

Manufacturing,
installing
and servicing
API pumping units.

Legrand

API Pumping Units

Innovation... Tradition

1874—England.

Alfred Legrand and Robert Sutcliffe hand drill a 174-foot deep, 3-inch diameter well.

By 1920, the company was known as Legrand, Sutcliffe & Gell Limited and was focusing on manufacturing pumping equipment and drilling and maintaining water wells in the United Kingdom and Europe.

After World War II, European oil companies found themselves unable to purchase drilling and production equipment from their regular American sources, and the emphasis of Legrand shifted to the manufacturing of oil production equipment.

Legrand's production of equipment for the oil and gas industry began with the development and manufacture of oil-well pumping units. Wellheads, valves and other associated oilfield components soon followed. By 1950, a total of 1,000 pumping units were produced and sold to the Middle East, South America and South East Asia. In 1954, Legrand Limited moved a portion of its operation from England to Canada. Headquarters were established in Calgary, Alberta and the

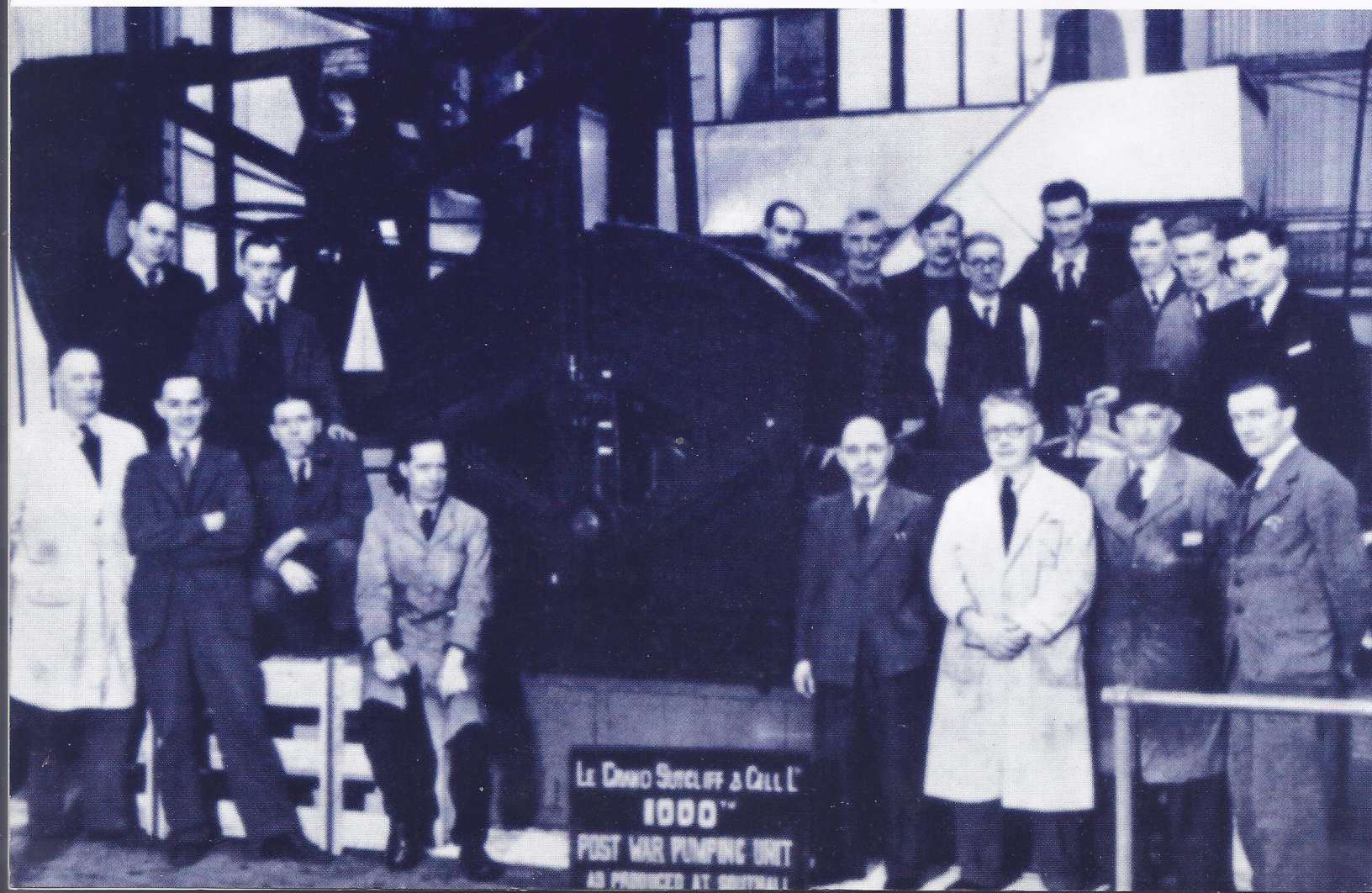
company soon earned a reputation for unequalled excellence in the Canadian oilpatch.

Eventually, the company's entire pumping unit operation was moved to Canada. In 1981, Legrand established Taro Gear to manufacture gear reducers. This enabled control over quality and availability of the gear reducers which are the heart of the pumpjack.

Today, thousands of Legrand pumping units are in operation throughout the world – many of them with more than 40 years of field service.

The parent company of Legrand is Taro Industries Limited, which has been publicly traded on the Toronto Stock Exchange since 1979. In 1994, Taro bought Griffin Pumps Inc. and merged it with Legrand to form the Griffin Legrand division.

The division continues to grow by providing quality pumpjacks, progressing cavity pumps and associated products for artificial lift from its Calgary manufacturing facility to oil producing countries worldwide.





Legrand Performance

Legrand pumping units are characteristic of the company's commitment to excellence. Developed and field-proven over many years of service in diverse applications, Legrand pumping units represent the highest refinement of engineering, design, fabrication, quality control and service available anywhere.

Special features of the pumping units include:

- Component designs that allow for ease in servicing and a minimum of downtime
- Bearing assemblies designed for quick and easy replacement
- Rugged cast iron gear boxes with centre split cases for ease of maintenance
- Heavy construction for reliability, durability and long service life

Each pumping unit is manufactured to API specifications and authorized to carry the API monogram.



**AUTHORIZED
MANUFACTURER
UNDER STD 11E**

Bearings

To keep downtime to a minimum, Legrand bearing assemblies are designed as a "package" so that the entire assembly can be quickly changed.

All bearing assemblies utilize self-aligning spherical roller bearings permitting angular displacement of the shafts relative to the housings. Self-aligning bearings cope with misalignment without reducing bearing life or inducing fatigue cracking to structural members. Since the same bearing is used in several locations, fewer bearings need to be kept on hand for service.

All bearings are grease lubricated and grease flow out of the seals purges the bearing of dirt for longer service life.

L-10 life ratings of all bearing assemblies, at maximum structural loading, exceed 100,000 hours.

CRANK PIN BEARINGS:

The crankpin bearing assemblies allow angular misalignment of the crank pin of 2° without any strain on structural components.

EQUALIZER BEARING:

Equalizer bearing assemblies pivot on a cross pin to allow trouble free operation even with misalignment due to installation, shifting of the base or working loads.

SADDLE BEARING:

The saddle bearing is adjustable in both longitudinal and lateral directions to permit adjustments of the walking beam to the centre of the well without having to move the entire unit. This results in easier installation.

General Construction

Legrand is an authorized manufacturer under API Standard 11E. The bases and samson posts are constructed of wide flange beams for durability and stability. All Legrand units disassemble into components of reasonable size for ease of shipment, field erection and service. Final alignment is accomplished by lateral or longitudinal adjustment of the saddle bearing on top of the samson post.

BASES:

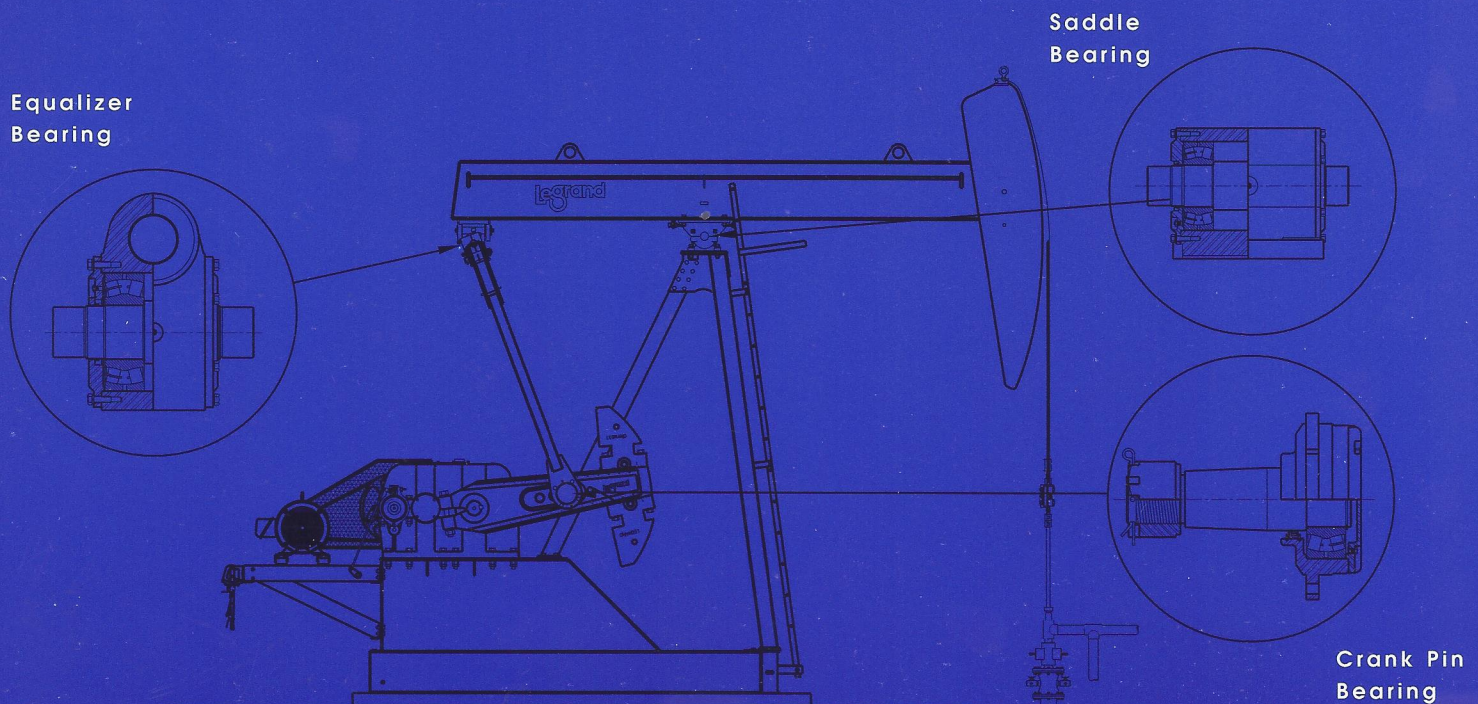
Bases can be provided to suit electric motors or reciprocating engines. Most sizes are also available with wide skid bases for temporary placement or erection of units where concrete bases are not available or practical.

WALKING BEAMS:

Walking beams are conservatively rated in accordance with API specifications and are constructed from rolled steel wide flange beams. Walking beams are equipped with lifting lugs for safe installation and removal.

HORSEHEADS:

The horseheads on all units are easily removable to provide clearance for well servicing. Horseheads are constructed using one-piece formed front plates for strength and rigidity. Horseheads are equipped with lifting eyes for simple and safe removal.



BRAKE:

Brakes may be applied and locked prior to installation or removal of the brake lever assembly. This safety feature allows the brake to lock the cranks and balance weights while the unit is in transit or being installed in the field. The brake lever is conveniently placed near the prime mover. A spring loaded brake lever assembly is optional.

CARRIER BAR:

Using a removable gate, the carrier bar is easily installed on, or removed from, the polished rod. The cable clamp concept facilitates both adjustment of the carrier bar height and cable replacement in the field.

PULLEYS:

Legrand pulleys are mounted on gear reducers by means of taper-lock bushings for ease of installation and removal. Legrand provides pulleys of the correct size and vee-belt section to suit the pump and its prime mover.

BELTGUARDS:

Beltguards are constructed of sheet and mesh steel, formed and welded into an effective safety barrier which can easily be removed for service.

LADDERS:

Ladders, equipped with safety hoops, are standard on all pumping units. An optional full-length cage is also available.

EQUALIZERS:

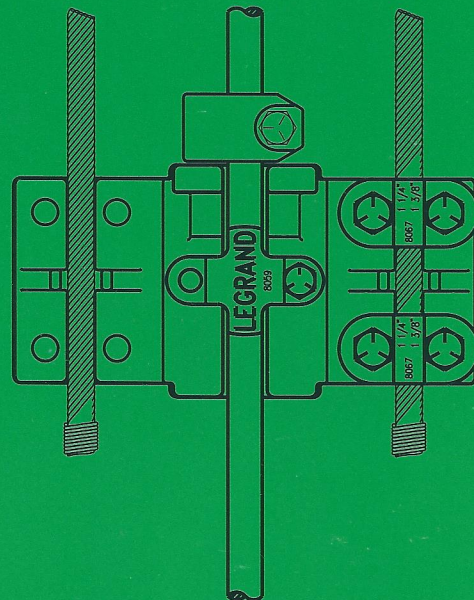
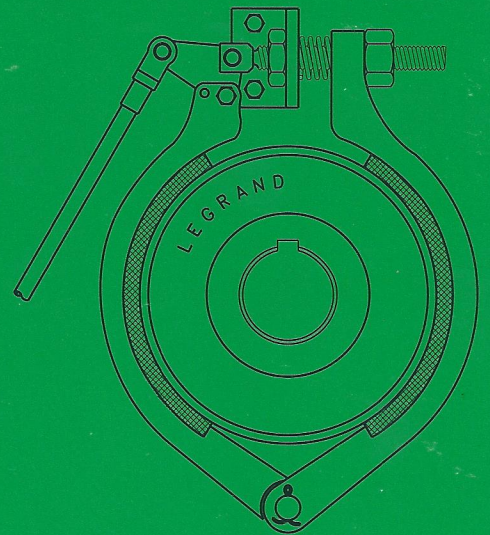
Equalizing action reduces stresses in the walking beam and pitman arms that can result from any misalignment of the structure. Equalizing is achieved by means of a cross-pin attachment to the walking beam, and by utilizing pinned connections of the pitman arms to the equalizer beam.

To eliminate galling at these pinned connections, Legrand uses oil-impregnated bronze sleeves. These sleeves are easily replaceable and eliminate the need for additional lubrication at these points.

CRANKS AND BALANCE WEIGHTS:

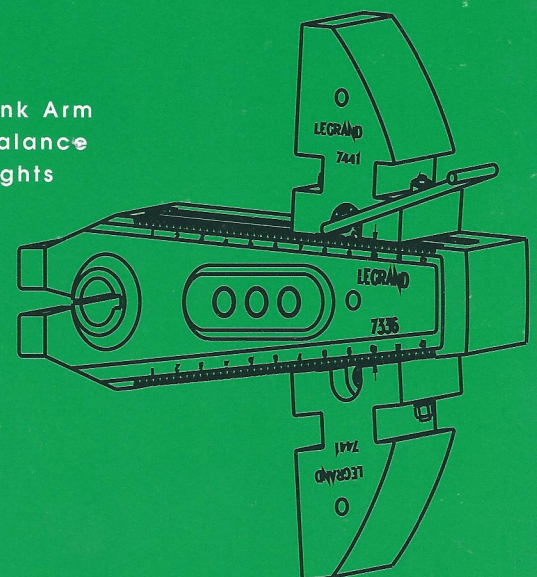
Cranks are made of cast iron with a keyed split boss for ease of assembly and removal in the field. Legrand's rack-and-pinion method for adjusting counterbalance weight position is easy and effective, ensuring the pumping unit can be balanced by one person. The closed ends of the slots in the crank prevent weights from coming off during adjustment. Balance weights are secured by disc washers to prevent the nuts from loosening.

Brake



Carrier Bar

Crank Arm & Balance Weights



Gear Reducer

Legrand gear reducers are manufactured to exceed API specifications and utilize double reduction herringbone gears. The reducers are fitted with oil-lubricated, self-aligning spherical roller bearings. The case is made of cast iron for stability and better shock absorption—it is also split through the drive shaft centre line to allow easy removal and quick servicing of the gears and bearings. To ensure superior operation, all Legrand gear reducers are test run before installation onto a pumping unit. At this point they are authorized to carry the API monogram.

SEALING:

To provide the maximum degree of sealing, Legrand uses a double sealing arrangement consisting of a lip-type oil seal plus machined labyrinth grooves in the high- and low-speed end covers. Oil returns are provided from the labyrinth seals into the reducer to prevent pressure build-up between the bearings and oil seals.

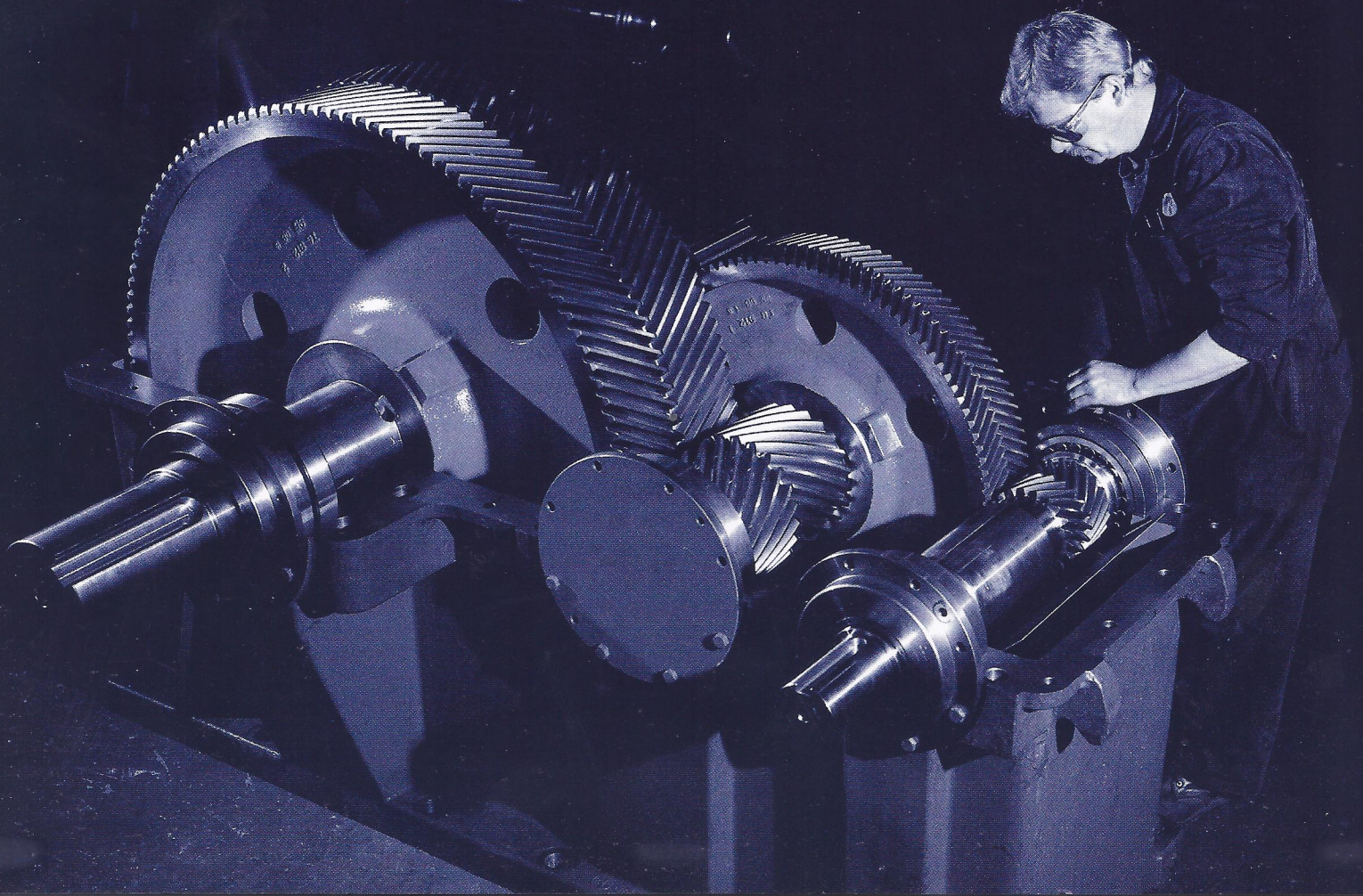
DESIGN FEATURES:

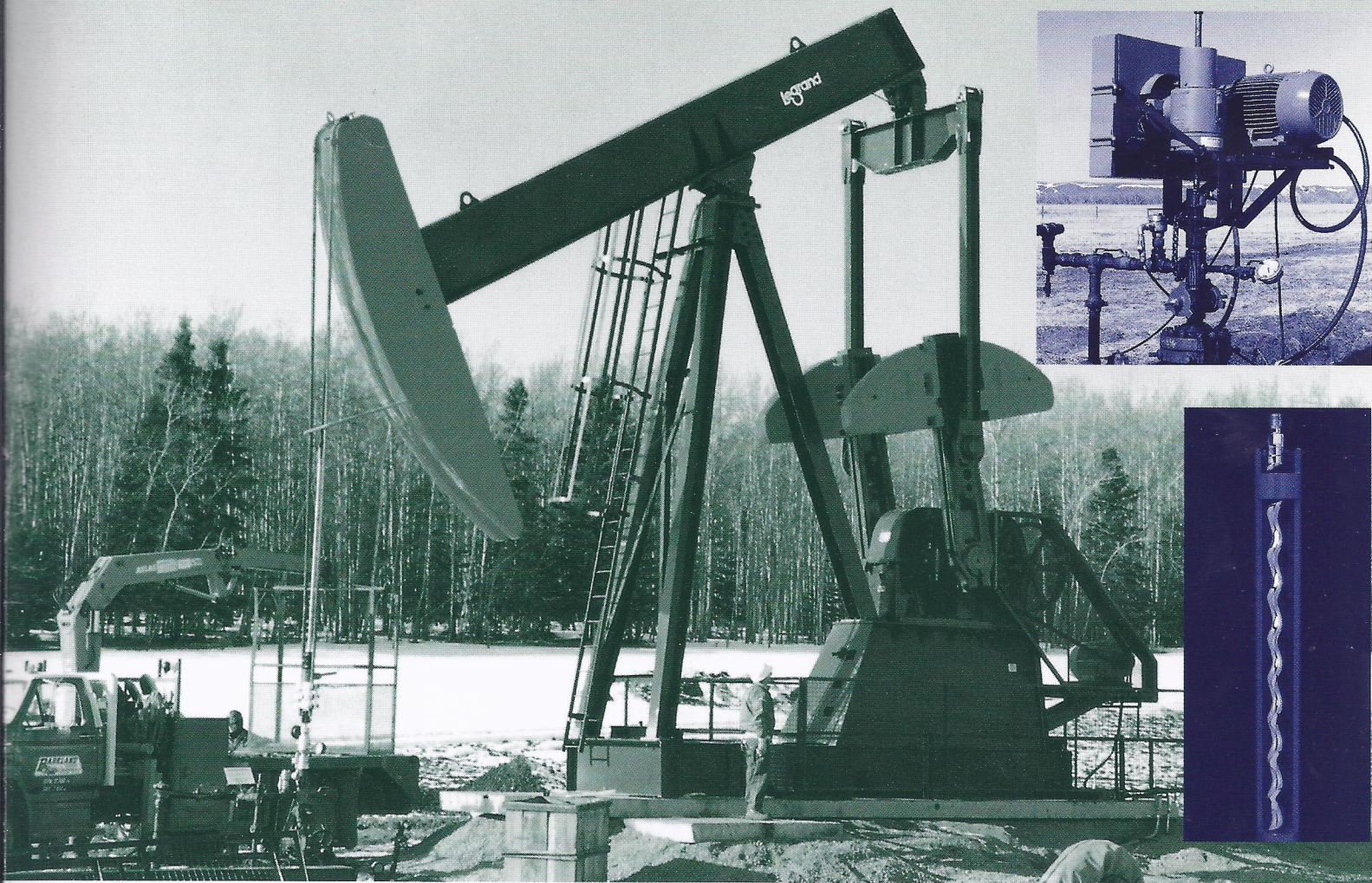
All reducers use extra large diameter shafting to prevent deflection at the gear teeth. Pinions are made of forged bars having a minimum Brinell hardness of 320 and the gears are manufactured from heat-treated, alloy ductile iron, hardened to a Brinell hardness of 270 before machining.

The lubrication system is designed to allow the gear reducer to operate at speeds as low as 1 SPM. Low-speed shafts are provided with full-length keyways and threaded centres to permit easy installation.

Legrand is one of the few pumping unit manufacturers in the world which produces both the gear reducer and the pumping unit structure. This guarantees quality control throughout the manufacturing process. It also minimizes interruptions in delivery often caused when a manufacturer must depend on an outside source.

Legrand's total in-house assembly and manufacturing ensures customers needs for quick delivery of new units and replacement parts can be met.





Griffin Legrand

Griffin Legrand is unique in supplying the two market-leading artificial lift technologies: progressing cavity (PC) pumping systems and API pumping units. Griffin PC pumping systems incorporate superior, energy-efficient lift technology—a development that was pioneered by the Griffin team.

This development work has yielded benefits that have been recognized in Canada where PC pumping systems are now the dominant artificial lift technology. The demand for these systems is increasing as their range of applications grow. Legrand is also developing new solutions for slant drilling and height-restricted operations.

Both of the company's pumping product lines are being enhanced with electronic components for monitoring and controlling pump operation.

Griffin Legrand's unique warranty protection and service options are also designed to minimize lifting costs for customers.

Since Griffin Legrand manufactures and services both pumpjacks and PC pumps, we can analyze customers' needs and recommend the most effective product for each application. Customers can satisfy their artificial lift needs with a single phone call!

We are committed to providing our customers with the greatest overall value in artificial lift—whether the requirement is a pumping unit or a progressing cavity pump.

WANT MORE INFORMATION?

It's easy. Contact the nearest distributor or Griffin Legrand.



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