

# Parts List Catalog

UL 100-168



**OILWELL**  
(SERIES GT)

The diagram shows an exploded view of a mechanical assembly. At the top is a long horizontal cylindrical component (1) with a flange. Below it is a vertical support structure (2) with a central column and four legs. A horizontal beam (3) is attached to the top of the support. A motor or drive unit (4) is mounted on the beam. The base is a rectangular frame (5) with various mounting points. Numerous small numbered circles (6-25) indicate specific parts and their assembly locations.

# Pumping Units & Drive Assemblies

**OILWELL**



Division of  
United States Steel Corporation

This parts list catalog will enable you to identify and select parts for any one of the OILWELL Series GT Pumping Unit and Drive Assemblies for models listed below

GT57-89-36	GT80-119-54	GT160-169-64	GT228-246-86
GT57-76-42	GT80-133-54	GT160-200-64	GT320-246-74
GT57-89-42	GT114-133-48	GT160-173-74	GT320-212-86
GT57-109-42	GT114-119-54	GT160-200-74	GT320-246-86
GT57-95-48	GT114-133-54	GT228-200-64	GT320-298-86
GT57-109-48	GT114-169-54	GT228-173-74	GT320-256-100
GT80-109-42	GT114-143-64	GT228-200-74	GT320-298-100
GT80-95-48	GT114-169-64	GT228-246-74	GT320-213-120
GT80-109-48	GT160-169-54	GT228-212-86	GT320-256-120
GT80-133-48	GT160-143-64		

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United States Steel

**OILWELL "GT" SERIES**  
**CRANK COUNTERBALANCED PUMPING UNITS**

**DESIGN FEATURES**

Extended lubrication is provided with 12 month relubrication recommended.

Rapid field assembly with pin connected equalizer.

Balanced torque-factor geometry assures low and identical reduction gear loading in either direction of crank rotation. This allows all prime movers to drive from same side of gear reducer.

Caged roller bearings are used at saddle and tail bearings.

Heavy structural members in base and samson post provide rigidity to the entire unit, reducing vibration and its detrimental effects on bearings and the gear reducer. These members are heavily gusseted at stress points.

Efficient counterbalance arrangement with removable, auxiliary weights provides required counterbalance effect at minimum cost. Auxiliary weights can be added if counterbalance requirements increase. The field proven OILWELL T-bolt locking screw adjustment permits safe and easy counterbalancing.

Rigid samson post with triangular configuration of samson post legs minimizes deflections. Space is provided for mounting an electric motor under the samson post. All samson posts are aligned and welded in heavy jigs.

Cartridge-type wrist pin assembly can be completely removed from the unit for servicing. Non-adjustable spherical roller bearings eliminate adjustment problems and a hydraulic system is provided to assist removing the wrist pin from the crank.

Frame with T-type base and integral sub base provides stable support for samson post, rigid mounting for gear reducer and full floor clearance for cranks when counterweights are fully extended.

Gear reducer incorporates single helical gears mounted on tapered roller bearings throughout.

Safety-tested, slotted polished rod yoke provides simplified installation and removal of yoke on polished rod. Ample clearance is maintained, above and below the yoke, for use of a rod rotator or a dynamometer. Cables are widely spaced.

Roll-back arc provides maximum convenience for well servicing. It has a latch which locks automatically and can be released from grade level.

Tubular pitmans provide a strong assembly with liberal safety factor. Full equalization is provided.

Long-life spherical roller wrist pin bearings are mounted in one piece housing.

Walking beam adjustment is provided for exact positioning over well.

Shoe-type brake with long-life lining reduces maintenance cost and frequency.

Choice of drive assemblies for most prime movers with bolted-on base extensions, universal slide rails, brake, control and belt guards. Heavy section cast iron slide rails are equipped with screw adjustment for varying belt tension.

**FRAME:**

The T-type base is fabricated of heavy, wide-flange beams to provide rigidity and eliminate twisting. Centerline marks are drilled at the front and rear as well as at the sides of the base to position the unit accurately on the well centerline with reference to the longitudinal centerline of the unit and the centerline of the walking beam trunnion.

The gear reducer sub base is fabricated of heavy steel plate having vertical sides with internal bracing and is welded solidly to the base. Sufficient height is built into the subbase to provide floor clearance and a few inches of "toe" room below the crank with counterbalance weights fully extended.

### **SAMSON POST ASSEMBLY**

The samson post is fabricated of heavy angles with a rigid cast steel top. The legs are arranged, as nearly as possible, in line with the center of the saddle bearings. This arrangement utilizes the inherent stiffness of the triangle to increase rigidity of the samson post. A welded angle girt at the mid-point of the legs and two diagonal braces provide additional stiffness. The sturdy steel samson post top is accurately line bored to support the saddle bearings and carriers. Heavy duty, caged, small diameter roller bearings are used to handle the heavy oscillating load and are mounted in bearing carriers to facilitate servicing. The bearing load is carried by the bottom rollers which results in improved lubrication due to the natural gravity feed of the softened grease. A hardened and ground alloy steel bearing pin is supported by the heavy clamp type saddle which bolts to the walking beam with slots and an adjusting screw to provide the required longitudinal adjustment. The thrust alignment forces are carried by thrust faces on the ductile iron bearing carriers which bear on the pin ends with good lubrication assured by the grease filled reservoir. Double lip seals are used to seal in the lubricant and to seal out the dust and contamination. A sturdy ladder and safety loop are provided for inspection and servicing of saddle bearings and walking beam adjustment.

### **WALKING BEAM ASSEMBLY**

Sturdy, wide flange beams meet API specifications. The straightness of these beams is carefully controlled. The tail bearing housings are aligned with the beams and fabricated in heavy jigs. The sturdy steel tail bearing housing is accurately line bored to support the tail bearings and carriers. Heavy duty, caged, small diameter roller bearings are used to handle the heavy oscillating load and are mounted in bearing carriers to facilitate servicing. The bearing load is carried by the bottom rollers which results in improved lubrication due to the natural gravity feed of the softened grease. A hardened and ground alloy steel pin is attached to the heavy clamp type connector which is pin connected to the equalizer. The thrust alignment forces are carried by thrust faces on the ductile iron bearing carriers which bear on the pin ends with good lubrication assured by the grease filled reservoir. Double lip seals are used to seal in the lubricant and to seal out the dust and contamination.

### **ROLL-BACK ARC**

The arc is hinge mounted on the top flange of the walking beam and held in working position with a lock-type latch at the lower flange. The arc can, without detaching, be rolled back out of the way for servicing the well. The "track-type" arc face provides maximum support for the arc cables and clearance for the polished rod. The length and spacing of the arc cable provides clearance for a sucker rod rotator and for the use of a dynamometer, either above or below the yoke. A slotted polished rod yoke provides maximum convenience in making-up or removing the cable and yoke assembly from the polished rod.

### **EQUALIZER**

The box section equalizer is a fabrication of carefully tested design. The equalizer is pin connected to the clamp type tail bearing connector. A pre-lubricated bushing in the connector assures full equalization.

### **PITMANS**

Pitmans are tubular with cast steel ends. A pin connection is provided at the equalizer end with pre-lubricated bushings to assure full equalization. A heavy steel clamp is used to connect the pitman to the cartridge type wrist pin assembly. The horizontal clamping bolt engages a groove in the bearing housing and serves the dual purpose of closing the clamp tightly and positively retaining the clamp on the housing.

#### **WRIST PIN ASSEMBLY:**

A one-piece housing is used to support each wrist pin bearing. The non-adjustable spherical roller bearings are retained on the wrist pin and in the housing by duty snap rings. Special tight-lip oil seals, capable of handling extra eccentricity, are retained by snap rings.

The wrist pin is provided with a long, gradual taper to assure a tight, trouble-free joint at the crank. Fine pitch threads are used to reduce the amount of sledging required to tighten the hammer-lug wrist pin nut. The wrist pin is center drilled and the taper relieved to provide for its hydraulic removal. The removal fitting is readily accessible through a pipe plug opening on the outside face of the wrist pin bearing housing.

#### **EXTENDED LUBRICATION:**

The saddle bearings, tail bearings and wrist pin bearings are pre-lubricated before shipment. This initial lubrication is sufficient for normal operation for a period of one year assuming that seal damage, resulting in the loss of lubricant or intrusion of dirt, does not occur. Each bearing is equipped with a grease pressure fitting, a relief fitting and a drain plug to facilitate relubrication. Because of the extended relubrication period, it is assumed that when relubrication is required, clean grease of approved quality will be used to flush out all old grease after all seals are checked and replaced if necessary.

#### **COUNTERBALANCE CRANK:**

The OILWELL Type "G" crank is favorably known in the field for safety, convenience in operation and in adjustment. A slotted clamp-type hub provides for convenient field removal or installation. The rib-reinforced crank casting has adequate strength to easily handle all loads within the unit rating. The Acme-threaded adjusting bolts (which position the counterweights) in combination with the T-bolts (which clamp the weights firmly in place) provide maximum convenience, simplicity and safety in adjusting the counterbalance. A ratchet-type socket wrench, permits safe and speedy counterbalance adjustment with the worker standing at the side and out of the path of the swinging weights should there be unexpected crank movement.

Additional flexibility in counterbalancing is provided by the B & C (master & auxiliary) style crankweights. Increased efficiency is obtained by selecting a combination of weights which provides the necessary counterbalance effect with minimum total weight. However, if increasing counterbalance requirements are expected, a combination of weights which will permit the addition of auxiliary weights, as required, should be selected. The auxiliary weights are securely attached to the master weights with heavy bolting. A three point pad arrangement supports the auxiliary weights with no rocking possible. Premium quality locknuts assure permanent bolt tightness.

#### **GEAR REDUCER:**

Gear reducer housings are rigid, one-piece castings with accurately machined bearing mountings. Bolted covers, with large inspection openings are provided for easy maintenance. Single helical gearing, with precision-hobbed, involute long and short addendum tooth form, handle the rated loads year after year with minimum maintenance. Gear blanks are fully heat-treated. Shafts are mounted in heavy-duty, shim-adjusted, tapered roller bearings to achieve high efficiency and provide for easy field adjustment. Maintenance of correct centers, with properly adjusted bearings, assures the proper meshing of gear teeth and reduces backlash to a minimum. Gears are positioned so that both the low speed and intermediate gear will have proper submergence in the oil reservoir. This permits adequate lubrication with minimum oil. Bearing lubrication is accomplished by a system of scrapers and/or troughs which drain oil from the gear splash to all bearings. Double-lip oil seals are used at all exposed shaft extensions to prevent leakage of oil and entrance of moisture, wind-blown sand, etc. A filter-type breather is mounted on the housing cover to prevent pressure build-up.

#### **BRAKE:**

An expanding, shoe-type brake with weatherproof housing provides smooth braking and holding capacity considerably in excess of requirements. The brake is mounted on either side of the gear reducer and utilizes a brake drum which is integral with the V-belt pulley. The combination pulley and brake drum is mounted on the high speed shaft extension by means of a quick detachable hub.

#### **DRIVE ASSEMBLY:**

Base extensions for most prime movers are available complete with slide rails, bolting, brake rod, ratchet brake lever, etc. Electric Motor Hi-Drive, with motor raised to a position near the gear reducer drive pulley, also available. A convenient means for adjusting V-belt tension is a feature of all prime mover installations. The attached drive assembly parts drawings provide V-belt, drive pulley and belt guard information for all standard drive arrangements.

The following items should be ordered separately, if required, for application of a particular pumping unit.

Drive Assembly  
V-Belts  
Prime Mover Pulley

A separate brake drum and standard pulley can be furnished for special drive ratio requirements. When pulley-belt combinations that are not shown, are to be used, the engineering department should be consulted to determine if the necessary adjustment can be obtained.

#### **WIDE FRAME UNITS:**

All "GR" Series units are available with wide frames for temporary-type applications in which full length outrigger beams are provided to support the unit on hard-packed fill, wood sills on concrete piers.