



USATCO U.S. Air Tool Company, Inc.

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| | | | | | | | | | |
|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| 15 | L | F | 2 | X | X | - | X | X | NL |
|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|

Tool Series

15 = Drill

Throttle Type

L = Locking Lever

Note: "S" and "L" models are the same

Motor Size

F = 0.4 hp

Handle Style

2 = Right Angle

Exhaust Type

5 = Front Exhaust

8 = Rear Exhaust

Speed Options (RPM)

500 Angle Head

1 = 3,700

2 = 2,800

3 = 2,300

4 = 1,700

5 = 700

6 = 525

7 = 420

600, 700, 45°, 360° Angle Heads

1 = 5,300

2 = 4,000

3 = 3,300

4 = 2,400

5 = 1,000

6 = 750

7 = 600

Termination Code: Angle Head Type

4 = 45° Mini Angle Head

5 = 500 Series Angle Head

6 = 600 Series Angle Head

7 = 700 Series Angle Head

9 = 360° Mini Angle Head

Termination Code: Output Type

1 = #10-32 Output Spindle

2 = 1/4-28 Output Spindle

3 = 9/32-40 Output Spindle

4 = 5/16-24 Output Spindle

9 = 1/4 Capacity 3 Jaw Chuck (500 series head)

Blade Option (Extra Cost)

NL = Oil Less Blade

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The original language of this manual is English.

Product Safety Information:

Intended Use:

These pneumatic drills are to be used only for removing material by utilizing appropriate material removal cutting devices.

For additional product safety information refer to Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG document CE-2006, General Safety Portable Drills.



These drills must not be modified in any manner unless approved in writing by Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG. All safety devices must be properly installed and maintained in good working order.

EC Declaration of Conformity:

We affirm that this machine is in accordance with the following EC regulations (2006/42/EC). Applied harmonized standards are ISO 12100:2010-11.

The name, job function and address of the person authorized to compile the technical file.

Mr. Vishnu Irigireddy
Director of Global R&D- Mechanical Engineering
Apex Tool Group
670 Industrial Drive
Lexington, SC 29072

Signature: Vishnu Irigireddy
Date: July 23, 2015

Noise and Vibration:

- 15LN Series Noise Level: 78 dB(A)
- 15LS Series Noise Level: 78 dB(A)
- 15LN Series Vibration Level: < 2.5 m/s²
- 15LS Series Vibration Level: < 2.5 m/s²

Air Line Lubrication:

Use Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG's lightweight air tool oil 500021 (available in quantities shown in the following chart) or an SAE-5 lightweight spindle oil.

| Part No. | Packaged | Designation |
|----------|--------------------------|-------------------------|
| 540397 | 1 Quart (0.94 liter) | Airlube 10W/NR-420LB DR |
| 533485 | 1 US Gallon (3.78 liter) | Airlube 10W/NR-420LB DR |

Recommended Grease:

| Part No. | Packaged | Designation |
|----------|------------------|-----------------------------|
| 45-0980 | 2 oz. (0.06 kg) | Angle Head: Moly-XL SAE 250 |
| 540395 | 2 oz. (0.06 kg) | Planetary: Magnalube-G |
| 513156 | 16 oz. (0.45 kg) | Planetary: Magnalube-G |

Air Supply Line:

| Parameter | Description |
|----------------|---|
| Air Hose | Minimum inside diameter: 1/4" (6,4 mm) Maximum length: 8.0' (2,4 m) |
| Air Pressure | Recommended: 90 psi (620 kPa) |
| Compressed air | Air quality according to ISO 8573-1, quality class 2.4.3 The compressed air must be clean and dry. |

Service and Repair:

Tool service and repair should be performed by an authorized Apex Tool Group, LLC or Apex Tool Group GmbH & Co. OHG Center. Refer to the last page of this manual for locations.

Disposal:



Observe local disposal guidelines for all components of this tool and its packaging.

Copyright Protection:

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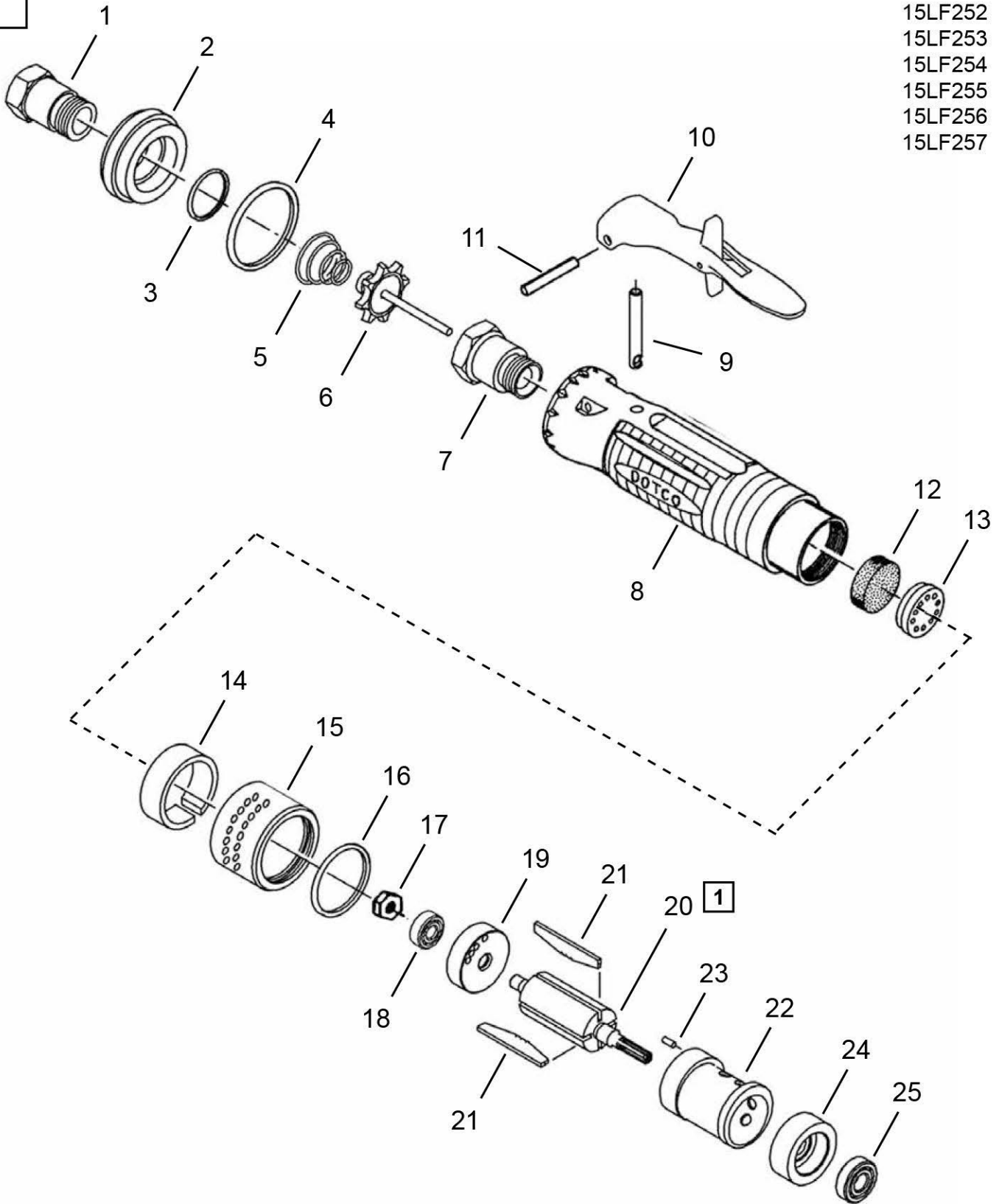


15LF Front Exhaust Housing and Motor Assembly

“A”

Models

- 15LF251
- 15LF252
- 15LF253
- 15LF254
- 15LF255
- 15LF256
- 15LF257



1 See Service Notes

15LF Front Exhaust Housing and Motor Assembly

Illustration "A"

| Ref | Number | # | X | EN |
|-----|-----------|---|----|--------------------------------------|
| | | | | Description |
| 1 | 01-2505 | 1 | 1 | Air Inlet Adapter (1/4" NPT) |
| 2 | 01-2506 | 1 | | Exhaust Plug |
| 3 | 2965 | 1 | 3 | O-Ring |
| 4 | 3036PT | 1 | 3 | O-Ring |
| 5 | 01-2519 | 1 | 3 | Valve Spring |
| 6 | 01-2518 | 1 | | Valve |
| 7 | 01-2504 | 1 | | Valve Seat |
| 8 | 01-1065 | 1 | | Motor Housing |
| 9 | 01-1017 | 1 | | Push Rod |
| 10 | 01-1267 | 1 | 1 | Locking Lever Assembly |
| 11 | 1042 | 1 | 1 | Lever Pin |
| 12 | 01-1046 | 1 | 3 | Filter |
| 13 | 01-1061 | 1 | | Filter Retainer |
| 14 | 01-1066 | 1 | 3 | Felt Muffler |
| 15 | 01-1062 | 1 | | Muffler Body |
| 16 | 2301PT | 1 | 3 | O-Ring |
| -- | Table "A" | 1 | | Motor Assembly (includes Ref. 17-25) |
| 17 | 1012215 | 1 | 3 | Rotor Nut |
| 18 | 1009879 | 1 | 2 | Ball Bearing |
| 19 | 1110072 | 1 | | Rear Bearing Plate |
| 20 | Table "A" | 1 | | Rotor |
| 21 | 1008914 | 4 | 12 | Rotor Blade |
| 22 | 1017579 | 1 | | Cylinder (includes Ref. 23) |
| 23 | 1017422 | 1 | 2 | Cylinder Locating Pin |
| 24 | 1008916 | 1 | | Front Bearing Plate |
| 25 | 1007537 | 1 | 2 | Ball Bearing |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "A"

| Ref. | Description | # | 15LF251 15LF255 | # | 15LF252 15LF256 | # | 15LF253 15LF257 | # | 15LF254 |
|------|----------------|---|--------------------|---|--------------------|---|--------------------|---|---------|
| -- | Motor Assembly | 1 | 1025550 | 1 | 1025554 | 1 | 1025552 | 1 | 1025556 |
| 20 | Rotor | 1 | 1015872 | 1 | 1017518 | 1 | 1017517 | 1 | 1017516 |

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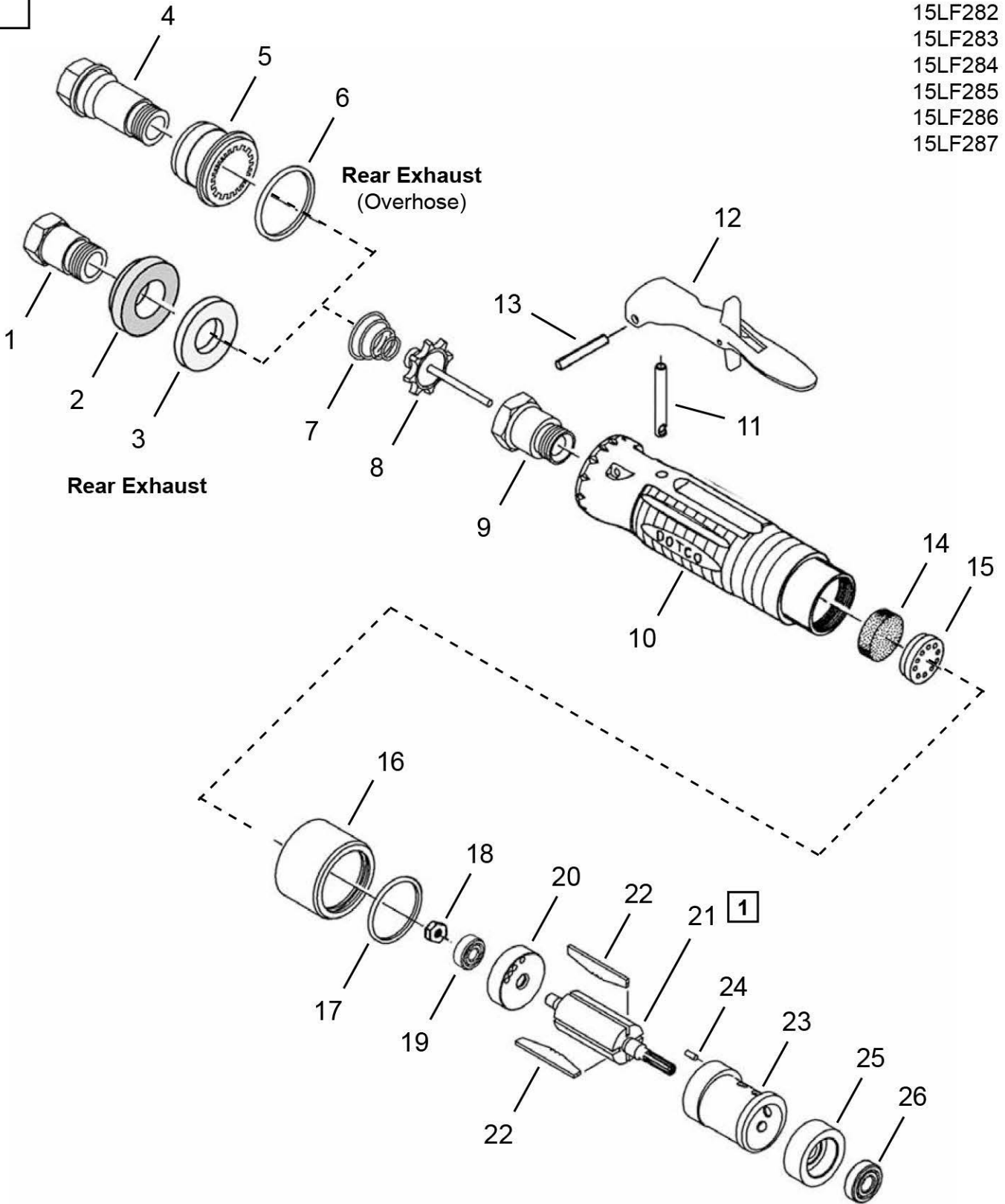
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15LF Rear Exhaust Housing and Motor Assembly

“B”

Models

- 15LF281
- 15LF282
- 15LF283
- 15LF284
- 15LF285
- 15LF286
- 15LF287



1 See Service Notes

15LF Rear Exhaust Housing and Motor Assembly

Illustration "B"

| Ref | Number | # | X | EN | |
|-----|-----------|---|----|--------------------------------------|--|
| | | | | Description | |
| 1 | 01-2505 | 1 | 1 | Air Inlet Adapter (1/4" NPT) | |
| 2 | 01-2520 | 1 | | Diffuser | |
| 3 | 1110134 | 1 | 3 | Muffler | |
| 4 | 01-1031 | 1 | | Air Inlet Adapter (Overhose) | |
| 5 | 01-1032 | 1 | | Muffler (Overhose) | |
| 6 | 3036PT | 1 | 3 | O-Ring (Overhose) | |
| 7 | 01-2519 | 1 | 3 | Valve Spring | |
| 8 | 01-2518 | 1 | | Valve | |
| 9 | 01-2504 | 1 | | Valve Seat | |
| 10 | 01-1065 | 1 | | Motor Housing | |
| 11 | 01-1017 | 1 | | Push Rod | |
| 12 | 01-1267 | 1 | 1 | Locking Lever Assembly | |
| 13 | 1042 | 1 | 1 | Lever Pin | |
| 14 | 01-1046 | 1 | 3 | Filter | |
| 15 | 01-1061 | 1 | | Filter Retainer | |
| 16 | 01-1063 | 1 | | Muffler | |
| 17 | 2301PT | 1 | 3 | O-Ring | |
| -- | Table "B" | 1 | | Motor Assembly (includes Ref. 18-26) | |
| 18 | 1012215 | 1 | 3 | Rotor Nut | |
| 19 | 1009879 | 1 | 2 | Ball Bearing | |
| 20 | 1110072 | 1 | | Rear Bearing Plate | |
| 21 | Table "B" | 1 | | Rotor | |
| 22 | 1008914 | 4 | 12 | Rotor Blade | |
| 23 | 1017579 | 1 | | Cylinder (includes Ref. 24) | |
| 24 | 1017422 | 1 | 2 | Cylinder Locating Pin | |
| 25 | 1008916 | 1 | | Front Bearing Plate | |
| 26 | 1007537 | 1 | 2 | Ball Bearing | |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "B"

| Ref. | Description | # | 15LF281 15LF285 | # | 15LF282 15LF286 | # | 15LF283 15LF287 | # | 15LF284 |
|------|----------------|---|--------------------|---|--------------------|---|--------------------|---|---------|
| -- | Motor Assembly | 1 | 1025550 | 1 | 1025554 | 1 | 1025552 | 1 | 1025556 |
| 21 | Rotor | 1 | 1015872 | 1 | 1017518 | 1 | 1017517 | 1 | 1017516 |

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Dotco®
Single Reduction Gearing

“C”

Speed Codes: 1, 2, 3

Models

| | |
|---------|---------|
| 15LF251 | 15LF281 |
| 15LF252 | 15LF282 |
| 15LF253 | 15LF283 |

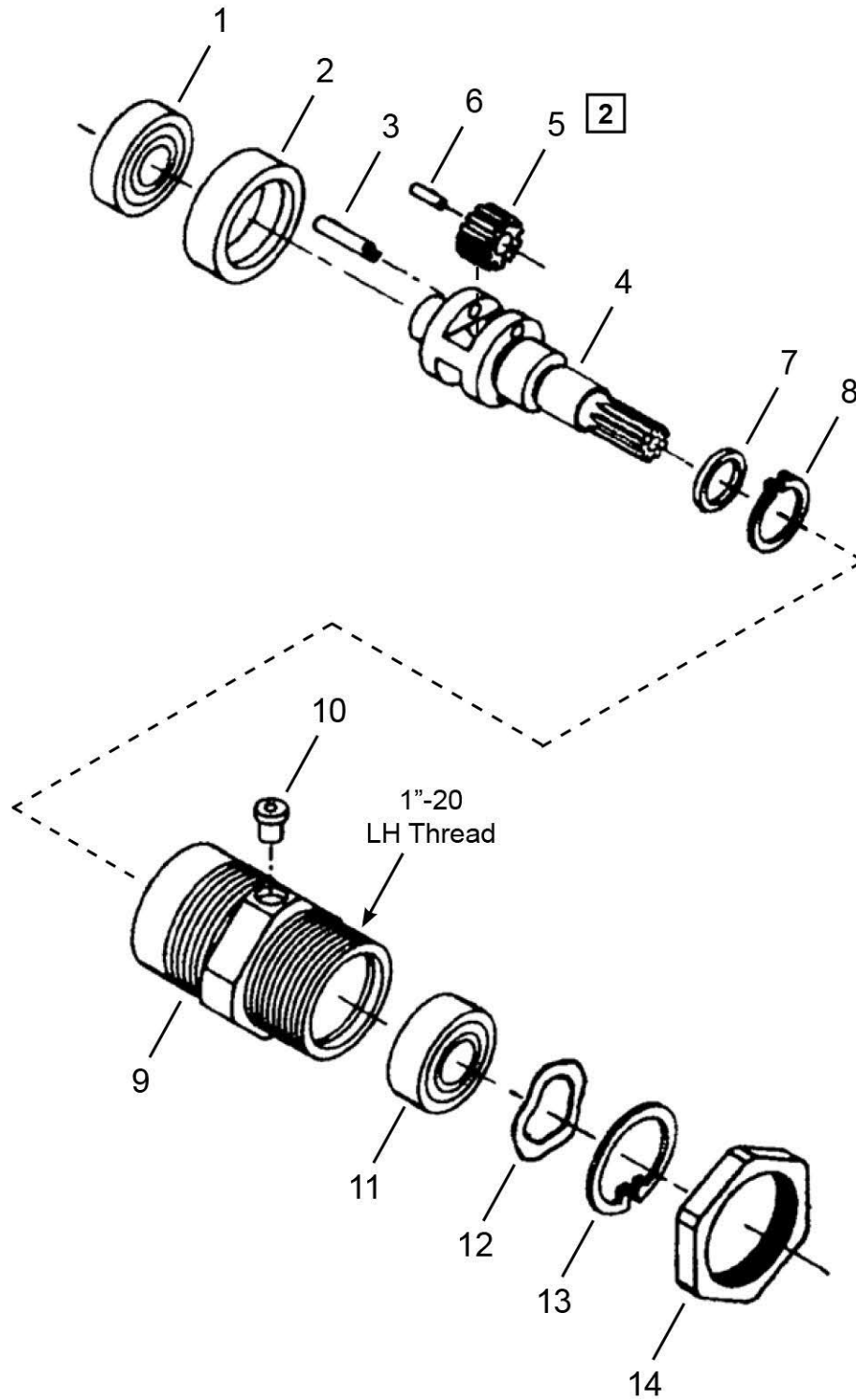


Illustration "C"

| Ref | Number | # | X | EN |
|-----|-----------|----|----|---------------------------------------|
| | | | | Description |
| -- | Table "C" | 1 | | Gearing Assembly (includes Ref. 1-13) |
| 1 | 1005062 | 1 | 2 | Ball Bearing |
| 2 | Table "C" | 1 | | Bearing Adapter |
| 3 | Table "C" | 1 | | Planetary Gear Cage |
| 4 | Table "C" | 2 | 4 | Planetary Gear |
| 5 | 1008924 | 24 | 48 | Planetary Gear Roller |
| 6 | 1008920 | 2 | 4 | Planetary Gear Pin |
| 7 | Table "C" | 1 | | Planetary Gear Cage Washer |
| 8 | 1010099 | 1 | 1 | Retaining Ring |
| 9 | Table "C" | 1 | | Gear Housing (includes Ref. 10) |
| 10 | 1463PT | 1 | | Grease Fitting |
| 11 | 1008854 | 1 | 2 | Ball Bearing |
| 12 | 1110127 | 1 | 2 | Wave Washer |
| 13 | 1008859 | 1 | 1 | Retaining Ring |
| 14 | 1110065 | 1 | | Lock Nut |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "C"

| Ref. | Description | # | 15LF251 15LF281 | # | 15LF252 15LF282 | # | 15LF253 15LF283 |
|------|-----------------------|---|--------------------|---|--------------------|---|--------------------|
| -- | Gearing Assembly | 1 | 1025650 | 1 | 1025651 | 1 | 1025652 |
| 2 | Bearing Adapter | | ----- | | ----- | 1 | 1008921 |
| 3 | Planetary Gear Cage | 1 | 1110223 | 1 | 1110225 | 1 | 1110224 |
| 4 | Planetary Gear | 2 | 1008973 (14T) | 2 | 1008968 (17T) | 2 | 1008919 (19T) |
| 7 | Planetary Cage Washer | 1 | 1110054 | 1 | 1110055 | 1 | 1110056 |
| 9 | Gear Housing | 1 | 1110046 | 1 | 1110047 | 1 | 1110048 |

(T) Teeth

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Dotco® Single Reduction Gearing

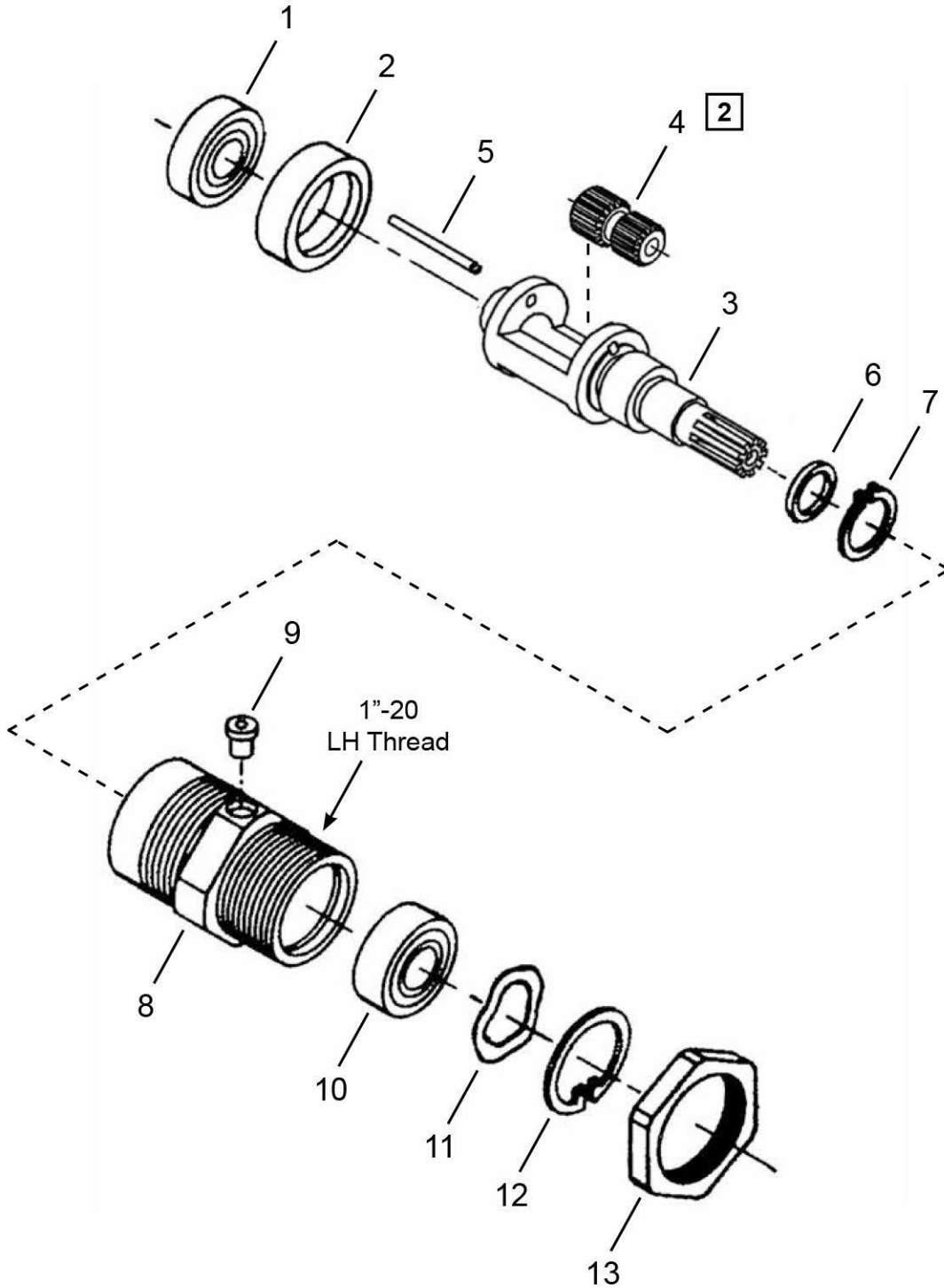
“D”

Speed Code: 4

Models

15LF254

15LF284



2 See Service Notes

Illustration "D"

| Ref | Number | # | X | EN |
|-----|---------|---|---|---------------------------------------|
| | | | | Description |
| -- | 1025653 | 1 | | Gearing Assembly (includes Ref. 1-12) |
| 1 | 1005062 | 1 | 2 | Ball Bearing |
| 2 | 1008921 | 1 | | Bearing Adapter |
| 3 | 1110233 | 1 | | Planetary Gear Cage |
| 4 | 1008978 | 2 | 4 | Planetary Gear |
| 5 | 1008977 | 2 | 4 | Planetary Gear Pin |
| 6 | 1110055 | 1 | | Planetary Gear Cage Washer |
| 7 | 1010099 | 1 | 1 | Retaining Ring |
| 8 | 1110049 | 1 | | Gear Housing (includes Ref. 9) |
| 9 | 1463PT | 1 | | Grease Fitting |
| 10 | 1008854 | 1 | 2 | Ball Bearing |
| 11 | 1110127 | 1 | 1 | Wave Washer |
| 12 | 1008859 | 1 | 1 | Retaining Ring |
| 13 | 1110065 | 1 | | Lock Nut |

(#) Quantity

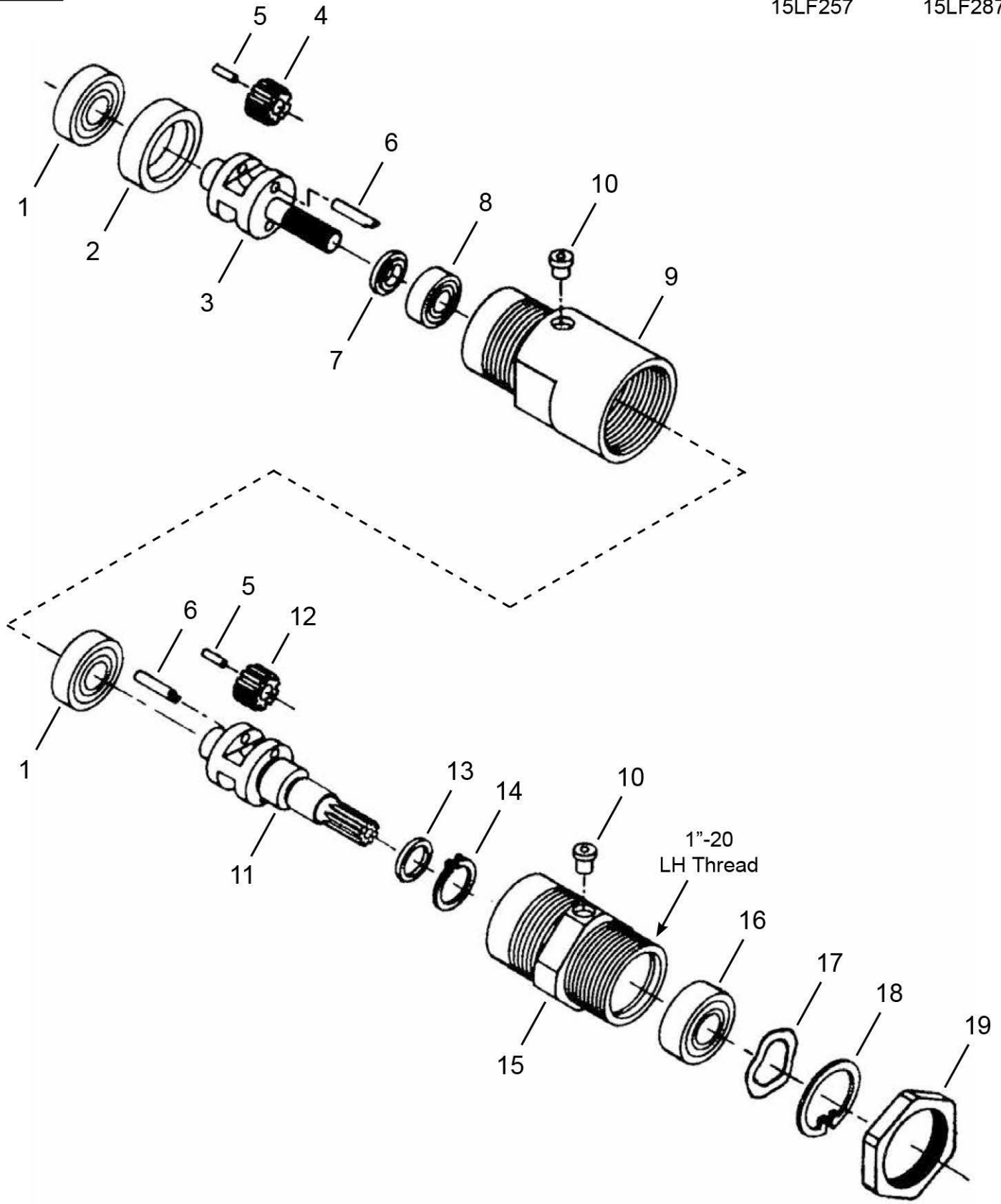
(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

“E”

Speed Codes: 5, 6, 7

Models

| | |
|---------|---------|
| 15LF255 | 15LF285 |
| 15LF256 | 15LF286 |
| 15LF257 | 15LF287 |



Double Reduction Gearing

Illustration "E"

| Ref | Number | # | X | EN | |
|-----|-----------|----|----|---|--|
| | | | | Description | |
| -- | Table "E" | 1 | | Primary Gearing Assembly (includes Ref. 1-10: 1 (qty.1), 5 (qty.24), 6 (qty. 2) | |
| 1 | 1005062 | 2 | 4 | Ball Bearing | |
| 2 | Table "E" | 1 | | Bearing Adapter | |
| 3 | Table "E" | 1 | | Planetary Gear Cage | |
| 4 | Table "E" | 2 | 4 | Primary Planetary Gear | |
| 5 | 1008924 | 48 | 96 | Planetary Gear Roller | |
| 6 | 1008920 | 4 | 8 | Planetary Gear Pin | |
| 7 | Table "E" | 1 | 1 | Planetary Gear Cage Washer | |
| 8 | 1007537 | 1 | 2 | Ball Bearing | |
| 9 | Table "E" | 1 | | Gear Housing (includes Ref. 10, qty. 1) | |
| 10 | 1463PT | 2 | | Grease Fitting | |
| -- | 1025650 | 1 | | Output Gearing Assembly (includes Ref. 11-18: 1 (qty.1), 5 (qty.24), 6 (qty.2) | |
| 11 | 1110233 | 1 | | Output Planetary Gear Cage | |
| 12 | 1008973 | 2 | 4 | Output Planetary Gear (14T) | |
| 13 | 1110054 | 1 | 1 | Output Planetary Gear Cage Washer | |
| 14 | 1010099 | 1 | 1 | Retaining Ring | |
| 15 | 1110046 | 1 | | Output Gear Housing (includes 1 Ref. 10) | |
| 16 | 1008854 | 1 | 2 | Ball Bearing | |
| 17 | 1110127 | 1 | 1 | Wave Washer | |
| 18 | 1008859 | 1 | 1 | Retaining Ring | |
| 19 | 1110065 | 1 | | Lock Nut | |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

(T) Teeth

Table "E"

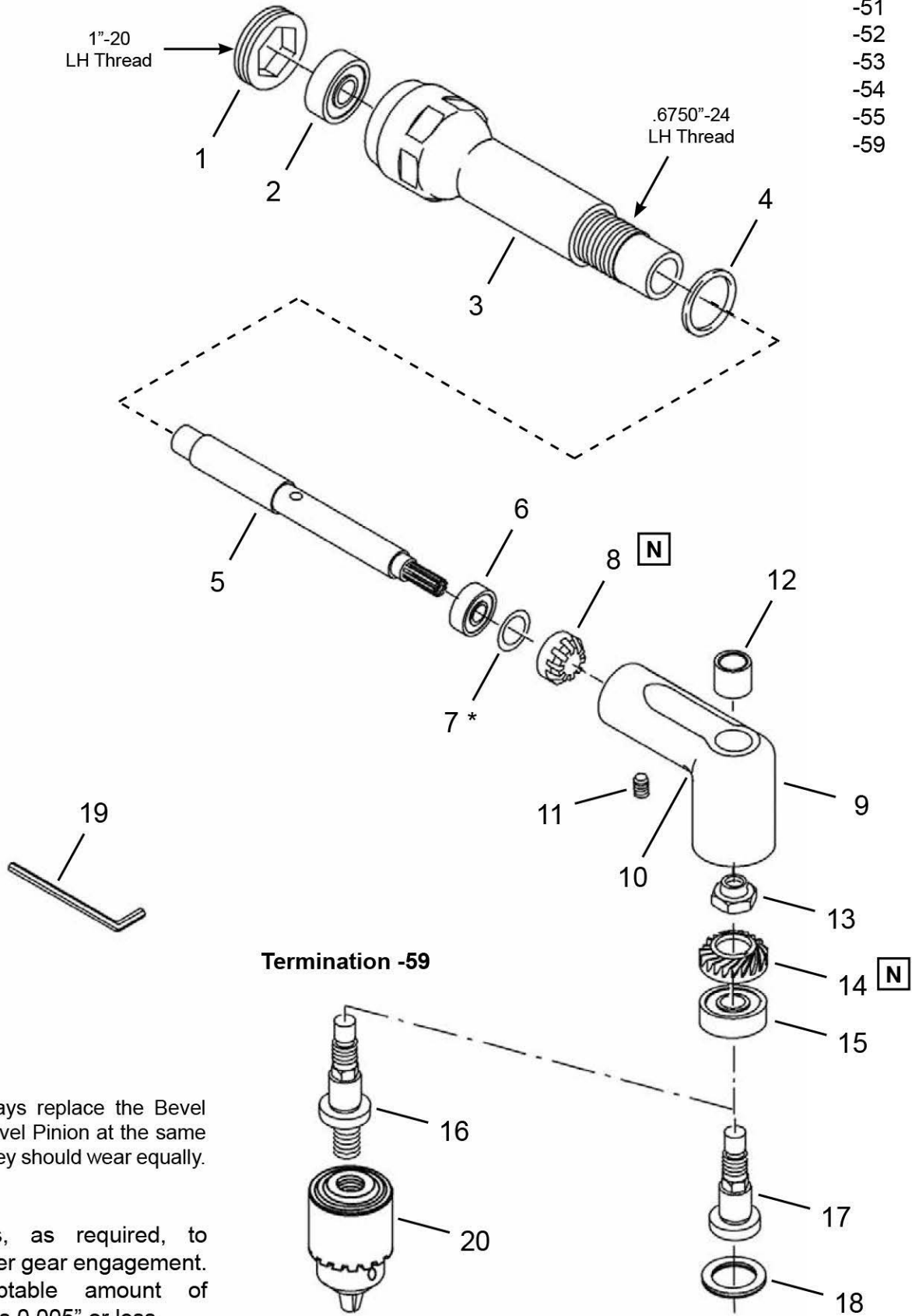
| Ref. | Description | # | 15LF255 | | 15LF256 | | 15LF257 | |
|------|----------------------------|---|---------------|---|---------------|---|---------------|--|
| | | | 15LF285 | # | 15LF286 | # | 15LF287 | |
| -- | Primary Gear Assembly | 1 | 1025247 | 1 | 1025180 | 1 | 1025250 | |
| 2 | Bearing Adapter | | ----- | | ----- | 1 | 1009681 | |
| 3 | Planetary Gear Cage | 1 | 1008985 | 1 | 1009679 | 1 | 1009681 | |
| 4 | Primary Planetary Gear | 2 | 1008973 (14T) | 2 | 1008968 (17T) | 2 | 1008919 (19T) | |
| 7 | Planetary Gear Cage Washer | 1 | 1008986 | 1 | 1009680 | 1 | 1009682 | |
| 9 | Primary Gear Housing | 1 | 1019146 | 1 | 1019147 | 1 | 1019148 | |

(T) Teeth

“F”

Angle Head Terminations

- 51
- 52
- 53
- 54
- 55
- 59



N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

*** NOTE:**

Use shims, as required, to obtain proper gear engagement. The acceptable amount of movement is 0.005" or less.

Termination -59

Dotco®
90° Heavy Duty Angle Head

45-8422EN

07/23/2015

Illustration "F"

| Ref | Number | # | X | EN |
|-----|-----------|----|---|--|
| | | | | Description |
| -- | Table "F" | 1 | | Heavy Duty Angle Head Assembly (Includes Ref. 1-19) |
| 1 | 1006205 | 1 | | Retaining Nut |
| 2 | 1005062 | 1 | 2 | Ball Bearing |
| 3 | 1009242 | 1 | | Housing |
| 4 | 1008680 | 1 | 3 | O-Ring |
| 5 | 1009643 | 1 | | Spindle Extension |
| 6 | 1007537 | 1 | 2 | Ball Bearing |
| 7 | 1008748 | AR | | Shim (0.002") |
| | 1013224 | AR | | Shim (0.005") |
| 8 | 1009255 | 1 | 1 | Bevel Pinion |
| 9 | 1008853 | 1 | | Angle Housing (includes Ref. 10) |
| 10 | 1463PT | 1 | 1 | Grease Fitting |
| 11 | 1008345 | 1 | 2 | Set Screw |
| 12 | Table "F" | 1 | 2 | Needle Bearing |
| 13 | 1008849 | 1 | 2 | Spindle Nut |
| 14 | 1009095 | 1 | 1 | Bevel Gear |
| 15 | 1008854 | 1 | 2 | Ball Bearing |
| 16 | Table "F" | 1 | | Output Spindle (Male Thread) |
| 17 | Table "F" | 1 | | Output Spindle (Internal Thread) |
| 18 | Table "F" | 1 | 2 | Retaining Ring |
| 19 | 1008860 | 1 | 1 | Hex Key Wrench |
| 20 | 1005078 | 1 | 1 | 1/4" Capacity Drill Chuck (Includes Ref. 21) (Termination -59) |
| 21 | 1005079 | 1 | 1 | Drill Chuck Key (not shown) |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "F"

| Ref. | Description | 90° Heavy Duty Angle Attachments | | | | | | | | | | | |
|------|---------------------------|----------------------------------|---------|---|---------|---|----------|---|----------|---|---------|---|---------|
| | | # | 1025547 | # | 1021289 | # | 1021292 | # | 1021291 | # | 1025780 | # | 1021620 |
| -- | Termination Code | | -51 | | -52 | | -53 | | -54 | | -55 | | -59 |
| -- | Spindle Thread (Internal) | | #10-32 | | 1/4"-28 | | 9/32"-40 | | 5/16"-24 | | 3/8"-24 | | ----- |
| -- | Spindle Thread (External) | | ----- | | ----- | | ----- | | ----- | | ----- | | 3/8"-24 |
| 12 | Needle Bearing | 1 | 382253 | 1 | 382253 | 1 | 382253 | 1 | 382253 | 1 | 382253 | 1 | 1008929 |
| 16 | Output Spindle (External) | | ----- | | ----- | | ----- | | ----- | | ----- | 1 | 1015703 |
| 17 | Output Spindle (Internal) | 1 | 1110062 | 1 | 1008850 | 1 | 1008948 | 1 | 1008856 | 1 | 1017662 | | ----- |
| 18 | Retaining Ring | 1 | 1008859 | 1 | 1008859 | 1 | 1008859 | 1 | 1008859 | 1 | 1008859 | | ----- |

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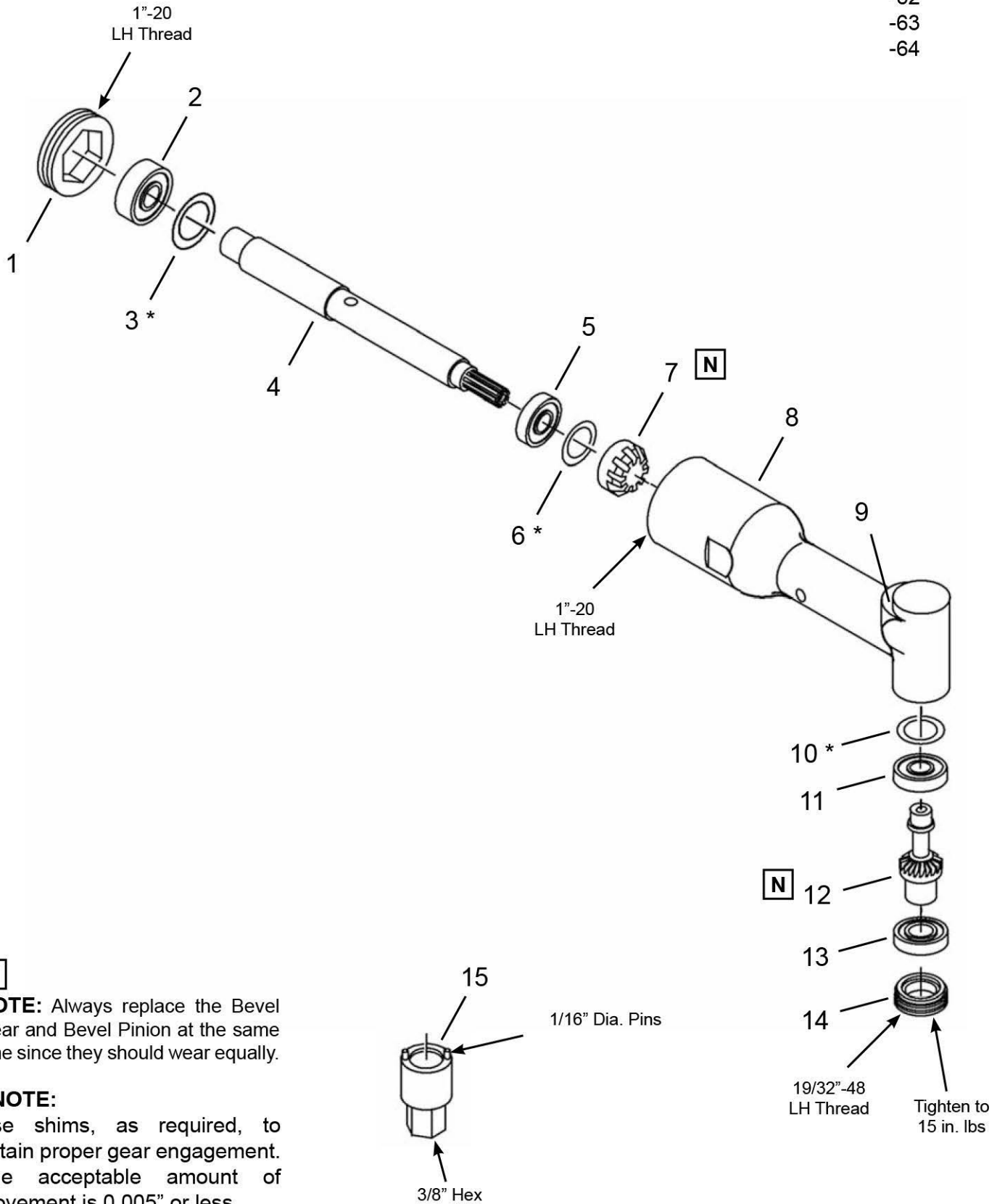
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“G”

Angle Head Terminations

- 61
- 62
- 63
- 64

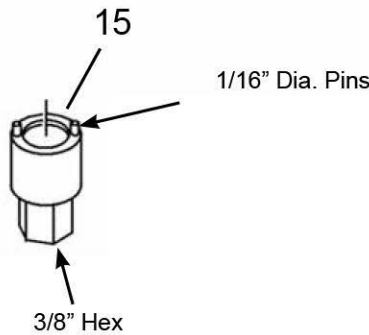


N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

*** NOTE:**

Use shims, as required, to obtain proper gear engagement. The acceptable amount of movement is 0.005" or less.



90° Miniature Angle Head

Illustration "G"

| Ref | Number | # | X | EN | |
|-----|-----------|----|---|--|--|
| | | | | Description | |
| -- | Table "G" | 1 | | 90° Miniature Angle Head Assembly (Includes Ref. 1-14) | |
| 1 | 1006205 | 1 | | Retaining Nut | |
| 2 | 1009087 | 1 | 2 | Ball Bearing | |
| 3 | 1016150 | AR | | Shim (0.002") | |
| | 1016151 | AR | | Shim (0.005") | |
| | 1013432 | AR | | Shim (0.008") | |
| 4 | 1009643 | 1 | | Extension Spindle | |
| 5 | 1019559 | 2 | 4 | Ball Bearing | |
| 6 | 1008748 | AR | | Shim (0.002") | |
| | 1013224 | AR | | Shim (0.005") | |
| 7 | 1019555 | 1 | 1 | Bevel Gear | |
| 8 | 1019556 | 1 | | 90° Angle Housing (Includes Ref.9) | |
| 9 | 1463PT | 1 | 1 | Grease Fitting | |
| 10 | 1006265 | AR | | Shim (0.002") | |
| | 1006266 | AR | | Shim (0.003") | |
| | 1006267 | AR | | Shim (0.005") | |
| 11 | 1019559 | 1 | 2 | Ball Bearing | |
| 12 | Table "G" | 1 | | Output Spindle | |
| 13 | 1019560 | 1 | 2 | Ball Bearing | |
| 14 | 1019569 | 1 | | Bearing Cap | |
| 15 | 1019759 | 1 | 1 | Spanner Wrench (not included with angle attachment) | |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "G"

| Ref. | Description | 90° Mini Angle Attachments | | | | | | | |
|------|---------------------------|----------------------------|---------|---|---------|---|----------|---|----------|
| | | # | 1025314 | # | 1025409 | # | 1025313 | # | 1025328 |
| -- | Termination Code | | -61 | | -62 | | -63 | | -64 |
| -- | Spindle Thread (Internal) | | #10-32 | | 1/4"-28 | | 9/32"-40 | | 5/16"-24 |
| 12 | Output Spindle (Internal) | 1 | 1019553 | 1 | 1019551 | 1 | 1019552 | 1 | 1019554 |

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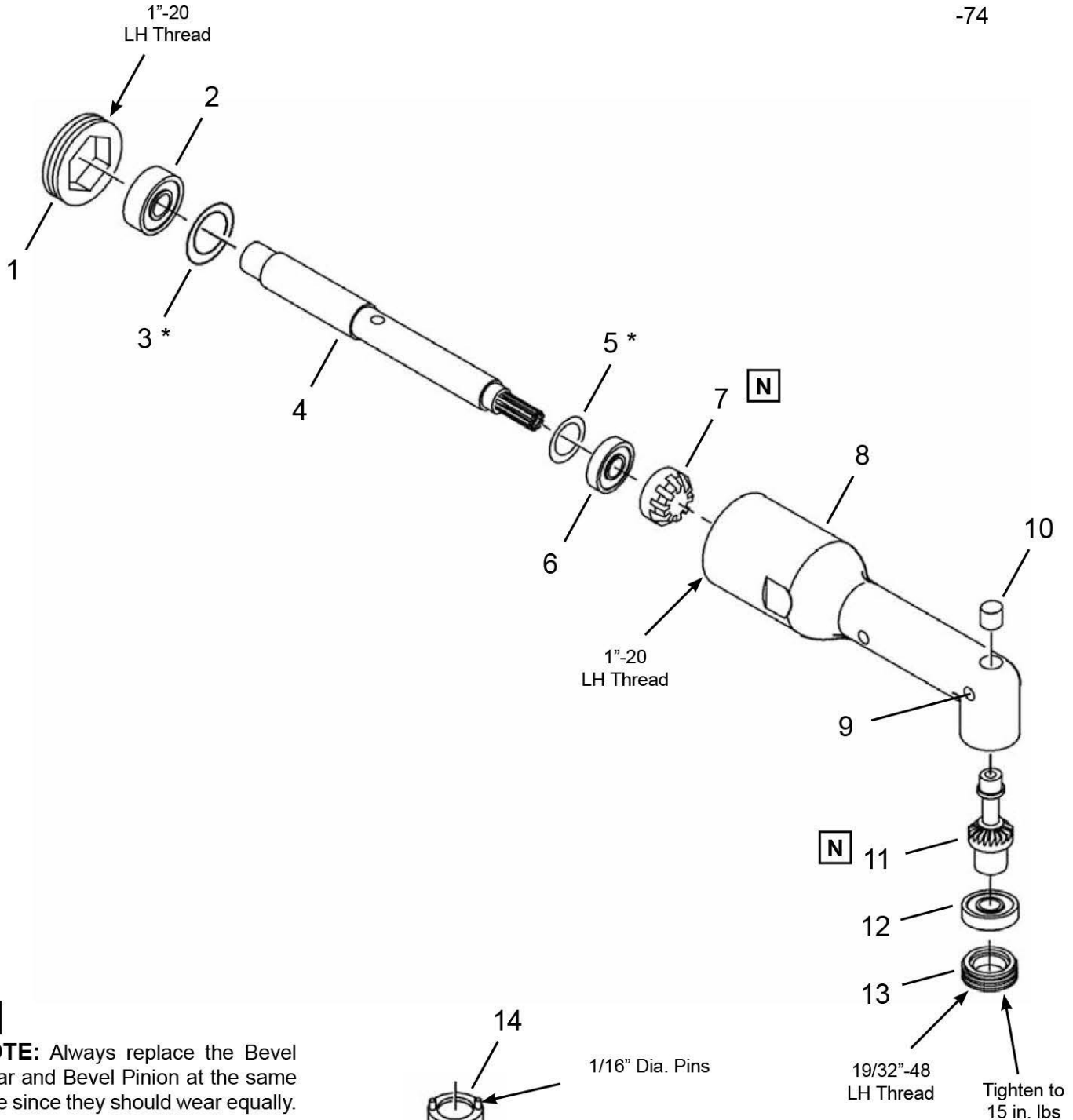
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“H”

Angle Head Terminations

- 71
- 72
- 73
- 74

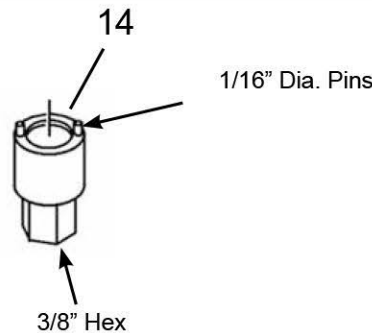


N

NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

*** NOTE:**

Use shims, as required, to obtain proper gear engagement. The acceptable amount of movement is 0.005" or less.



19/32"-48 LH Thread
Tighten to 15 in. lbs

90° Compact Angle Head

Illustration "H"

| Ref | Number | # | X | EN |
|-----|-----------|----|---|--|
| | | | | Description |
| -- | Table "H" | 1 | | 90° Compact Angle Head Assembly (Includes Ref. 1-13) |
| 1 | 1006205 | 1 | | Retaining Nut |
| 2 | 1009087 | 1 | 2 | Ball Bearing |
| 3 | 1016150 | AR | | Shim (0.002") |
| | 1016151 | AR | | Shim (0.005") |
| | 1013432 | AR | | Shim (0.008") |
| 4 | 1009643 | 1 | | Extension Spindle |
| 5 | 1008748 | AR | | Shim (0.002") |
| | 1013224 | AR | | Shim (0.005") |
| 6 | 1019559 | 1 | 2 | Ball Bearing |
| 7 | 1019555 | 1 | 1 | Bevel Gear |
| 8 | 1019758 | 1 | | 90° Angle Housing (includes Ref. 9) |
| 9 | 1463PT | 1 | 1 | Grease Fitting |
| 10 | 1011597 | 1 | 2 | Bushing |
| 11 | Table "H" | 1 | | Output Spindle |
| 12 | 1019560 | 1 | 2 | Ball Bearing |
| 13 | 1019569 | 1 | | Bearing Cap |
| 14 | 1019759 | 1 | 1 | Spanner Wrench (not included with angle attachment) |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "H"

| Ref. | Description | 90° Compact Angle Attachments | | | | | | | |
|------|---------------------------|-------------------------------|---------|---|---------|---|----------|---|----------|
| | | # | 1025667 | # | 1025477 | # | 1025476 | # | 1025668 |
| -- | Termination Code | | -71 | | -72 | | -73 | | -74 |
| -- | Spindle Thread (Internal) | | #10-32 | | 1/4"-28 | | 9/32"-40 | | 5/16"-24 |
| 11 | Output Spindle (Internal) | 1 | 1110261 | 1 | 1019879 | 1 | 1019880 | 1 | 1110262 |

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Dotco®
45° Miniature Angle Head

45-8422EN

07/23/2015

Illustration "I"

| Ref | Number | # | X | EN |
|-----|-----------|----|---|---|
| | | | | Description |
| -- | Table "I" | 1 | | 45° Mini Angle Head Assembly (Includes Ref. 1-15) |
| 1 | 1006205 | 1 | | Retaining Nut |
| 2 | 1009087 | 1 | 2 | Ball Bearing |
| 3 | 1110405 | 1 | | Housing |
| 4 | 1009643 | 1 | | Spindle Extension |
| 5 | 1019559 | 1 | 2 | Ball Bearing |
| 6 | 1008748 | AR | | Shim (0.002") |
| | 1013224 | AR | | Shim (0.005") |
| | 1013432 | AR | | Shim (0.008") |
| 7 | 1110353 | 1 | 1 | Bevel Pinion |
| 8 | 1110406 | 1 | | 45° Angle Housing (Includes Ref. 9) |
| 9 | 1463PT | 1 | 1 | Grease Fitting |
| 10 | 1005823 | 1 | 3 | Steel Ball (7/32") |
| 11 | Table "I" | 1 | | Output Spindle |
| 12 | 1019560 | 2 | 4 | Ball Bearing |
| 13 | 1110354 | 1 | | Spacer |
| 14 | 02-1750 | 1 | | Spacer |
| 15 | 1019569 | 1 | | Bearing Cap |
| 16 | 1019759 | 1 | 1 | Spanner Wrench (not included with angle attachment) |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "I"

| Ref. | Description | 45° Mini Angle Attachments | | | | | | | |
|------|---------------------------|----------------------------|---------|---|---------|---|----------|---|----------|
| | | # | 1025732 | # | 1025730 | # | 1025731 | # | 1025733 |
| -- | Termination Code | | -41 | | -42 | | -43 | | -44 |
| -- | Spindle Thread (Internal) | | #10-32 | | 1/4"-28 | | 9/32"-40 | | 5/16"-24 |
| 11 | Output Spindle (Internal) | 1 | 1110351 | 1 | 1110349 | 1 | 1110350 | 1 | 1110352 |

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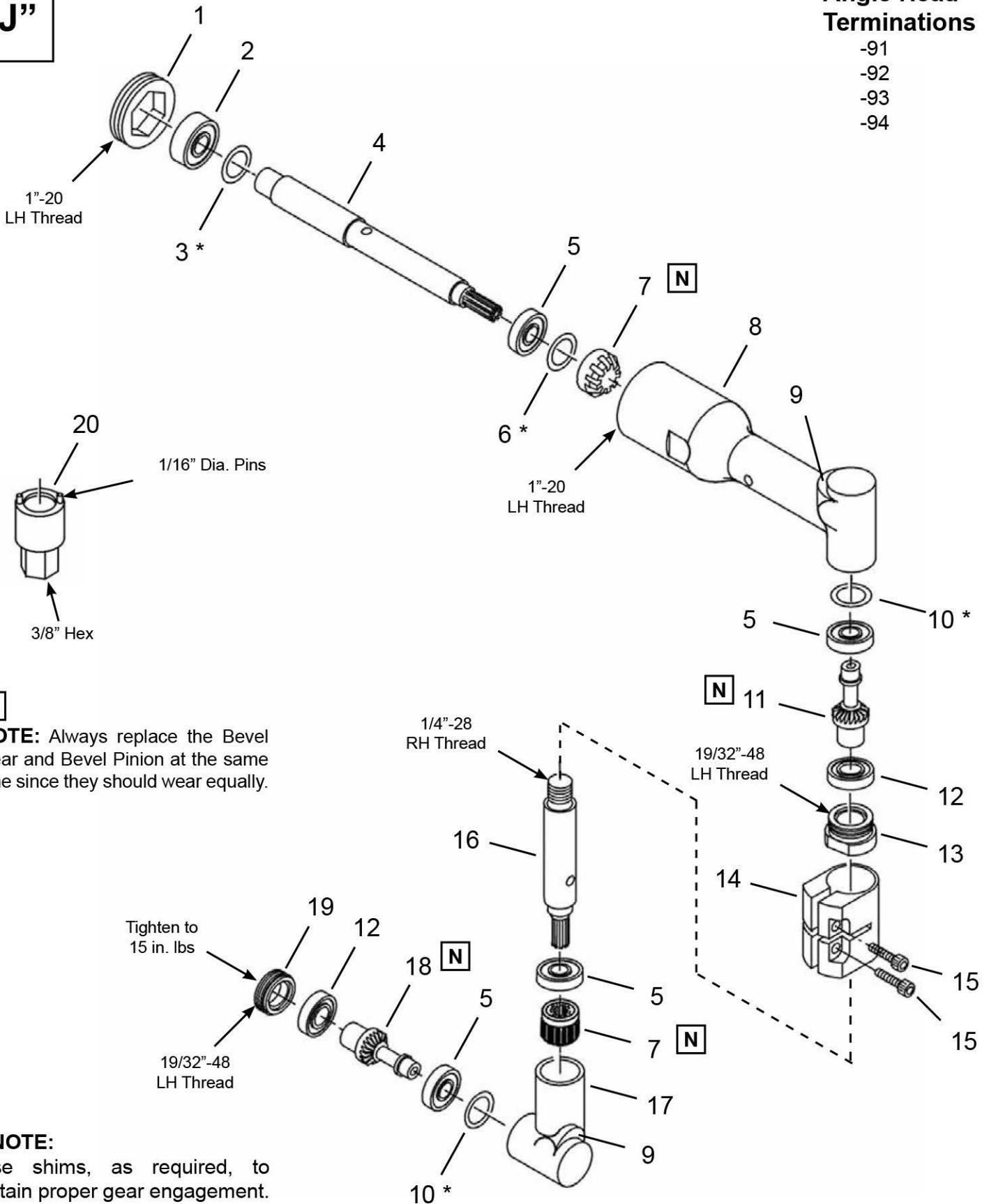
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“J”

Angle Head Terminations

- 91
- 92
- 93
- 94



N
NOTE: Always replace the Bevel Gear and Bevel Pinion at the same time since they should wear equally.

*** NOTE:**
 Use shims, as required, to obtain proper gear engagement. The acceptable amount of movement is 0.005" or less.

360° Miniature Angle Head

Illustration "J"

| Ref | Number | # | X | EN | |
|-----|-----------|----|---|---|--|
| | | | | Description | |
| -- | Table "J" | 1 | | 360° Mini Angle Head Assembly (Includes Ref. 1-19) | |
| 1 | 1006205 | 1 | | Retaining Nut | |
| 2 | 1009087 | 1 | 2 | Ball Bearing | |
| 3 | 1016150 | AR | | Shim (0.002") | |
| | 1016151 | AR | | Shim (0.005") | |
| | 1013432 | AR | | Shim (0.008") | |
| 4 | 1009643 | 1 | | Spindle Extension | |
| 5 | 1019559 | 4 | 8 | Ball Bearing | |
| 6 | 1008748 | AR | | Shim (0.002") | |
| | 1013224 | AR | | Shim (0.005") | |
| 7 | 1019555 | 2 | 2 | Bevel Gear | |
| 8 | 1019556 | 1 | | Housing (includes 1 Ref. 9) | |
| 9 | 1463PT | 2 | 2 | Grease Fitting | |
| 10 | 1006265 | AR | | Shim (0.002") | |
| | 1006266 | AR | | Shim (0.003") | |
| | 1006267 | AR | | Shim (0.005") | |
| 11 | 1019551 | 1 | 1 | Output Spindle | |
| 12 | 1019560 | 2 | 4 | Ball Bearing | |
| 13 | 1110332 | 1 | | Retaining Nut | |
| 14 | 1110333 | 1 | | Clamp (includes Ref. 15) | |
| 15 | 2140PT | 2 | 4 | Screw | |
| 16 | 1110331 | 1 | | Spindle Extension | |
| 17 | 1110330 | 1 | | 360° Angle Housing (includes 1 Ref. 9) | |
| 18 | Table "J" | 1 | | Output Spindle | |
| 19 | 1019569 | 1 | | Bearing Cap | |
| 20 | 1019759 | 1 | 1 | Spanner Wrench (not included with angle attachment) | |

(#) Quantity

(X) Recommended Spare Parts (quantity shown based on 1-5 tools in operation)

Table "J"

| Ref. | Description | 360° Mini Angle Attachments | | | | | | | |
|------|---------------------------|-----------------------------|---------|---|---------|---|----------|---|----------|
| | | # | 1025696 | # | 1025694 | # | 1025695 | # | 1025697 |
| -- | Termination Code | | -91 | | -92 | | -93 | | -94 |
| -- | Spindle Thread (Internal) | | #10-32 | | 1/4"-28 | | 9/32"-40 | | 5/16"-24 |
| 18 | Output Spindle (Internal) | 1 | 1019553 | 1 | 1019551 | 1 | 1019552 | 1 | 1019554 |

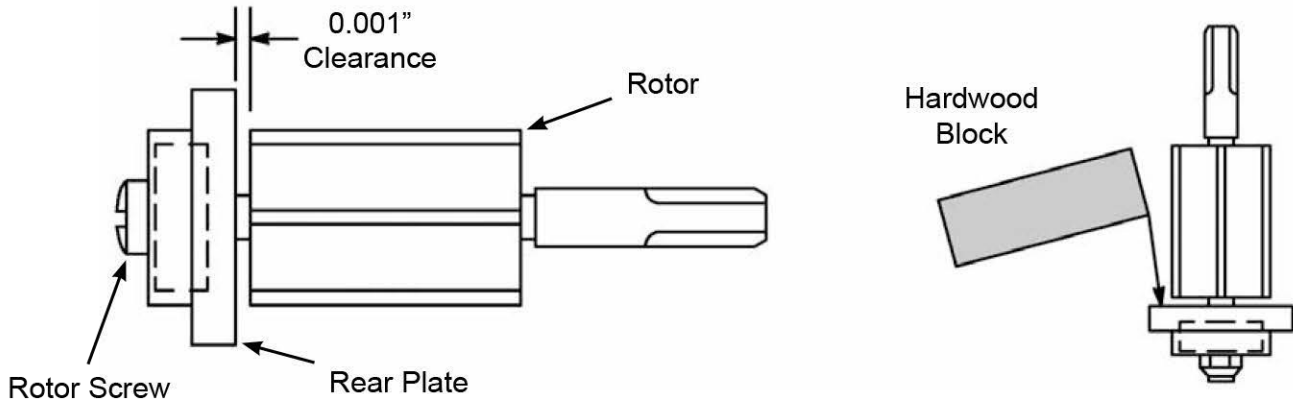
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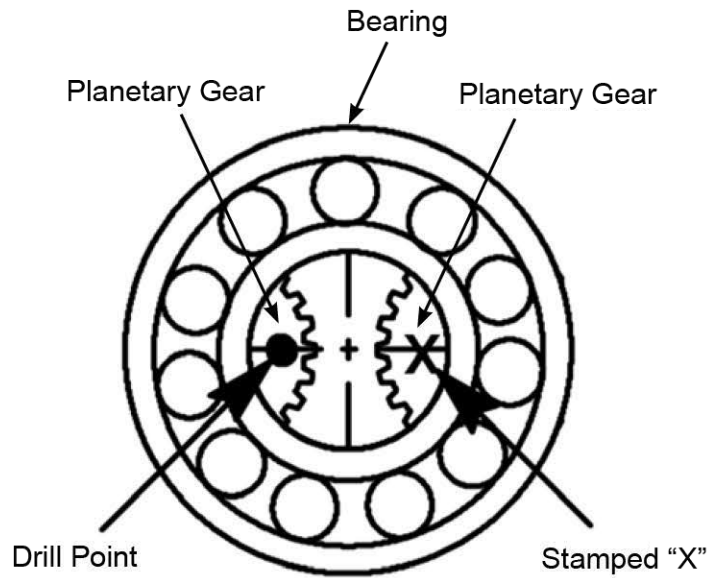
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1 Motor Assembly



2 Planetary Gear Timing: Speed Code 4



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