _____


PFAFF
silberblau
Check t
Wormgear screw 19cks/
Linear drives
according to 94/9/EG (ATEX)
for use in potential explosive
areas
Safety - Made by Pfaff-silberblau


PFAFF
silberblau
2008

Technical questionnaire

To enable us to design lifting units/drive elements in accordance with EU-directive 94/9/EG it is essential that this checklist is completed and all open questions regarding explosion protection are answered carefully.

Equipment group, categories and zones

Equipment group I	
(only for mining fire damp protection)	
	Category M1
	Category M2

Equipment group II		
Category - Zone		Ex-atmosphere ...
–	Category 1 - Zone 0/20	... is present continuously for long periods or frequently (not available)
	Category 2 - Zone 1/21	... is present occasionally in normal operation
	Category 3 - Zone 2/22	... is unlikely to be present except for a short period of time.

Ex-atmosphere

Medium? If dusts are involved - please specify

Surrounding temperature (only permissable between -20 up to +40°C)	

Zone			
	Gases/Vapours G		Dust D
–	0	–	20
	1		21
	2		22

Explosion group	
	IIA
	IIB
	IIC

Temperature classes

	Temperature class	Max. surface temperature of the equipment [°C]	Max. ignition temperature of combustible substances [°C]	Max. surface temperature for dust [°C]
	T1	450	>450	Ignition temperature ..... Smouldering temperature .....
	T2	300	>300... <450	
	T3	200	>200... <300	
	T4	135	>135... <200	
–	T5	100	>100... <135	
–	T6	85	> 85... <100	

T1 up to T4 available, T5 and T6 not available

Place, Date_____ Signature _____

Yale Industrial Products GmbH

You would like to know more?

Simply ask for our Yale product catalogue. Of course, we can also contact you personally.

Simply fill in...

Company: _____

First name: _____

Name: _____

Street: _____

Zip code: _____

Place: _____

Country: _____

Phone: _____

Fax: _____

e-Mail: _____

... select...

Yes, ☐ we would like to know more about the Yale product portfolio. Please send your product catalogue

Yes, ☐ we would like a non-binding consultation, resp. do have a specific requirement. Please contact us sales@dale-lifting.co.uk

... and fax to us!

0161 223 6767

Place, Date _____

Signature _____

DLH online

DALE

Lifting and Handling Specialists

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