

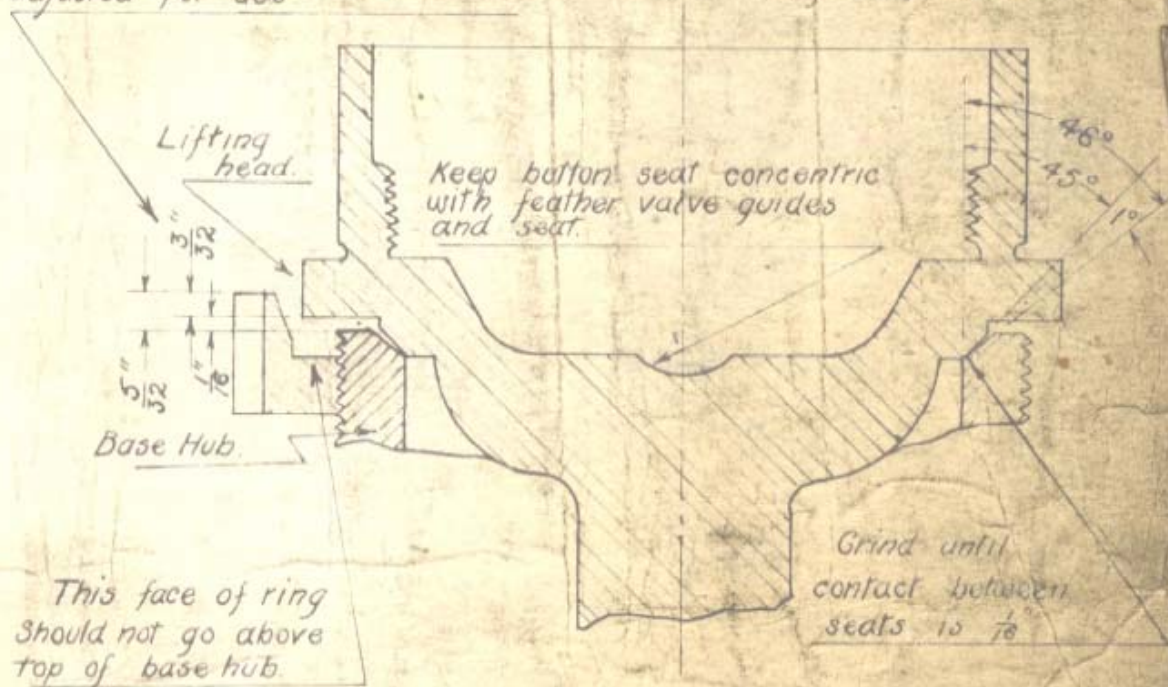
Coale Safety Valve Maintenance Instructions.

Top of ring should be not less than $\frac{3}{32}$ " above bottom of lifting head of feather valve when valve is adjusted for use

Machine :-

Angle in base 46°

Angle on valve 45°



Note :-

Traced from Coale Muffler & Safety

Valve Company's Drawn N^o 791. dated 15-4-41

TRANSPORT DEPARTMENT, TASMANIA RAILWAY BRANCH		
COALE SAFETY VALVES. DIAGRAM ACCOMPANYING INSTRUCTIONS FOR INSTALLATION & MAINTENANCE.		
Scale: Full Size.	Recept N ^o F 4	Drawn N ^o F 3649
Drawn. See Note.		
Traced 5-6-40 V.G.M.		
Checked 6-6-40 [Signature]		
		Chief Engineer

C.E. Ref. 35/35.

3935

INSTALLATION.

The Valve should be attached as close as possible to the boiler. No long pipe should be used between the Valve and boiler. Where it is necessary to get rid of the steam from the Valve, an exhaust or discharge pipe should be used, and this should be as short, large and straight as possible.

21/11

SEATS ON BASE AND FEATHER VALVE.

An improper condition here will cause trouble. A too small contact between the seat of the Base and the seat of the Feather Valve may cause chattering. This condition will also permit the steam to blow through before the Valve "pops" open.

A too large contact between the seats of the Base and Feather Valve will permit the steam to leak through before "popping" - (the Valve will simmer). The proper amount of contact between the seats is about $1/16$ ".

A good method of seating the Valves, we find, is to turn the seat angle of the Feather Valve to 45 degrees, and seat angle of the Base to 46 degrees with the axis; both should be round and smooth; then grind them with a good grinding compound until the contact between them is about $1/16$ ".

While either too small contact or too large contact will cause a leaking or blowing through of the steam, the nature of the blows differ. With a too small contact the blow is quite considerable at the beginning, and continues almost unchanged (no increase) until the Valve "pops". With the too large contact the leak is small at the beginning, and increases until the Valve "pops". The magnitude of the leak or blow, as measured by the pressure gauge, may, in either case, vary from an almost imperceptible amount to four or five pounds.

37/5

ADJUSTING RINGS.

The Ring thread should fit the hub of the Base so that it can be turned freely by hand with little or no shake before the Valve is assembled. (See next to last paragraph of Mr. L. Steger's letter No. 4797).

In our shops, to assure that the Rings are round and to the proper size, all Rings are re-tapped by hand after they are finish turned. If the Rings are not fitted hand free at assembly, after the Valves are put under pressure, the Rings, due to unequal expansion, etc., will fit so tightly that they cannot be turned to make the blow-down adjustments.

The position of the Ring with relation to the top of the hub (or seat) - (referred to in next to last paragraph of Mr. L. Steger's letter No. 4797) - should be such that the top of the Ring is never less than $5/32$ " above the top of the Base hub.

A Spring much lighter than specifications (one that compresses much more than $21/32$ " under the maximum load), an improper seat condition (too little or too much seat contact), rubbing of the Valve against the guides in the Case or Base, or rubbing of the Spring Chamber against the Spring Case may make it necessary to lower the Ring below the point mentioned above in order to get the proper blow-down.

A Valve in which the Ring is below the dimensions given is very likely to chatter.

1/25

VENT IN SPRING CHAMBER.

The Spring Chamber should have a free opening to the atmosphere. This opening is provided for by the hole in the center of the Spring Bolt; should this hole be closed or made too small, a pressure is likely to be built up in the Spring Chamber, which may cause the Valve to chatter.

BUTTONS, ETC.

The guide for the Spring on the Upper Spring Button should be concentric with the seat on the Button for the Spring Bolt.

The guide for the Spring on the Lower Spring Button should be concentric with the seat on the Button for the Feather Valve.

The tolerance on the guides of the Base, Case and Feather Valve should be no larger than those indicated on the drawings.

The guide and seat in the Base should be concentric with the thread.

The guide, Base Thread and Spring Bolt thread in Case should be concentric with one another.

SPRING.

The Spring should have a compression of $5/8" \pm 1/32"$ under the maximum load (area of Valve x maximum pressure) for which it is intended. The other parts of the Valve are designed for a Spring of this strength. If a Spring very much lighter than this is used, in order to get the Valve to close before the pressure is reduced too much the Ring must be turned down so low on the hub that the Valve is very likely to chatter.

If a Spring very much heavier than specifications is used, it may be that insufficient reduction of pressure could be obtained, even after the Ring is screwed upward on the hub until bottom of contour of Ring is flush with the top of the Base-hub. The Ring should not go higher than this point.

Just how far from the $1/32" \pm$ tolerance the Spring can be made without affecting the operation of the Valve is difficult to say, because the condition of the other parts is an influencing factor.

The tolerance of $1/32" \pm$ as allowed is a reasonable one, and, for the sake of uniformity and interchangeability should be adhered to.

After a Spring has been compressed in a Valve to hold the pressure at which the Valve is to be operated, it should still be possible to compress the Spring an amount sufficiently large so that the Spring will not be closed solid when the Valve in operation is opened to its maximum lift.

SPRING (CONTINUED)

2/7/5

A Spring that is closed solid when the Valve operates is very likely to cause chatter.

In a 3" Valve it should still be possible to further compress the Spring not less than $5/16$ " after the Valve has been set at the desired pressure.

J. B. Bennett
U. Eng.