

KINOCRANES

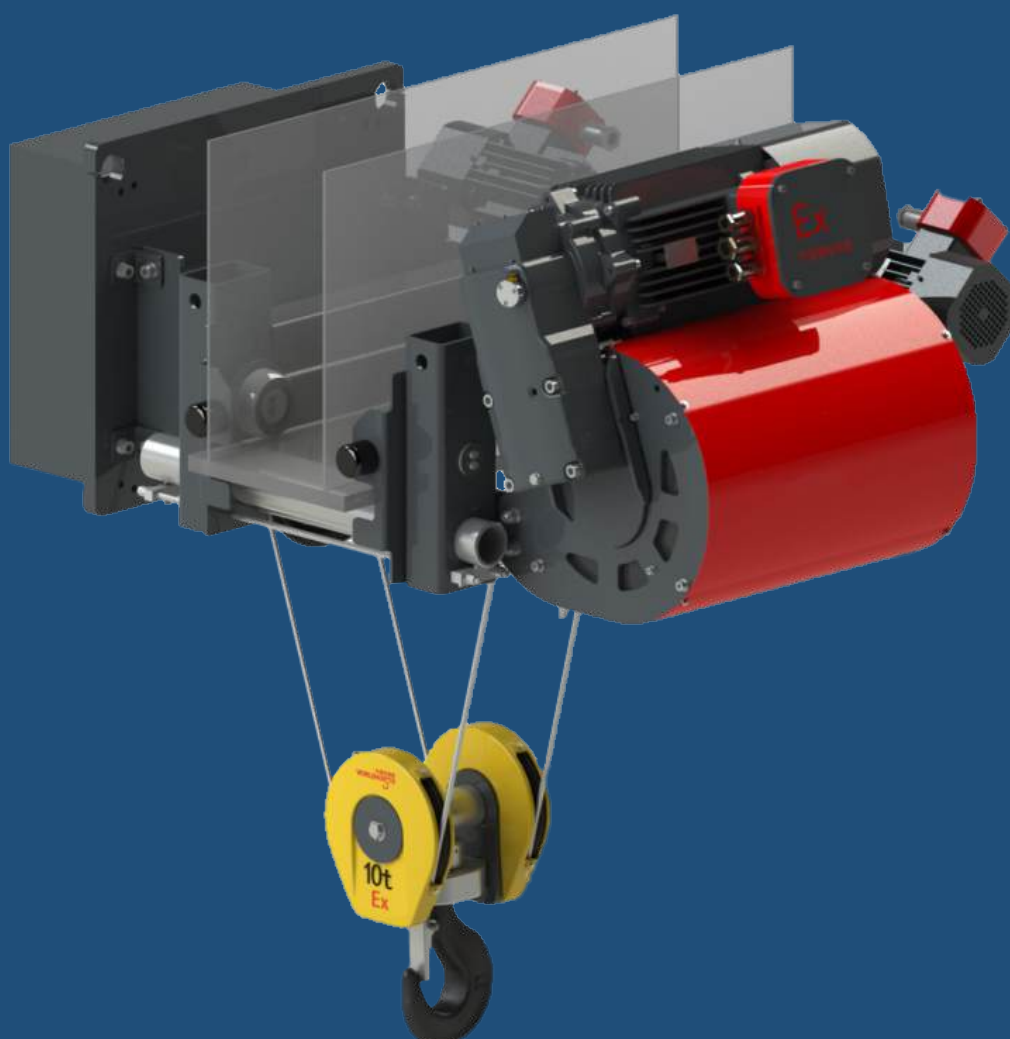
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Explosion-Proof Hoists & Cranes

Gas Zones 1 & 2 · dIIBT4 to IIC T4 · KNEK / KNEH Hoists & Ex Cranes

Product Guide - Technical Overview & Specifications



Zones 1 & 2

gas environments;
dust options

dIIBT4

default class,
up to IIC T4

GB 3836 · IEC 60079

explosion-protection
regime

T4

temperature class,
surface ≤ 135 C

EXPLOSION PROTECTION, ENGINEERED

Specified to your gas group. Exactly.

KNEK/KNEH explosion-proof hoists and Ex overhead cranes are built for gas Zones 1 and 2 - refineries, chemical plants, paint shops, offshore platforms - under the GB 3836 / IEC 60079 regime, with cranes engineered to JB/T 5897-2014. Protection classes are supplied in graded steps, so the machine matches the hazard actually present on site.

■ Graded protection classes

dIIBT4 as the default class, with eIIBT4 and IIC T4 / eIIIBT4 built to order. Each step is real engineering - IIC flameproof joints run over 6 mm long at gaps under 0.04 mm - so you specify to the gas group, not to a guess.

■ Low headroom where it counts

Mounting heights from ~520 mm against over 1,500 mm for conventional Ex hoists - about one metre of building height saved, and every metre costs more in an Ex-rated building.

■ Re-engineered, not retrofitted

Ex models differ systematically from the standard series: two-speed hoisting only, travel speeds capped by gas group, duty classes stepped down, envelopes enlarged, motors uprated with -Ex ratings. Every change follows explosion physics.

■ Sparks controlled, both kinds

Electrical sources are enclosed or energy-limited; mechanical ones are handled by bronze-coated hooks and wheels with nylon sheaves and rope guides - recommended for IIC/IIIB/IIIC service and aligned with JB/T 5897 material rules.

Protection classes to order

Class	Protection type	Gas / dust group	Availability
dIIBT4	Flameproof enclosure "d"	IIB gases (ethylene group)	Standard
eIIBT4	Increased safety "e"	IIB gases	On request
IIC T4	Flameproof, hydrogen group	IIC gases - strictest group	On request
eIIIBT4	Dust protection	IIIB non-conductive dusts	On request

Temperature class T4 (surface ≤ 135 °C) as default; marking format per GB 3836, e.g. Ex d e IIC T4 Gb. For zones and full class selection our engineers work from your hazardous-area classification drawings.

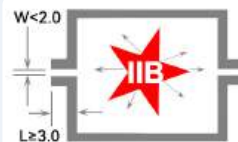


ENGINEERING DETAILS

Where the protection lives

Flameproof joint machining

The Ex enclosure is only as good as its joints: IIB spigots over 3 mm at gaps under 0.2 mm; IIC over 6 mm at gaps under 0.04 mm. That machining precision is the physical core of the rating.



Spark-proof golden parts

Bronze-coated hook and travel wheels, nylon rope sheaves and a nylon rope guide take mechanical impact and friction sparks out of the picture—recommended wherever IIC or conductive dusts rule.



Ex hoist motors

D-Ex two-speed motors with flameproof terminal boxes ("do not open when energized"), IIC-capable, IP65, Class H insulation, 60% ED heavy duty, thermal and overload protection built in.



Ex control panel

IP65 flameproof enclosure with Ex switchgear and the Ex mark on the door; control wiring runs joint-free, with Ex junction boxes only where the layout demands them.



C-rail festoon power

Rubber-sheathed round cable on nylon trolleys along a C-profile rail feeds the hoist; flexible cables carry a dedicated earth core per JB/T 5897 electrical rules.



Ex four-step hoist limit

Programmable geared limit in an Ex enclosure: lower, slow-down, upper and ultimate steps plus phase-sequence protection—the anti-two-block chain stays intact in the hazardous area.



Dual holding brakes (cranes)

Ex overhead cranes carry two Ex-rated holding brakes on the hoisting mechanism and use no open gearing—both mandatory under JB/T 5897-2014.



Speed governed by group

Travel is capped at 20/5 m/min for IIB and 16/4 for IIC/IIIB/IIIC; hoisting to 8 m/min in IIC service—speed limits that keep kinetic energy below ignition-relevant levels.



BY THE BOOK

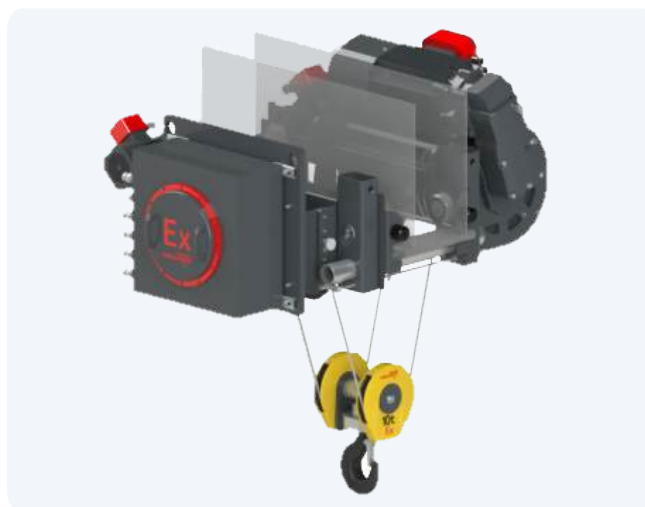
Built to JB/T 5897-2014

China's explosion-proof overhead crane standard - rooted in the same GB 3836 / IEC 60079 regime used worldwide - defines how an Ex crane must differ from a standard one. The highlights:

Scope	Gas Zones 1/2 and dust Zones 21/22; capacities 3.2-320 t, spans 10.5-40.5 m, duty A3-A5 max
Materials	Brass or stainless nameplates; copper-alloy / stainless wheel treads for IIC-IIIB-IIIC; buffer surface resistance $\leq 1 \text{e}9 \text{ ohm}$
Mechanisms	Two Ex-rated holding brakes on hoisting; no open gear transmissions; rope safety factor one class above GB/T 3811
Speed limits	Travel $\leq 16 \text{ m/min}$ for IIC/IIIB/IIIC (25 otherwise); hoisting $\leq 8 \text{ m/min}$; rope wind-in $\leq 28 \text{ m/min}$
Electrics	Ex apparatus per GB 3836.1 / GB 12476.1; flexible feed cables with earth core; no mid-run cable joints
Verification	No-light spark observation tests, loaded and unloaded, on every motion; insulation $\geq 1.5 \text{ megohm}$; permanent Ex mark at girder mid-span

IIB vs IIC - what changes

Group	Joint length	Max joint gap	Hoisting speed	Travel speed	Spark-proof parts
IIB (ethylene)	> 3.0 mm	< 0.2 mm	per model	20/5 or 0-20 m/min	optional
IIC (hydrogen)	> 6.0 mm	< 0.04 mm	max 8 m/min	16/4 or 0-16 m/min	recommended



TECHNICAL DATA

KNEK / KNEH Ex hoist models

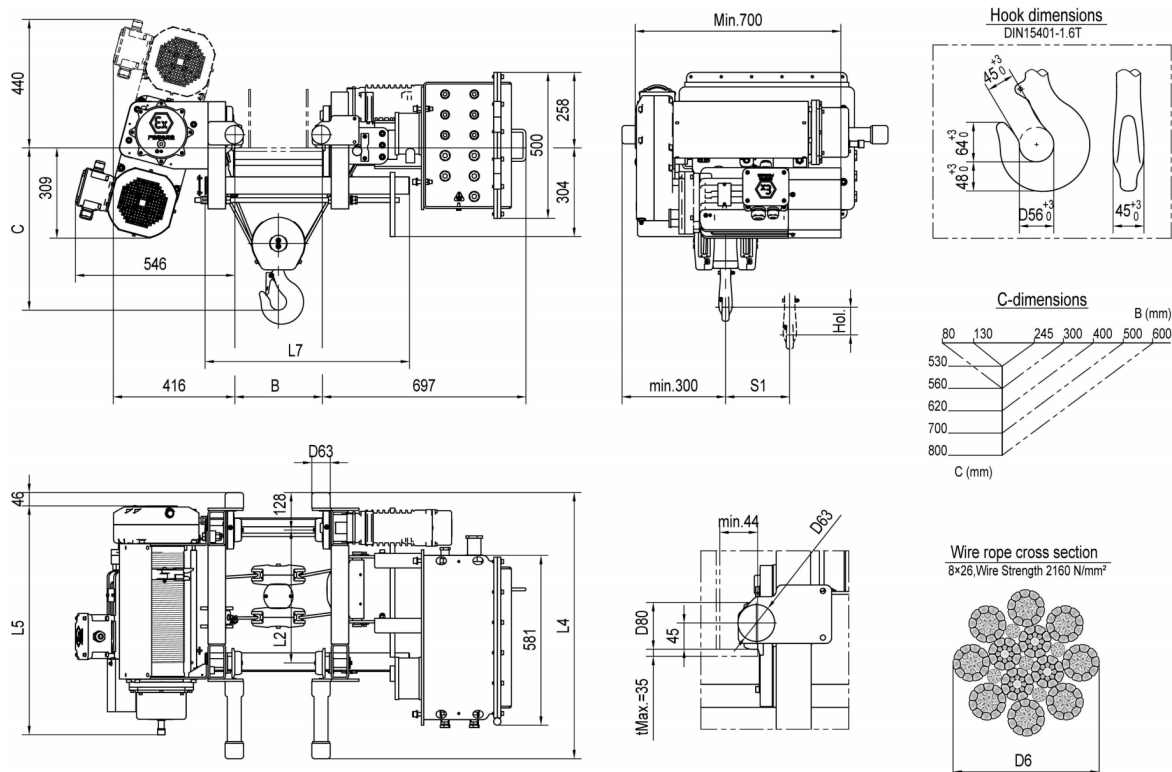
Five low-headroom Ex models, 2-10 t, all two-speed hoisting with D-Ex motors; larger Ex hoists and complete Ex cranes are engineered per project.

Model	Reeving	Capacity @ duty	Hoisting (m/min)	Travel IIB / IIC-III B-III C (m/min)	HOL - weight (m - kg)	C-dim (mm)	Hook
KNEK2104	1:4	2 t @ M6 · 2.5 t @ M5 · 3.2 t @ M4	5/0.8 · 6.3/1.1	20/5 / 16/4	6-415 · 9.5-439	530-800	1.6T
KNEK3102	1:2	2 t @ M6 · 2.5 t @ M5 · 3.2 t @ M3	8/1.3	20/5 / 16/4	12-473 ... 30-540	675-885	1.6T
KNEK3104	1:4	4 t @ M6 · 5 t @ M5	4/0.7 · 5/0.8	20/5 / 16/4	6-488 ... 15-555	615-825	2.5T
KNEH4102	1:2	4 t @ M5 · 5 t @ M4	8/1.3 · 10/1.7	20/5 / 16/4	24-836 · 32-888	840-1,040	2.5T
KNEH4104	1:4	6.3 t @ M6 · 8 t @ M5 · 10 t @ M4	4/0.7 · 5/0.8	20/5 / 16/4	12-882 · 16-932	720-920	5T

Weights include Ex motors. Flange range 150-610 mm across the series; wire rope 8x26 galvanized at 2,160 N/mm² (35x7 for lifting heights of 24 m and above); hooks forged to DIN 15401. Spark-proof package (bronze-coated hook, stainless/bronze wheels, nylon guides) recommended for IIC/IIIB/IIIC.

General data

Power supply	AC 380 V / 50 Hz via C-rail festoon, rubber round cable with earth core
Controls	Ex control panel IP65 · Ex switches · four-step Ex hoist limit with phase-sequence protection · two-step travel limits
Motors	D-Ex hoist motors, IIC-capable, IP65, Class H, 60 %ED; Ex travel motors, two-speed or stepless within group limits
Standards	GB 3836.1/2/3-2010 · IEC 60079 regime · cranes to JB/T 5897-2014 · GB/T 14405 · GB/T 3811
Certification	Type-tested by PCEC (national Ex product test centre); current certificates available on request



QUALITY YOU CAN AUDIT

Manufacturing & certification

Ex products are built in the same audited Henan plant as our standard cranes - then verified the explosion-proof way.

Verified in the dark

Beyond the standard 14 factory test categories (100 % rotor balancing, insulation and surge testing, load calibration of every monitor), Ex machines undergo no-light spark-observation runs: every motion exercised loaded and unloaded, watching for a single visible spark, per JB/T 5897. Insulation is verified at 1.5 megohm minimum.

Certified and audited

Ex hoists are type-tested by **PCEC** - the Supervision & Test Center of Ex-products of China Petroleum & Chemical Industry - to GB 3836.1/2/3; current certificates are available on request. Complete cranes carry **CE certification**. The 150,000m² plant was assessed by independent auditor V-Trust; products are exported to the EU, the Americas and Southeast Asia.



IIC T4

strictest gas group,
type-tested

< 0.04 mm

IIC flameproof
joint gap

~520 mm

low-headroom
mounting height

Zones 1 & 2

gas environments
covered

Working in a hazardous area?

Send us your area classification drawing, gas group and load case - we will return the right protection class, model selection and full Ex documentation for your HSE review.

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Specifications subject to change with product development. Protection classes, zones and speeds are confirmed against your hazardous-area classification at quotation; values drawn from the manufacturer's technical documentation.