



The Hands Free Advantage



"If you had all the money in the world, you couldn't buy an extra hour." - unknown

The "Hand's Free Advantage" has been a unique benefit of the BeaconMedæ scroll since we originally launched the scroll back in 2000. We included it with our scroll for three reasons: Our main reason was overcoming potential customer's concerns about the new technology and the 10,000 hour tip seal replacement and bearing re-lubrication. Our second reason was to deal with the fact the tip seal process on the Hitachi scroll is quite tricky, and requires a well trained individual to perform the work. Our third reason was to reinforce with the customers we had a national service capability unmatched by any competitor.

The Hands Free Advantage was a bit of a gamble when it was originally launched - we took a risk that the scroll would be as good as Hitachi said, and we assumed we would not run into any unexpected problems. Fortunately, those assumptions have largely proved correct, and we continue to offer the HFA to buyers of our scrolls today.

The Hands Free Advantage is truly unique. Given how unique it is, it seems a very under utilized sales tool. It is rarely mentioned in specifications, and to my knowledge it has never appeared on a P.O. It is not a warranty - warranty on the scroll is 24/30 along with the rest of the system. It is not a contract - there is no signed legal undertaking. It's a unique animal entirely.

Hitachi vs. Atlas Copco

Since the original launch of the BeaconMedæ scroll it has undergone a few changes in design and components. None was as dramatic and viewed with as much suspicion as the change from the Hitachi scroll to the Atlas Copco scroll. Now that the change is done and the Atlas Scroll is being used on all but the largest units (7.5 and 15 Hp), what impact does this have on the HFA?

We should start with a reminder of the scroll operating principle. Two shaped scrolls are nested inside of one another, one moving and the other fixed. The moving scroll actually moves in a small circle ("orbits") and because of the relative geometry of the two, that orbit moves the point of near contact between the two scrolls progressively from the outside (the inlet location) to the center (the outlet location) of the scroll. As the point of near contact progresses, it pushes the air trapped between the scrolls along like toothpaste in a tube.



Very simple, effective and geometrically elegant.

The orbiting scroll is held in its precise little circle by being attached to four bearings - three "orbital" bearings on the outer edge and a drive bearing in the center. The orbit is extremely critical - even a small deviation will mean the point of *near* contact between the scroll elements becomes a point of *actual* contact, and if that happens, your machine is scrap metal.

However, at the ends of the scroll elements, where the

Continues...

The Hands Free Advantage is a simple promise. A commitment from BeaconMedæx to our customers about the long term relationship we propose to have with them and with the equipment they purchased from us. It is a statement about BeaconMedæx as a company - our commitment, our capabilities and our confidence in our products. Anyone can write a slippery warranty statement, but only a committed friend will keep a promise.

We are now proudly delivering on our promise to numbers of customer's who have reached the 10,000 hour mark.

Although things have generally worked out with the HFA as we had hoped, in the process we have discovered some wrinkles that no one anticipated. We need to be sure that our customers are aware of these so they get the benefits but so they don't have expectations which are not part of the promise. Specifically:

1. The Hands Free Advantage requires the customer call us when their machine reaches 10,000 operating hours for us to schedule our tech to perform the work. We cannot know when the machine reaches the runtime and we have no way to predict it, so the customer has that responsibility.

We have been very flexible with the hours and have attempted to refurbish units as much as 11,000+ hours. We have discovered, and Hitachi has confirmed, that the 10,000 hour mark is surprisingly important. If the compressor is allowed to run past that time, the chances that the tip seals can be successfully replaced and the unit run a second 10,000 hours declines with every hour run. The surprise is how steep that curve actually turns out to be. At 10,000 hours, the chances are nearly 100%, but by 11,000, they are virtually nil. At 10,500, they are no more than even.

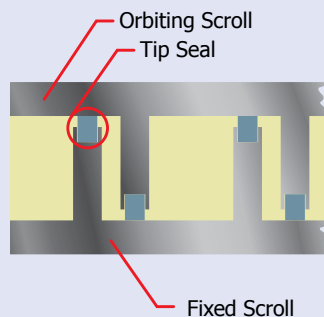
Therefore, our policy moving forward is that we cannot honor the HFA promise if the compressor has been allowed to run past 10,000 hours. In that case, the customer will be charged for a new compressor. On the other hand, if the customer calls us before the 10,000 hours, we will gladly perform the tip seal replacement early to ensure they have a successful rebuild.

2. The tip seal replacement on Hitachi compressors is very tricky, and we have much better success if the operation can be done on a bench here in the shop. Therefore, tip seal replacements will involve a swap

of the compressors for refurbished units rather than on site rebuild. This means that we will take the customer's compressor and replace it with a refurbished unit from our pool, return their compressor to Rock Hill, refurbish that compressor and put it into the pool. We will NOT be refurbishing and returning the same compressor. A conditional PO is required up front, in the event the returned compressor cannot be refurbished. This applies to Hitachi compressors only (see sidebar if you're curious why).

3. Scroll compressors are ideal for medical use because they are at their best within the band of pressures and operating duties common in medical use. However, they have their limits. One of these is maximum pressure. We have advertised the scrolls as capable of up to 125 psig

Hitachi vs. Atlas Copco (cont'd)



two elements are nested together, the tips do have to touch the body of the opposite element. There is a seal placed there (the tip seal) which wears down over the life of the machine and must be replaced. That occurs after 10,000 hours. At the same time, the drive bearing must be re-greased.

Hitachi and Atlas Copco scrolls are nearly identical in many respects and these basic design points are among the ways they are functionally the same.

It's the difference in the regreasing of that center bearing which is the biggest difference between the designs and where Hitachi has the problems that make their's the less ideal of the two.

Atlas Copco scrolls use orbital and drive bearings which can be re-greased externally. Since they can be re-greased in place, the scroll element never needs to be detached from the orbiting bearings, and thus the very precise position of the element need not be disturbed. The Hitachi machine uses sealed bearings and must be disassembled to accomplish the drive bearing regreasing. This disassembly disturbs the alignment of the orbiting scroll, and it requires very great care to get it back together and properly aligned. With the Atlas Copco machine, a qualified technician can successfully replace the tip seals, without any special tools, and perform the work at the customer site. With the Hitachi machine, it requires a very high degree of skill, training, a bit of talent and even some luck to make it work consistently.

output pressure, and so they are. In fact Atlas Copco has a unit good to 145 psi. But units run in these pressure ranges require much more frequent tip seal replacement, and may not survive to 10,000 hours.

Therefore, any compressor running at a pressure of greater than 110 psig is NOT eligible for the HFA program. Customers who call and request this service on units where the pressure has been "bumped up" (e.g. for lab use) must be told that the program does not apply. In addition, it never applies to 145 psi Atlas Copco scrolls.

This does not say the customer cannot run their compressors at elevated pressures. If they do so, they must be prepared to change out the tip seals at 5,000 hour intervals, which is simply not part of the HFA promise. Naturally we can and would be pleased to do this for them at the usual service rates, and it can be included as part of a P.M. program if they wish.

4. The nature of the program is such that it requires a trained BeaconMedaes service tech. Therefore it is (and has always been) applicable in the U.S. only. It is possible for it to apply anywhere, but we require the AC Customer Center take on the commitment and have training for their technicians. To date, none have elected to do so.
5. There was a part of the HFA originally that seems to have gotten lost along the way. The HFA was always meant to be and will continue to be limited to 5 years. To put this simply, the HFA applies to compressors that reach their 10,000 hour mark within 5 years after startup date. Otherwise the HFA is not applicable.

You may not realize it, but with every scroll sold we set aside a sum of money to cover the expected cost of delivering on our HFA promise. This is now amounting to quite a large sum, and we would like to put it to more productive use. In order to do that but also to ensure we can deliver on our promises, we need to be able to say when a system is no longer "in the queue". Five years is a reasonable time frame which should capture the majority of installations.

6. Some minor points have always been true but perhaps were not absolutely understood:
 - The HFA applies only to the package and therefore to the first, original compressors only. It does not apply to replacement compressors however they came to be there (the sole exception is if the compressor was replaced under warranty during or immediately after startup, e.g. what can be considered "infant mortality"

for the machine).

- It does not apply to a pump which has received a tip seal replacement (i.e. one per customer!) nor to a rebuilt compressor.
- It does not apply to a compressor bought as a part (regardless whether BeaconMedaes installed it or not).
- It does not apply to compressors sold to OEM customers.
- Other than the usual warranty we apply to any service work (90 days, parts and labor - see the standard service warranty document for details), a compressor which is refurbished under the HFA program does not have any new or extended warranty that applies.
- If a customer replaces the compressor because it cannot be refurbished, the new compressor does have a new compressor warranty, but does not have the HFA (see first point, above)



BEACONMEDÆS®

Part of the Atlas Copco Group

This policy is effective 11/17/2008

No previous Editions

Quick Summary of The Hands Free Advantage Policy

The Hands Free Advantage entitles the owner of a BeaconMedaes Scroll Medical Air system to the 10,000 hour tip seal replacement procedure (including the replacement of the tip seals and relubrication as required for the compressor) This includes parts and labor to accomplish the required procedures.

1. The Customer is responsible for calling BeaconMedaes service (1-800 4 MED GAS) to schedule their tip seal replacement under the Hands Free Advantage. They should call prior to any compressor reaching 10,000 running hours (we recommend calling at around 9,500 hours to allow scheduling time). We will be flexible up to 10,250 hours, but NO compressor with more than 10,250 hours will be covered by the HFA.
2. Compressors may be either exchanged for a factory refurbished compressor or site refurbished by the tech (depending on the compressor) at BeaconMedaes' discretion. If the compressor is to be exchanged, BeaconMedaes will include cost of shipping the exchanged unit(s) in the HFA program. Customer agrees to accept the refurbished compressor in exchange for their compressor.
3. Compressors will be ineligible if:
 - a. They have obviously been mistreated.
 - b. The room in which they are placed is in excess of 100°F
 - c. Required system maintenance (see owners manual) has not been performed.
 - d. The system is not in normal operating condition (e.g. inlet filters are missing, the system is partially valved off, parts are missing, etc.)
 - e. The compressors have been or are running in excess of 110 psig
4. Since a compressor which has been damaged for reasons other than normal wear is not eligible, and it is not always possible to tell this in the field, it is necessary to get a conditional purchase order to cover costs beyond the expected. This purchase order will not be used in the event of any normal HFA exchange or rebuild, but will be employed if the compressor is judged to be non-rebuildable and a new compressor is required.
5. Regional Service Manager must approve any HFA service.