





## *Introduction*

### **Practical Experience, Exceptional Results**

Global operators have been putting their trust in Ampscot pumping units in oil fields for more than three decades. The units are recognized worldwide for their dependability, durability, and extended service life. These qualities, plus very high mechanical efficiency, low operating costs, and high resale value, have earned Ampscot units an excellent reputation. Ampscot pumping units and gear reducers are manufactured in a range of sizes from 114 through 1824.

Weatherford state-of-the-art facilities in Canada and Brazil are dedicated to these pumping units and continually enhance capabilities to address tomorrow's technological challenges. In addition, these facilities hold APJ licensure. Clients can be confident knowing that each product is designed to exceed the latest API Specification 11E and is backed by the API Specification Q1 Quality Assurance Program.

### **Features, Advantages, and Benefits**

- Ampscot pumping units are designed with the following features: safety line with stops running the length of the walking beam, lifting hooks, crank guards, belt guards, caged ladders, and ground-level lubrication to provide the highest level of safety.
- The gear reducer designed with one-piece gear case and herringbone-type gears in accordance with API Specification 11E, providing long life and easy maintenance.
- Class I working geometry operates in either direction equalizing gear wear and extending reducer life.
- Three-legged Sampson post, with the rear leg mounted high in the pedestal base, adds upper structure stability while equalizing surface loads.
- Crank arm provides convenient counterweight adjustment.
- Bolt-on crank arms can be removed in the field without the use of hydraulic press or special tools.
- Quick-release retainer pin expedites removal of horsehead for well servicing.

# Ampscot Pumping Units

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## Gear Reducer

The Ampscot gear reducer uses a one-piece, cast iron gear case, providing maximum strength, precise alignment, and added protection against leaks and environmental concerns. This design uses anti-friction bearings for long life, economical replacement, and efficient operation. All gearbox bearings are mounted in a separate bearing carrier, protecting the gear case during corrective or preventative maintenance. This system also provides convenient access to bearings should they need replacement.

- Coarse-pitch, heat-treated, ductile iron herringbone-style gears and 4145 heat-treated alloy steel pinions extend life.
- The smooth, efficient gear reducer reduces noise and vibration, and every gearbox is thoroughly factory tested.
- Field-replaceable intermediate gear/pinion assemblies reduce repair costs.
- Removable inspection covers and access lids facilitate service.
- The gear reducer is designed to lubricate at speeds as low as two strokes per minute without modification.

## Structural bearings

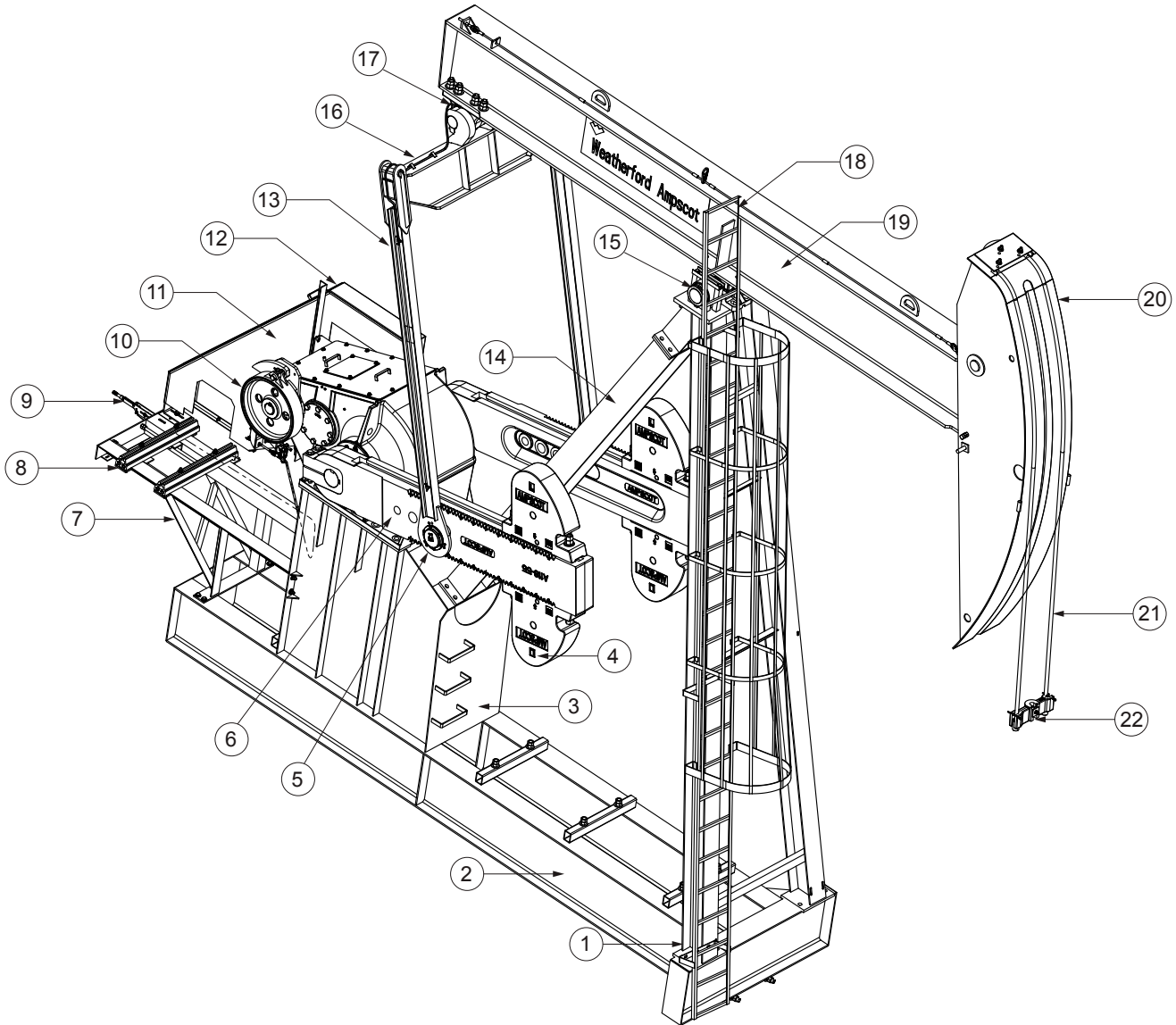
- Ampscot high-capacity structural bearings are readily available for ease of maintenance and repair.
- All Ampscot units have high-efficiency roller bearings.
- Crank pin assemblies feature a standard tapered pin and self-aligning spherical roller bearings, with an easily accessible inspection cover.
- Center bearings have excellent load characteristics and infinite L10 life, with proper maintenance.
- Equalizer bearings for the 114 and 160 units incorporate self-aligning spherical roller bearings. Larger units use a rugged double-tapered roller assembly.



# Ampscot Pumping Units

## Parts Identification

Ampscot Pumping Units

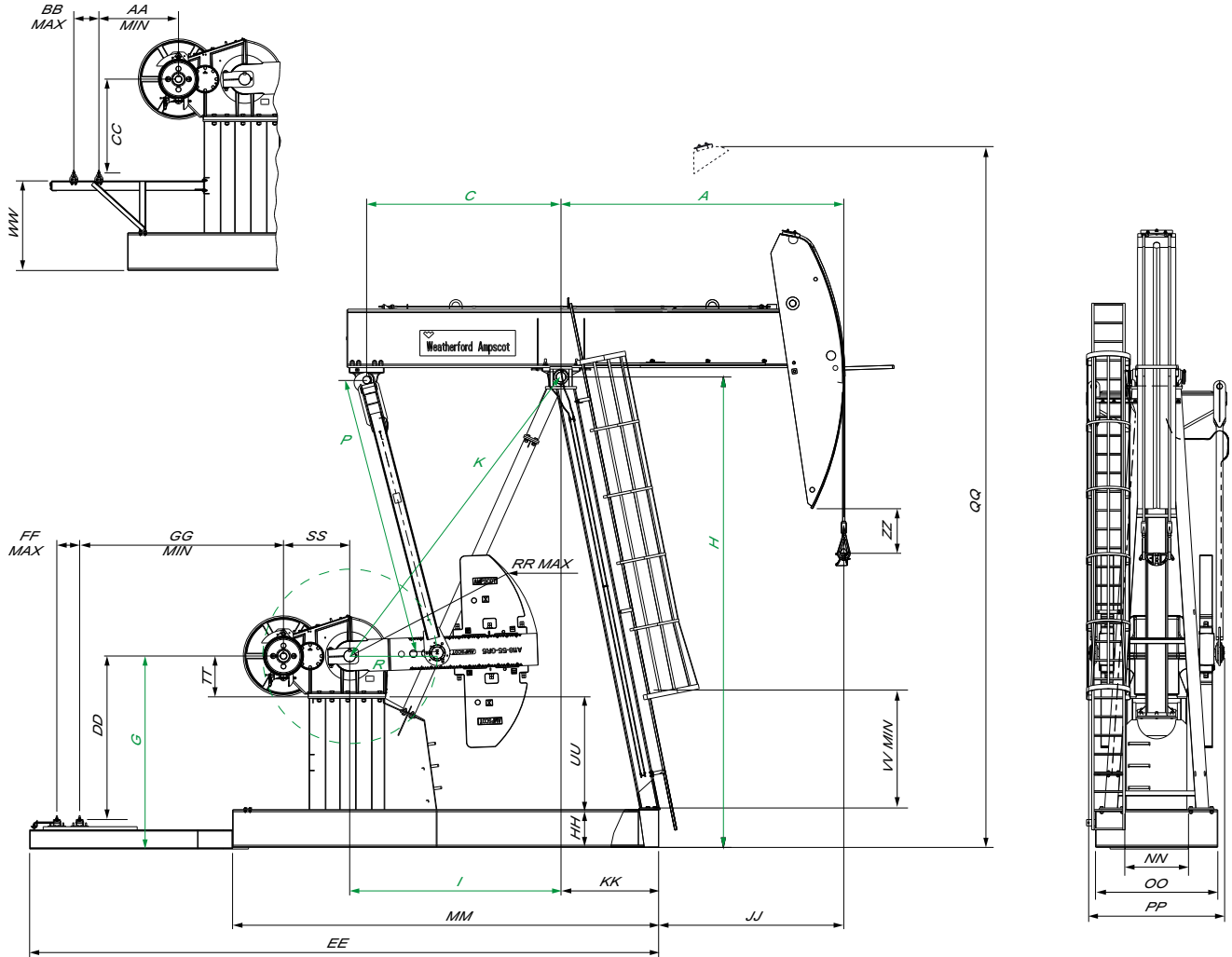


|                             |                             |                               |
|-----------------------------|-----------------------------|-------------------------------|
| 1 Sampson post A-leg        | 9 Brake lever               | 16 Equalizer beam             |
| 2 Main frame                | 10 Brake assembly           | 17 Equalizer bearing assembly |
| 3 Reducer sub-base          | 11 Gear reducer             | 18 Sampson post ladder        |
| 4 Counterweights            | 12 Reducer sheave           | 19 Walking beam               |
| 5 Crank pin assembly        | 13 Pitman arm               | 20 Horsehead                  |
| 6 Crank                     | 14 Sampson post support leg | 21 Wireline                   |
| 7 High-mount base extension | 15 Center bearing assembly  | 22 Polish rod hanger          |
| 8 Motor rails               |                             |                               |

# Ampscot Pumping Units

## Pumping Units

Ampscot  
Pumping Units







# Ampscot Pumping Units

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Pumping Units



## Specifications

| API Size                                  | Maximum Polished Rod Capacity (lb) | Standard Strokes–Fourth Stroke Optional (in.) | Torque Factor at 90°–Fourth Stroke Optional (in.) | Wireline Size (in.)   | Wireline Center (in.) |
|---|------------------------------------|---|---|-----------------------|-----------------------|
| 114-133-054                               | 13,300                             | 54, 44, 34                                    | 27, 22, 17  | 1.00 × 228.00         | 11.00                 |
| 114-143-064<br>114-173-064                | 17,300                             | 64, 52, 40                                    | 32, 26, 20  | 1.00 × 228.00         | 11.00                 |
| 114-143-074                               | 14,300                             | 74, 63, 52                                    | 36, 31, 26  | 1.00 × 274.00         | 11.00                 |
| 114-119-086                               | 11,900                             | 86, 73, 61                                    | 42, 36, 30  | 1.00 × 274.00         | 11.00                 |
| 160-173-064                               | 17,300                             | 64, 52, 40                                    | 32, 26, 20  | 1.00 × 228.00         | 11.00                 |
| 160-200-074<br>160-173-074                | 20,000                             | 74, 63, 52                                    | 36, 31, 26  | 1.00 × 274.00         | 11.00                 |
| 160-173-086                               | 17,300                             | 86, 73, 61                                    | 42, 36, 30  | 1.00 × 274.00         | 11.00                 |
| 160-173-100                               | 17,300                             | 100, 85, 71                                   | 48, 42, 35  | 1.00 × 300.00         | 11.00                 |
| 228-200-074                               | 20,000                             | 75, 64, 53                                    | 36, 31, 26  | 1.00 × 274.00         | 11.00                 |
| 228-173-086                               | 17,300                             | 86, 73, 61                                    | 42, 36, 30  | 1.00 × 274.00         | 11.00                 |
| 228-213-086                               | 21,300                             | 85, 72, 60                                    | 40, 35, 29  | 1.00 × 274.00         | 11.00                 |
| 228-246-086                               | 24,600                             | 86, 77, 68                                    | 41, 37, 33  | 1.13 × 360.00         | 12.00                 |
| 228-173-100<br>228-213-100                | 21,300                             | 100, 85, 71                                   | 48, 41, 35  | 1.00 × 300.00         | 11.00                 |
| 228-213-120                               | 21,300                             | 120, 107, 94                                  | 57, 52, 46  | 1.13 × 360.00         | 12.00                 |
| 320-213-086                               | 21,300                             | 85, 72, 60                                    | 40, 35, 29  | 1.00 × 274.00         | 11.00                 |
| 320-246-086                               | 24,600                             | 86, 77, 68                                    | 41, 37, 33  | 1.13 × 360.00         | 12.00                 |
| 320-213-100                               | 21,300                             | 100, 85, 71                                   | 48, 41, 35  | 1.00 × 300.00         | 11.00                 |
| 320-256-100<br>320-305-100                | 30,500                             | 104, 93, 82                                   | 50, 45, 40  | 1.13 × 360.00         | 12.00                 |
| 320-213-120<br>320-256-120<br>320-305-120 | 30,500                             | 120, 107, 94, 82                              | 57, 52, 46, 35                                    | 1.13 × 360.00         | 12.00                 |
| 320-213-144                               | 21,300                             | 144, 128, 113, 98                             | 68, 62, 55, 48                                    | 1.13 × 384.00         | 12.00                 |
| 456-256-120<br>456-305-120                | 30,500                             | 120, 107, 94, 82                              | 57, 52, 46, 35                                    | 1.13 × 360.00         | 12.00                 |
| 456-365-120                               | 36,500                             | 120, 102, 84, 68                              | 55, 48, 41, 33                                    | 1.25 × 420.00         | 16.00                 |
| 456-256-144<br>456-305-144                | 30,500                             | 146, 124, 103, 83                             | 67, 58, 49, 40                                    | 1.25 × 420.00         | 16.00                 |
| 456-305-168                               | 30,500                             | 170, 144, 120, 96                             | 78, 68, 57, 47                                    | 1.25 × 456.00         | 16.00                 |
| 640-305-120                               | 30,500                             | 120, 107, 94, 82                              | 57, 52, 46, 35                                    | 1.13 × 360.00         | 12.00                 |
| 640-365-120                               | 36,500                             | 120, 102, 84, 68                              | 55, 48, 41, 33                                    | 1.25 × 420.00         | 16.00                 |
| 640-246-144<br>640-305-144<br>640-365-144 | 36,500                             | 146, 124, 103, 83                             | 67, 58, 49, 40                                    | 1.25 × 420.00         | 16.00                 |
| 640-305-168                               | 30,500                             | 170, 144, 120, 96                             | 78, 68, 57, 47                                    | 1.25 × 456.00         | 16.00                 |
| 640-365-168                               | 30,500                             | 168, 143, 119, 96                             | 80, 69, 58, 47                                    | 1.38 × 480 loop style | 16.00                 |
| 912-427-144                               | 42,700                             | 144, 123, 102, 82                             | 68, 59, 50, 41                                    | 1.38 × 480 loop style | 16.00                 |
| 912-365-168                               | 36,500                             | 168, 143, 119, 96                             | 80, 69, 58, 47                                    | 1.38 × 480 loop style | 16.00                 |
| 912-427-168                               | 42,700                             | 168, 143, 119, 96                             | 86, 69, 58, 47                                    | 1.38 × 480 loop style | 16.00                 |
| 912-305-192<br>912-365-192                | 36,500                             | 192, 163, 136, 110                            | 91, 79, 67, 54                                    | 1.38 × 480 loop style | 16.00                 |
| 1280-365-168                              | 36,500                             | 168, 143, 119, 96                             | 80, 69, 58, 47                                    | 1.38 × 480 loop style | 16.00                 |
| 1280-427-168                              | 42,700                             | 168, 143, 119, 96                             | 80, 69, 58, 47                                    | 1.38 × 480 loop style | 16.00                 |
| 1280-305-192<br>1280-365-192              | 36,500                             | 192, 163, 136, 110                            | 91, 79, 67, 54                                    | 1.38 × 480 loop style | 16.00                 |
| 1280-305-240                              | 30,500                             | 239, 206, 175                                 | 112, 98, 85                                       | 1.38 × 480 loop style | 16.00                 |





**Maximum Effective Counterbalance\***

Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.  
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.

| API Size                   | Structural imbalance | Crank number | Crank only | 2-B  | 4-B  | 2-B, 2-D | 4-D  | 2-D, 2-F | 4-F  | 2-F, 2-H | 4-H  | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L  | 2-L, 2-N | 4-N  | 2-N, 2-P | 4-P  | 2-P, 2-R | 4-R   | 2-R, 2-S |  |
|----------------------------|----------------------|--------------|------------|------|------|----------|------|----------|------|----------|------|----------|-------|----------|------|----------|------|----------|------|----------|-------|----------|--|
| 114-133-054                | 300                  | A55L-27      | 2629       | 3989 | 5350 | 5765     | 6180 | 6611     | 7041 | 7423     | 7804 | 8204     | 8603  | 9073     | 9542 | 10135    |      |          |      |          |       |          |  |
| 114-173-064<br>114-143-064 | 100                  | A55L-27      | 2068       | 3218 | 4368 | 4719     | 5070 | 5434     | 5798 | 6120     | 6443 | 6781     | 7118  | 7515     | 7912 | 8413     | 8914 | 9441     | 9969 | 10356    | 10744 | 12569    |  |
| 114-143-074                | 300                  | A80L-36      | 3668       | 5257 | 6846 | 7338     | 6830 | 8403     | 8976 | 9470     | 9965 | 10508    | 11051 |          |      |          |      |          |      |          |       |          |  |
| 114-119-086                | 25                   | A80L-36      | 2929       | 4299 | 5669 | 6094     | 6518 | 7012     | 7506 | 7932     | 8359 | 8827     | 9295  |          |      |          |      |          |      |          |       |          |  |

| API Size                   | Structural imbalance | Crank number | Crank only | 2-B  | 4-B  | 2-B, 2-D | 4-D  | 2-D, 2-F | 4-F  | 2-F, 2-H | 4-H  | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   |
|----------------------------|----------------------|--------------|------------|------|------|----------|------|----------|------|----------|------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| 160-173-064                | 100                  | A55L-27      | 2068       | 3218 | 4368 | 4719     | 5070 | 5434     | 5798 | 6120     | 6443 | 6781     | 7118  | 7515     | 7912  | 8413     | 8914  | 9969     | 10356 | 10744    | 10744 | 12569    | 14394 |
| 160-173-074<br>160-200-074 | 300                  | A80L-36      | 3668       | 5257 | 6846 | 7338     | 7830 | 8403     | 8976 | 9470     | 9965 | 10508    | 11051 | 11674    | 12297 | 13152    | 14007 | 15889    |       |          |       |          |       |
| 160-173-086                | 25                   | A80L-36      | 2929       | 4299 | 5669 | 6094     | 6518 | 7012     | 7506 | 7932     | 8359 | 8827     | 9295  | 9832     | 10370 | 11107    | 11844 | 13466    |       |          |       |          |       |
| 160-173-100                | 300                  | A80L-36      | 2202       | 3383 | 4563 | 4929     | 5294 | 5720     | 6146 | 6513     | 6881 | 7284     | 7687  | 8150     | 8613  | 9248     | 9883  | 10582    | 11281 | 11707    | 12133 | 14172    |       |

| API Size                   | Structural imbalance | Crank number | Crank only | 2-B  | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   |
|----------------------------|----------------------|--------------|------------|------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| 228-200-074                | 950                  | A80-36       | 5179       | 6773 | 8367  | 8861     | 9354  | 9929     | 10504 | 11000    | 11496 | 12040    | 12585 | 13210    | 13835 | 14693    | 15550 |          |       |          |       |          |       |
| 228-173-086                | 75                   | A80L-36      | 2979       | 4349 | 5719  | 6144     | 6568  | 7062     | 7556  | 7982     | 8409  | 8877     | 9345  | 9882     | 10420 | 11157    | 11894 | 12705    | 13516 |          |       |          |       |
| 228-213-086                | 650                  | A80-36       | 4390       | 5800 | 7209  | 7646     | 8082  | 8590     | 9098  | 9537     | 9976  | 10457    | 10939 | 11492    | 12044 | 12803    | 13561 | 14396    | 15230 | 15739    | 16247 |          |       |
| 228-246-086                | 1675                 | A100-50      | 8161       | 9954 | 11746 | 12304    | 12862 | 13540    | 14218 | 14798    | 15378 | 16024    | 16671 | 17407    | 18144 | 19181    |       |          |       | 13000    |       |          |       |
| 228-213-100<br>228-173-100 | 200                  | A80-36       | 3373       | 4568 | 5764  | 6134     | 6504  | 6936     | 7367  | 7739     | 8111  | 8520     | 8928  | 9397     | 9866  | 10509    | 11152 | 11860    | 12568 | 15877    | 13431 | 15496    | 17561 |
| 228-213-120                | 450                  | A100-50      | 5099       | 6385 | 7670  | 8070     | 8470  | 8956     | 9442  | 9857     | 10273 | 10737    | 11200 | 11728    | 12256 | 13000    | 13743 | 14572    | 15401 |          | 16352 |          |       |

| API Size                                  | Structural imbalance | Crank number | Crank only | 2-B  | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   |
|---|----------------------|--------------|------------|------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| 320-213-086                               | 650                  | A80-36       | 4390       | 5800 | 7209  | 7646     | 8082  | 8590     | 9098  | 9537     | 9976  | 10457    | 10939 | 11492    | 12044 | 12803    | 13561 | 14396    | 15230 | 15739    | 16247 |          |       |          |       |
| 320-246-086                               | 1675                 | A100-50      | 8161       | 9954 | 11746 | 12304    | 12862 | 13540    | 14218 | 14798    | 15378 | 16024    | 16671 | 17407    | 18144 | 19181    |       |          |       |          |       |          |       |          |       |
| 320-213-100                               | 200                  | A80-36       | 3373       | 4568 | 5764  | 6134     | 6504  | 6936     | 7367  | 7739     | 8111  | 8520     | 8928  | 9397     | 9866  | 10509    | 11152 | 11860    | 12568 | 13000    | 13431 | 15496    | 17561 |          |       |
| 320-305-100<br>320-256-100                | 1000                 | A100-50      | 6359       | 7840 | 9321  | 9782     | 10243 | 10803    | 11363 | 11842    | 12322 | 12856    | 13390 | 13999    | 14607 | 15464    | 16321 | 17277    | 18232 | 18780    | 19328 | 21969    | 24609 |          |       |
| 320-305-120<br>320-256-120<br>320-213-120 | 450                  | A100-50      | 5099       | 6385 | 7670  | 8070     | 8470  | 8956     | 9442  | 9857     | 10273 | 10737    | 11200 | 11728    | 12256 | 13000    | 13743 | 14572    | 15401 | 15877    | 16352 | 18643    | 20934 | 22038    | 23141 |
| 320-213-144                               | -175                 | A100-50      | 3704       | 4777 | 5849  | 6183     | 6517  | 6922     | 7328  | 7675     | 8021  | 8408     | 8795  | 9235     | 9676  | 10296    | 10917 | 11609    | 12300 | 12697    | 13094 | 15006    | 16917 |          |       |

\*At the polished rod at maximum stroke, in pounds





# Ampscot Pumping Units

## Maximum Effective Counterbalance\* (continued)

Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.  
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.

| API Size                                  | Structural imbalance | Crank number | Crank only | 2-B  | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   |  |
|---|----------------------|--------------|------------|------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|--|
| 320-213-086                               | 650                  | A80-36       | 4390       | 5800 | 7209  | 7646     | 8082  | 8590     | 9098  | 9537     | 9976  | 10457    | 10939 | 11492    | 12044 | 12803    | 13561 | 14396    | 15230 | 15739    | 16247 |          |       |          |       |  |
| 320-246-086                               | 1675                 | A100-50      | 8161       | 9954 | 11746 | 12304    | 12862 | 13540    | 14218 | 14798    | 15378 | 16024    | 16671 | 17407    | 18144 | 19181    |       |          |       |          |       |          |       |          |       |  |
| 320-213-100                               | 200                  | A80-36       | 3373       | 4568 | 5764  | 6134     | 6504  | 6936     | 7367  | 7739     | 8111  | 8520     | 8928  | 9397     | 9866  | 10509    | 11152 | 11860    | 12568 | 13000    | 13431 | 15496    | 17561 |          |       |  |
| 320-305-100<br>320-256-100                | 1000                 | A100-50      | 6359       | 7840 | 9321  | 9782     | 10243 | 10803    | 11363 | 11842    | 12322 | 12856    | 13390 | 13999    | 14607 | 15464    | 16321 | 17277    | 18232 | 18780    | 19328 | 21969    | 24609 |          |       |  |
| 320-305-120<br>320-256-120<br>320-213-120 | 450                  | A100-50      | 5099       | 6385 | 7670  | 8070     | 8470  | 8956     | 9442  | 9857     | 10273 | 10737    | 11200 | 11728    | 12256 | 13000    | 13743 | 14572    | 15401 | 15877    | 16352 | 18643    | 20934 | 22038    | 23141 |  |
| 320-213-144                               | -175                 | A100-50      | 3704       | 4777 | 5849  | 6183     | 6517  | 6922     | 7328  | 7675     | 8021  | 8408     | 8795  | 9235     | 9676  | 10296    | 10917 | 11609    | 12300 | 12697    | 13094 | 15006    | 16917 |          |       |  |

| API Size                   | Structural imbalance | Crank number | Crank only | 2-B   | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   | 2-X, 2-Y |
|----------------------------|----------------------|--------------|------------|-------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| 456-305-120<br>456-256-120 | 625                  | A100-50      | 5274       | 6560  | 7845  | 8245     | 8645  | 9131     | 9617  | 10032    | 10448 | 10912    | 11375 | 11903    | 12431 | 13175    | 13918 | 14747    | 15576 | 16052    | 16527 | 18818    | 21109 | 22213    | 23316 |          |
| 456-365-120                | 900                  | A118-55      | 9881       | 11486 | 13092 | 13593    | 14094 | 14717    | 15341 | 15871    | 16402 | 16999    | 17595 | 18272    | 18949 | 19916    | 20883 | 21968    | 23053 | 23656    | 24258 | 27172    | 30085 |          |       |          |
| 456-305-144<br>456-256-144 | 50                   | A118-55      | 7408       | 8723  | 10038 | 10449    | 10860 | 11370    | 11881 | 12316    | 12751 | 13240    | 13729 | 14283    | 14838 | 15630    | 16422 | 17311    | 18200 | 18694    | 19187 | 21574    | 23961 |          |       |          |
| 456-305-168                | -650                 | A118-55      | 5686       | 6819  | 7951  | 8305     | 8658  | 9098     | 9538  | 9912     | 10287 | 10708    | 11129 | 11606    | 12084 | 12766    | 13448 | 14213    | 14979 | 15404    | 15829 | 17885    | 19940 | 20993    | 22045 | 23889    |

| API Size                                  | Structural imbalance | Crank number | Crank only | 2-B   | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   | 2-X, 2-Y | 4-Y   | 2-Y, 2-Z |
|---|----------------------|--------------|------------|-------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|
| 640-305-120                               | 625                  | A100-50      | 5274       | 6560  | 7845  | 8245     | 8645  | 9131     | 9617  | 10032    | 10448 | 10912    | 11375 | 11903    | 12431 | 13175    | 13918 | 14747    | 15576 | 16052    | 16527 | 18818    | 21109 | 22213    | 23316 |          |       |          |
| 640-365-120                               | 900                  | A118-55      | 9881       | 11486 | 13092 | 13593    | 14094 | 14717    | 15341 | 15871    | 16402 | 16999    | 17595 | 18272    | 18949 | 19916    | 20883 | 21968    | 23053 | 23656    | 24258 | 27172    | 30085 |          |       |          |       |          |
| 640-365-144<br>640-305-144<br>640-246-144 | 50                   | A118-55      | 7408       | 8723  | 10038 | 10449    | 10860 | 11370    | 11881 | 12316    | 12751 | 13240    | 13729 | 14283    | 14838 | 15630    | 16422 | 17311    | 18200 | 18694    | 19187 | 21574    | 23961 | 25184    | 26406 | 28547    |       |          |
| 640-305-168                               | -650                 | A118-55      | 5686       | 6819  | 7951  | 8305     | 8658  | 9098     | 9538  | 9912     | 10287 | 10708    | 11129 | 11606    | 12084 | 12766    | 13448 | 14213    | 14979 | 15404    | 15829 | 17885    | 19940 | 20993    | 22045 | 23889    |       |          |
| 640-365-168                               | -350                 | A118-55      | 5872       | 6979  | 8085  | 8431     | 8776  | 9206     | 9635  | 10001    | 10367 | 10778    | 11190 | 11656    | 12123 | 12789    | 13456 | 14204    | 14951 | 15367    | 15782 | 17791    | 19799 | 20827    | 21855 | 23657    | 25458 | 27388    |

| API Size                   | Structural imbalance | Crank number | Crank only | 2-B  | 4-B   | 2-B, 2-D | 4-D   | 2-D, 2-F | 4-F   | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   | 2-X, 2-Y | 4-Y   | 2-Y, 2-Z | 4-Z   |
|----------------------------|----------------------|--------------|------------|------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| 912-427-144                | 500                  | A118-55      | 7770       | 9063 | 10355 | 10759    | 11163 | 11665    | 12167 | 12594    | 13021 | 13502    | 13983 | 14528    | 15073 | 15852    | 16630 | 17504    | 18378 | 18863    | 19349 | 21695    | 24041 | 25243    | 26444 | 28549    | 30654 | 32909    |       |
| 912-365-168                | -275                 | A118-55      | 5947       | 7054 | 8160  | 8506     | 8851  | 9381     | 9710  | 10076    | 10442 | 10853    | 11265 | 11731    | 12198 | 12864    | 13531 | 14279    | 15026 | 15442    | 15857 | 17866    | 19874 | 20902    | 21930 | 23732    | 25533 | 27463    |       |
| 912-427-168                | -300                 | A118-55      | 5922       | 7029 | 8135  | 8481     | 8826  | 9256     | 9685  | 10051    | 10417 | 10828    | 11240 | 11706    | 12173 | 12839    | 13506 | 14254    | 15001 | 15417    | 15832 | 17841    | 19849 | 20877    | 21905 | 23707    | 25508 | 27438    | 29368 |
| 912-365-192<br>912-305-192 | -950                 | A118-55      | 4506       | 5476 | 6446  | 6749     | 7052  | 7429     | 7806  | 8126     | 8447  | 8808     | 9168  | 9577     | 9987  | 10571    | 11155 | 11811    | 12467 | 12831    | 13195 | 14956    | 16717 | 17619    | 18520 | 20100    | 21679 | 23372    | 25064 |

| API Size                     | Structural imbalance | Crank number | Crank only | 2-B  | 4-B  | 2-B, 2-D | 4-D  | 2-D, 2-F | 4-F  | 2-F, 2-H | 4-H   | 2-H, 2-J | 4-J   | 2-J, 2-L | 4-L   | 2-L, 2-N | 4-N   | 2-N, 2-P | 4-P   | 2-P, 2-R | 4-R   | 2-R, 2-S | 4-S   | 2-S, 2-X | 4-X   | 2-X, 2-Y | 4-Y   | 2-Y, 2-Z | 4-Z   |
|------------------------------|----------------------|--------------|------------|------|------|----------|------|----------|------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| 1280-365-168                 | -225                 | A118-55      | 5997       | 7104 | 8210 | 8556     | 8901 | 9331     | 9760 | 10126    | 10492 | 10903    | 11315 | 11781    | 12248 | 12914    | 13581 | 14329    | 15076 | 15492    | 15907 | 17916    | 19924 | 20952    | 21980 | 23782    | 25583 | 27513    |       |
| 1280-427-168                 | -250                 | A118-55      | 5972       | 7079 | 8185 | 8531     | 8876 | 9306     | 9735 | 10101    | 10467 | 10878    | 11290 | 11756    | 12223 | 12889    | 13556 | 14304    | 15051 | 15467    | 15882 | 17891    | 19899 | 20927    | 21955 | 23757    | 25558 | 27488    | 29418 |
| 1280-365-192<br>1280-305-192 | -900                 | A118-55      | 4556       | 5526 | 6496 | 6799     | 7102 | 7479     | 7856 | 8176     | 8497  | 8858     | 9218  | 9627     | 10037 | 10621    | 11205 | 11861    | 12517 | 12881    | 13245 | 15006    | 16767 | 17669    | 18570 | 20150    | 21729 | 23422    | 25114 |
| 1280-305-240                 | -2100                | A118-60      | 2321       | 3107 | 3894 | 4139     | 4385 | 4690     | 4995 | 5255     | 5515  | 5807     | 6100  | 6431     | 6763  | 7236     | 7710  | 8241     | 8773  | 9068     | 9363  | 10790    | 12217 | 12948    | 13678 | 14958    | 16238 | 17610    | 18981 |

\*At the polished rod at maximum stroke, in pounds

Ampscot Pumping Units



## *Gear Reducers*

Ampscot gear reducers are manufactured to API Specification 11E. Our commitment is to manufacture a quality product of the strength and reliability demanded within the oil industry. Ampscot gear reducers are designed specifically to handle high-cyclical loads encountered in oilfield pumping situations. The gearcase is a tub-type molded in one piece from high-strength cast iron. The one-piece design gives the reducer more strength than common split reducers.

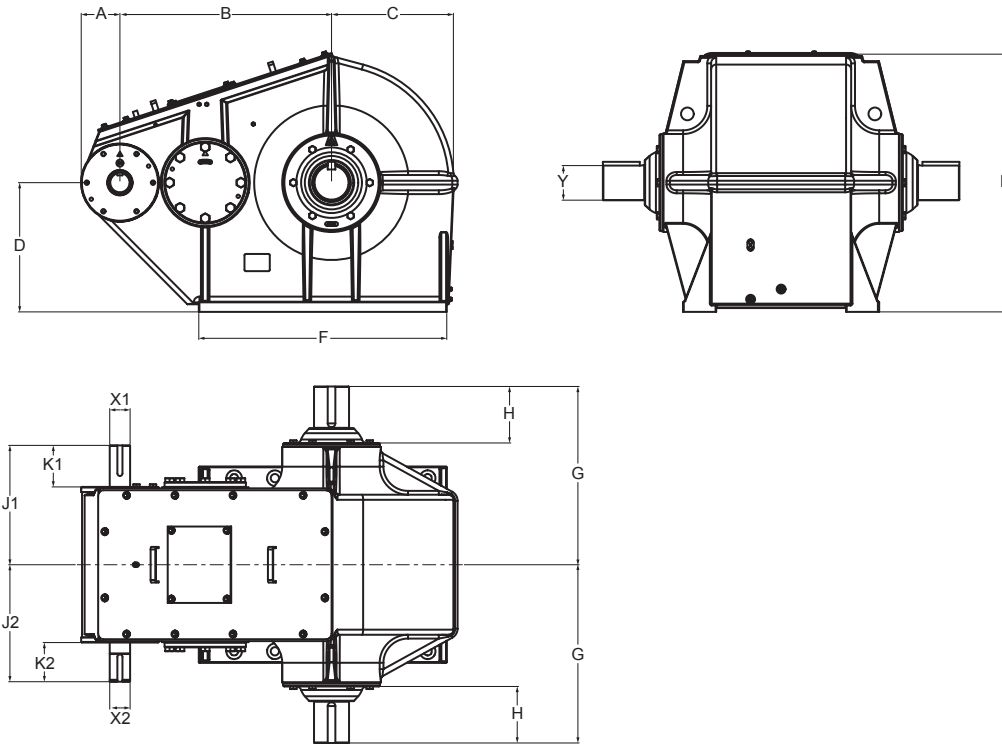
High- and intermediate-speed roller bearings are enclosed in separate housings. This provides easy access to the bearings for service or replacement, and more importantly, protects the main gearcase in the event of a bearing failure. Lubricating oil is distributed directly to each bearing by a wiper and gravity feed system. This system provides adequate lubrication on reducers operating at pumping speeds as low as two strokes per minute, assuming that oil of the proper viscosity is used.

All gears are made of cast ductile iron and have herringbone-type teeth for a compact design, higher resistance to failure, and better alignment. The gearing is also designed with a coarse diametric pitch for added protection against shock loads. Pinion shafts are manufactured from top quality 4145 heat-treated, stress-relieved steel to achieve high-tensile strength and maximum durability.

### Technical Data

| Model Size | Torque Rating (in.-lb) | Gear Ratio | Maximum Sheave Size (in.) | Oil Capacity |     |
|------------|------------------------|------------|---------------------------|--------------|-----|
|            |                        |            |                           | (gal)        | (l) |
| D114       | 114,000                | 30.88      | 36 (4C)                   | 14.8         | 56  |
| D160       | 160,000                | 29.17      | 36 (4C)                   | 14.8         | 56  |
| D228       | 228,000                | 30.03      | 36 (4C)                   | 33.0         | 125 |
| D320       | 320,000                | 30.03      | 36 (5C)                   | 31.7         | 120 |
| D456       | 456,000                | 29.64      | 50 (5C)                   | 63.4         | 240 |
| D640       | 640,000                | 29.64      | 50 (5C)                   | 62.1         | 235 |
| D912       | 912,000                | 30.29      | 50 (8C)                   | 81.9         | 310 |
| D1280      | 1,280,000              | 28.25      | 50 (10C)                  | 80.6         | 305 |

# Ampscot Pumping Units



## Dimensions

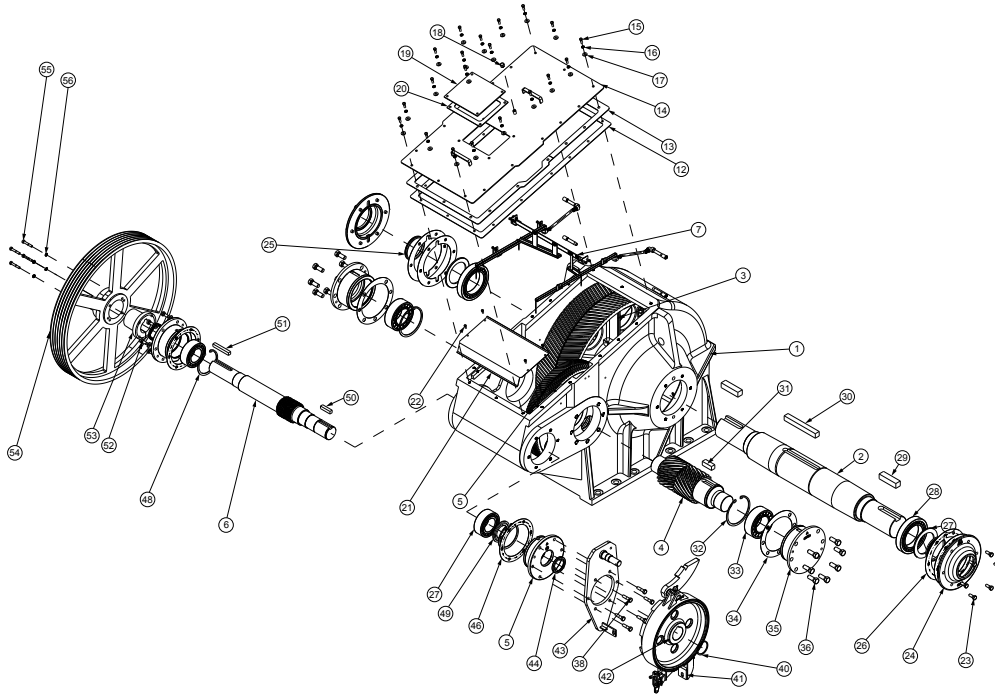
|    | API Size* |       |       |       |       |       |       |       |
|----|-----------|-------|-------|-------|-------|-------|-------|-------|
|    | D114      | D160  | D228  | D320  | D456  | D640  | D912  | D1280 |
| A  | 4.88      | 4.75  | 5.75  | 5.75  | 7.75  | 7.75  | 9.00  | 9.00  |
| B  | 26.00     | 26.13 | 33.38 | 33.38 | 41.50 | 41.50 | 49.25 | 50.00 |
| C  | 15.00     | 15.00 | 20.38 | 20.38 | 24.75 | 24.75 | 29.00 | 29.00 |
| D  | 16.75     | 16.75 | 20.63 | 20.63 | 25.75 | 25.75 | 30.38 | 30.38 |
| E  | 31.50     | 31.50 | 41.63 | 41.63 | 51.63 | 51.63 | 59.25 | 59.25 |
| F  | 28.38     | 28.38 | 40.00 | 40.00 | 49.00 | 49.00 | 57.50 | 57.25 |
| G  | 25.00     | 25.00 | 30.00 | 30.00 | 35.00 | 35.00 | 39.25 | 43.00 |
| H  | 8.75      | 8.75  | 10.38 | 10.38 | 9.00  | 9.00  | 10.00 | 14.13 |
| J1 | 15.25     | 15.25 | 18.75 | 18.75 | 23.38 | 23.38 | 27.00 | 27.75 |
| J2 | 15.13     | 15.13 | 18.00 | 18.00 | 23.00 | 23.00 | 25.63 | 26.75 |
| K1 | 5.38      | 5.38  | 6.50  | 6.50  | 8.13  | 8.13  | 9.00  | 8.63  |
| K2 | 5.75      | 5.63  | 5.75  | 5.75  | 7.75  | 7.75  | 7.75  | 7.50  |
| X1 | 2.25      | 2.75  | 3.00  | 3.00  | 4.00  | 4.00  | 4.50  | 5.00  |
| X2 | 2.38      | 2.75  | 3.00  | 3.00  | 4.00  | 4.00  | 4.50  | 5.00  |
| Y  | 5.50      | 5.50  | 6.25  | 6.25  | 6.75  | 7.50  | 7.50  | 8.63  |

\*All dimensions are in inches.



# Ampscot Pumping Units

## Parts Identification



|                         |  |                                     |
|-------------------------|--|-------------------------------------|
| 1 Gearbox               | 20 Inspection cover gasket               | 39 Intermediate-speed support plate |
| 2 Low-speed shaft       | 21 Splash guard                          | 40 Brake snap ring                  |
| 3 Low-speed gear        | 22 Splash guard bolt                     | 41 Brake band                       |
| 4 Low-speed pinion      | 23 Low-speed bolt                        | 42 Brake wheel                      |
| 5 High-speed gear       | 24 Low-speed housing                     | 43 High-speed support plate         |
| 6 High-speed pinion     | 25 V-ring                                | 44 High-speed seal                  |
| 7 Oiler assembly        | 26 Low-speed shim                        | 45 High-speed housing               |
| 8 Hose                  | 27 Low-speed slinger                     | 46 High-speed gasket                |
| 9 Oiler assembly nut    | 28 Low-speed bearing                     | 47 High-speed bearing               |
| 10 Flat washer          | 29 Crank key                             | 48 High-speed snap ring             |
| 11 Bolt                 | 30 Low-speed gear key                    | 49 High-speed slinger               |
| 12 Polyethylene gasket  | 31 High-speed gear key                   | 50 Brake key                        |
| 13 Gearbox cover gasket | 32 Intermediate-speed snap ring          | 51 Sheave key                       |
| 14 Gearbox cover        | 33 Intermediate-speed bearing            | 52 High-speed housing bolt          |
| 15 Gearbox cover bolt   | 34 Intermediate-speed gasket             | 53 Bushing                          |
| 16 Lock washer          | 35 Intermediate-speed housing            | 54 Reducer sheave                   |
| 17 Flat washer          | 36 Intermediate-speed housing bolt       | 55 Cap screw                        |
| 18 Breather             | 37 Intermediate-speed support plate bolt | 56 Lock washer                      |
| 19 Inspection cover     | 38 High-speed support plate bolt         |                                     |

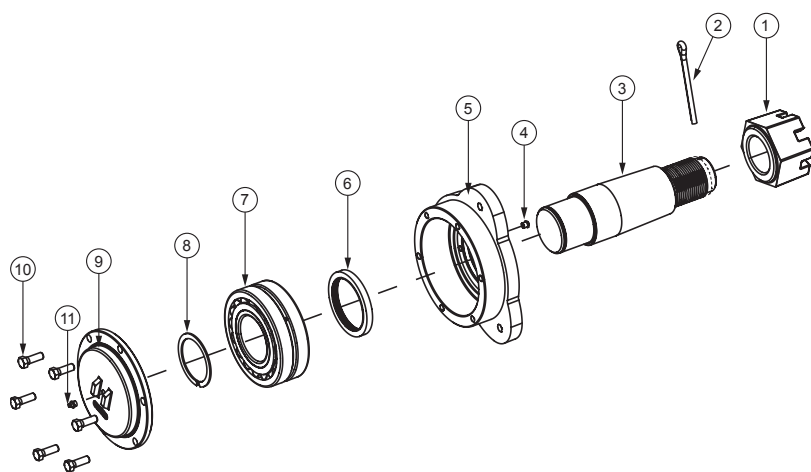


# Ampscot Pumping Units

## Components

### Crank Pin Assembly

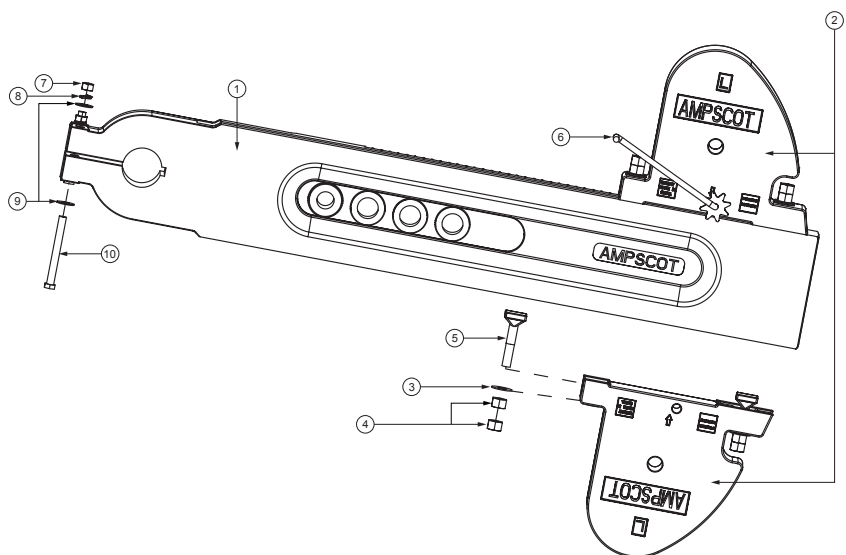
Crank pins use the well-proven single taper attachment to the crank. The assembly uses conventional self-aligning spherical roller bearings that are easily accessible through an inspection cover.



|    |                       |
|----|-----------------------|
| 1  | Crank pin nut         |
| 2  | Cotter pin            |
| 3  | Crank pin             |
| 4  | Relief fitting        |
| 5  | Crank pin housing     |
| 6  | Seal                  |
| 7  | Bearing               |
| 8  | Snap ring             |
| 9  | Crank pin housing cap |
| 10 | Housing cap bolt      |
| 11 | Grease fitting        |

### Crank and Counterbalance

Crank arms are designed with a split boss for simple installation and removal. All crank-to-weight surfaces are machined to ensure proper counterbalance retention and permit easy adjustment with our rack-and-pinion method of balancing. The cranks come standard with three machined crank pin holes. An optional fourth hole in the crank can be ordered for an added stroke length alternative. The 1 1/2-in. forged Ampscot weight bolts provide ample counterweight security.



|    |                        |
|----|------------------------|
| 1  | Crank                  |
| 2  | Counterweight          |
| 3  | Washer                 |
| 4  | Nut                    |
| 5  | Counterweight bolt     |
| 6  | Weight adjusting crank |
| 7  | Nut                    |
| 8  | Lock washer            |
| 9  | Flat washer            |
| 10 | Bolt                   |



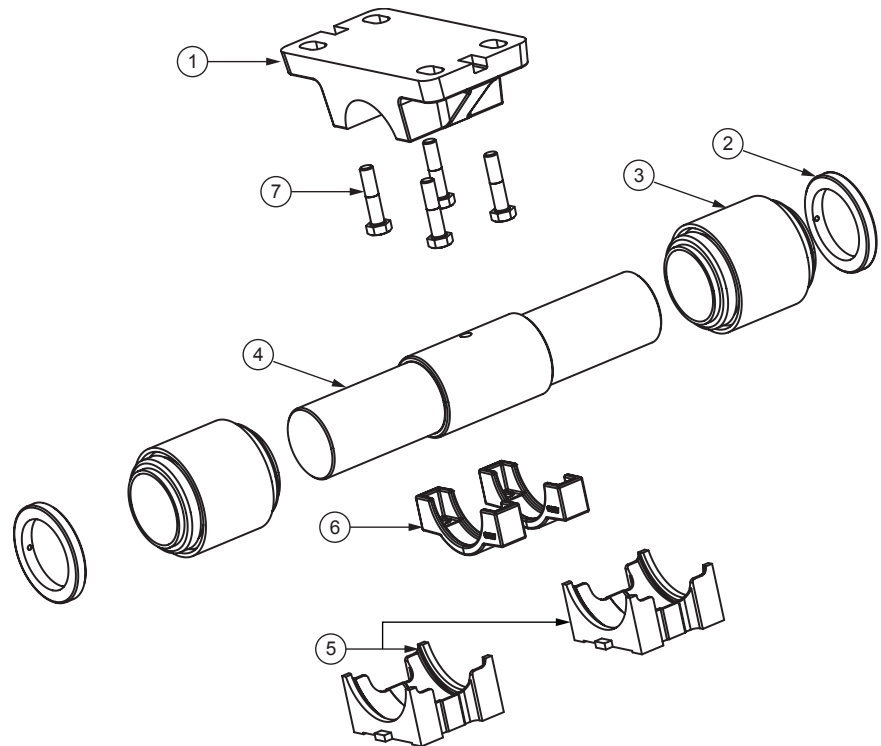
## Ampscot Pumping Units

### Center Bearing Assembly

Ampscot 114 to 160 pumping units use a double tapered roller, which has a large sealed lubricant cavity and is mounted in a split housing.

On units larger than 160, two of these bearings are used, one on each side of the walking beam. These bearings have excellent load carrying capabilities and are readily available. These assemblies can be replaced without special tools.

- |   |                       |
|---|-----------------------|
| 1 | Saddle trunnion       |
| 2 | Bearing retainer ring |
| 3 | Bearing               |
| 4 | Saddle shaft          |
| 5 | Bearing adapter       |
| 6 | Saddle trunnion cap   |
| 7 | Bolt                  |



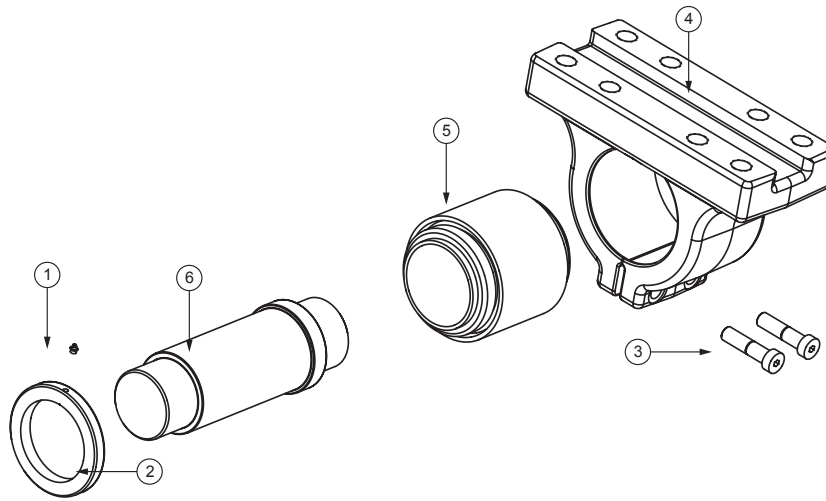
# Ampscot Pumping Units

## Equalizer Bearing Assembly

For size 228 pumping units and larger, the double tapered roller bearing is incorporated in a housing that is bolted onto the walking beam. The split housing clamps the bearing into place. Removal of two bolts allows easy removal of the equalizer bearing and pin, which are a complete unit. This system makes it very simple to service the bearing without removing the walking beam.

The equalizer beam is manufactured using two robust hooks. When the two wedge bolts are removed, the Pitman assemblies can be lifted off of the equalizer bearing, allowing the bearing to be serviced or the unit to be easily moved.

Ampscot 114 and 160 pumping units incorporate conventional self-aligning spherical roller bearings mounted in an interchangeable housing with the crank pin assembly. This design greatly simplifies maintenance procedures by providing easy access to the assembly for parts replacement or servicing. This design also uses a minimum number of parts.



|   |                        |
|---|------------------------|
| 1 | Grease nipple          |
| 2 | Bearing retaining ring |
| 3 | Bolt                   |
| 4 | Bearing housing        |
| 5 | Bearing                |
| 6 | Equalizer shaft        |

## Brake Assembly

Ampscot 114 and 160 pumping units are equipped with a Bendix 3 × 9-in. internal expanding brake assembly. On the 228 and 320 units, an 18-in. brake band is used (see drawing to the right). For the 456 through 1280 pumping units, a 24-in. brake band is used. This is a simple, effective assembly that is easily serviced and adjusted. Standard brake assemblies are operated by an over-center Orscheln brake lever and cable assembly.

