```
 1  x̂ˢ = 0.
 2  ŷˢ = 0.
 3  do j = 1, . . .
 4      qᵃ ⟵ input qᵇ if j.eq.1; and xᵍ = L⁻¹qᵃ   ! read_guess()
 5      setup for Bx̂ operation if j.eq.1   ! prewgt()
 6      setup for HᵀR⁻¹(H(xᵍ + x̂) − o) operation   ! setuprhsall()
 7      dˣ̂ = 0.
 8      dŷ = 0.
 9      x̂ = 0.
10      f̂ = 0.
11      do i = 1, . . .
12          gˣ̂ = HᵀR⁻¹(H(xᵍ + x̂) − o)   ! intall()
13          gŷ = Bgˣ̂   ! berror()
14          gˣ̂ = ŷˢ + gˣ̂
15          gŷ = x̂ˢ + gŷ
16          f̂ = gŷ − f̂
17          β = f̂ᵀgŷ / f̂ᵀdˣ̃; f̂ = gŷ
18          dˣ̂ = −gŷ + βdˣ̂
19          dŷ = −gˣ̂ + βdŷ
20          minimize J(x̂ + αdˣ̃) for α   ! stpcalc()
21          x̂ = x̂ + αdˣ̃
22          x̂ˢ = x̂ˢ + αdˣ̂
23          ŷˢ = ŷˢ + αdŷ
24      enddo
25      qᵃ = qᵃ + Lx̂   ! hopers()
26  enddo
27  write out qᵃ   ! write_all()
```