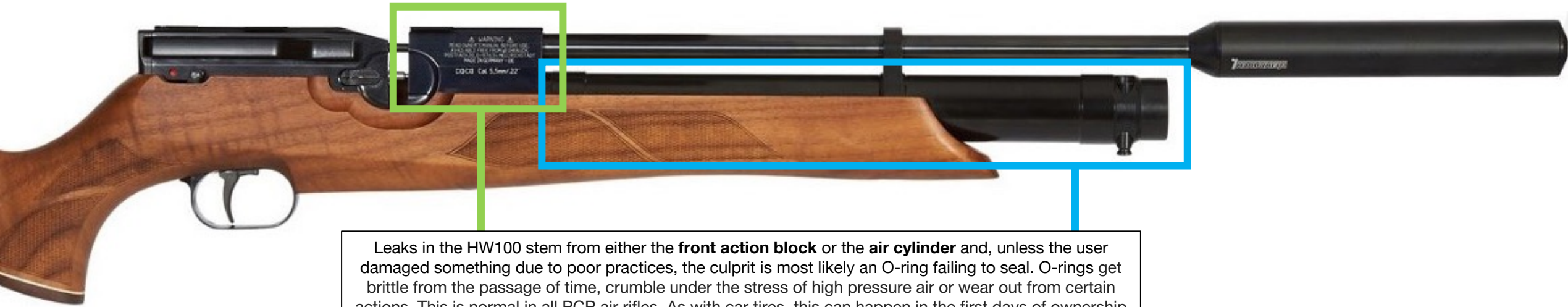




HW 100 S T K | MK2 MK3

LEAKAGE GUIDE

LEAK SOURCES



Leaks in the HW100 stem from either the **front action block** or the **air cylinder** and, unless the user damaged something due to poor practices, the culprit is most likely an O-ring failing to seal. O-rings get brittle from the passage of time, crumble under the stress of high pressure air or wear out from certain actions. This is normal in all PCP air rifles. As with car tires, this can happen in the first days of ownership or after a decade. Luckily, the HW100 is fairly easy to service.

FRONT ACTION BLOCK

The aluminium front action block consists of the parts that control the flow of the regulated, high pressure air that is guided to the projectile. The breech, probe seal, porting, valve seat, valve assembly and the pressure regulator are all home here. There are a total of 9 O-rings inside the front action block that might be prone to failure and cause a slow or fast leak. Alongside leaks, inconsistency issues, high air consumption per shot, loud pops or puffs of air in the face when shooting can all be traced back to an O-ring not sealing well in the front action block. The Front Action Block Pneumatic Diagram on page 4 shows several points of possible leakage with the responsible O-rings.

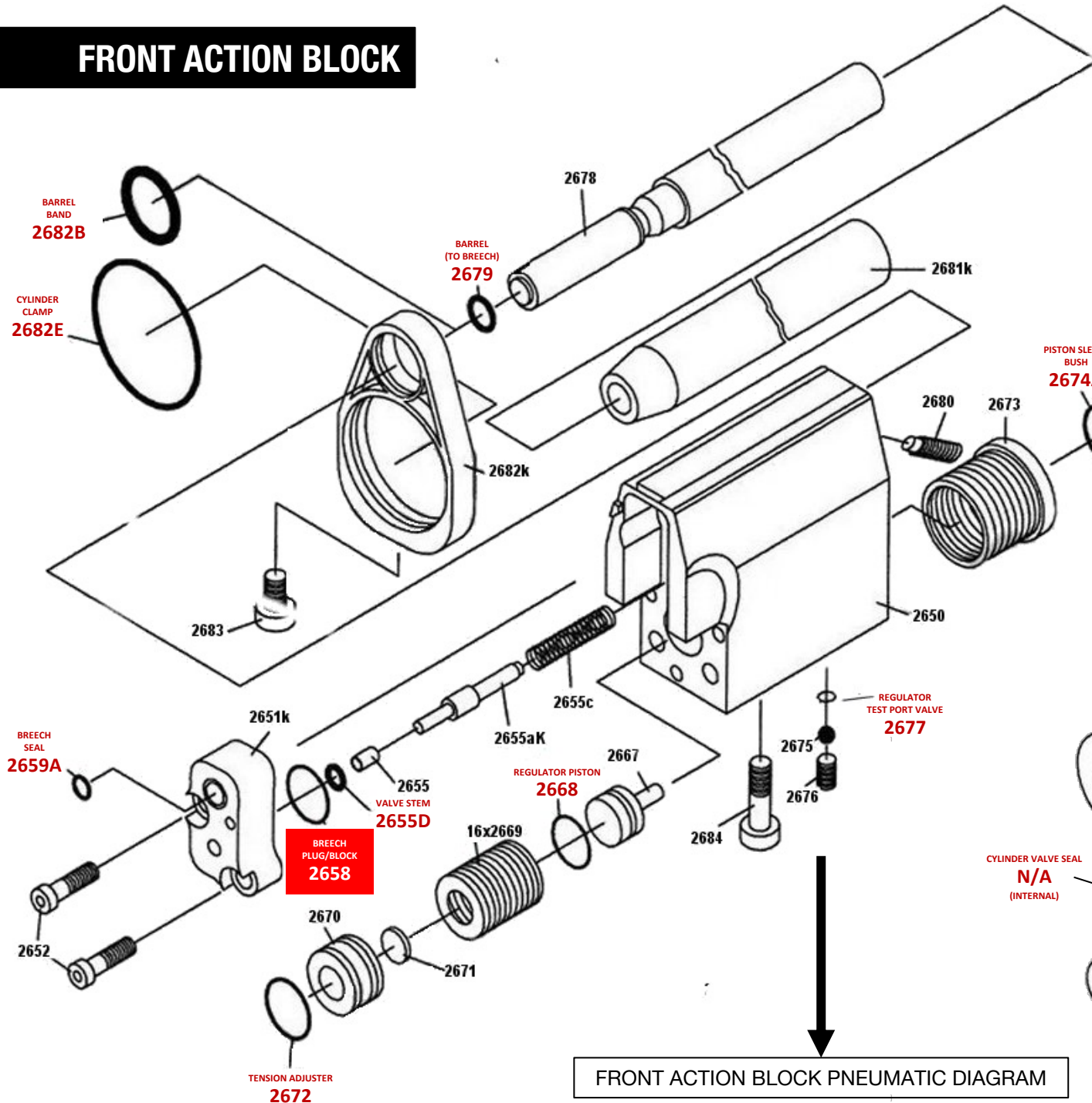
FRONT ACTION BLOCK DIAGRAM

AIR CYLINDER

The 200 bar pressure, air cylinder with quick-fill is made of a stainless steel tube with caps on both ends - one end with a valve pin that screws into the front action block and one end with a pressure reading gauge on the muzzle side. The latter features the quick fill port housing - home to a one-way, spring loaded fill valve. There are a total of 5 O-rings in the air cylinder that might be prone to failure and cause a leak. One to seal each end-cap, one in the pressure gauge/manometer one in the fill valve and one in the intake cylinder valve. A common leak is caused by not lubricating the fill probe O-rings or by incorrectly inserting the fill probe into the fill port. Dry bits of rubber are shearing off the probe & getting blown into the fill valve. Such debris in the fill valve will cause a slow or fast leak. Regularly lubricate the fill probe and dust plug O-rings with Molykote O-ring grease and connect/disconnect the fill hose from the fill probe before/after inserting the probe into the fill port = a good practice.

AIR CYLINDER DIAGRAM

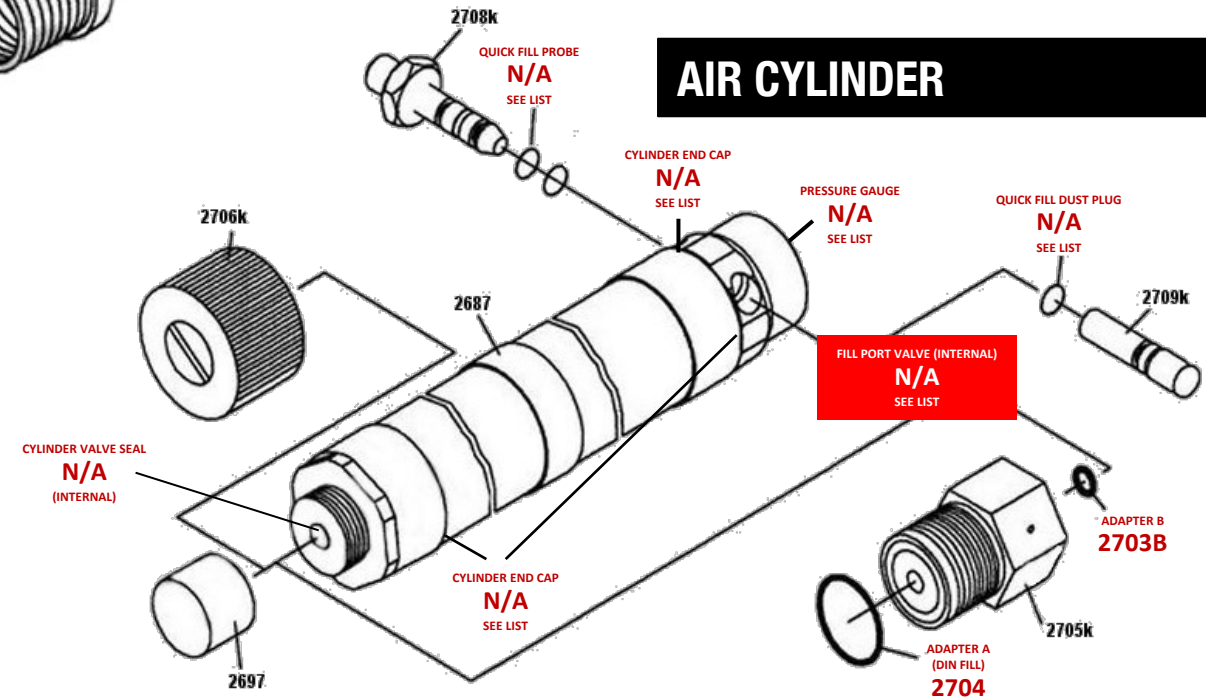
FRONT ACTION BLOCK



RED = USUAL O-RINGS THAT FAIL TO SEAL AND CAUSE LEAKS

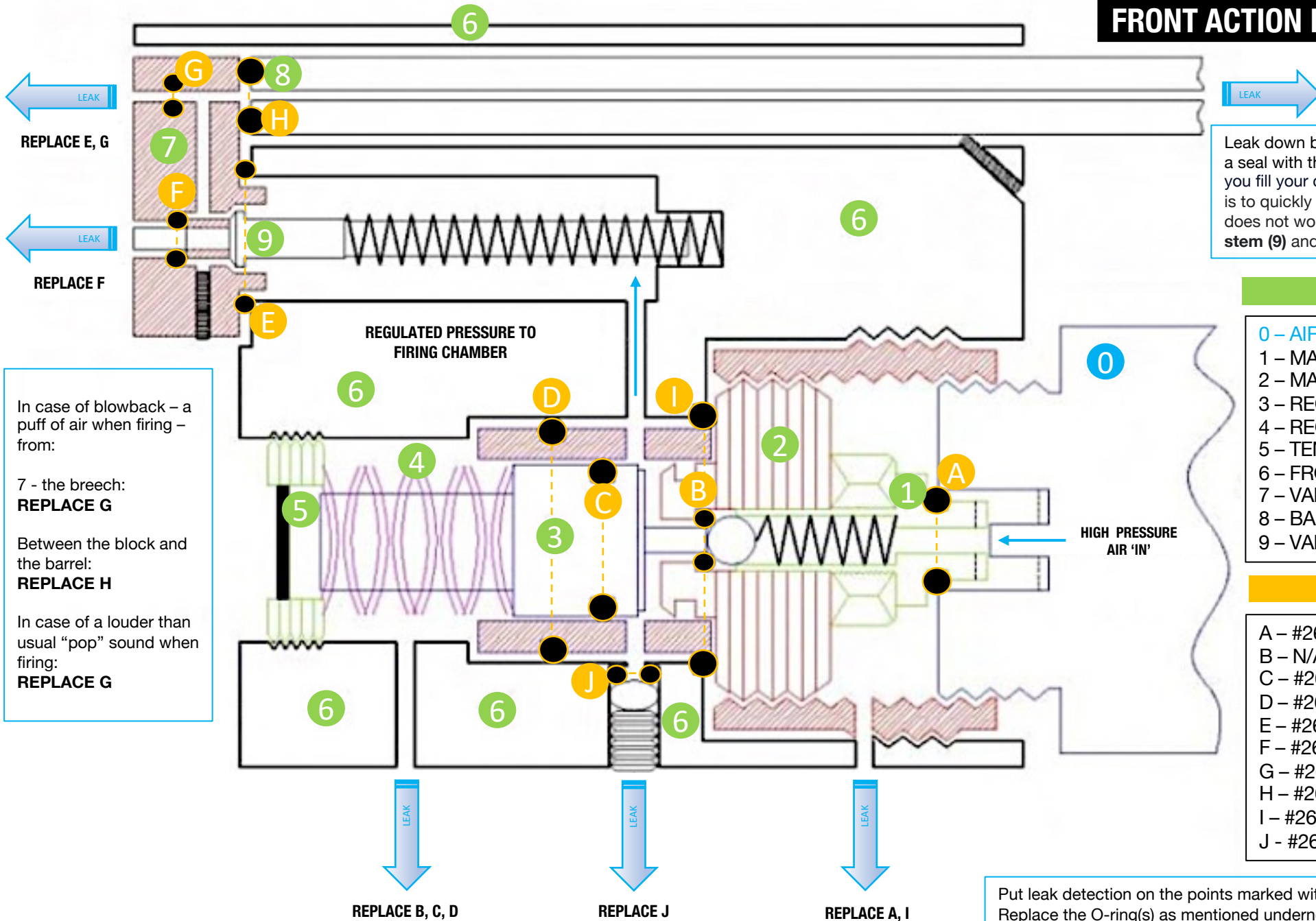
To determine if the rifle leaks from the front action block or air cylinder take the air cylinder off the gun, make sure to have some air into it and pop a balloon or plastic glove over each end of the cylinder (ensure that you cover the fill port and the gap where the end cap is screwed onto the tube.) Check that the balloons do not have any tiny holes in them, let it sit for a few hours and if either of the balloons inflate, you know that it's the air cylinder that is leaking, and you also know which end is leaking. If the balloons do not inflate – the leak comes from the front action block. The pneumatic diagram of the front action block on page 4 will help in locating the leak and indicate the responsible O-ring to replace.

AIR CYLINDER



FRONT ACTION BLOCK PNEUMATIC DIAGRAM

FRONT ACTION BLOCK PNEUMATIC DIAGRAM



In case of blowback – a puff of air when firing – from:
7 - the breech:
REPLACE G

Between the block and the barrel:
REPLACE H

In case of a louder than usual “pop” sound when firing:
REPLACE G

Leak down barrel means the **valve stem (9)** no longer creates a seal with the seat. Can be caused by low cylinder pressure if you fill your cylinder slowly or fit an empty air cylinder. The fix is to quickly introduce around 40 BAR into the cylinder. If this does not work try to lap the valve seat or replace the **valve stem (9)** and **valve stem seal F**

LOCATION

- 0 – AIR CYLINDER**
- 1 – MAIN INLET VALVE SUB ASSEMBLY
 - 2 – MAIN VALVE #2660K
 - 3 – REGULATOR PISTON #2667
 - 4 – REGULATOR BELLEVILLE WASHERS #2669
 - 5 – TENSION ADJUSTER #2670
 - 6 – FRONT ACTION BLOCK BODY #2650
 - 7 – VALVE HOUSING AND BREECH #2651k
 - 8 – BARREL #2678
 - 9 – VALVE STEM #2655aK

O-RING / SEAL

- A – #2665 MAIN INLET VALVE (A) SEAL
- B – N/A MAIN VALVE (INTERNAL) SEAL
- C – #2668 REGULATOR PISTON SEAL
- D – #2674A PISTON SLEEVE BUSH SEAL
- E – #2658 BREECH PLUG/BLOCK SEAL
- F – #2655D VALVE STEM SEAL
- G – #2659A BREECH SEAL
- H – #2679 BARREL (TO BREECH) SEAL
- I – #2674B MAIN INLET VALVE (B) SEAL
- J – #2677 REGULATOR TEST PORT VALVE SEAL

Put leak detection on the points marked with a blue arrow to locate the source of a slow leak. Replace the O-ring(s) as mentioned underneath the arrow. Find the O-ring size and density on page 5.

HW100 COMPLETE O-RING OVERVIEW			MK2* SIZE MM*	MK3* SIZE MM*	Recommended	
PART #	O-RING LOCATION	CAL			MATERIAL	DENSITY
2682E	Cylinder Clamp #2682k	.177 .22	37.1 x 1.6	37.1 x 1.6	NBR - Nitrile	70 Shore A
2618	Probe Buffer #2616	.177 .22	4 x 1.5	4 x 1.5	NBR - Nitrile	70 Shore A
2658	Breech Plug/Block #2651k	.177 .22	12 x 1	12 x 1	NBR - Nitrile	70 Shore A
2665	Main inlet valve (A) #2660k	.177 .22	2.57 x 1.78	2.57 x 1.78	PUR	90 Shore A
2666	Main Valve #2660k	.177 .22	7 x 1.5	7 x 1.5	NBR - Nitrile	70 Shore A
2668	Regulator Piston #2667	.177 .22	7 x 1.5	7 x 1.5	NBR - Nitrile	70 Shore A
2672	Tension Adjuster #2670	.177 .22	10 x 1.5	10 x 1.5	NBR - Nitrile	70 Shore A
2677	Regulator Test Port Valve #2650	.177 .22	2 x 1	2 x 1	FKM FPM Viton	90 Shore A
2679	Barrel (to Breech) #2678	.177 .22	8 x 1.5	9 x 1.5	NBR - Nitrile	70 Shore A
2704	Adaptor A (DIN fill) #2705k	.177 .22	13 x 2	13 x 2	NBR - Nitrile	70 Shore A
2710	Quick Fill Probe #2708k	.177 .22	5 x 1.5	5 x 1.5	PUR	70 Shore A
2603A	Magazine #2602	.177 .22	32 x 2.5	32 x 2.5	NBR - Nitrile	70 Shore A
2655D	Valve Stem #2651k	.177 .22	3 x 1.5	3 x 1.5	PTFE	70 Shore A
2659A	Breech #2651k	.177	4.5 x 1	4.5 x 1	NBR - Nitrile	70 Shore A
2659A	Breech #2651k	.22	5.5 x 1	5.5 x 1	NBR - Nitrile	70 Shore A
2674A	Piston Sleeve Bush #2674	.177 .22	11 x 1.5	11 x 1.5	NBR - Nitrile	70 Shore A
2674B	Main Inlet Valve (B) #2660k	.177 .22	14 x 1.5	14 x 1.5	NBR - Nitrile	70 Shore A
2682B	Barrel Band #2682k	.177 .22	15.6 x 2.5	15.6 x 2.5	NBR - Nitrile	70 Shore A
2703B	Adaptor B #2705k	.177 .22	2.57 x 1.78	2.57 x 1.78	NBR - Nitrile	70 Shore A
N/A	Dust Plug #2709k	.177 .22	5 x 1.5	5 x 1.5	NBR - Nitrile	70 Shore A
N/A	Main Valve (internal) #2660k	.177 .22	2.57 x 1.78	2.57 x 1.78	NBR - Nitrile	90 Shore A
N/A	Fill port Valve (Internal) #2687	.177 .22	3.15 x 1.80	3.15 x 1.80	NBR - Nitrile	70 Shore A
N/A	Cylinder Valve (Internal) #2687	.177 .22	3.15 x 1.80	3.15 x 1.80	NBR - Nitrile	70 Shore A
N/A	Standard Cylinder End-Cap #2687 (200 bar fill)	.177 .22	26 x 2.5	26 x 2.5	NBR - Nitrile	70 Shore A
N/A	Titanium Cylinder End-Cap #2687 (250 bar fill)	.177 .22	26 x 2	26 x 2	FKM FPM Viton	90 Shore A
N/A	Pressure Gauge/Manometer	.177 .22	8 x 1.5	8 x 1.5	NBR - Nitrile	70 Shore A

AFTER MARKET						
N/A	©Pre-Chamber Insert Body	.177 .22	11 x 1.5	11 x 1.5	NBR - Nitrile	70 Shore A
For HW100Tuning ©Pre-Chamber Insert only			11 x 1 also works			

RED = MOST COMMON O-RINGS THAT FAIL TO SEAL AND CAUSE LEAKS

*inside (ID) x cross-sectional diameter (CS)

*MK2 produced aprox. from 2007 to 2020. MK3 produced from 2020 onwards. Find your rifle's build year by serial number here <https://www.weihrach-database.eu/dywp>

GOOD PRACTICES

Work **safely**. ALWAYS remove the air cylinder from the rifle BEFORE carrying out any repair work and make sure the rifle is completely free from pressurized air.

Source **quality** O-rings from a specialised dealer. Don't buy the cheapest O-rings on Amazon, etc. Alternatively, several outlets sell **complete reseal packs**. Recommend [HW100Tuning](#) in the UK as their packs are good value, quality, include Molykote grease and O-rings are individually packed and labeled with the respective part numbers. Get a few from each, especially the "usual culprits". It is not unusual for a new o-ring to fail so keep a few at hand at all times.

Lube all your O-rings with Molykote O-ring grease **except** Main Valve (internal) and #2655D Valve Stem O-rings, for longer durability and a better seal. Molykote is a silicone-based material that helps ensure positive lubrication and sealing by slightly swelling O-rings and seals. This product is heat-stable and oxidation-resistant. Recommend [Molykote 55](#).

Be **carefull** with using metal tools when removing O-rings, especially on the brass parts. Even the tiniest of scratches can cause a leak as high pressure air will find a way through. Blunted wood/plastic toothpicks or cocktail sticks are a good, cheap alternative.

The air cylinder end caps are notoriously hard to unscrew. Save yourself some pain and avoid damage by getting a dedicated end-cap removal kit. Recommend [HW100Tuning](#) for this purpose.

Do not submerge the front action block or air cylinder in water to find slow leaks. Use a professional, non-corrosive **leak detection**. Recommend [SNOOP](#).

USEFUL RESOURCES

The following video links are a good starting point to understand the HW100's build and for servicing leaks and replacing O-rings. They are not all made by professionals and sometimes mistakes are made. It is highly advised to watch all of these videos entirely before undertaking any service work. See them as a general guide.

Weihrach HW100 Maintenance - O'rings Replacement, Parts 1 to 5 by Unrelated Activities

Video on servicing the front action block O-rings.

<https://www.youtube.com/watch?v=T5NdoJCvee0&t=513s>

Weihrach HW100 - Regulator Service by Martin Healy

3 part video series that includes a full strip down and explanation of the front action block and O-ring replacements as well as operating the regulator.

Part 1: <https://www.youtube.com/watch?v=0Mc4M31SkgY>

Part 2: <https://www.youtube.com/watch?v=0Mc4M31SkgY&t=281s>

Part 3: <https://www.youtube.com/watch?v=MwAwreaUVkE&t=2230s>

HW100 Air Cylinder Full Strip & Service + Leak Fix by Bagnal & Kirkwood

Video on how to replace all seals in the air cylinder.

<https://www.youtube.com/watch?v=ipbxGwLNIX4&t=886s>

100 COMPLETE DIAGRAM

This diagram illustrates the exploded view of a 100cc engine assembly. The components are labeled with numbers and names, organized into several main sections:

- Top Section (Cylinder and Piston):** Includes the cylinder (2681k), piston (2682E), piston rings (2682, 2682K), and various seals and O-rings (2678, 2679, 2680, 2683, 2684, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800).
- Middle Section (Crankshaft and Connecting Rod):** Includes the crankshaft (2650), connecting rod (2651K), and various seals and O-rings (2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800).
- Bottom Section (Cylinder Head and Valve Train):** Includes the cylinder head (2650), intake valve (2651K), exhaust valve (2652), and various seals and O-rings (2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800).
- Right Section (Crankcase and Oil Pan):** Includes the crankcase (2601), oil pan (2602), and various seals and O-rings (2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 2715, 2716, 2717, 2718, 2719, 2720, 2721, 2722, 2723, 2724, 2725, 2726, 2727, 2728, 2729, 2730, 2731, 2732, 2733, 2734, 2735, 2736, 2737, 2738, 2739, 2740, 2741, 2742, 2743, 2744, 2745, 2746, 2747, 2748, 2749, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800).

The diagram also includes labels for specific components such as the **MAIN VALVE SEAL (INTERNAL)**, **QUICK FILL DUST PLUG O-RINGS (x2)**, **PRESSURE GAUGE SEAL**, **FILL PORT VALVE (INTERNAL) SEAL**, **CYLINDER VALVE SEAL (INTERNAL)**, and **CYLINDER END CAP SEALS**.