



Forklift **Technologies**

# HEAVY DUTY FORKLIFT TRUCKS







With lifting capacities ranging from 3 up to 32 tonnes, IPO Lifts heavy duty forklift trucks are suitable for any heavy duty application with a variety of options.

A wide range of capacities, engine power-outputs, wheelbases, masts, attachments and optional features is on offer, enabling customers to select the optimum solution for an extensive range of industrial application requirements. These industrial forklifts can be tailor made to the needs of any demanding and intensive operating environment.

Reliable proven components, low cost of ownership, fuel efficiency and outstanding driver comfort which deliver an excellent return on investment.



## MANUFACTURER AND SUPPLIER OF PREMIUM QUALITY HEAVY DUTY FORKLIFT TRUCKS.



Found in 1990, IPO Ltd. operates in three business domains – manufacturing, consulting and distribution. The company is dedicated to delivering premium quality technology solutions for the machine building, mining, construction, agricultural and transport industries.

In the beginning of 2011 IPO Ltd. expanded its manufacturing portfolio with the design and production of own brand patented forklift trucks. They are distinguished with premium quality, innovative design and reliability, achieved by installation of high quality components - Perkins, Cummins, Yanmar, Dana, Graziano, Hella, Walvoil, etc.

The manufacturing business unit of forklift trucks in IPO Lifts emerges as a result of the company's long standing experience in the machine-building sector combined with an opportunity in the market for highly customized heavy duty loading equipment.

The 20+ years of experience in the design, production, repair and maintenance of equipment and spare parts for the mining, agriculture and road construction industries provides our manufacturing team with the vital know-how and expertise in the forklift concept development, design and building process.

Furthermore IPO Ltd. is an official dealer of leading manufacturers of diesel engines (Cummins and Yanmar), transmissions (Allison) and filtration systems (Fleetguard) for the local market. Having the access to premium quality components for the production of the forklifts provides an unparalleled advantage in achieving high levels of efficiency in the components selection and uncompromised performance achieved by the manufactured machines.



## HIGH PERFORMANCE AND RELIABILITY



IPO Lifts are developed to meet the high demands for performance and reliability set by the market. The wide portfolio range of 3 to 32 tonnes load capacity of the machines means enabling customers to select the optimum solution for an extensive range of industrial application requirements. These industrial forklifts can be tailor made to the needs of any demanding and intensive operating environment. From the precision of a hydrostatic drive and reliable gearbox of the light forklifts to the robust design, specifically made for the most demanding applications - steel, metal, concrete, stone blocks, industrial sites, ports – IPO Lifts ensure excellent performance and productivity at optimum cost.

### What sets our forklifts apart?

- Wide production range – forklifts with lifting capacity from 3 to 32 tons
- Heavy duty off-road forklifts and front loaders
- Manufacturing of tailor-made forklifts in accordance with customer requirements
- High-quality machines with 12 month guarantee
- High spare parts availability at stock
- Warranty and aftermarket service
- Great variety of attachments and options
- Short lead time

### Premium Quality Components

- The careful selection of premium quality components built in the forklifts ensures excellent performance, reliability and long exploitation life of the machines.
- Engines – standard and specially built for their application in forklifts, delivering uncompromised reliability in performance, low consumption of fuel, long exploitation period and low noise levels and emissions, in full conformity with all EU directives.
- Premium quality driving axels, transmissions and hydraulic systems, ensuring easy and comfortable operation.
- Highly wear resistant tires with a long life expectancy, with excellent application in rough terrain operation conditions.

## INNOVATIVE DESIGN IN VARIETY OF APPLICATIONS



### Heavy duty forklifts with load capacity of 3 to 32 ton

IPO Lifts are distinguished with their wide variation in loading capacity and their innovative design, fully developed by our specialized engineering unit. Key focus of the product development team is the optimal fit of the produced forklifts for the particular loading and off-loading needs of our clients. Therefore, main priority in the production process is the development of machines, built according to the clients' specific requirements. This means that each manufactured forklift could be accustomed to a wide variety of parameters – off-road operation capability, lifting capacity, lifting height, etc.

### Rough Terrain Forklifts – 4x4x4

IPO Lifts rough terrain forklifts are a reliable and versatile solution. They are distinguished by their productivity and security for all types of cargo handling on difficult and irregular terrain. Offering a wide range of off-road and semi-industrial models in the market, IPO Lifts 4x4 are perfect for virtually any rehandling environment from docks to yards, special events, timber forestry, construction sites and builders' merchants.

The machines have a greater turning radius and are supplied with both front and back driving axels – 4x4x4. The special features ensure they are designed for high mobility and superb productivity in rough terrain area.

### Excellent performance in a variety of problematic conditions:

- Open mines
- Military
- Agriculture
- Woodwork enterprises
- Deserts and sand regions
- Underdeveloped road conditions



## CORE TECHNOLOGIES AND COMPONENTS

### STRENGTH AND DURABILITY

#### CHASSIS

- Chassis is manufactured from special metal plates, providing high strength and reliability of the structure.
- Regular load distribution over the entire structure.



#### MAST

- Robust mast and its bearing structure are providing high strength, maximum stability and hardness along the whole loading length.
- Perfect visibility.
- Big width of driving and secondary spools between mobile and fixed mast ensure even load distribution.



#### AXLE

- Mounted on the chassis by cardan shaft.
- Double acting cylinder is entirely protected from mechanical interventions.
- Hydraulic valves protecting double acting cylinder from overloading.
- Complete hydrostatic servo control provides excellent maneuverability without any drivers difficulties or fatigue.



### POWER AND PERFORMANCE

#### DRIVING AXLE

- IPO Lifts are with double reduced driving heavy duty axle with main shifting initially and planetary wheel reducers secondary.
- Semi-shafts are mobile and are operating in bearings, set in oil, which are with autonomous independent cooling.
- Axle drive equipped with wet disc brakes performing in oil with service required.



#### ENGINE

- Modern turbocharged engines are used in order to cover latest emission and noise level regulations.
- High output, extended service intervals, low fuel consumption.



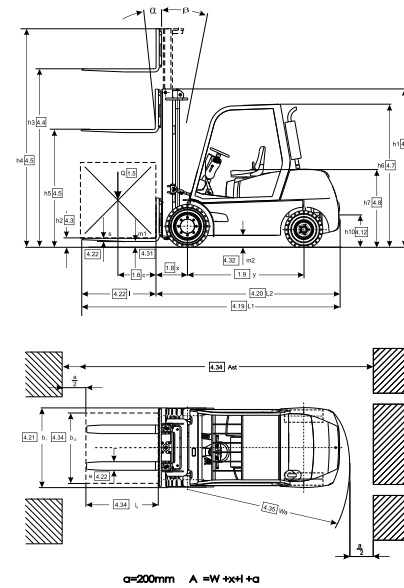
#### TRANSMISSION

- Heavy duty high performance industrial transmissions (directly mounted to the engine) are installed.
- Hydrodynamic transmissions are with 2 (3) forward shifts and 2 (3) rear shifts with electrical selection.





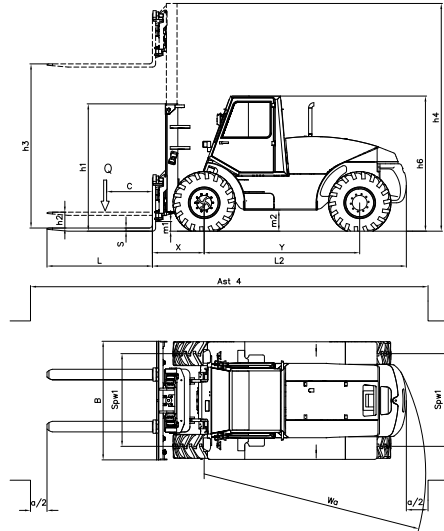
## TECHNICAL SPECIFICATIONS AND PARAMETERS



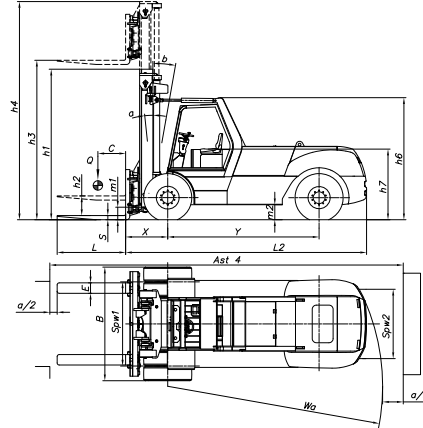
Identification	1.1	Manufacturer	IPO-Lifts Ltd	IPO-Lifts Ltd	IPO-Lifts Ltd	IPO-Lifts Ltd
	1.2	Type	IPO 30	IPO 40	IPO 40	IPO 50
	1.3	Drive: elec., diesel, gasoline, LPG	Diesel	Diesel	Diesel	Diesel
	1.4	Driver position: Seated	Seated	Seated	Seated	Seated
	1.5	Load capacity Q ( t )	3,00	4,00	4,00	5,00
	1.6	Load center C ( mm )	500	500	600	600
	1.7	Distance from CL of front axle to fork face X ( mm )	450	500	500	562
	1.8	Wheel base Y ( mm )	1800	1800	1800	2000
Weights	2.1	Weight - unladen kg	4520	5283	5673	6501
	2.2	Axle weight laden, front / rear kg	6780/900	8394/889	8558/1115	10551/950
	2.3	Axle weight unladen, front / rear kg	1920/2550	2171/3112	2113/3560	2646/3855
Wheels, Chasis	3.1	Tyre type: SE=Superelastic, L=Pneumatic	L/L	SR	L/L	L/L
	3.2	Tyre size, front	8,15-15 PR 14	8,15-15	8,15-15 PR 14	250-15 PR 14
	3.3	Tyre size, rear	6,5-10 PR 14	6,5-10	6,5-10 PR 14	23x9-10 PR 14
	3.4	Wheels, front / rear ( x=drive )	2X/2	2X/2	4X/2	2X/2
	3.5	Track, Spw1 / Spw2 front / rear	997/975	997/975	1255/974	1270/994
Basic Dimensions	4.1	Mast tilt angles, forward ( a ) / backward ( b ) deg	5/11	6/11	5/10	6/11
	4.2	Mast height - closed h1 ( mm )	2240	2240	2240	2340
	4.3	Free lift h2 ( mm )	130	130	130	130
	4.4	Lift h3 ( mm )	3300	3300	3300	3300
	4.5	Mast height - extended h4 ( mm )	3825	3855	3855	3960
	4.6	Full free lift, duplex / triplex h5 ( mm )	-	-	-	-
	4.7	Height of overhead guard h6 ( mm )	2210	2210	2210	2220
	4.8	Seat height h7 ( mm )	1170	1170	1170	1180
	4.9	Length to fork face L2 ( mm )	2910	2858	2918	3130
	4.10	Overall width B ( mm )	1220	1220/1238	1220/1238	1500
	4.11	Fork dimension ( thickness / wight / length ) s/e/l ( mm )	40x125x1150	45x125x1150	50x140x1150	50x140x1150
	4.12	Fork carriage to ISO 2328, Class A, B	3A	3A	3A	3A
Performance data	4.13	Ground clearance laden under mast m1 ( mm )	140	140	140	140
	4.14	Ground clearance center of wheel base m2 ( mm )	170	170	170	170
	4.15	Aisle wight pallet 800/1000 R min ( mm )	3760	3900	4110	4110
	4.16	Turning radius, maximum R max ( mm )	2560	2660	2710	2907
	5.1	Travel speed, laden / unladen km / h	19/20	18/19	18/19	20/22
	5.2	Lifting speed, laden / unladen m/s	0.36/0.5	0.34/0.5	0.34/0.5	0.34/0.4
	5.3	Lowering speed, laden / unladen m/s	0.45 max/0.45 min	0.45 max/0.45 min	0.45 max/0.45 min	0.45 max/0.4 min
Engine	5.4	Drawbar, pull, laden / unladen kN	17/17	25/25	37/37	39/39
	5.5	Gradeability laden / unladen %	22/22	26/22	26/22	26/32
	5.6	Service brake, type	Hydraulic	Hydraulic	Hydraulic	Hydraulic
	5.7	Parking brake, type	Hand	Hand	Hand	Hand
Other Details	6.1	Engine manufacture / type	Perkins 404D-22T	Perkins 1104D-44T	Perkins 1104D-44T	Perkins 1104D-44T
	6.2	Engine output to ISO 1585 kW	43	62,5	62,5	62,5
	6.3	Rated speed rotation 1/min	2500	2200	2200	2200
	6.4	Cylinders / displacement /cm3	4/2200	4/4400	4/4400	4/4400
	7.2	Transmission manufacturer / type	Graziano PST 1	Graziano PST 1	Graziano PST 2	Graziano PST 2
	7.3	Coupling	hydrodynamic 1/1	hydrodynamic 1/1	hydrodynamic 2/2	hydrodynamic 2/2
	7.4	Working pressure for attachments bar	180	180	180	180

D (G) 30;35;40								
simplex					triplex			
h3	3700	4000	4500	5000	4300	4800	5100	6000
h1	2440	2590	2840	3190	2060	2220	2340	2630
h4	4225	4525	5025	5525	4760	5260	5600	6470
h2	130	130	130	130	0	0	0	0
a/b	5/12	5/12	5/12	3/6	5/12	3/6	3/6	3/6

## TECHNICAL SPECIFICATIONS AND PARAMETERS



Identification	1.1	Manufacturer	IPO-Lifts Ltd	IPO-Lifts Ltd	IPO-Lifts Ltd
	1.2	Type	IPO 40 DR	IPO 50 DR	IPO 70 DR
Weights	1.3	Drive: elec., diesel, gasoline, LPG	Diesel	Diesel	Diesel
	1.4	Driver position: Seated	Seated	Seated	Seated
	1.5	Load capacity Q ( t )	4,00	5,00	7,00
	1.6	Load center C ( mm )	600	600	600
	1.7	Distance from CL of front axle to fork face X ( mm )	850	785	968
Wheels, Chasis	1.8	Wheel base Y ( mm )	2200	2200	2700
	2.1	Weight - unladen kg	7800	8700	10800
	2.2	Axle weight laden, front / rear kg	9900/1300	12300/1400	13620/1800
	2.3	Axle weight unladen, front / rear kg	3120/4400	4200/4500	5280/5220
	3.1	Tyre type: SE= Superelastic, L=Pneumatic	L/L	L/L	L/L
Basic Dimensions	3.2	Tyre size, front	365/80 R 20	365/80 R 20	18.0x22.5
	3.3	Tyre size, rear	365/80 R 20	365/80 R 20	18.0x22.5
	3.4	Wheels, front / rear ( x=drive )	2X/2X	2X/2X	2X/2X
	3.5	Track, Spw1 / Spw2 front / rear	1730/1730	1730/1730	1760/1760
	4.1	Mast tilt angles, forward ( a ) / backward ( b ) deg	10/12	10/12	10/12
	4.2	Mast height - closed h1 ( mm )	2480	2500	2845
	4.3	Free lift h2 ( mm )	130	140	200
	4.4	Lift h3 ( mm )	3300	3300	3300
	4.5	Mast height - extended h4 ( mm )	4065	4106	4655
	4.6	Full free lift, duplex / triplex h5 ( mm )	-	-	-
	4.7	Heigh of overhead guard h6 ( mm )	2490	2490	2600
	4.8	Seat height h7 ( mm )	1470	1430	1580
	4.9	Length to fork face L2 ( mm )	3920	3930	4700
	4.10	Overall width B ( mm )	2100	2100	2250
	4.11	Fork dimension ( thickness / wight / length ) s/e/l ( mm )	50x120x1200	50x120x1200	70x150x1200
Performance data	4.12	Fork carriage to ISO 2328, Class A, B	4A	4A	4A
	4.13	Ground clearance laden under mast m1 ( mm )	280	300	365
	4.14	Ground clearance center of wheel base m2 ( mm )	360	360	400
	4.15	Turning radius, minimum R min ( mm )	1150	1150	1300
	4.16	Turning radius, maximum R max ( mm )	4200	4600	5650
Engine	5.1	Travel speed, laden / unladen km / h	24/27	24/27	24/27
	5.2	Lifting speed, laden / unladen m/s	0.40/0.50	0.40/0.50	0.40/0.50
	5.3	Lowering speed, laden / unladen m/s	0.60/0.40	0.60/0.40	0.60/0.40
	5.4	Drawbar, pull, laden / unladen kN	58/45	66/55	72/65
Other Details	5.5	Gradeability laden / unladen %	26/32	26/32	26/32
	5.6	Service brake, type	Hydraulic	Hydraulic	Hydraulic
	5.7	Parking brake, type	Hand	Hand	Hand
	6.1	Engine manufacture / type	Perkins 1104D-44T	Perkins 1104D-44T	Perkins 1104D-44T
Other Details	6.2	Engine output to ISO 1585 kW	62	62	74
	6.3	Rated speed rotation 1/min	2200	2200	2200
	6.4	Cylinders / displacement /cm3	4/4400	4/4400	4/4400
	7.1	Fuel tank capacity	140	140	190
Other Details	7.2	Transmission manufacturer / type *	DANA/T12000	DANA/T12000	DANA/T12000
	7.3	Coupling	hydrodynamic 3/3	hydrodynamic 3/3	hydrodynamic 3/3
	7.4	Working pressure for attachments bar	180	180	180



Identification	1.1	Manufacturer	IPO-Lifts Ltd	IPO-Lifts Ltd	IPO-Lifts Ltd	IPO-Lifts Ltd
	1.2	Type	IPO 160 D	IPO 200 D	IPO 250 D	IPO 320 D
Weights	1.3	Drive: elec., diesel, gasoline, LPG	Diesel	Diesel	Diesel	Diesel
	1.4	Driver position: Seated	Seated	Seated	Seated	Seated
	1.5	Load capacity Q ( t )	16,00	20,00	25,00	32,00
	1.6	Load center C ( mm )	1200	1200	1200	1200
	1.7	Distance from CL of front axle to fork face X ( mm )	1010	1160	1160	1210
Wheels, Chasis	1.8	Wheel base Y ( mm )	3620	4000	4200	4500
	2.1	Weight - unladen kg	23600	31120	35500	48300
	2.2	Axle weight laden, front / rear kg	36350/3250	47500/3620	55820/4680	72440/7860
	2.3	Axle weight unladen, front / rear kg	10500/13100	16900/14220	17040/18460	22218/26082
	3.1	Tyre type: SE=Superelastic, L=Pneumatic	L/L	L/L	L/L	L/L
Basic Dimensions	3.2	Tyre size, front	12.00-20	14.00-24 PR28	16.00-25	18.00-25
	3.3	Tyre size, rear		14.00-24 PR28	16.00-25	18.00-25
	3.4	Wheels, front / rear ( x=drive )	4X/2	4X/2	4X/2	4X/2
	3.5	Track, Spw1 / Spw2 front / rear	2020/1810	2210/2010	2240/2010	2440/2510
	4.1	Mast tilt angles, forward ( a ) / backward ( b ) deg	6/10	6/10	6/10	6/10
	4.2	Mast height - closed h1 ( mm )	3600	3500	3950	4600
	4.3	Free lift h2 ( mm )	200	200	250	320
	4.4	Lift h3 ( mm )	4000	4000	4000	4000
	4.5	Mast height - extended h4 ( mm )	5550	5950	5950	6600
	4.6	Full free lift, duplex h5 ( mm )	-	-	-	-
	4.7	Heigh of overhead guard h6 ( mm )	2900	3150	3200	3250
	4.8	Seat height h7 ( mm )	1690	1860	1860	1910
	4.9	Length to fork face L2 ( mm )	5760	6360	6360	6750
	4.10	Overall width B ( mm )	2720	3060	3060	3600
	4.11	Fork dimension ( thickness / wight / length ) s/e/l ( mm )	100x250x2400	110x250x2400	110x250x2400	115x310x2400
Performance data	4.12	Fork carriage to ISO 2328, Class A, B	Fork positioner	Fork positioner	Fork positioner	Fork positioner
	4.13	Ground clearance laden under mast m1 ( mm )	300	300	300	300
	4.14	Ground clearance center of wheel base m2 ( mm )	360	380	500	500
	4.15	Aisle wight pallet 1000/1200 R min ( mm )	8800	9450	9650	10300
	4.16	Turning radius, maximum R max ( mm )	5350	6200	6200	6700
Engine	5.1	Travel speed, laden / unladen km / h	23/25	25/30	25/30	25/30
	5.2	Lifting speed, laden / unladen m/s	0.35/0.40	0.25/0.29	0.25/0.29	0.25/0.29
	5.3	Lowering speed, laden / unladen m/s	0.5/0.3	0.45 max/0.40 min	0.45 max/0.40 min	0.45 max/0.40 min
	5.4	Drawbar, pull, laden / unladen kN	95/110	130/180	130/180	170/210
Other Details	5.5	Gradeability laden / unladen %	25/23	28/25	28/25	28/25
	5.6	Service brake, type	Hydraulic	Hydraulic	Hydraulic	Hydraulic
	5.7	Parking brake, type	Hydraulic	Hydraulic	Hydraulic	Hydraulic
	6.1	Engine manufacture / type	Perkins 1106D-E66TA	Perkins 1106D-E66TA	Perkins 1106D-E66TA	Perkins 1106D-E66TA
Other Details	6.2	Engine output to ISO 1585 kW	120	168	168	220
	6.3	Rated speed rotation 1/min	2200	2200	2200	2200
	6.4	Cylinders / displacement /cm3	6/6600	6/6600	6/6600	6/6600
	7.2	Transmission manufacturer / type *	DANA/T20000	DANA/HR32000	DANA/HR32000	DANA/HR36000
Other Details	7.3	Coupling	hydrodynamic 3/3	hydrodynamic 4/4	hydrodynamic 4/4	hydrodynamic 4/4
	7.4	Working pressure for attachments bar	210	210	210	210

D (G) 50									
	simplex				triplex				
	h3	h1	h4	h2	a/b	h3	h1	h4	h2
h3	3700	4000	4500	5000		4300	4800	5100	5500
h1	2540	2690	2940	3290		2160	2320	2440	2560
h4	4540	4840	5340	5840		5100	5600	5940	6300
h2	130	130	130	130		0	0	0	0
a/b	5/12	5/12	5/12	3/6		5/12	3/6	3/6	3/6

	D 160				D 200				D 250				D 320			
	duplex				duplex				duplex				duplex			
h3	4500	5000	5500	6000	4500	5000	5500	6000	4500	5000	5500	6000	4500	5000	5500	6000
h1	3800	4050	4300	4550	4200	4450	4700	4950	4200	4450	4700	4950	4850	5100	5350	5600
h4	5150	5650	6150	6650	6450	6950	7450	7950	6450	6950	7450	7950	7100	7600	8100	8600
h2	190	190	190	190	250	250	250	250	250	250	250	250	320	320	320	320
a/b	6/10	6/10	3/5	3/5	6/10	6/10	3/5	3/5	6/10	6/10	3/5	3/5	6/10	6/10	3/5	3/5



## SUPERIOR COMFORT AND ERGONOMICS



Operator comfort and high productivity during exploitation of the forklifts are key priorities in the design process.

- The full hydrostatic driving system allows high maneuverability of the machines avoiding any difficulty in exploitation.
- Low vibration levels are achieved by the cabin module being mounted to the chassis on its own rubber pads.
- All forklifts are equipped with adjustable seats with a belt and armrests for high level of operator's comfort and perfect visibility in all directions

### Optional equipment

- Heated, soundproofed cabin.
- Air-conditioner, spark retainer, automatic shifting, etc.
- Great variety of attachments manufactured by KAUP, CASCADE, etc.

## OPERATOR SAFETY

Uncompromised operator health and safety of IPO Lifts is ensured through full compliancy with all safety requirements - ROPS & FOPS STANDARD. All forklifts are subject to functional, agility and stability tests carried out by an external authorized agency.

- All devices and signals are concentrated on adjustable steering panel.
- Hydraulic safety valves in the brake pedal, control system, hydraulic distributors, etc.
- Control valve for lifting and lowering gears.
- Safety valves in lifting cylinders.
- Valve regulating mast gradient.
- Valve monitoring fork speed and preventing gun-controlled movement with load.
- Drive direction shift with an embedded protector for engine start when in neutral position.
- Sound signal during rear drive.
- Signal lamp on when forklift is in operation.







## QUALITY CONTROL ASSURED

Modern and fully equipped quality control facilities for incoming, preventive and final control over the manufacturing process guarantees the premium quality of the forklifts. An excellently trained team of highly critical specialists carry out all quality control procedures as well as standard testing of the final machine – maximum load capacity, maximum speed laden, maximum lifting height, etc.

### Warranty

All machines are offered with a standard 1 year guarantee. An extension of the warranty period to 2 years is available subject to additional payment. The warranty and post-warranty service of the machines is carried out only by our qualified forklift production team.

The quality of the manufactured products by IPO Lifts is guaranteed by the successfully implemented system ISO 9001:2008, by application of input control, selection of optimal technology, control over functional and technical parameters at various stages of the production cycle, as well as output control of the final products.

## CERTIFICATE



**BUREAU VERITAS**  
Certification

**IPO - LIFTS LTD.**  
6, Teofan Raynov Str., 4300 Karlovo, Bulgaria

*Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standard detailed below*

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Standard

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**ISO 9001:2008**

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*Scope of certification*

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**Design, manufacturing, service, repair and trade of forklifts, electric forklifts and mining machines. Manufacturing and trade of their respective spare parts and consumables.**

Certification cycle start date: **07 August 2014**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **06 August 2017**

Original certification date: **07 August 2014**

Certificate No: BG120309Q Version 1, Revision date: **07 August 2014**



*Rayna Zlatarova*  
Rayna Zlatarova, Technical Manager Bureau Veritas Certification Bulgaria

Certification body address: Brandon House, 180 Borough High Street, London SE1 1LB, United Kingdom  
Local Office: 81A, Bulgaria Blvd., 1404 Sofia, Bulgaria



**UKAS**  
MANAGEMENT  
SYSTEMS

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by contacting the organization.  
To check this certificate validity please call: +359 (2) 983 60 44

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# Forklift **Technologies**

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**OFFICE SOFIA:**

47, Rezbarska Str., 1517 Sofia, Bulgaria,  
tel. +359 2 971 95 49, fax +359 2 971 95 48,  
office@ipo-bg.com

**OFFICE KARLOVO:**

Industrialna zona, 4300 Karlovo, Bulgaria,  
tel. +359 335 965 85, +359 335 967 62,  
fax +359 335 974 85

[www.ipo-bg.com](http://www.ipo-bg.com)