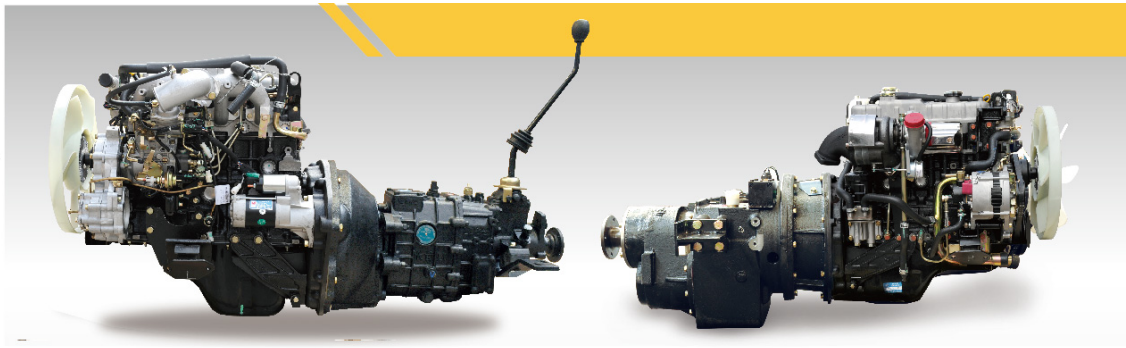
G系列2–3吨内燃牵引车
G SERIES 2-3T INTERNAL-COMBUSTION TOW TRACTOR



整车简介
General Introduction

合力G系列2～3t内燃牵引车是安徽合力股份有限公司最新研制的牵引车产品，是原有H2000系列内燃牵引车的升级换代。整车充分利用了本公司成熟的设计、制造技术，整机由车身系统（含配重）、动力系统、传动系统、变速操纵系统、行车制动系统、油门操纵系统、转向系统、电气系统、前/后悬挂、转向桥、驱动桥、牵引销机构、驾驶室等部分组成。

G series 2-3t internal-combustion tow tractor is a series of new product designed by HELI.It is the latest generation based on H2000 series. The whole tractor adequately adopts the mature design and manufacturing technology of our company. It's composed of bodywork system (including the rear counterweight), power system, transmission system, transmission control system, service brake control system, accelerator control system, steering system, electric system, front suspension ass'y, rear suspension ass'y, steering axle, drive axle, operation stick & pin component，cab and so on.



动力传动系统 Power and transmission system

选用高品质的发动机，整机排放要求符合国家最新环保要求。经过优化设计的传动系统与发动机的动力输出达到最佳匹配。传动系统有机械传动和液力传动两种。

机械变速箱采用三个前进档，一个倒档。I、II、III档之间有同步器，空档定在档位中心，具有良好的操作性能和合理的传动比。

液力变速箱传动比合理，前进和后退换档平稳无冲击，具有良好的散热和密封性能，舒适性好。智能自动技术的应用，实现“智能换档”，避免因II档起步及误操作等造成离合器损坏或安全事故。

High quality engine is assembled on the tractor and the tractor meets national latest environment requirement. Superior devised transmission system matched with engine power output perfectly.There are two types of transmission model:mechanical transmission and hydraulic powered transmission.

The transmission box have three forward gears and one reverse gear, synchronizer among I,II and III gear and good operating performance is adopted. The neutral is fixed in the center of the gear position. The transmission ratio of the transmission box is reasonable.

Hydraulic tractor assembled with hydraulic powered transmission box with reasonable transmission ratio. The transmission box has smooth forward/reverse gear shifting, excellent cooling and sealing performance,good comfort. Application of intelligent automatic technology, the achievement of intelligent automatic gear shifting system, to avoid starting at the II gear or improper operation which may cause clutch damage or accident.

制动系统 Brake system

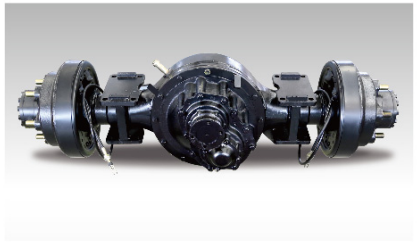
※两轮/四轮动力制动，应用无动力全行程有效制动技术，可靠性、安全性高，制动力小，保证在发动机坡道意外熄火的情况下，仍然可以实现5脚以上的制动。

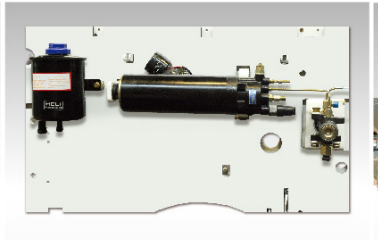
For hydraulic power brake system act on two/four tyres,application of effective brake technology during total travel,ensures high reliability ,high safety and small brake force,makes effective brake for five times after the engine is flame out on a slope.

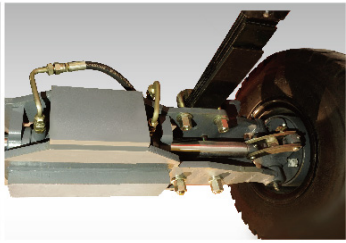
转向系统 Steering system

合力自行研发的全液压横置油缸动力转向技术（其中转向油缸U形密封圈为进口件），刚性好，转向轻便、准确。该项技术解决了国内同类产品转向桥刚性不足，轮胎过早磨损、前桥早期报废等问题。

The tractor adopts HELI homemade fully hydraulic transverse cylinder powered steering technology(the U-ring of cylinder is imported part), has good rigidity, has easy and accurate steering and operating feeling,thus effectively avoids the problems such as steering axle rigidity insufficient,tyre early worn out and front axle early discarding in domestic similar products.







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弹性悬挂装置 Suspension system

采用专业汽车配件生产厂家生产的前、后板弹簧悬挂装置。且前桥另装有筒式阻尼减震器，使得整机更加具有良好的平稳性。

The tractor adopt leaf spring suspension at front and rear axle which are made by professional auto parts manufacturers. Further more, the shock absorber is assembled on the front axle, which makes the tractor has favorable stability.

液压系统 Hydraulic system

合力自行研发的集成化稳流单齿轮泵技术（与同行业不同）。液压系统采用单齿轮泵，泵体集成单稳分流阀，其特点是齿轮泵流量近似恒流，系统简洁，油温低，性能可靠，故障点少，布置、维护、维修方便。液压系统工作密封可靠，无泄露，工作油液温度≤90℃。

The tractor assembled with integrated steady flow single gear pump designed by HELI(different from domestic similar products). The hydraulic system adopts single gear pump, the pump integrated monostable shunt valve, which is characterized by the gear pump flow is approximate to constant flow. The hydraulic system has excellent performance, for instance, simple, low oil temperature, reliable, few fault points,convenient maintenance.The hydraulic system sealing reliable, no leakage, the hydraulic oil temperature in pipeline≤90℃.

车身系统 Bodywork system

较小的车身长度、轴距提高了车辆灵活性。

最小离地间隙150mm,提高了车辆通过性。

机罩采用二次开启机构（与同行业不同），有效防止行车时因车辆颠簸或误操作发生机罩突然打开的现象，提高了行车安全性。

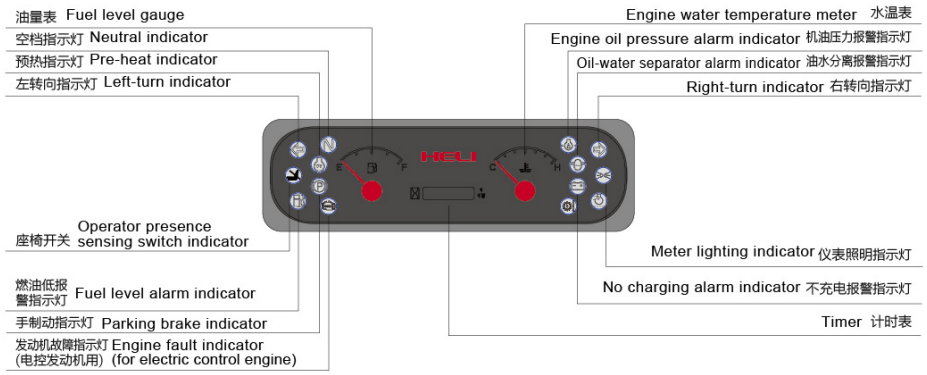
Small overall length and wheel base improve vehicle maneuverability.
Min. underground clearance is 150mm,improves vehicle trafficability.
Hood opening mechanism need two steps to fully open（different from domestic similar products）, effectively prevent hood suddenly open during travelling caused by vehicle bumps or improper operation, improves travelling safety.

操纵牵引销机构 Operation stick & pin component

采用可双点操作的带自锁及自动导引功能的操纵牵引销装置，驾驶室内、外均可实现拖车的脱、挂操作，操纵方便，效率高。自锁功能有效避免因误操作或行车颠簸导致拖车脱销的隐患，提高行车安全性。

The tractor adopts double point operation stick & pin component with self lock and automatic guide function.Trailer hook on and off operation can be realized in or out of cab to improve operational convenient and working efficiency. Self lock function effectively avoids trailer hook suddenly off caused by vehicle jolt during travelling or mis-operation, improves travelling safety.

可靠的专业仪表 RELIABLE PROFESSIONAL INSTRUMENT



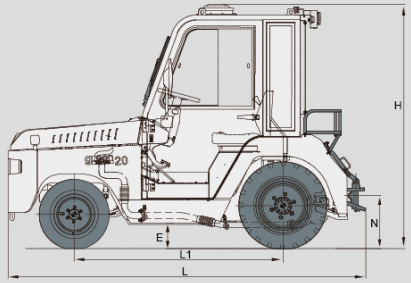
2–3 内燃牵引车获航空地面设备检测合格证
AVIATION GROUND EQUIPMENT INSPECTION CERTIFICATE WON BY 2–3t IC TRACTOR

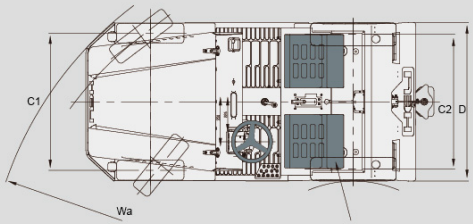







整车选配——空调





G系列2-3吨内燃牵引车

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技术参数 Parameter

	参数名称 Parameter		单位Unit	QYC20-J1G	QYC25-J1G	QYCD20-J1G	QYCD25-J1G	QYC20-J2G	QYCD20-J2G	QYCD25-J2G	QYCD20-YNG	QYCD25-YNG	QYQD20-RCG	QYQD25-RCG	QYYD20-RCG	QYYD25-RCG	QYQYD20-RCG	QYQYD25-RCG	QYC20-W1G	QYC25-W1G	QYCD20-W1G	QYCD25-W1G	QYCD20-CUG	QYCD25-CUG	QYCD30-CUG
1	最大牵引力 Max.drawbar.pull		kN	20	25	20	25	20	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	20	25	30
2	空载最大行驶速度(前进) Max.Travel speed(without load, forward)		km/h	30	30	30	30	27	26	20	28.5	28.5	24	21	24	21	24	21	25	25	24	24	25	25	19
3	爬坡度（空载） Grade ability (without load)		%	30																						
4	最小转弯半径 Min.turning radius		mm	≤3250																						
5	制动距离（20Km/h） Service braking distance(20Km/h)		m	≤5																						
6	整车质量（不含驾驶室） Total Weight(without cab)		kg	3150	3650	3200	3700	3100	3150	3650	3260	3760	3420	3860	3420	3860	3420	3860	3110	3160	3160	3660	3160	3660	3660
7	桥负荷 Axle load	前桥（不含驾驶室） Front(without cab)	kg	1000	1000	1020	1020	960	980	980	1050	1050	1170	1170	1170	1170	1170	1170	970	970	1000	1000	1000	1000	1000
		后桥（不含驾驶室） Rear(without cab)	kg	2150	2650	2180	2680	2140	2170	2670	2210	2710	2180	2680	2180	2680	2180	2680	2140	2640	2160	2660	2160	2660	2600
8	发动机 Engine	型 号 Model		JX493ZG3				JX493G53			云内YN4BZ060-31CR		NISSAN K25发动机						五十铃GK-4JG2NKFC01				康明斯QSF2.8		
		缸径×冲程 Bore×stroke	mm	4-93×102				4-93×102			4-92×105		4-89×100						4-95.4×107				4-94×100		
		额定功率/转速 Rated output	kW/rpm	64/3000				36.5/2500			44.1/2600		37.6/2400						36/2450				36.5(43)/2500		
		最大扭矩/转速 Max. output	N·m/rpm	243/1800				156/1800			200/1600-1950		176.5/1600						170/1700				186/1100-1500		
9	燃油箱容积 Fuel tank capacity		L	65				65			65		65		35		65		65				65		
10	外形尺寸 External dimensions	长 Overall length	mm	3110（包括牵引座 with coupler）				3050（包括牵引座 with coupler）			3110（包括牵引座with coupler）								3050（包括牵引座 with coupler）				3110（包括牵引座 with coupler）		
		宽 Overall Width	mm	1390																						
		高(不含驾驶室） Overall height(without cab)	mm	1370(无驾驶室，方向盘处 without cab,at steering wheel), 2070(驾驶室顶部 with cab)																						
11	轴 距 Wheel base		mm	1780																						
12	轮距 Tread	前 轮 Front	mm	1200																						
		后 轮 Rear	mm	1180																						
13	最小离地间隙 Min.underground clearance		mm	150																						
14	牵引座中心线离地高度 Center height of drawbar		mm	450(可选 customized)																						
15	电压/容量 Battery (voltage/capacity)		V/Ah	6-QW-80 12V 80Ah																						
16	驱动桥型号 Drive axle			P62L3-00001（配真空助力制动 Vacuum servo brake）、P62L3-00011（配动力制动 Power brake）				P62L3-00011（配动力制动 Power brake）			P66L3-00011		–						P62L3-00011（配动力制动 Power brake）				P66L3-00011		
17	变速箱 Transmission case	型号 Model		ML320A		YYXZ25H		ML320A	YYXZ25H		YYXZ25H		YYXZ25H						CAS3-20		YYXZ25H		YYXZ25H		
		变速型式 Type		同步器机械式 Synchronous mechanical		无级变速 Stepless change speed 变矩器 Tor-con:YQB265		同步器机械式 Synchronous mechanical	无级变速 Stepless change speed 变矩器 Tor-con:YQB265										同步器机械式 Synchronous mechanical		无级变速 Stepless change speed 变矩器 Tor-con:YQB265					
18	制动器 Brake apparatus	行车制动 Service brake		全液压两轮动力制动 Hydraulic oil acts on the rear wheels																						
		停车制动 Parking brake		机械制动，作用于变速箱 Mechanical type acts on the transmission box		机械制动，作用于后轮 Mechanical type acts on the rear wheels		机械制动，作用于变速箱Mechanical type acts on the transmission box	机械制动，作用于后轮 Mechanical type acts on the rear wheels		机械制动，作用于变速箱 Mechanical type acts on the transmission box								机械制动，作用于后轮 Mechanical type acts on the rear wheels						
19	轮胎 Tyre	前轮 Front 规格 Model		6.50-10-10PR																						
		前轮 Front 气压 Air pressure	kPa	790																						
		后轮 Rear 规格 Model		7.00-15-12PR																						
		后轮 Rear 气压 Air pressure	kPa	860																						

Forklift

Техническая документация HELI / CHL

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