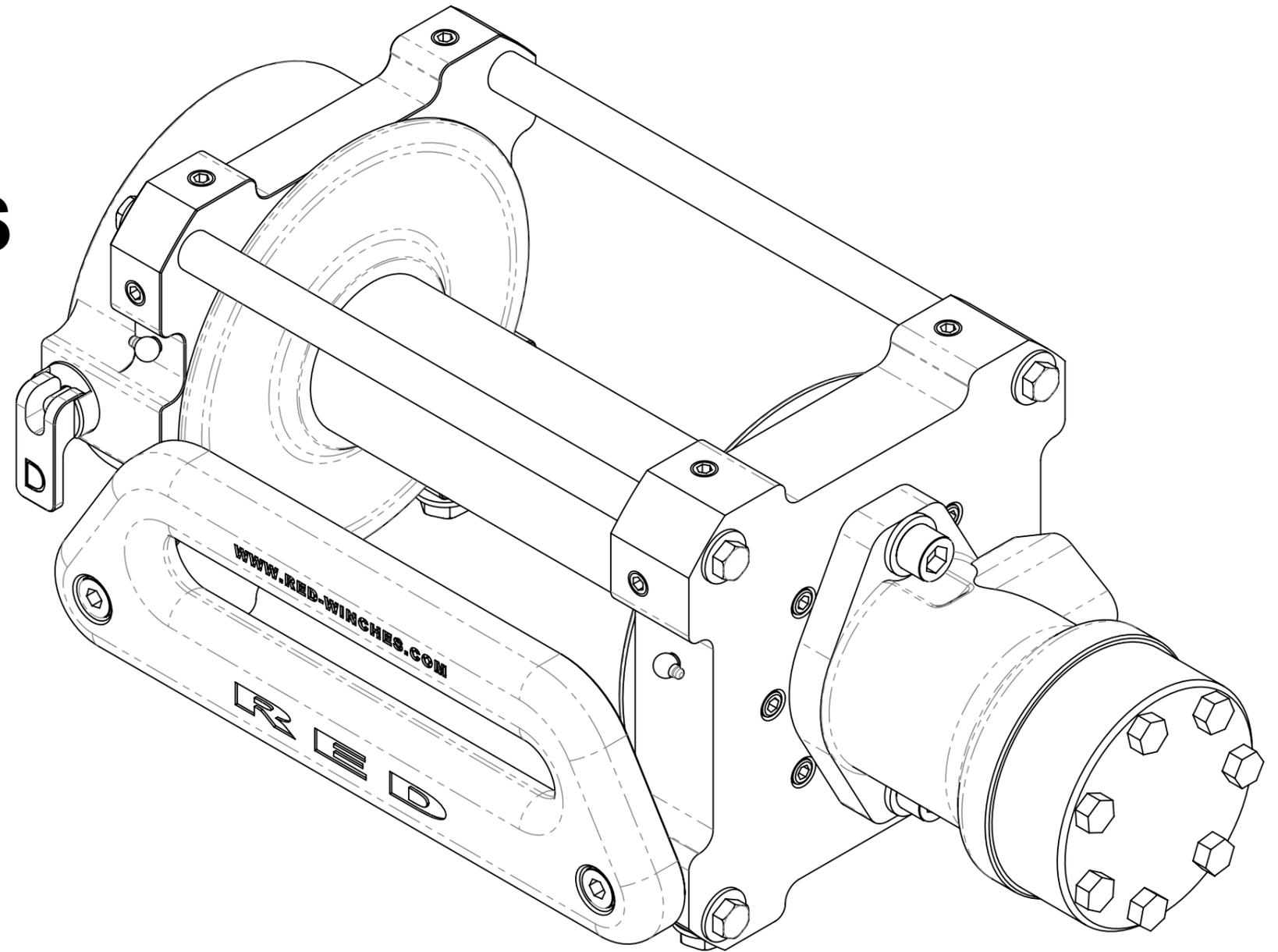




# RED Winches

## CHALLENGER WINCH WORKSHOP DRAWINGS



This winch is part of a group of winches whose designs have undergone extensive military testing and are now fitted to various military vehicles. These winches are now available on the commercial market and as such offer something previously unavailable. The end user can now enjoy a professional highly engineered high performance winch capable of operating in the most demanding of situations. The small compact size combined with its pulling power make it an ideal winch for maximum impact when faced with minimal installation space

- SHEET 1: FRONT COVER**
- SHEET 2: DIMENSIONS**
- SHEET 3: END COVER PLATE**
- SHEET 4: HYDRAULIC MOTOR**
- SHEET 5: DRIVE SHAFT**
- SHEET 6: REMOVING GEARS**
- SHEET 7: FAIRLEAD & LEVER**
- SHEET 8: END CAPS**
- SHEET 9: FULL EXPLODED VIEW**
- SHEET 10: HYDRAULIC DIAGRAM**
- SHEET 11: LUBRICATION**

<b>RED Winches</b>		www.red-winch.com ULTIMATE PERFORMANCE WINCH		
DRAWING NUMBER:	WORKSHOP MANUAL	SCALE:	REVISION:	SHT 1
		1:3	A	OF 11
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WINCH  
TYPE

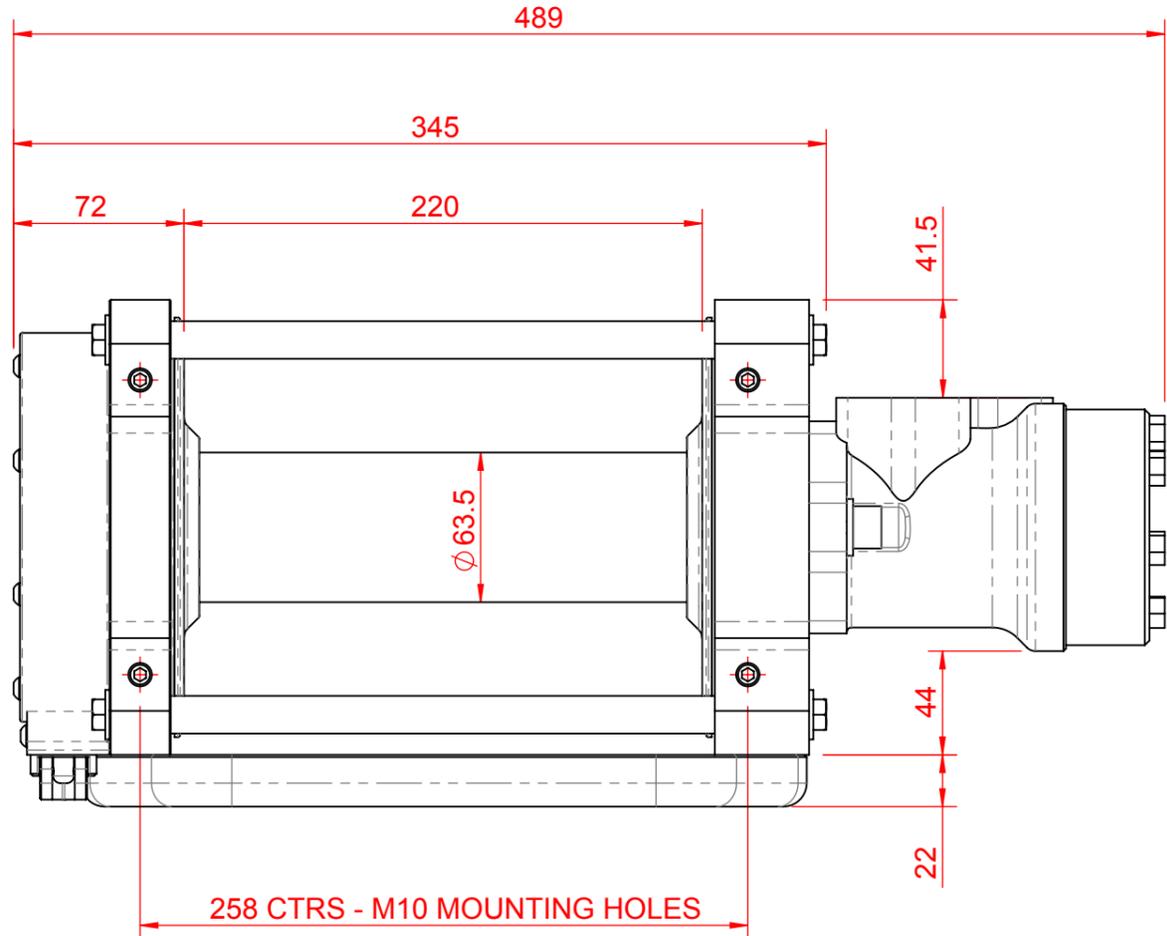
**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

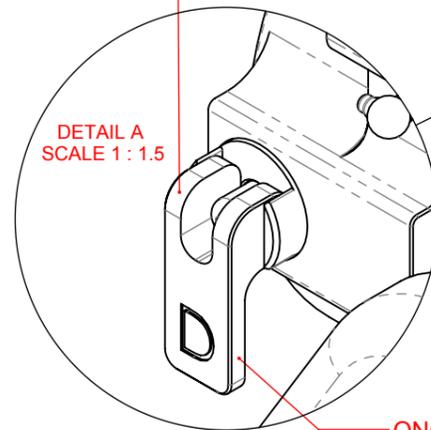
Telephone: +44 (0)1460 67744  
Email: sales@red-winch.com

REV.	DATE	DESCRIPTION	SIG
A	05/09/2010	WORKSHOP ISSUE	NJ

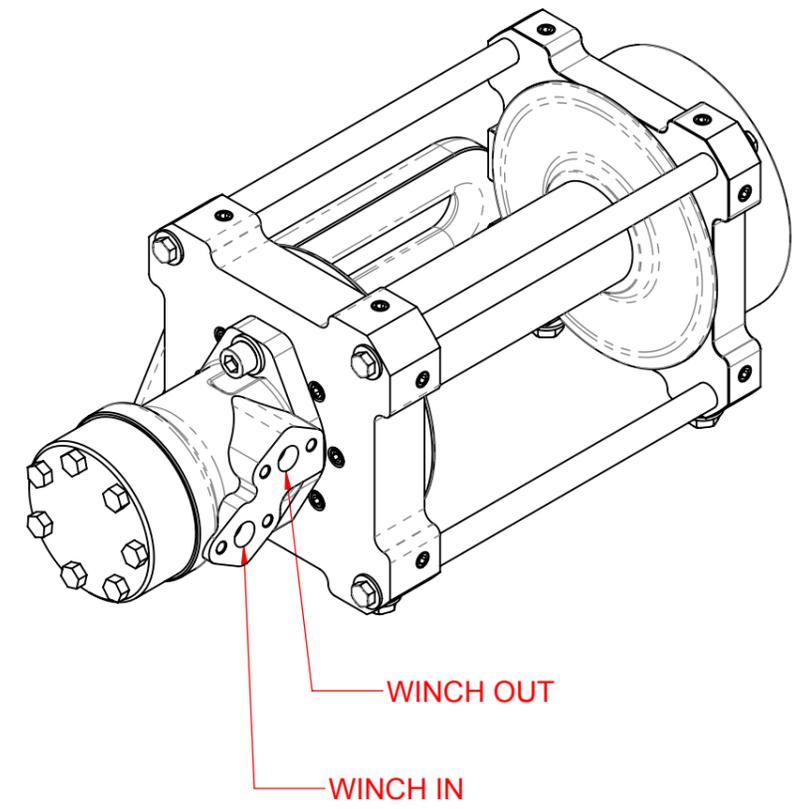
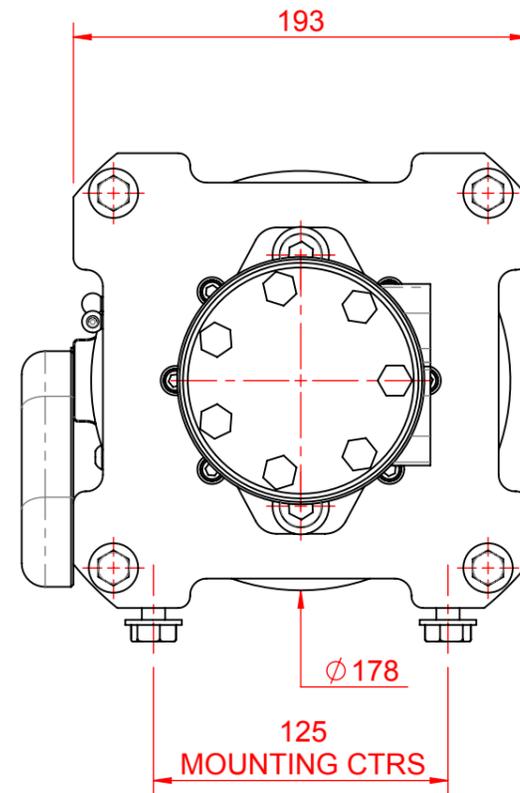
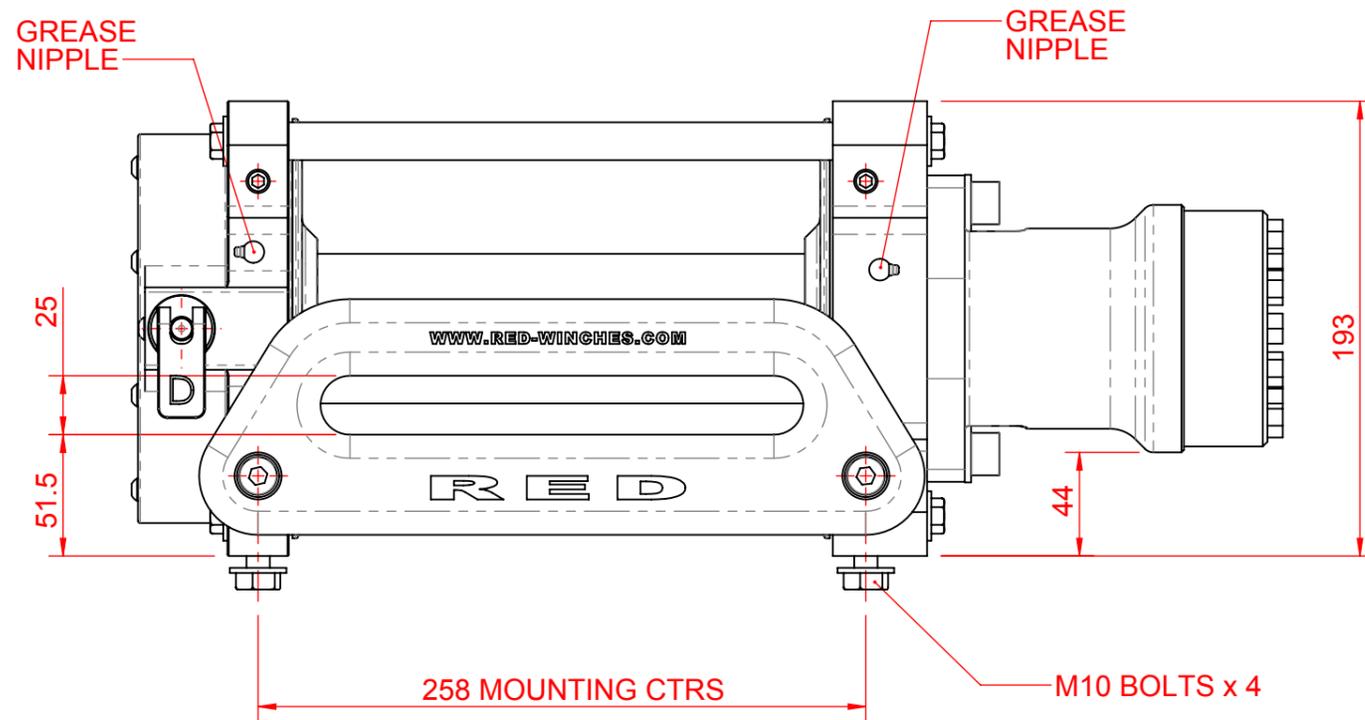
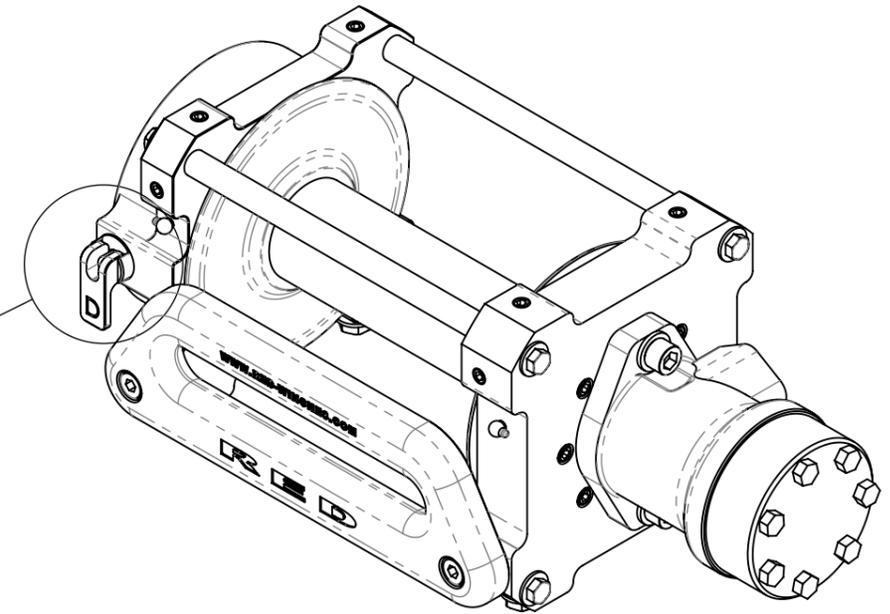


LEVER FLIPS DOWN FOR THE DRIVE POSITION SHOWING 'D'

LEVER FLIPS UP FOR THE FREE SPOOL POSITION SHOWING 'F'

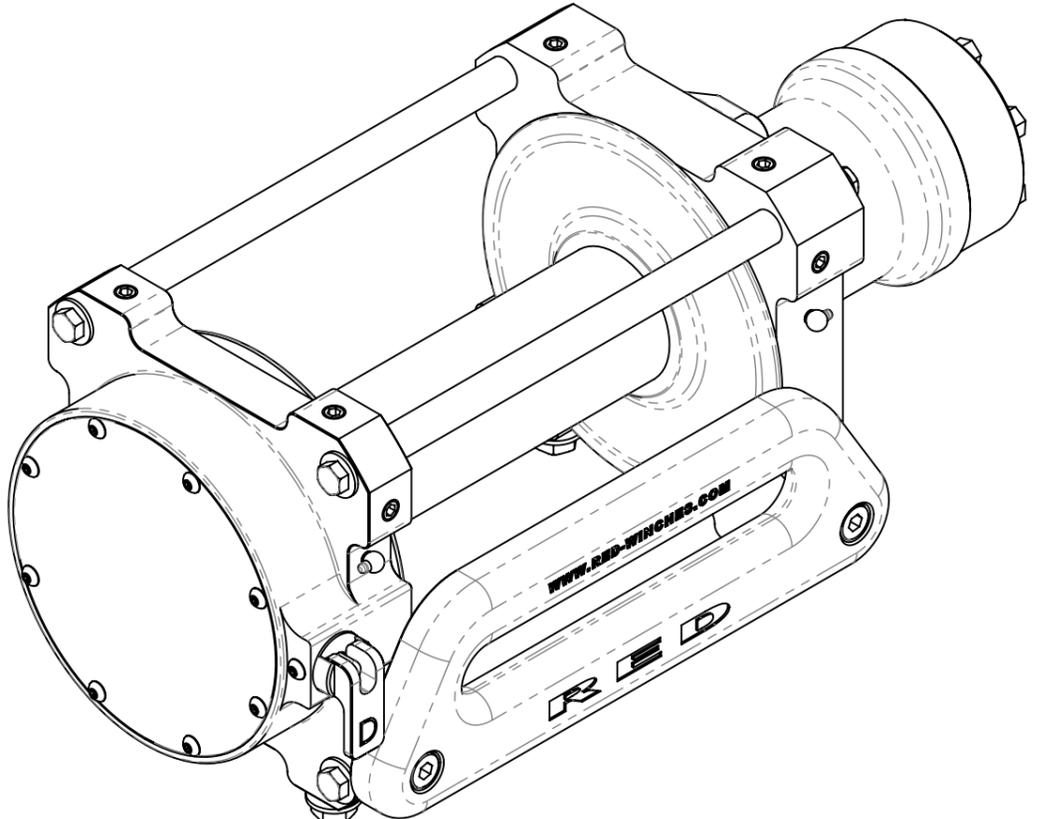
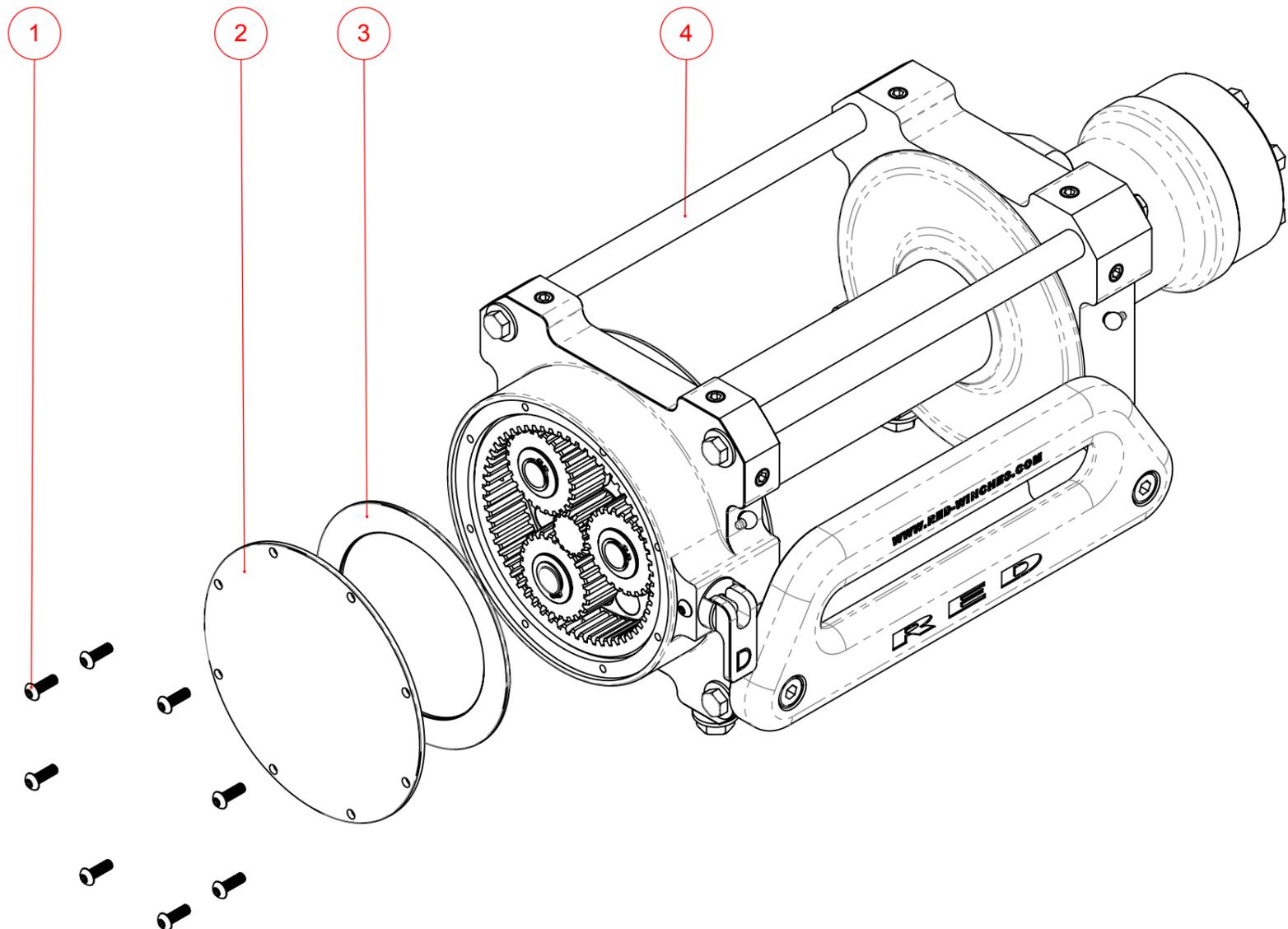


ONCE GEAR IS SELECTED VIA THE LEVER ROTATE DRUM BY HAND BEFORE OPERATING THE WINCH. YOU WILL HEAR IT CLICK INTO GEAR WHEN YOU TURN THE DRUM. THIS WILL REDUCE WEAR OF THE SELECTOR PIN



<b>WINCH TYPE</b>	<b>CHALLENGER</b>	<b>WINCH DESCRIPTION:</b>	<b>SINGLE SPEED, PLAIN BEARINGS, 160cc MOTOR</b>	Telephone: +44 (0)1460 67744 Email: sales@red-winches.com	<b>RED Winches</b> www.red-winches.com ULTIMATE PERFORMANCE WINCH	DRAWING NUMBER: <b>WINCH DIMENSIONS</b>	SCALE 1:3	REVISION <b>A</b>	SHT 2 OF 11
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1. PLACE WINCH (ITEM 4) SECURELY ON A LEVEL SURFACE
2. REMOVE M5 BUTTON HEAD SCREWS (ITEM 1) USING AN ALLEN KEY
3. REMOVE COVER PLATE (ITEM 2)
4. REMOVE THRUST WASHER (ITEM 3)

WINCH  
TYPE

**CHALLENGER**

WINCH  
DESCRIPTION:

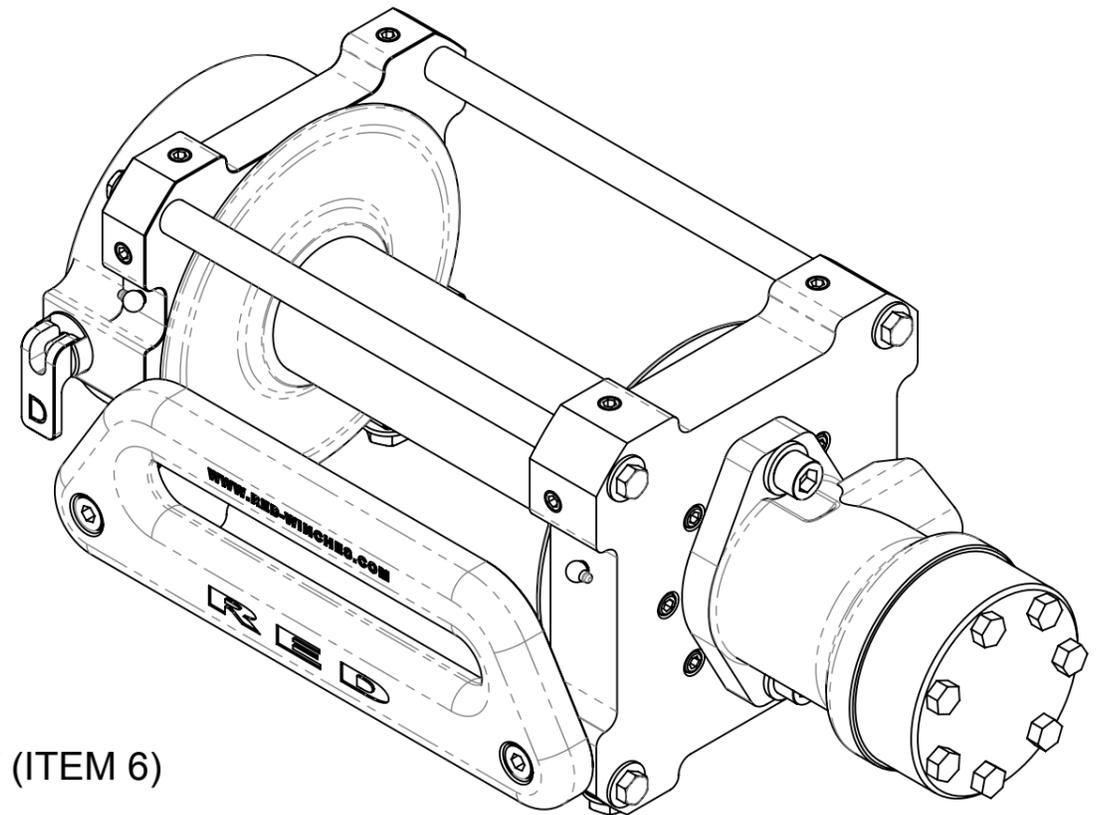
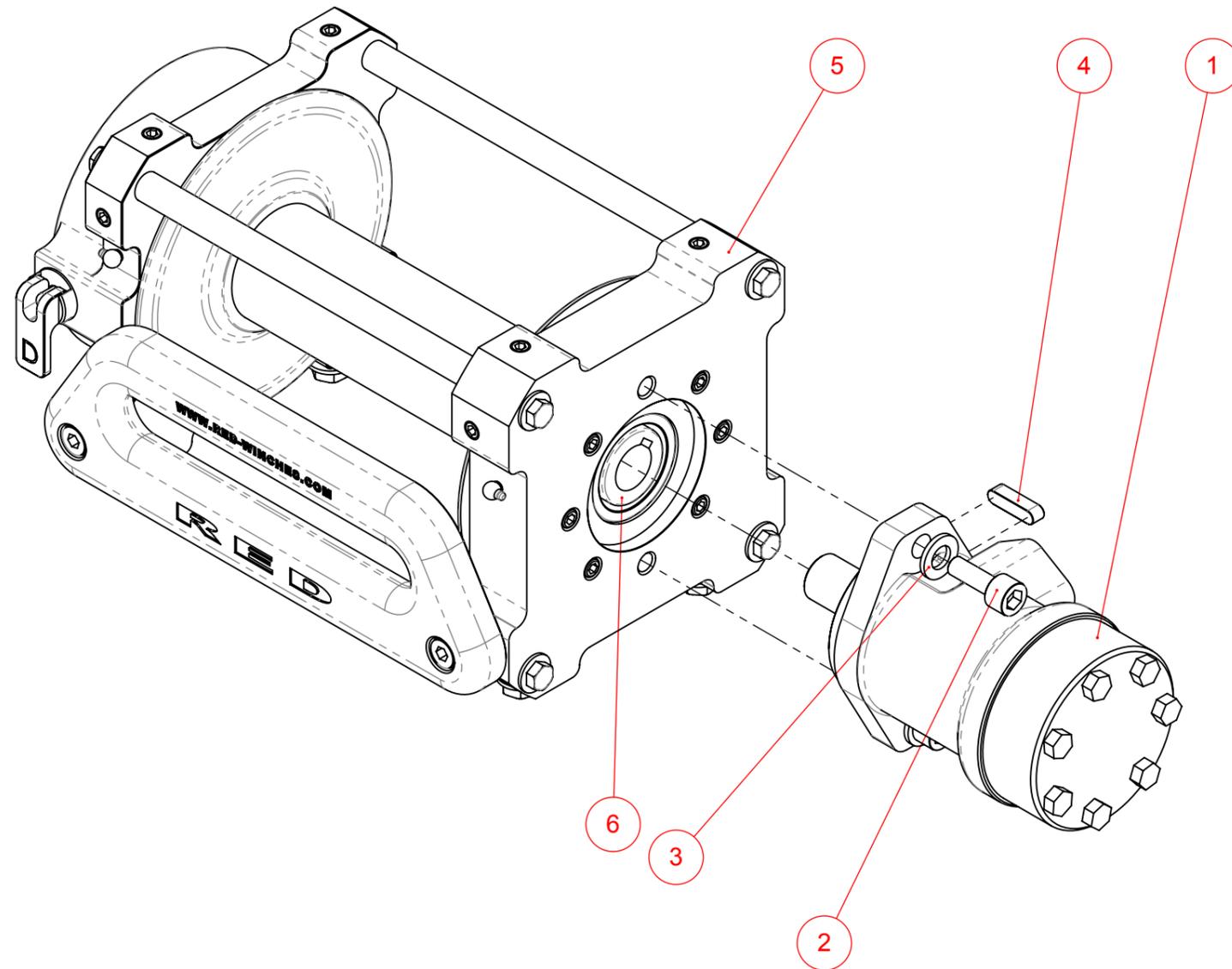
**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winches.com

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ULTIMATE PERFORMANCE WINCH

DRAWING NUMBER: REMOVING END CAP	SCALE 1:3	REVISION <b>A</b>	SHT 3 OF 11
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1. PLACE WINCH (ITEM 5) SECURELY ON A LEVEL SURFACE
2. REMOVE M12 SOCKET CAP HEAD BOLTS (ITEM 2) USING AN ALLEN KEY
3. REMOVE MOTOR (ITEM 1) BY SLIDING IT OUT FROM THE END OF THE DRIVE SHAFT (ITEM 6)

*THE DRIVE SHAFT MAY SLIDE OUT WHILE SLIDING THE MOTOR AWAY FROM THE WINCH, THIS IS NORMAL AND THE SHAFT CAN BE PUT BACK ONCE THE MOTOR HAS BEEN REMOVED*

4. IF THE DRIVE KEY (ITEM 4) LOOKS DAMAGED IT MUST BE REPLACED BEFORE THE WINCH IS USED AGAIN

<b>RED Winches</b>		www.red-winches.com	
		ULTIMATE PERFORMANCE WINCH	
DRAWING NUMBER:	REMOVING THE HYDRAULIC MOTOR	SCALE	REVISION
		1:3	<b>A</b>
		SHT 4	OF 11
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WINCH  
TYPE

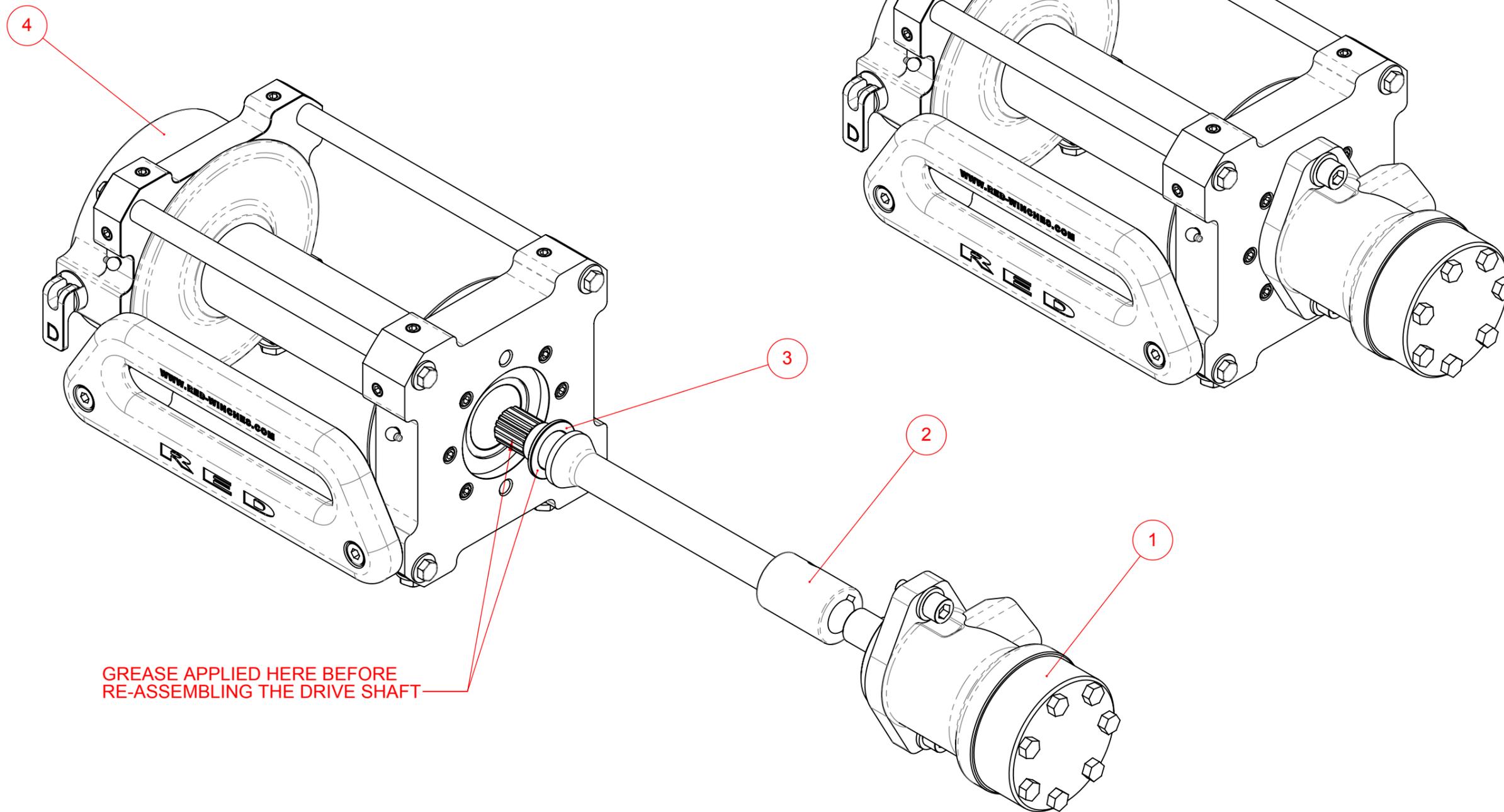
**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winches.com

Grease Specification:  
Castrol Spherol L-EP 2 or BP Energrease LS-EP 2



1. PLACE WINCH (ITEM 4) SECURELY ON A LEVEL SURFACE
2. REMOVE MOTOR ASSEMBLY (ITEM 1) AS DESCRIBED ON SHEET 4
3. SLIDE SHAFT (ITEM 2) OUT INCLUDING THE THRUST WASHER (ITEM 3)
4. IF THE DRIVE SHAFT (ITEM 2) LOOKS DAMAGED ON THE GEAR END IT MUST BE REPLACED BEFORE THE WINCH IS USED AGAIN
5. WHEN ASSEMBLING ENSURE THERE IS GREASE APLIED TO BOTH SIDES OF THE THRUST WASHER (ITEM 3)

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DRAWING NUMBER: <b>DRIVE SHAFT</b>	SCALE: 1:3 REVISION: <b>A</b> SHT 5 OF 11
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WINCH  
TYPE

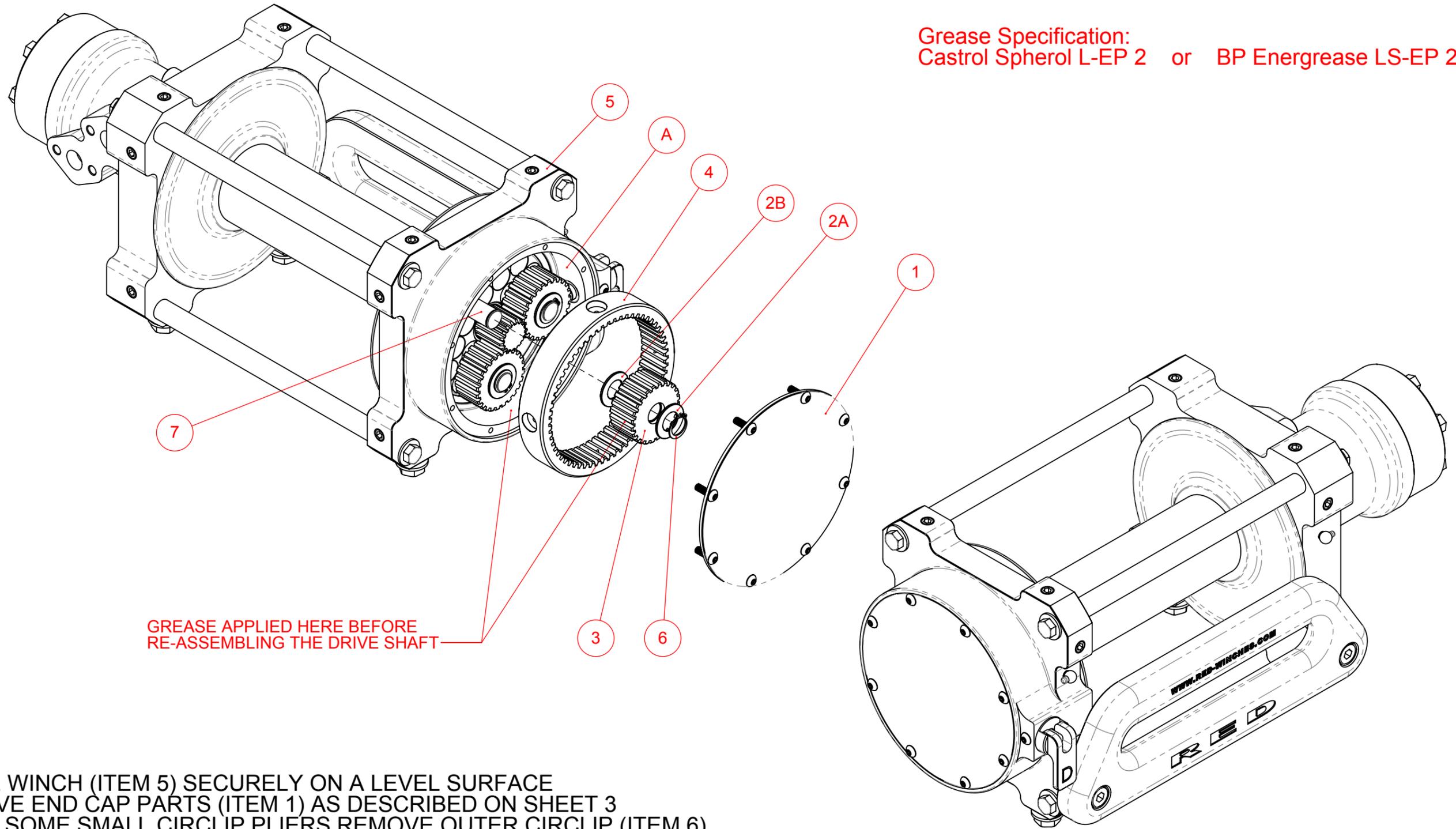
**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winches.com

Grease Specification:  
Castrol Spherol L-EP 2 or BP Energrease LS-EP 2



GREASE APPLIED HERE BEFORE  
RE-ASSEMBLING THE DRIVE SHAFT

1. PLACE WINCH (ITEM 5) SECURELY ON A LEVEL SURFACE
2. REMOVE END CAP PARTS (ITEM 1) AS DESCRIBED ON SHEET 3
3. USING SOME SMALL CIRCLIP PLIERS REMOVE OUTER CIRCLIP (ITEM 6)
4. YOU CAN THEN SLIDE ITEMS 2A, 3 & 2B OFF THE SHAFT (ITEM 6)
5. THIS CAN BE DONE FOR EACH OF THE THREE GEAR SETS
6. THE OUTER RING CAN THEN BE REMOVED FROM THE HOUSING BY HAND, DO NOT FORCE OR USE TOOLS TO REMOVE THIS RING
  - IF THE GEAR TEETH ARE DAMAGED ON ANY OF THE GEARS THEY MUST BE REPLACED BEFORE THE WINCH IS USED AGAIN
7. APPLY A LIGHT COVER OF GREASE TO SURFACE 'A'
8. APPLY TWO TABLE SPOONS OF GREASE TO THE GEARS, APPLY IT LIBERALLY OVER ALL THE GEARED SURFACES, EXCESS CAN BE PUT INTO THE CAVITIES AROUND THE GEARS.
9. APPLY A LIGHT SMEAR OF GREASE ON THE SHAFTS (ITEM 6)
10. ENSURE NO DIRT OR DEBRIS ENTERS THE GEARBOX HOUSING OTHERWISE THE WINCH WILL BE DAMGED.

WINCH  
TYPE

**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winches.com

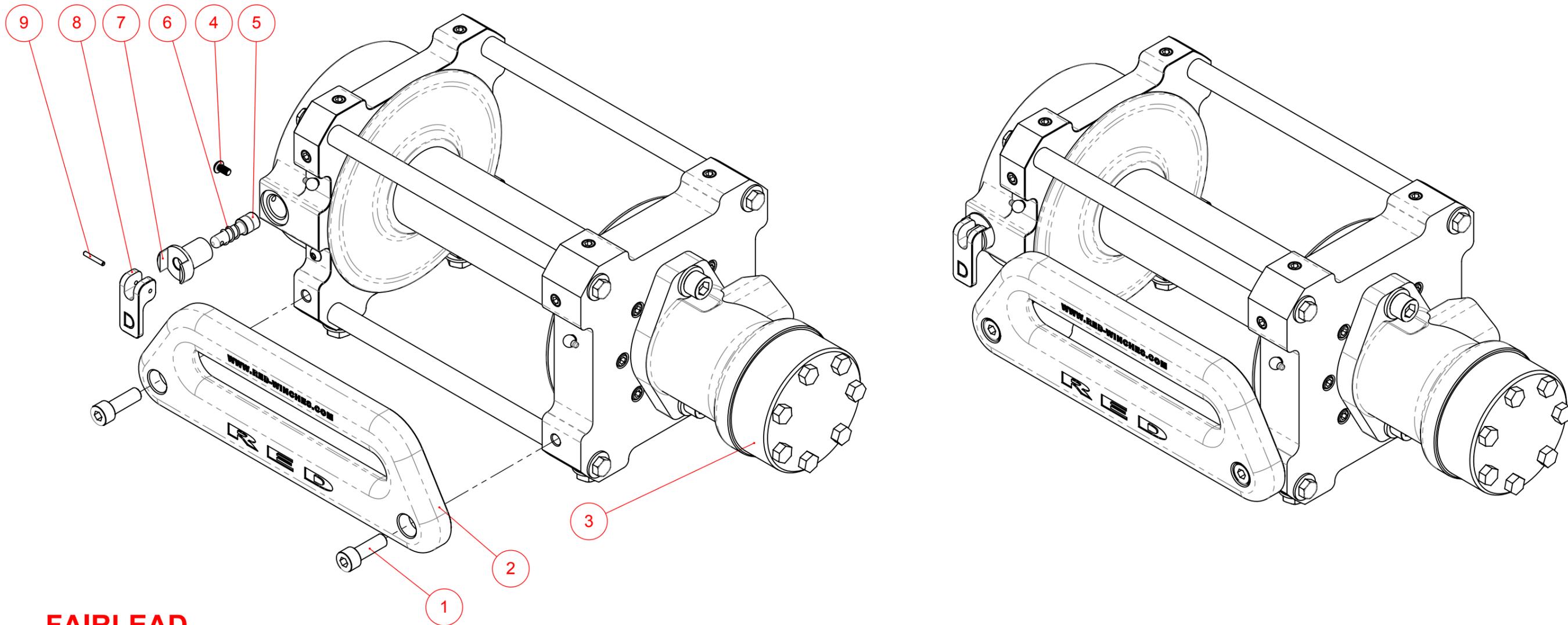
**RED Winches**

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ULTIMATE PERFORMANCE WINCH

DRAWING NUMBER:  
**REMOVING GEARS**

SCALE: 1:3  
REVISION: **A**  
SHT 6 OF 11

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## FAIRLEAD

1. PLACE WINCH (ITEM 3) SECURELY ON A LEVEL SURFACE
2. REMOVE M10 SOCKET CAP HEAD (ITEM 1) USING AN ALLEN KEY
3. REMOVE FAIRLEAD (ITEM 2)
4. CHECK FAIRLEAD FOR SHARP EDGES OR CRACKS
  - IF CRACKS ARE FOUND REPLACE THE FAIRLEAD BEFORE USING THE WINCH
  - IF SHARP EDGES ARE FOUND FILE THEM SMOOTH USING A SMALL ENGINEERING FILE BEFORE USING THE WINCH

## LEVER

1. PLACE WINCH (ITEM 3) SECURELY ON A LEVEL SURFACE
2. REMOVE M5 SOCKET BUTTON HEAD (ITEM 4) USING AN ALLEN KEY
3. WITH THE GEARS REMOVED (SEE SHEET 6) GENTLY PUSH THE LEVER HOUSING (ITEM 7) OUT OF THE GEARBOX CASING. THIS WILL ALSO REMOVE ITEMS 5, 6, 8 & 9.
4. TO REMOVE LOCKING DRIVE PIN (ITEM 5), PUSH THIS PIN INTO THE LEVER HOUSING UNTIL THE LEVER PIN (ITEM 9) IS SHOWING ABOVE THE TOP OF THE LEVER HOUSING (ITEM 7). KNOCK THE LEVER PIN OUT WHICH WILL RELEASE THE MECHANISM AND ALL PARTS WILL BECOME AVAILABLE.
  - USING A SMALL VICE TO COMPRESS THE PIN WILL HELP
5. ENSURE NO DIRT OR DEBRIS ENTERS THE GEARBOX HOUSING OTHERWISE THE WINCH WILL BE DAMAGED

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		ULTIMATE PERFORMANCE WINCH	
DRAWING NUMBER:	REMOVE FAIRLEAD & LEVER	SCALE:	1:3
		REVISION:	<b>A</b>
		SHT 7	OF 11
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WINCH  
TYPE

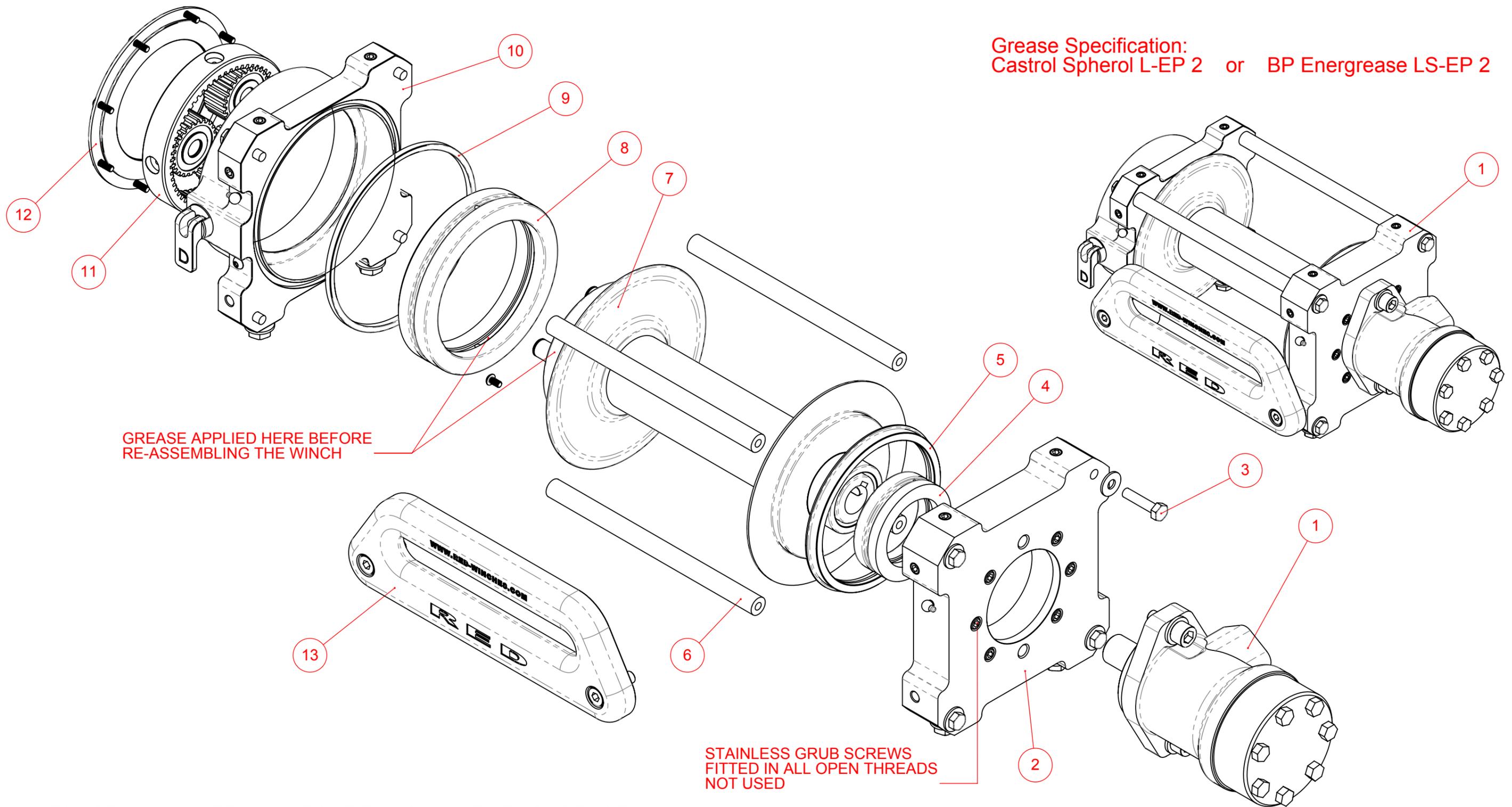
**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winchess.com

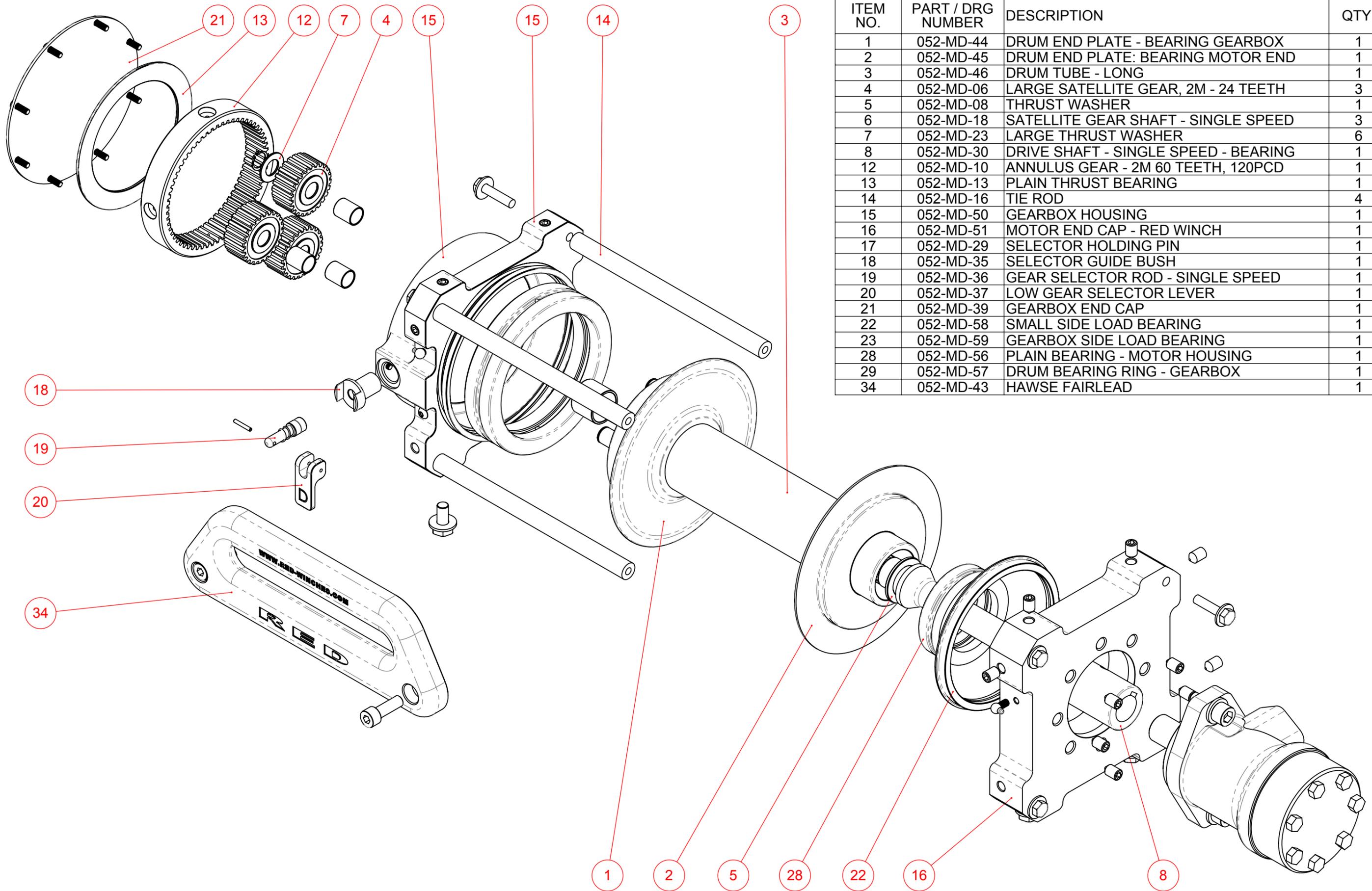
Grease Specification:  
Castrol Spherol L-EP 2 or BP Energrease LS-EP 2



1. PLACE WINCH (ITEM 1) SECURELY ON A LEVEL SURFACE
2. REMOVE END CAP, MOTOR, DRIVE SHAFT, GEARS AND FAIRLEAD (ITEMS 1, 11, 12, 13) ON SHEETS 3-7
3. USING A SPANNER REMOVE THE M8 BOLTS (ITEM 3) AND REMOVE THE TIE BARS (ITEM 6)
4. SLIDE MOTOR END PLATE (ITEM 2) OFF DRUM BY HAND, DO NOT FORCE. ITEMS 4 & 5 WILL BE FITTED TO THE HOUSING
5. THE BEARINGS (ITEMS 4 & 5) CAN BE REMOVED IF DAMAGED OR SERIOUSLY WORN BY PRESSING THEM OUT GENTLY
6. SLIDE GEARBOX END PLATE (ITEM 10) OFF DRUM BY HAND, DO NOT FORCE. ITEMS 8 & 9 WILL BE FITTED TO THE HOUSING
7. THE BEARINGS (ITEMS 8 & 9) CAN BE REMOVED IF DAMAGED OR SERIOUSLY WORN BY PRESSING THEM OUT GENTLY
8. WHEN RE-ASSEMBLING ENSURE NO DIRT OR DEBRIS ENTERS THE GEARBOX HOUSING OR DRUM BEARING SURFACES OTHERWISE THE WINCH WILL BE DAMAGED.

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DRAWING NUMBER:	SCALE:	REVISION:	SHT 8
REMOVING THE END CAPS	1:3	<b>A</b>	OF 11
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WINCH TYPE	<b>CHALLENGER</b>	WINCH DESCRIPTION:	<b>SINGLE SPEED, PLAIN BEARINGS, 160cc MOTOR</b>	Telephone: +44 (0)1460 67744 Email: sales@red-winch.es.com
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ITEM NO.	PART / DRG NUMBER	DESCRIPTION	QTY.
1	052-MD-44	DRUM END PLATE - BEARING GEARBOX	1
2	052-MD-45	DRUM END PLATE: BEARING MOTOR END	1
3	052-MD-46	DRUM TUBE - LONG	1
4	052-MD-06	LARGE SATELLITE GEAR, 2M - 24 TEETH	3
5	052-MD-08	THRUST WASHER	1
6	052-MD-18	SATELLITE GEAR SHAFT - SINGLE SPEED	3
7	052-MD-23	LARGE THRUST WASHER	6
8	052-MD-30	DRIVE SHAFT - SINGLE SPEED - BEARING	1
12	052-MD-10	ANNULUS GEAR - 2M 60 TEETH, 120PCD	1
13	052-MD-13	PLAIN THRUST BEARING	1
14	052-MD-16	TIE ROD	4
15	052-MD-50	GEARBOX HOUSING	1
16	052-MD-51	MOTOR END CAP - RED WINCH	1
17	052-MD-29	SELECTOR HOLDING PIN	1
18	052-MD-35	SELECTOR GUIDE BUSH	1
19	052-MD-36	GEAR SELECTOR ROD - SINGLE SPEED	1
20	052-MD-37	LOW GEAR SELECTOR LEVER	1
21	052-MD-39	GEARBOX END CAP	1
22	052-MD-58	SMALL SIDE LOAD BEARING	1
23	052-MD-59	GEARBOX SIDE LOAD BEARING	1
28	052-MD-56	PLAIN BEARING - MOTOR HOUSING	1
29	052-MD-57	DRUM BEARING RING - GEARBOX	1
34	052-MD-43	HAWSE FAIRLEAD	1

WINCH TYPE

**CHALLENGER**

WINCH DESCRIPTION:

**SINGLE SPEED, PLAIN BEARINGS, 160cc MOTOR**

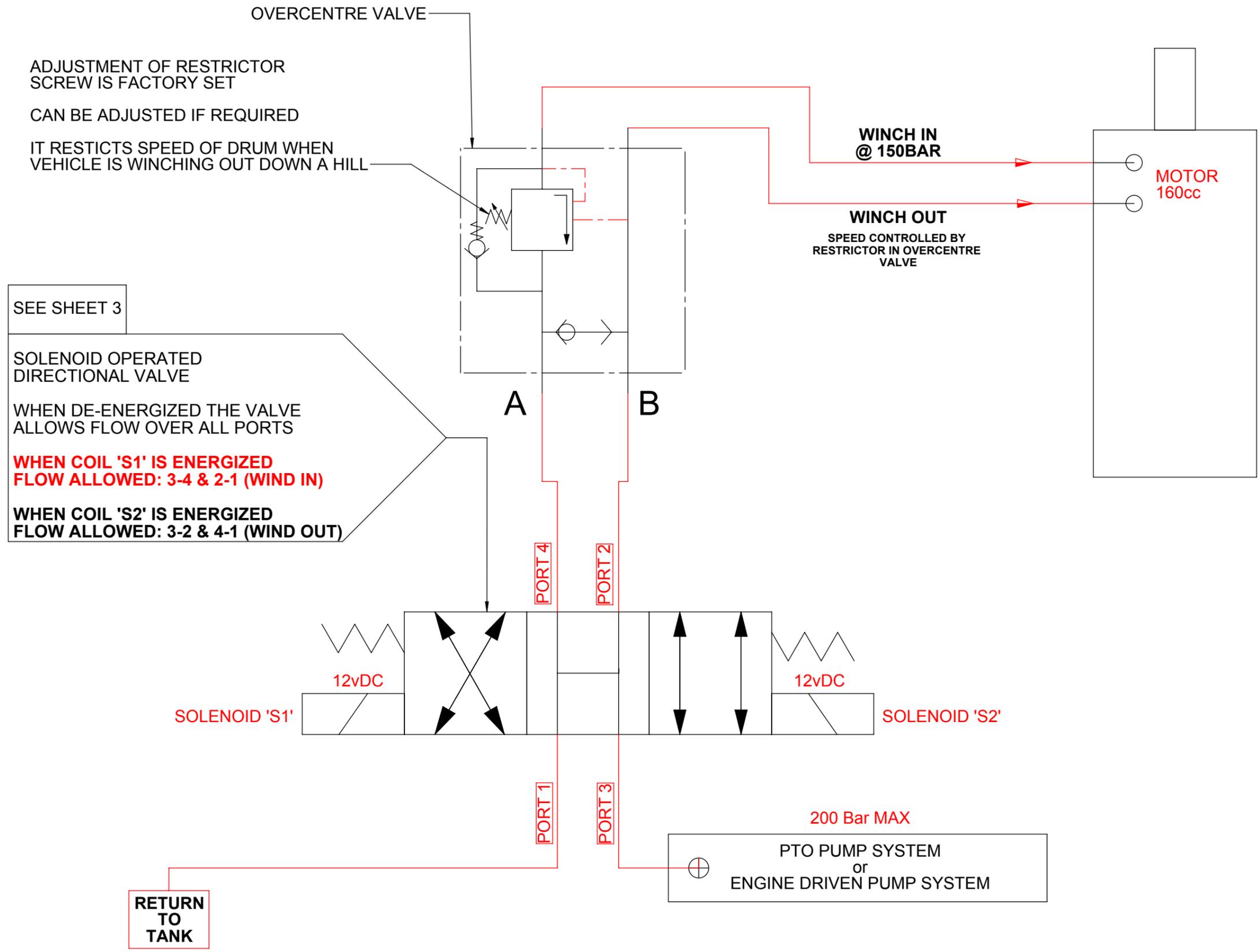
Telephone: +44 (0)1460 67744  
 Email: sales@red-winches.com

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 ULTIMATE PERFORMANCE WINCH

DRAWING NUMBER: <b>FULL EXPLODED VIEW</b>	SCALE <b>1:3</b>	REVISION <b>A</b>	SHT 9 OF 11
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REV.	DATE	DESCRIPTION	ISSUED SIG
A	26/01/2009	FIRST ISSUE	NJ



WINCH TYPE	<b>CHALLENGER</b>	WINCH DESCRIPTION:	<b>SINGLE SPEED, PLAIN BEARINGS, 160cc MOTOR</b>	Telephone: +44 (0)1460 67744 Email: sales@red-winches.com
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ULTIMATE PERFORMANCE WINCH

DRAWING NUMBER:	SCALE	REVISION	SHT 10
TYPICAL HYDRAULIC SYSTEM	1:1	<b>A</b>	OF 11

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# Lubrication Details

## Grease Specification:

**Castrol Spherol L-EP 2 or BP Energrease LS-EP 2**

As a guide Grease must be applied as per the following:  
The lubrication frequency is based on constant winch usage in hours per month:

1-4	Hrs - 50cc Every 6 Months
4-8	Hrs - 50cc Every 4 Months
8-12	Hrs - 50cc Every 2 Months
12-20	Hrs - 50cc Every Month
20-40	Hrs - 50cc Every 2 Weeks

This is based on dry above water level conditions.  
If winch has been used within water or wet muddy ground for more than 50% of the hours specified the greasing frequency needs to be increased to half of those shown in the above chart.

WINCH  
TYPE

**CHALLENGER**

WINCH  
DESCRIPTION:

**SINGLE SPEED,  
PLAIN BEARINGS, 160cc MOTOR**

Telephone: +44 (0)1460 67744  
Email: sales@red-winches.com

**RED Winches**

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ULTIMATE PERFORMANCE WINCH

DRAWING NUMBER:  
LUBRICATION

SCALE: 1:1  
REVISION: **A**  
SHT 11  
OF 11

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