



ATS53 & 54

ATS53 & 54 - FOR DIESEL APPLICATIONS UP TO 3 LITRES

The ATS53 & 54 series has been designed for those smaller engine applications such as fork trucks or portable pump units. Many configurations are available for applications where lack of room is an issue



Key Features at 100 psi

| | | | |
|--------|--------------------|-------------|--------------------|
| Weight | 17.6 lb (8kg) | Power | 10 hp (7.4 kW) |
| Torque | 50 ft lb (67.8 Nm) | Consumption | 4.7 scfs (132 l/s) |
| Speed | 4500 RPM | Noise Level | 100 dBa |

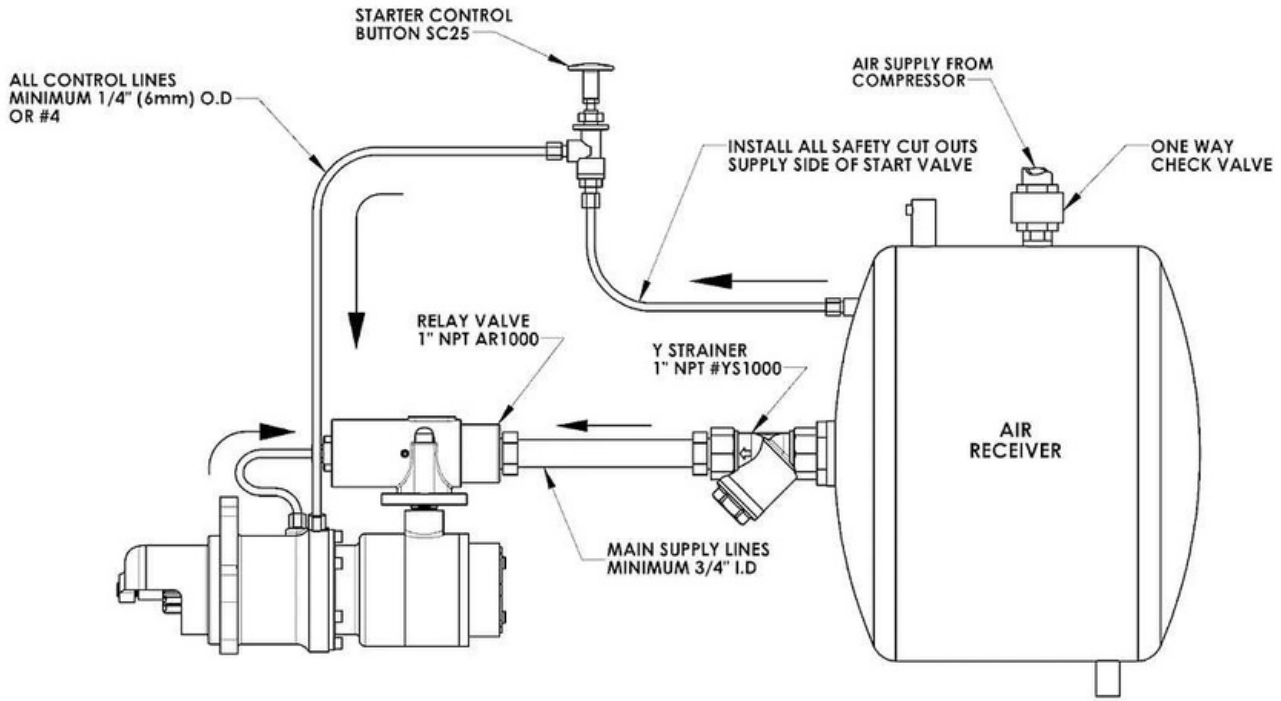
By ingenious design, benefits of Austart turbine starters include:

- ▶ No lubrication required
- ▶ Higher cranking torque
- ▶ Extended cranking periods
- ▶ Faster and more reliable starting
- ▶ 3 staged self governed turbine wheel
- ▶ Corrosion resistant coatings
- ▶ Fewer moving parts
- ▶ Longer service intervals
- ▶ Immunity to dusty environments
- ▶ Immunity to extremely high or low temperatures
- ▶ No need for special tools when servicing
- ▶ No batteries are required

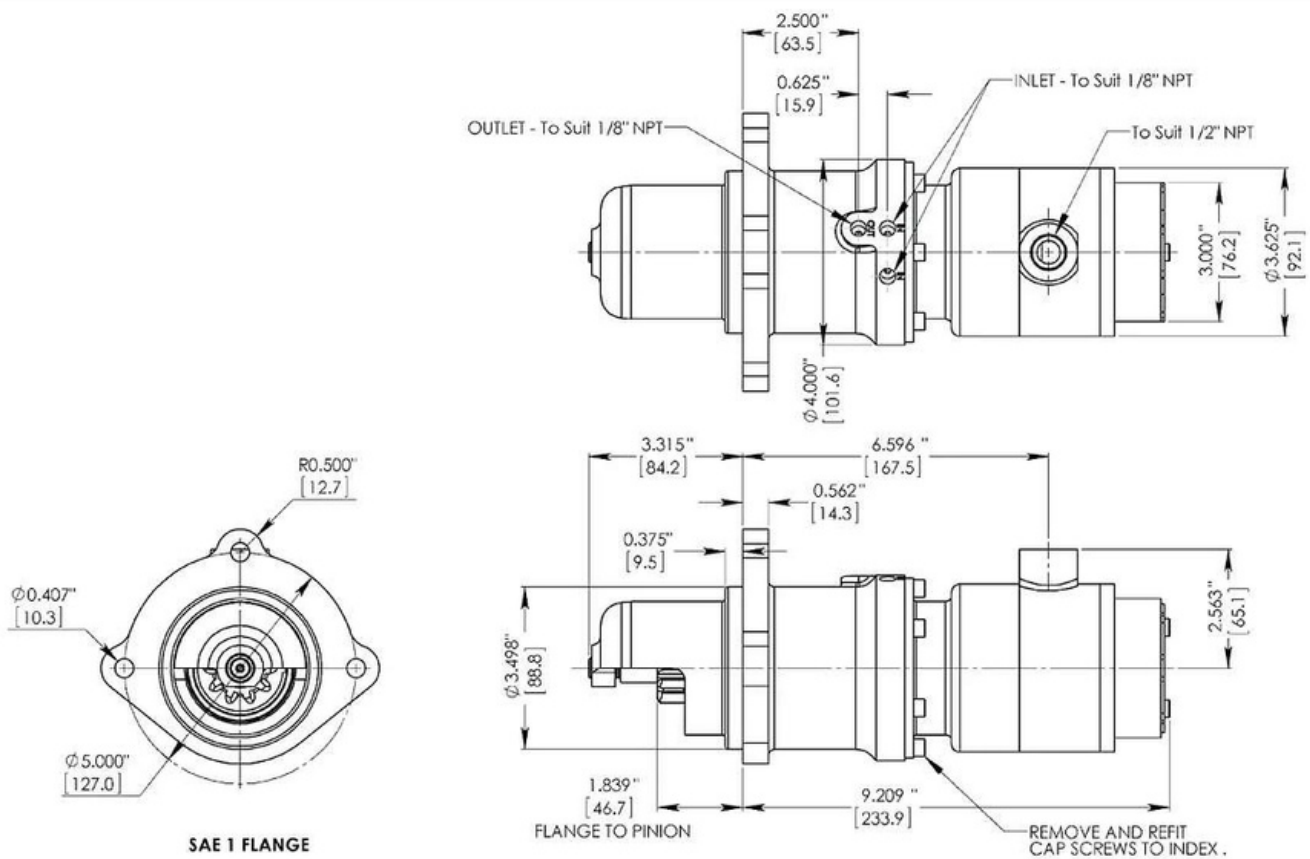
Air starters come in many configurations for a variety of applications and fitment objectives.

- ▶ Nosecone or overhung pinions
- ▶ Beryllium Copper Bronze (BCB) non sparking
- ▶ Pre-engaged or inertia engagement options
- ▶ U shaped models available for limited space applications
- ▶ Mounting flange and pinion options available to suite most engines





| | | |
|---|-------------------------|----------------------|
| TITLE | AT53 & AR1000-Schematic | SCALE: 1:3 |
| | | DATE: 22-11-16 |
| | | DO NOT SCALE DRAWING |
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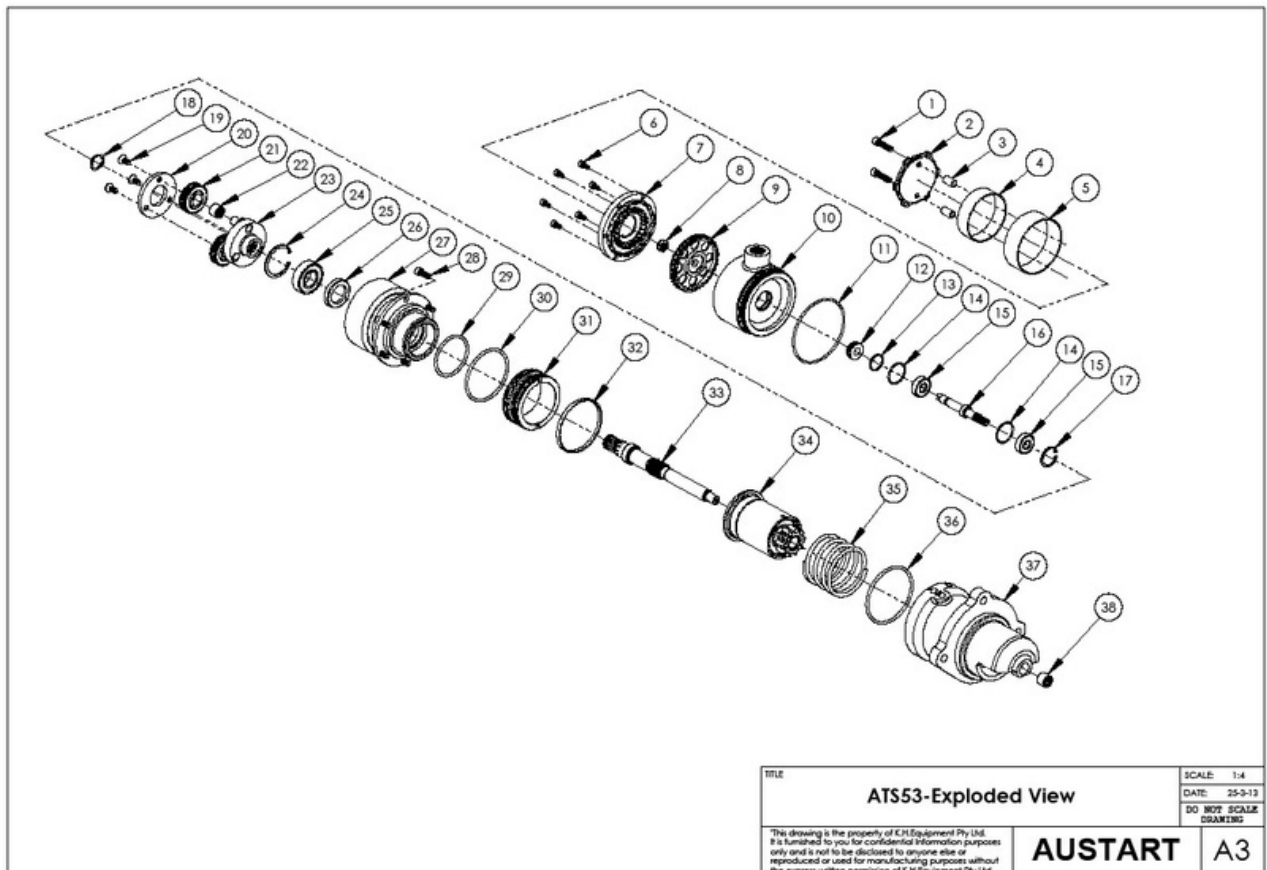
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|---|--------------------------|----------------------|
| TITLE | AT53-General Arrangement | DATE: 22-3-13 |
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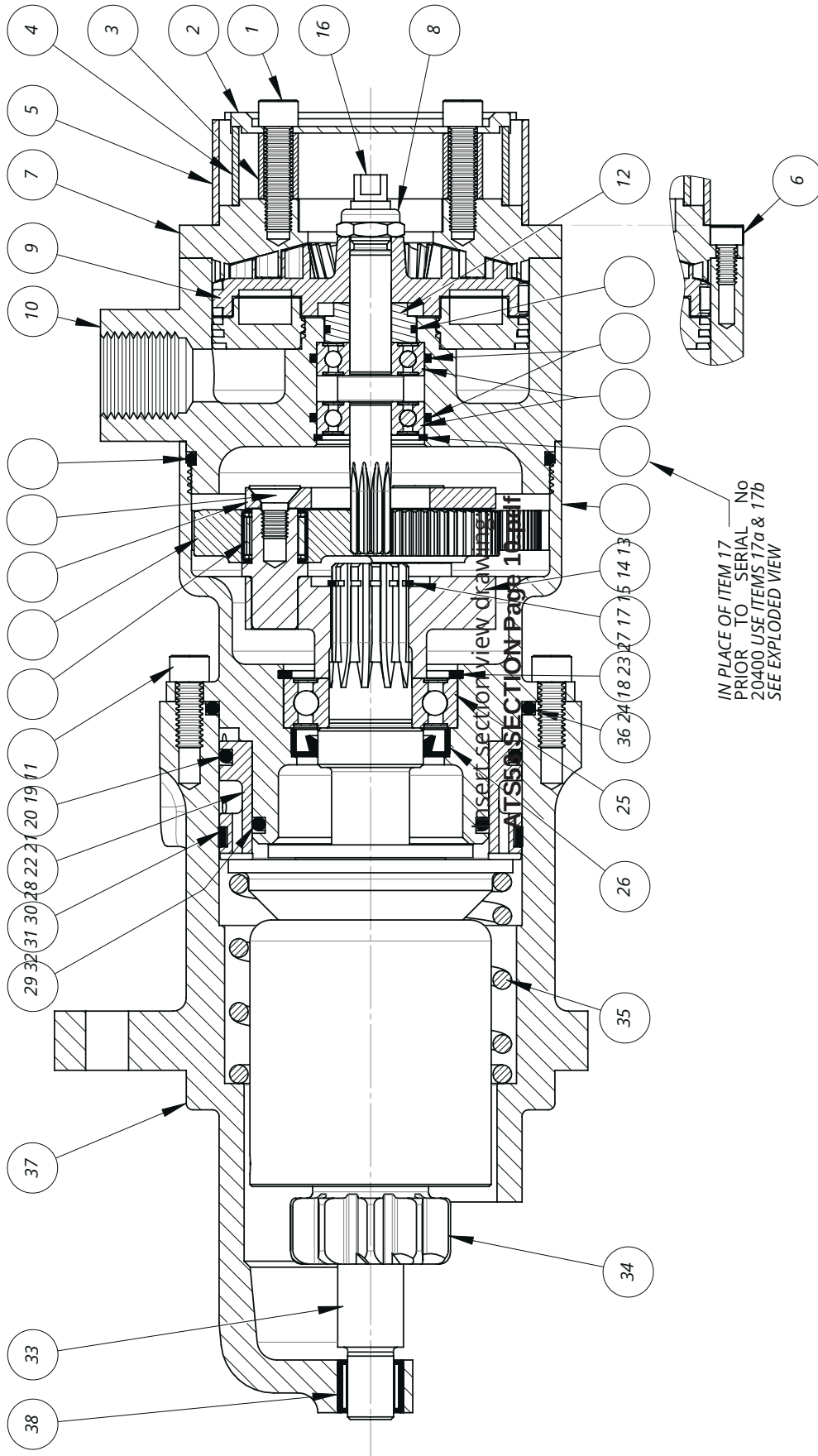


5340-900 AUSTART SERVICE KIT

| Item No. | Part ID | Description | Qty | Notes |
|----------|----------|-------------|-----|--|
| 11 | 5304-000 | O'ring | 1 | |
| 14 | 5309-000 | O'ring | 2 | |
| 15 | 5026-000 | Bearing | 2 | (Used before S/No #20400) |
| 18 | 5308-000 | Circlip | 1 | (Used after S/No #20400) |
| 18 | 5322-000 | Circlip | 1 | |
| 19 | 6617-000 | Circlip | 1 | |
| 23 | 6315-000 | Bearing | 3 | |
| 25 | 6619-000 | Circlip | 1 | |
| 26 | 6012-000 | Bearing | 1 | |
| 27 | 6621-000 | Seal | 1 | |
| 30 | 6730-000 | O'ring | 1 | |
| 31 | 6732-000 | O'ring | 1 | |
| 33 | 6733-500 | Seal | 1 | |
| 37 | 6731-000 | O'ring | 1 | (Item 17 Spacer not used after S/No #20400) |
| 39 | 6022-000 | Bearing | 1 | |



SECTION VIEW



TITLE

ATS53-Section View

SCALE: 1:1
DATE: 14-5-14

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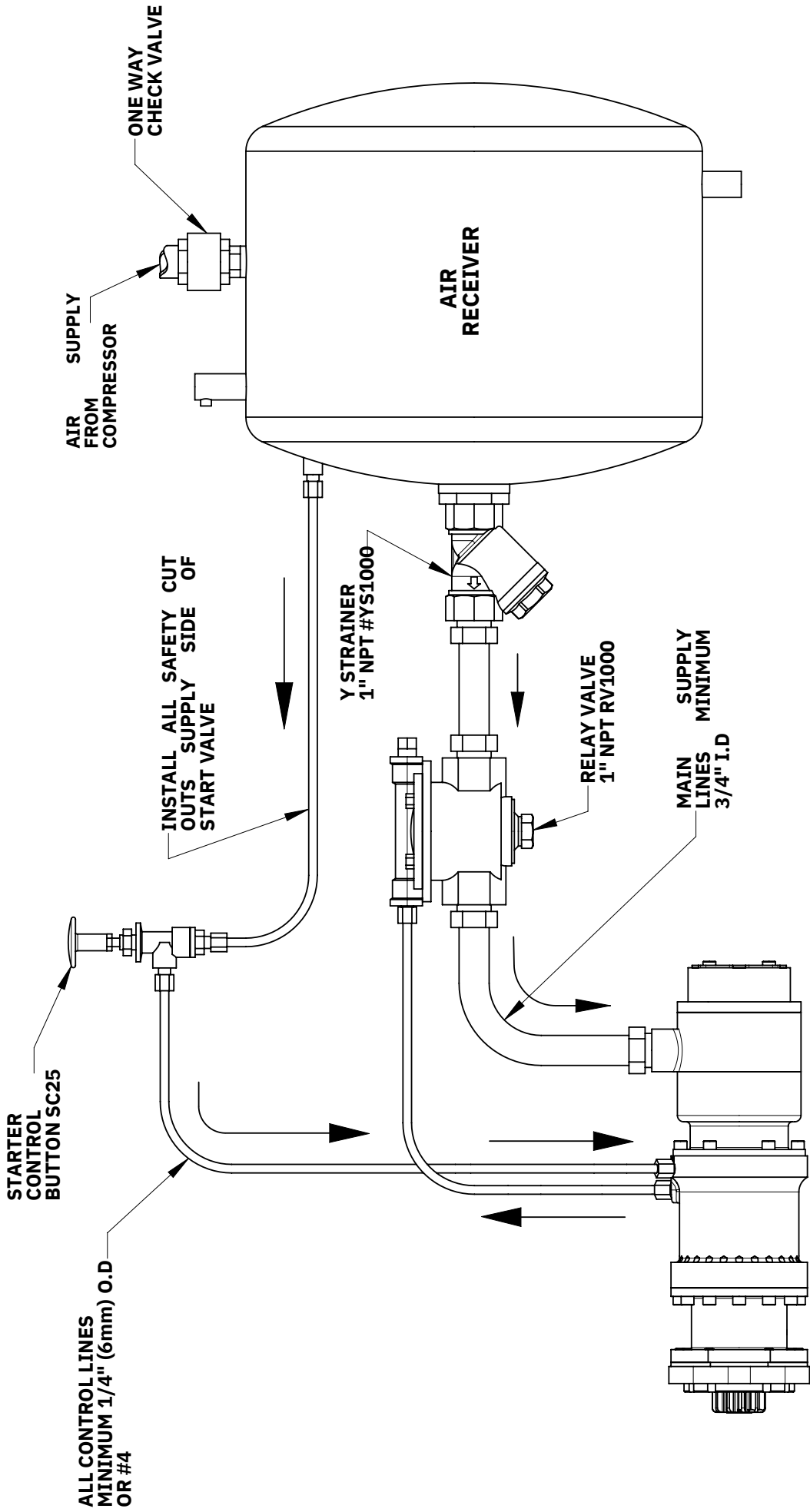
AUSTART ATS53

General Build List

| ITEM | PART NO. | EXT. | DESCRIPTION | QTY | ITEM | PART NO. | EXT. | DESCRIPTION | QTY |
|------|----------|------|---------------------------------|-----|------|----------|------|---------------------------------|-----|
| 1 | 7318 | 000 | SCREW | 2 | 28 | 6005 | 000 | SCREW | 6 |
| 2 | 3026 | 100 | END CAP (MUFFLER) | 1 | 29 | 6730 | 000 | O'RING | + |
| 3 | 3009 | 100 | SPACER | 2 | 30 | 6732 | 000 | O'RING | + |
| 4 | 5319 | 100 | BAFFLE SLEEVE | 1 | 31 | 6726 | 100 | PISTON | 1 |
| 5 | 5320 | 100 | OUTER SLEEVE | 1 | 32 | 6733 | 500 | SEAL | + |
| 6 | 6001 | 000 | SCREW | 6 | 33 | 6725 | xxx | DRIVE SHAFT | 1 |
| 7 | 5316 | 300 | END COVER | 1 | 34 | 6748 | xxx | DRIVE ASSY | 1 |
| 8 | 5301 | 000 | SPECIAL NUT | 1 | 35 | 6734 | 000 | SPRING | 1 |
| 9 | 5314 | 300 | ROTOR | 1 | 36 | 6731 | 000 | O'RING | + |
| 10 | 5302 | 930 | TURBINE HOUSING | 1 | 37 | 6728 | xxx | NOSE HOUSING | 1 |
| 11 | 5304 | 000 | O'RING | + | 38 | 6022 | 000 | BEARING | + |
| 12 | 5312 | 100 | SEAL SLEEVE | 1 | | | | | |
| 13 | 6313 | 000 | PISTON RING | 1 | | | | | |
| 14 | 5309 | 000 | O'RING | + | 2 | | | | |
| 15 | 5026 | 000 | BEARING | + | 2 | | | | |
| 16 | 5303 | 100 | ROTOR SHAFT | 1 | | | | | |
| 17 | 5322 | 000 | CIRCLIP (Used after S/N 20400) | + | 1 | | | | |
| 17a | 5305 | 100 | SPACER (Used before S/N 20400) | 1 | | | | | |
| 17b | 5308 | 000 | CIRCLIP (Used before S/N 20400) | + | 1 | | | | |
| 18 | 6617 | 000 | CIRCLIP | + | 1 | | | | |
| 19 | 6305 | 000 | SCREW | 3 | | | | | |
| 20 | 6306 | 100 | RETAINING RING | 1 | | | | | |
| 21 | 6307 | 100 | PLANET GEAR | 3 | | | | | |
| 22 | 6315 | 000 | BEARING | + | 3 | | | | |
| 23 | 6311 | 900 | SPIDER HUB ASSY | 1 | | | | | |
| 24 | 6619 | 000 | CIRCLIP | + | 1 | | | | |
| 25 | 6012 | 000 | BEARING | + | 1 | | | | |
| 26 | 6621 | 000 | SEAL | + | 1 | | | | |
| 27 | 5317 | 100 | GEAR | 1 | | 5340 | 900 | Service Kit Consist as marked + | A.R |

- XXX DENOTES OPTIONS AVAILABLE

ATS53/3 REV.06 22/05/2014



TITLE

ATS54-Schematic

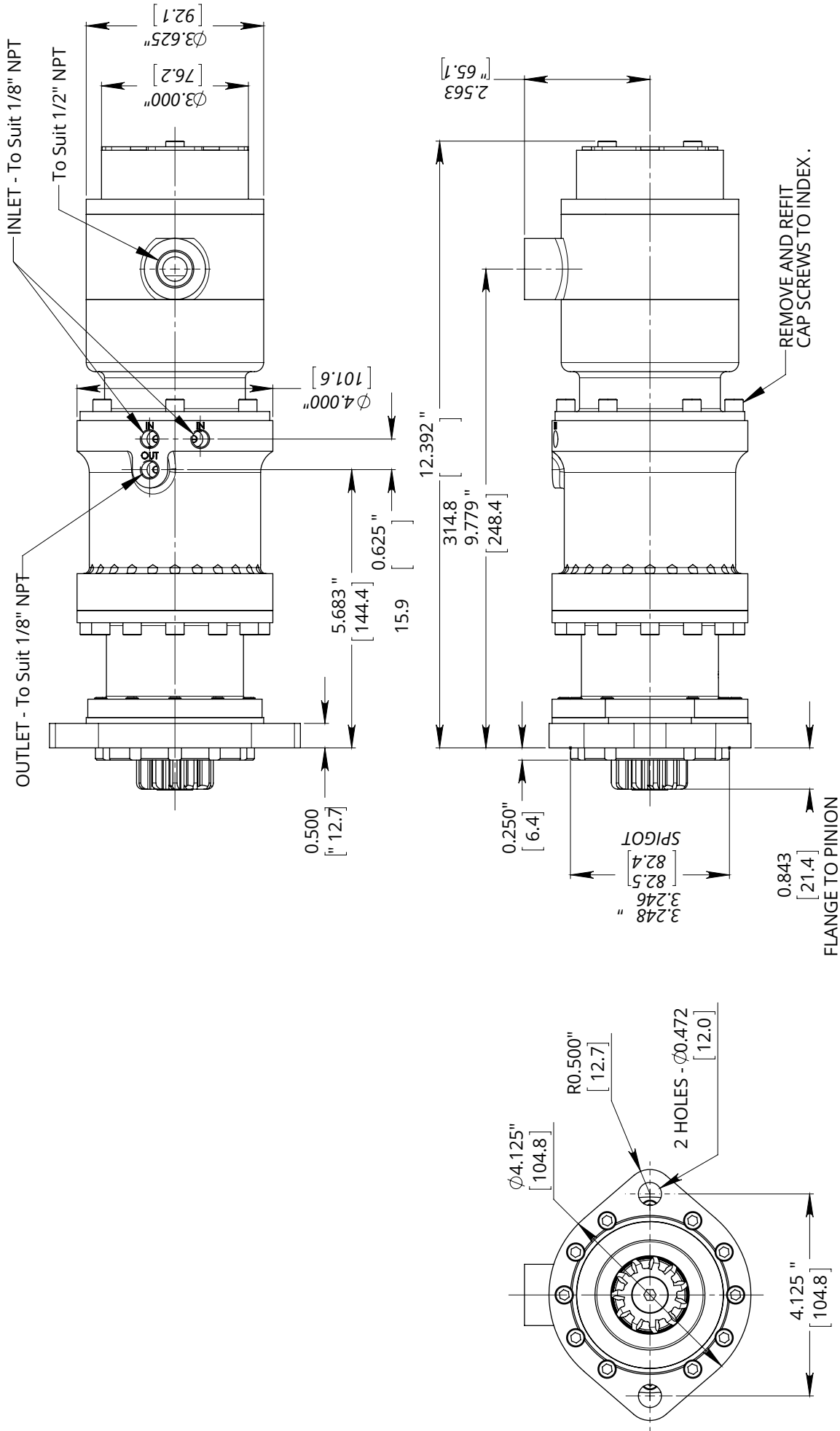
SCALE 1:3
 : 26-3-13
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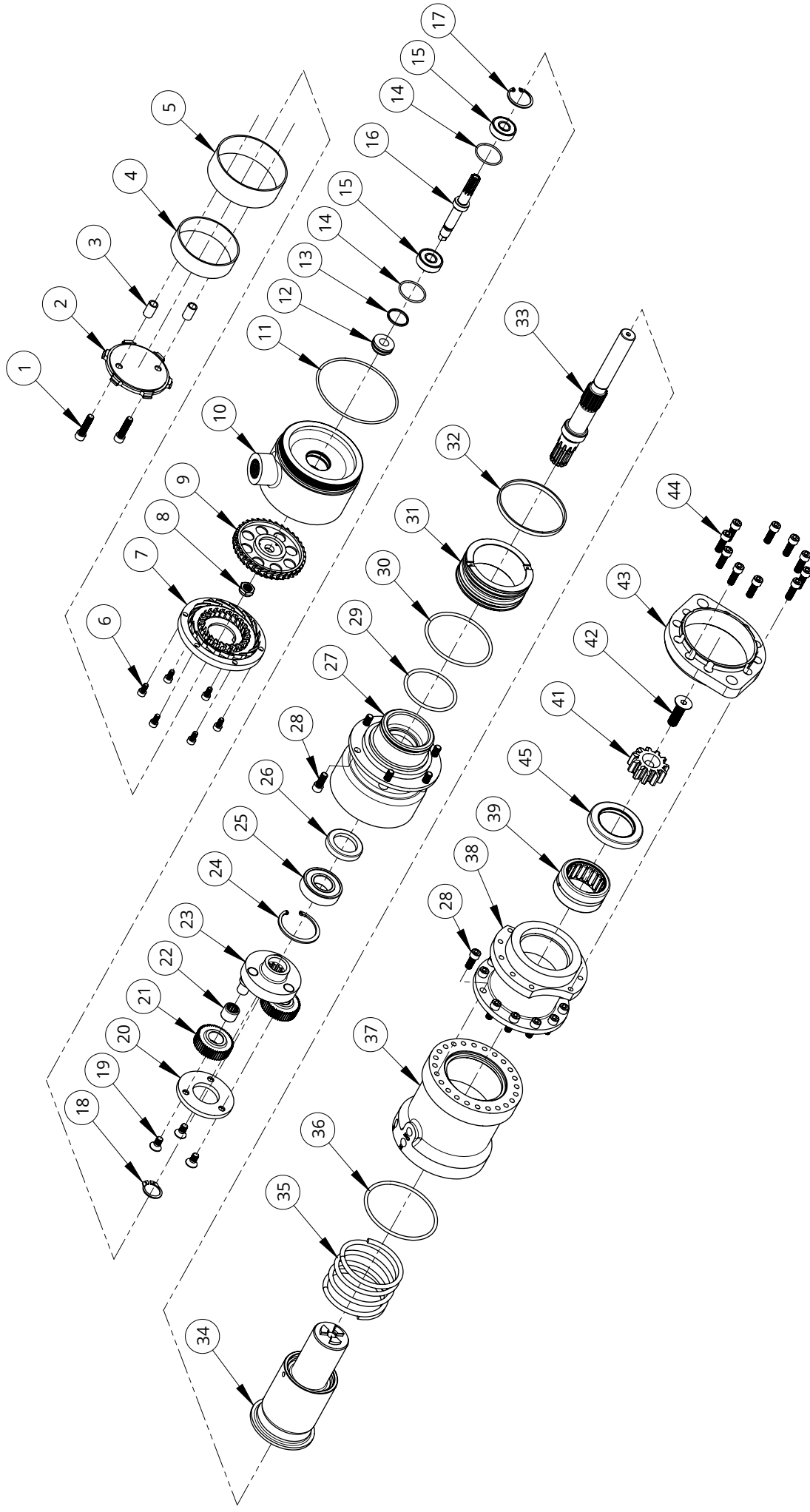


NOTE:
OTHER FLANGE AND PINION
OPTIONS AVAILABLE.

| | | |
|-------|----------------------------------|----------------------|
| TITLE | ATS54-General Arrangement | SCALE: 1:2 |
| | | DATE: 26-3-13 |
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TITLE

ATS54-Exploded View

SCALE: 1:4

DATE: 26-3-12

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PARTS BREAKDOWN

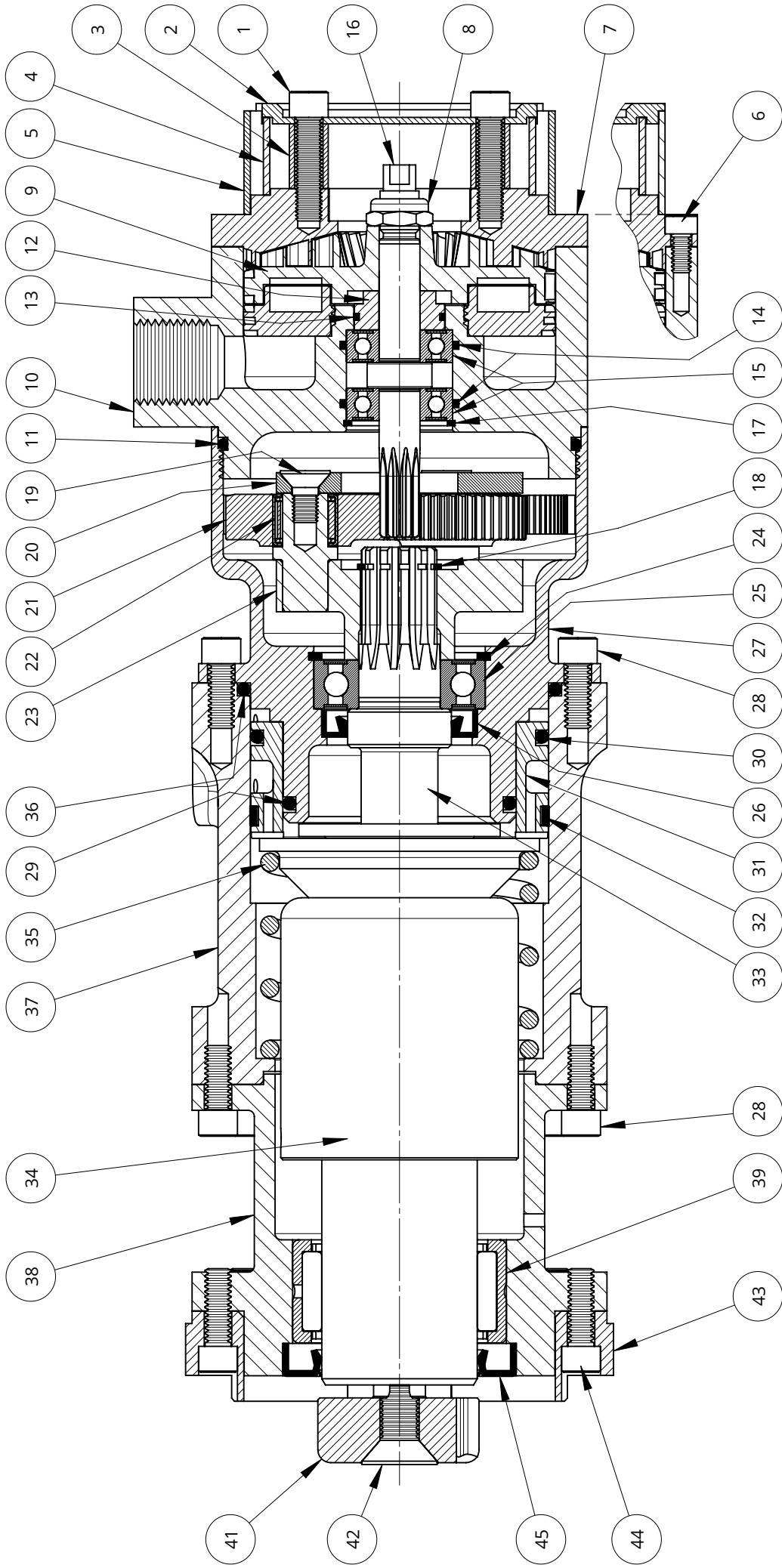
AUSTART AT554

General Bulb List

| ITEM# | PART NO. | EXT. | DESCRIPTION | QTY | ITEM | PART NO. | EXT. | DESCRIPTION | QTY |
|-------|----------|------|---------------------------------|-----|------|----------|------|-------------------------------|-------|
| 1 | 7318 | 000 | SCREW | 2 | 26 | 6012 | 000 | BEARING | 1 |
| 2 | 3026 | 100 | END CAP (AUXILIARY) | 1 | 27 | 6621 | 000 | SEAL | 1 |
| 3 | 3009 | 100 | SPACER | 2 | 28 | 5317 | 100 | GEAR ADAPTOR | 1 |
| 4 | 5319 | 100 | BAFFLE SUBVE | 1 | 29 | 6005 | 000 | SCREW | 18 |
| 5 | 5320 | 100 | OUTER SIEVE | 1 | 30 | 6730 | 000 | O'RING | 1 |
| 6 | 6001 | 000 | SCREW | 6 | 31 | 6732 | 000 | O'RING | 1 |
| 7 | 5316 | 300 | END COVER | 1 | 32 | 6726 | 100 | PISTON | 1 |
| 8 | 5301 | 000 | SPECIAL NUT | 1 | 33 | 6733 | 500 | SEAL | 1 |
| 9 | 5314 | 300 | ROTOR | 1 | 34 | 6750 | 100 | DRIVE SHAFT | 1 |
| 10 | 5302 | 900 | TURBINE HOUSING | 1 | 35 | 6760 | 900 | DRIVE ASSY | 1 |
| 11 | 5304 | 000 | O'RING | 1 | 36 | 6734 | 000 | SPRING | 1 |
| 12 | 5312 | 100 | SEAL SIEVE | 1 | 37 | 6731 | 000 | O'RING | 1 |
| 13 | 6313 | 000 | PISTON RING | 1 | 38 | 6762 | XXX | R.R. HOUSING | 1 |
| 14 | 5309 | 000 | O'RING | 2 | 39 | 6022 | XXX | FR. HOUSING | 1 |
| 15 | 5026 | 000 | BEARING | 2 | 40 | 7054 | 000 | BEARING | 1 |
| 16 | 5303 | 100 | ROTOR SHAFT | 1 | 41 | 7056 | 000 | SEAL | 1 |
| 17 | 5305 | 100 | SPACER (Used before S/N 20400) | 1 | 42 | 6765 | XXX | PINION | 1 |
| 18 | 5308 | 000 | CIRCLIP (Used before S/N 20400) | 1 | 43 | 6758 | 000 | SCREW | 1 |
| 19 | 5322 | 000 | CIRCLIP (Used after S/N 20400) | 1 | 44 | 6729 | XXX | FLANGE | 1 |
| 19 | 6617 | 000 | CIRCLIP | 1 | 45 | 7005 | 000 | SCREW | 10 |
| 20 | 6305 | 000 | SCREW | 3 | | | | | |
| 21 | 6306 | 100 | RETAINING RING | 1 | | | | | |
| 22 | 6307 | 100 | PLANET GEAR | 3 | | | | | |
| 23 | 6315 | 000 | BEARING | 3 | | | | | |
| 24 | 6311 | 900 | SPIIDER HUB ASSY | 1 | | | | | |
| 25 | 6619 | 000 | CIRCLIP | 1 | | | | | |
| | | | | + | | 5440 | 900 | Service Kit Consult on marked | 1 |
| | | | | | | | | | A.I.R |

• XXXX DEMOTES OPTIONS AVAILABLE

ATS 5473 REV. 01 16-03-2013



TITLE

ATS54-Section View

SCALE: 1:1

DATE: 27-3-13

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AUSTART

A3



MAINTENANCE



DISASSEMBLY

Refer to the Exploded View and Cross Sectional View drawings on pages 8 & 10.

Begin by holding nose housing (38) of the air starter in a vice using soft jaws.

Making sure a 1/2" NPT fitting is in the inlet port of turbine housing (10) lightly tap the boss of the inlet port with the fitting secure. The turbine housing (10) is secured onto the gear adaptor by means of left hand thread. Unscrew and separate the two sub assemblies.

The sub assemblies may now be dismantled separately. Disassembly of any of these two sub assemblies is detailed in the exploded view on page 8 and is basically in the order shown. Refer also to the following instructions:

NOSE ASSEMBLY

1. Remove six screws (29) and separate the gear adaptor (28) by gently tapping it with a soft hammer if necessary. The gear adaptor (28) should spring apart from the nose housing (38).
2. Remove spring (36), drive assembly (35) and piston (32).
3. Hold drive shaft (34) to remove the three countersunk screws (20) which may require a sharp tap to loosen them.
4. Remove retainer (21), planet gears (22) and bearings (23).
5. Support gear adaptor (28) in the vertical position, remove circlip (19) using circlip pliers and gently press out drive shaft (34) from spider hub (24) and bearing (26).

6. Remove circlip (25) using circlip pliers and press out bearing (26) and seal (27).
7. Remove nose bearing (39) from nose housing (38).

MOTOR ASSEMBLY

1. Begin by removing screws by removing screws (1), end cap (2), spacers (3), baffle sleeve (4) and outer sleeve (5).
2. Remove screws (6) from end cover (7).
3. Using a soft hammer lightly tap the side of the end cover (7) to remove from turbine housing (10).
4. Remove special nut (8) by holding rotor shaft (16) with the two flats provided in a vice.

CAUTION

Do not hold rotor shaft (16) by splined end when removing special nut (8). Damage to spline will cause premature gearbox failure.

5. Remove circlip (18) using circlip pliers and press out rotor shaft (16) through rotor (9) as an assembly.
6. Press out seal sleeve (12) and bearing (15) from turbine housing (10).
7. Press off bearing (15) from the rotor shaft (16).



REASSEMBLY

Refer to the Exploded View and Cross Sectional View drawings on pages 8 & 10.

Reassembly of any of the two sub assemblies detailed in the exploded view on page 8 is basically in the reverse order shown. Refer also to the following instructions:

NOSE ASSEMBLY

1. Begin by pressing the bearing (39) into nose housing (38) using a press with an appropriate pressing tool.
2. Drive home the seal (27) into the gear adaptor (28) until it bottoms.

CAUTION

Ensure the seal (27) is fitted the correct way i.e. with the tapered leading edge engaged first. Liberally grease the exposed side of the seal (27) with lithium based grease such as Valvoline Valplex EP grease or similar.

3. Using a press drive home the bearing (26) into the gear adaptor (28) until it bottoms. Then insert shaft (34) into the bearing (26) and press home. Ensure the gear adaptor (28) and bearing (26) are well supported during this operation. Finally fit circlip (25) using circlip pliers.
4. Invert the gear adaptor (28) and restrain in the vertical position. Slip on spider hub assembly (24) onto shaft (34) and fit circlip (19) using circlip pliers.
5. Install the three planet gears (22) and gear bearings (23) onto the spider hub assembly (24).

CAUTION

Ensure planet gears (22) are installed with the boss side of the gear facing the spider hub assembly (24). Coat gear bearings with grease before assembly.

6. Fit retainer (21) to the spider hub assembly (24) and install the three countersunk screws (20).
7. Invert partial assembly again to fit o-rings (37) and (30) onto gear adaptor (28).
8. Fit o-ring (31) and wiper seal (33) onto piston (32).
9. Liberally grease piston (32), the inner portion of the gear adaptor (28) and shaft (34) where it extends, then gently slide piston (32) onto the gear adaptor without damaging o-ring (30).
10. Slide drive assembly (35) onto shaft (34) and then fit spring (36) over drive assembly (35).
11. Liberally coat the inner regions of nose housing (38) and bearing (39) with grease and assemble nose assembly over piston (32) taking care not to damage wiper seal (33). Rotate the nose assembly until the six screw holes line up with the gear adaptor (28).
12. Squeeze together gear adaptor (28) and nose assembly (38) being careful not to damage o-ring (37) then insert screws (29).
13. Liberally pack gear teeth with suitable grease such as Valvoline Valplex EP or similar.
14. The nose assembly is now ready to accept the motor assembly.

MOTOR ASSEMBLY

1. Begin by lightly oiling the internal bore of the turbine housing (10) with hydraulic oil and fitting inner o'ring (14).
2. Evenly press home bearing (15) until it bottoms. Ensure o'ring (14) is not damaged or dislodged.
3. Install piston ring (13) onto seal sleeve (12).
4. Lightly grease the outside of the piston ring (13) on the seal sleeve (12) and push home into the turbine housing (10) until it bottoms.
5. Press bearing (15) onto rotor shaft (16) using a press and liberally grease top of bearing.
6. Install second o'ring (14) into turbine housing (10) and insert rotor shaft (16) and bearing (15) as an assembly. This should be achieved with an even push fit.
7. Insert spacer (17) (used prior to serial number 20400) and install circlip (18) with circlip pliers.
8. Fit turbine rotor (9) onto rotor shaft (16) extension. As this is an interference fit it is necessary to warm the turbine rotor (9) with a heat gun or boiling water before installing.
9. Lightly oil thread on rotor shaft (16) extension and install special nut (8). Tighten nut against the turbine rotor (9) to a torque of 20-25 ft lb. (27-34Nm.) Prevent the turbine rotor (9) from turning by holding the flats provided on the rotor shaft (16) in a vice.

CAUTION

Do not hold rotor shaft (16) by splined end when installing special nut (8) as damage can occur.

10. Install end cover (7), screw (6), baffle sleeve (4), outer sleeve (5), spacer (3), end cap (2) and screws (1).

ASSEMBLING NOSE & MOTOR ASSEMBLIES

1. Invert nose assembly and hold in a vice using jaws.
2. Apply grease to planet gears (22) and gear case (28). Apply oil to thread and o'ring (11) of motor assembly carefully line up spline of motor assembly shaft (16) with planet gears (22) on the nose assembly and screw together. Note that the motor assembly has a left hand thread.
3. Insert a 1/2" NPT fitting into the boss of the inlet port of motor assembly and tap with a soft hammer to tighten.
4. Test the operation of the drive assembly (35) by introducing air pressure at the control line inlet port. The drive assembly should move freely forward when air pressure is applied and back once the pressure has been relieved. Investigate if this movement is not smooth.



WARRANTY POLICY

All Austart Products and services supplied by K.H. Equipment Pty. Ltd. (herein called “the Manufacturer”) is warranted to be free from any defect in workmanship and material under conditions of normal use and service for engine starting applications for a period of 12 months from the date of purchase by the first user. A period of 6 months is warranted for all service work. Normal wear and tear is excluded from the warranty cover.

The Manufacturer will replace or repair at their works, without cost, any Austart Starter or parts found to be defective or at their discretion choose to refund the purchase price less a reasonable allowance for depreciation in exchange for the starter or part should the item prove impossible to repair or replace.

This warranty shall not apply to any Austart Starter or parts which have been altered or repaired or purchased outside the Manufacturer and its assigned agents nor to equipment or parts that have been subject to misuse including overloading, neglect, accident or damage, nor to any part or parts improperly applied or installed.

This warranty is in lieu of all other warranties and conditions statutory or otherwise expressed or implied and of all other obligations or liabilities on the Manufacturer’s part. The Manufacturer’s maximum liability is limited to the purchase price of the starter and is not liable for any consequential damage, loss or expense.

Repeat engine starting attempts must be delayed for 15 seconds to allow all Austart Starter and engine components to stop rotating to avoid damage or adverse wear of components.



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