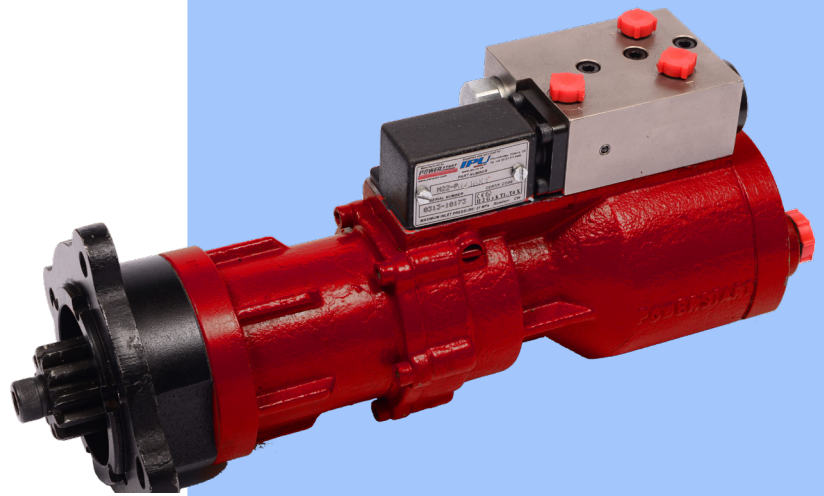


RELIABLE & POWERFUL HYDRAULIC STARTING SYSTEMS FOR DIESEL ENGINES & GENERATORS



IPU's hydraulic starting systems reliably start diesel & gas engines up to 80 litres.

IPU's hydraulic starting systems provide guaranteed reliability no matter how challenging or unpredictable the environment. Their independent, dead-ship or black-start capability is ideal as your primary method of starting fire pumps, emergency generators and compressors.

IPU's ATEX-approved starter motors provide safe starting on offshore platforms, in mines and at other hazardous locations.

Manufactured from cast iron, IPU's hydraulic starter motors combine quick acceleration with high torque output for guaranteed starting in extreme temperatures, after long shut down periods and in damp and hostile conditions.

Reliable

IPU's hydraulic starters provide primary starting for emergency systems or secondary starting when electric systems fail.

Convenient

IPU's hydraulic starting systems are self-contained and sealed making them ideal for use in underground and dusty environments.

ATEX-Approved

IPU starter motors use cast-iron casings. The optional pre-engaged mechanism avoids the potential for sparks in explosive environments.

Let's talk

+44 (0) 121 511 0400

ATEX APPROVAL IMPROVES SAFETY

IPU's hydraulic starter motors have ATEX approval. They are suitable for use in explosive environments such as oil platforms, underground mines, food processing plants and lumber mills.



Safety first

IPU's starter motors are often installed as an engine's secondary starting system. Operators rely on them to start fire pumps and backup generators when other systems have failed. They are part of the safety infrastructure that tackles emergency situations in hazardous environments.

They must be both reliable and safe so IPU systems incorporate exclusive features that exceed the most stringent safety standards.

ATEX regulations are designed to ensure equipment being used in hazardous or explosive environments is safe to use. IPU's pre-engaged hydraulic starting systems are ATEX-approved.

Two factors contribute to our starters motors' ATEX approval. These are safety features not found on the majority of other starter motors.

Cast-iron casing

IPU's hydraulic starter motors are constructed using cast-iron, not aluminium, casings.

Any external aluminium represents a significant risk in hazardous environments because it could help a thermite reaction develop. In most parts of the world, aluminium has been banned from fiery mines for decades but some still slips into use, causing a severe risk to life.

When aluminium comes into contact with an oxidiser such as iron oxide (rust) and is ignited by heat or by a spark, the thermite reaction that follows produces molten metal at a temperature of around 3000°C - a disaster waiting to happen in explosive atmospheres.

Pre-engaged starting mechanism

IPU's ATEX-certified starter motors are 'pre-engaged.' The starter motor pinion engages with the engine's ring-gear before rotating and cranking the engine.

This eliminates the risk of sparks being produced on engagement unlike inertia starters where the pinion is rotating at speed when it engages with the stationary ring-gear.

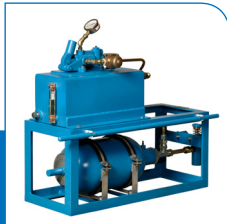
IPU's pre-engaged starter motors conform to ATEX EN1834-1 and 2. They can be used safely in flammable gas atmospheres as well as underground and other environments vulnerable to combustible dust.

For more information on ATEX, please visit: www.ipu.co.uk/atex.



PRODUCT HIGHLIGHTS

Hydraulic Mini-Pack



Hydraulic mini-packs are an ultra-reliable way of starting engine up to 12 litres.

They are extremely convenient because they are delivered as ready-to-fit, assembled units including:

- Starter motor, accumulator and oil reservoir.
- Hand pump, foot valve and relief valve.
- Pressure gauge, hoses and fittings.

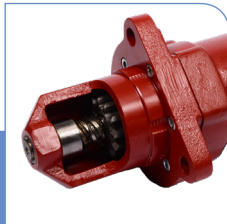
Parts Compatibility



Pinions, flanges and nosecones are interchangeable across IPU's entire range of air and hydraulic starter motors.

- Fewer spare parts need to be held in stock
- Over 100 types of pinions are available and small volume "specials" will be cut and produced on demand in our own gear-cutting facility.
- As a last resort, flanges and nosecones can be swapped between starter motors.

Flexible Installation



IPU's hydraulic starter motors are incredibly versatile. They can be oriented to suit the engine and its ancillary equipment.

The flange can be indexed in 60° increments and the body can be oriented independently of the flange or nose cone. This makes for almost infinite installation flexibility.

Accessories



Hydraulic starter motor accessories include:

- Accumulators.
- Hand Pumps.
- Foot Valves.
- Safety Release Valves.
- High Pressure Filters.
- Unloading Valves.

RELATED PRODUCTS

Systems



IPU designs, manufactures and commissions hydraulic starting systems for any brand of starter motor. Bespoke systems meet your space and performance needs.

Air



Jetstream air starter motors provide a reliable method of starting diesel and gas engines up to 150 litres. They can use an existing air supply or operate independently.

Spring



Spring (mechanical) starter motors provide a totally independent start system for engines up to 12 litres. They require no external electrical, pneumatic or hydraulic power.

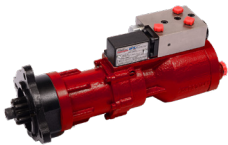
Other Systems



IPU's has over 40 years' experience designing, manufacturing and installing air and nitrogen starting systems to suit the exact needs of complex applications.

OPTIONS

Pre-engaged



Pre-engaged starter motors reduce the risk of sparks by waiting until the pinion has engaged with the engine's ring-gear before rotating and cranking the engine.

Inertia



Inertia starter motors are shorter and lighter than a pre-engaged equivalent.

Pinions



Beryllium-copper pinions can be used to reduce the risk of sparks from inertia starter motors.

CASE STUDIES



Hibiscus platform, Trinidad

The starting system provides three 30-second start cycles for the platform's emergency generator.

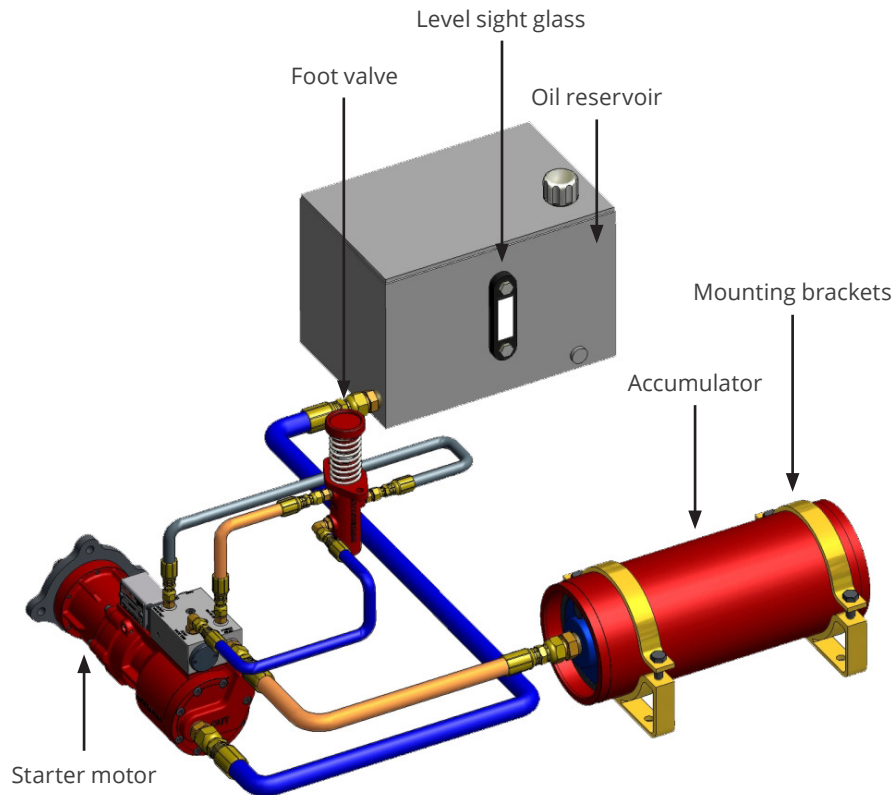
www.ipu.co.uk/case1006



Tapis R field, Malaysia

The secondary starting system provides six 10-second start cycles for the CAT 3516 emergency generator.

www.ipu.co.uk/case1007



How a hydraulic starter motor works

Energy is stored in the form of hydraulic oil under pressure inside the accumulator.

The oil is released using a foot switch, solenoid or manually-operated start valve.

Once released, the oil travels to the starter motor which engages with the engine's ring gear and cranks the engine.

When the engine has reached firing speed, the pinion is automatically kicked back by the ring gear.

The system can be recharged manually using a hand-operated pump, electrically using a hydraulic pump or even through the host machine's on-board hydraulics.

Your benefits

- **Guaranteed start:** The energy can be stored indefinitely as long as the system is installed and maintained to IPU specifications. If necessary, it can be quickly and easily recharged via a hand pump.
- **Performance in all conditions:** Performance is unaffected by hot or cold conditions provided the correct oil is used. Hydraulic starters operate efficiently following extensive periods of shut down.
- **Low maintenance:** Hydraulic starting systems last as long as your engine. The system is totally enclosed with all internal components immersed in oil, protecting them from the adverse environmental conditions that damage electric or vane starters.
- **Safe in hazardous areas:** IPU's pre-engaged hydraulic starters meet ATEX regulations for both gas and dust environments such as offshore, marine and mining.

SPECIFICATIONS

		M10	M16	M22	M28	M38	M66
PERFORMANCE							
Max. torque	Nm	30	48	66	84	124	216
	lb ft	22	35	49	62	92	160
Max. working pressure	MPa	21					
	psi	3,000					
Design pressure	MPa	25					
	psi	3,600					
Viscosity range	ISO	32 to 46					
	SUS	140 to 230					
Speed range	rpm	0 to 4,000			0 to 3,000		
Duty cycle		Intermittent					
Volumetric efficiency		95% minimum					
Temperature range	°C	-40 to +100					
	°F	-40 to +212					

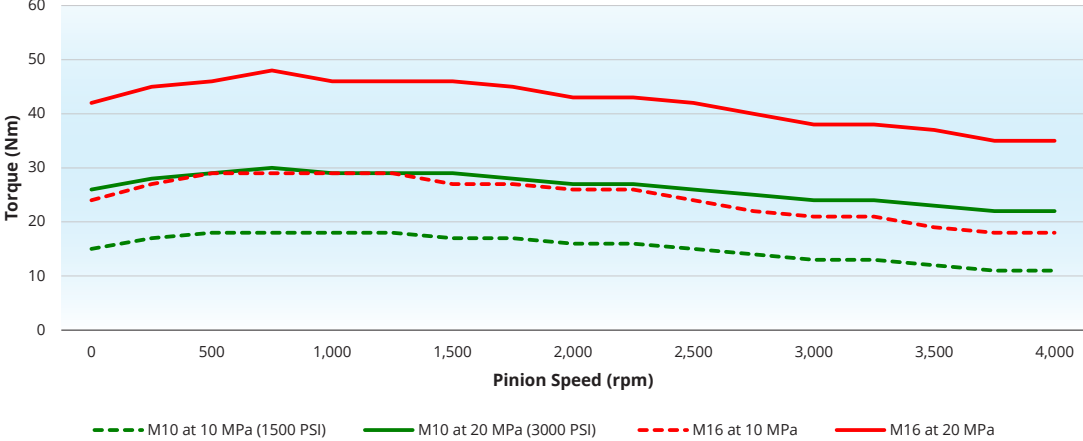
PHYSICAL							
Displacement	cc	9.98	15.59	22.10	28.0	38.0	66.0
	cu in	0.6	0.95	1.35	1.71	2.32	4.0
Length ¹	mm	293.0		328.5		441.0	
	in	11.5		12.9		17.4	
Diameter ¹	mm	89.5		101.5		130.0	
	in	3.5		4.0		15.1	
Weight ¹	kg	9.5		11.0		21.5	
	lb	20.9		24.3		47.4	
Construction		Cast iron (ductile iron)					
Fluid media		Mineral oil					
Rotation		Clockwise (counter-clockwise optional)					
Inlet port		3/8" NPT				SAE 12	
Outlet port		3/8" NPT		1/2" NPT		SAE 12	

Notes

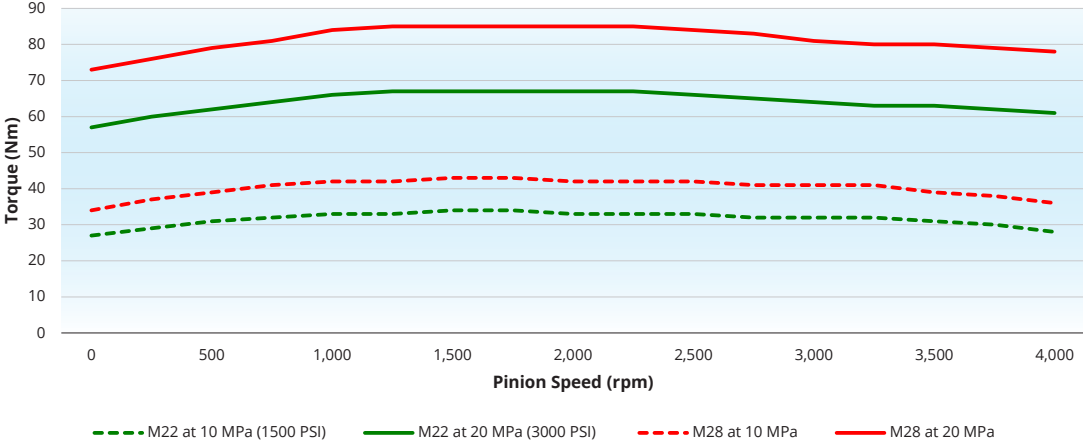
1 Dimensions and weights exclude valves, filters, accessories and options.

SPECIFICATIONS

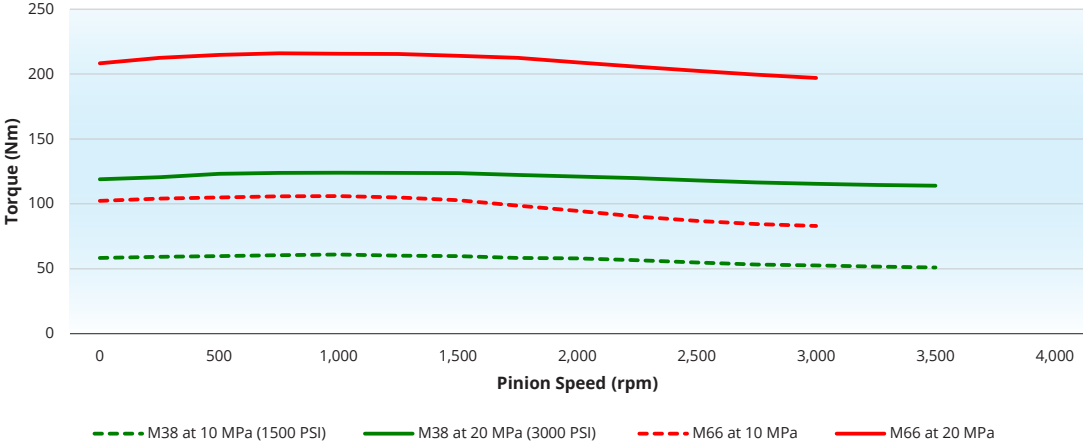
M10 & M16 power & torque curves



M22 & M28 power & torque curves



M38 & M66 power & torque curves





THE COMPANY YOU WANT TO DO BUSINESS WITH

IPU helps businesses reach the profitability and efficiency they seek.

For nearly sixty years, we have delivered the expert assistance and customer service that lets our domestic and international customers excel in their industries.

We support businesses in sectors including power-generation, oil & gas, marine, IT & telecoms, manufacturing and government.

Our industry experience, competitive pricing and superb support let us evolve from a regular supplier to become the company our customers *want* to do business with.



For further details, please visit: IPU.CO.UK/STARTING For more information, please contact: +44 (0) 121 511 0400

