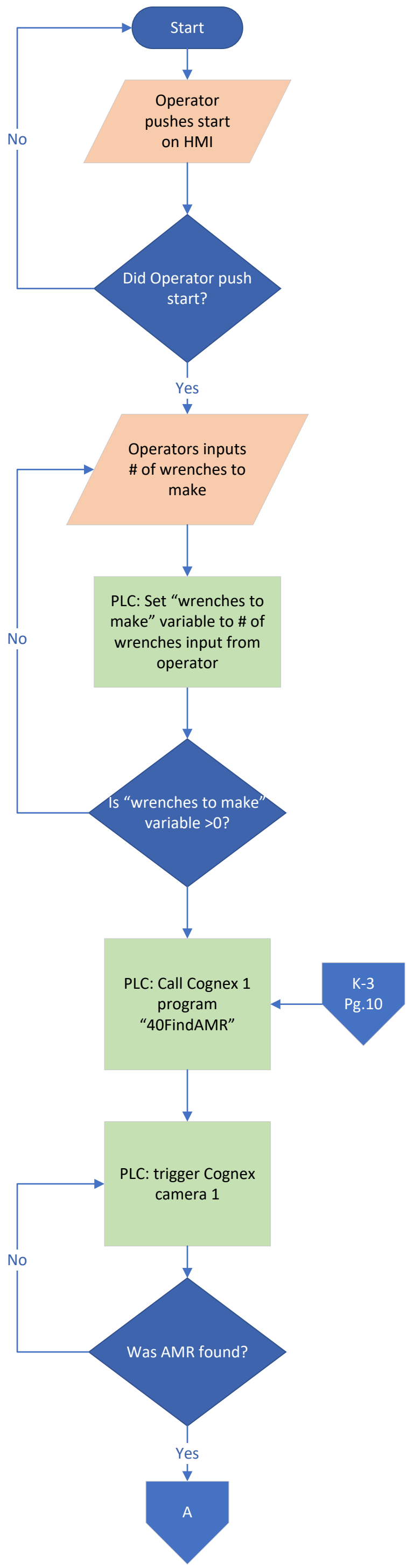
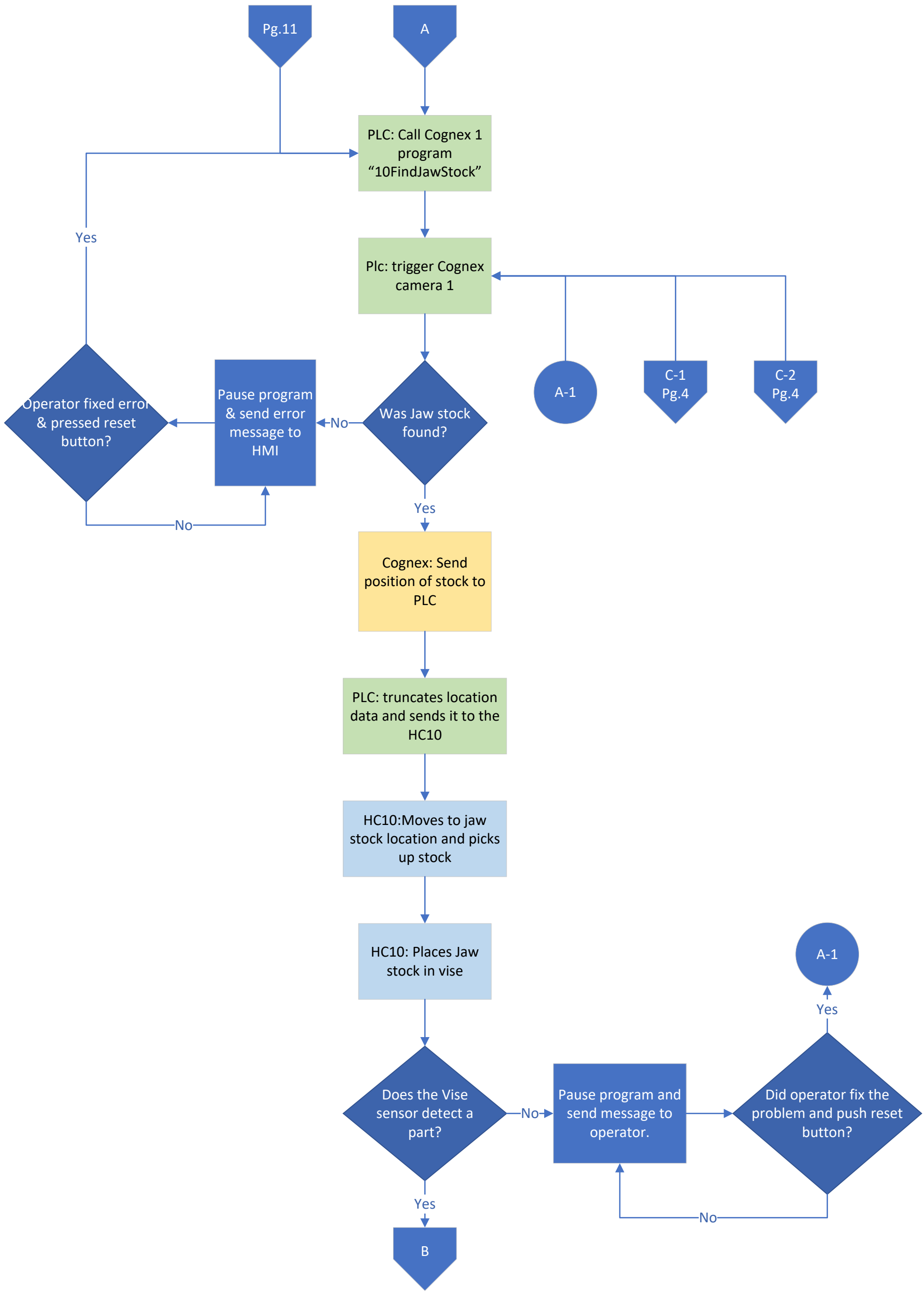
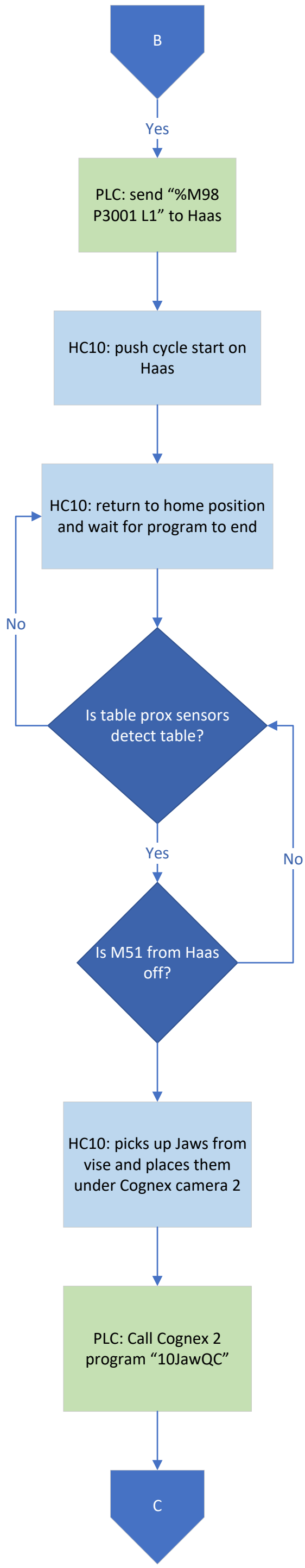
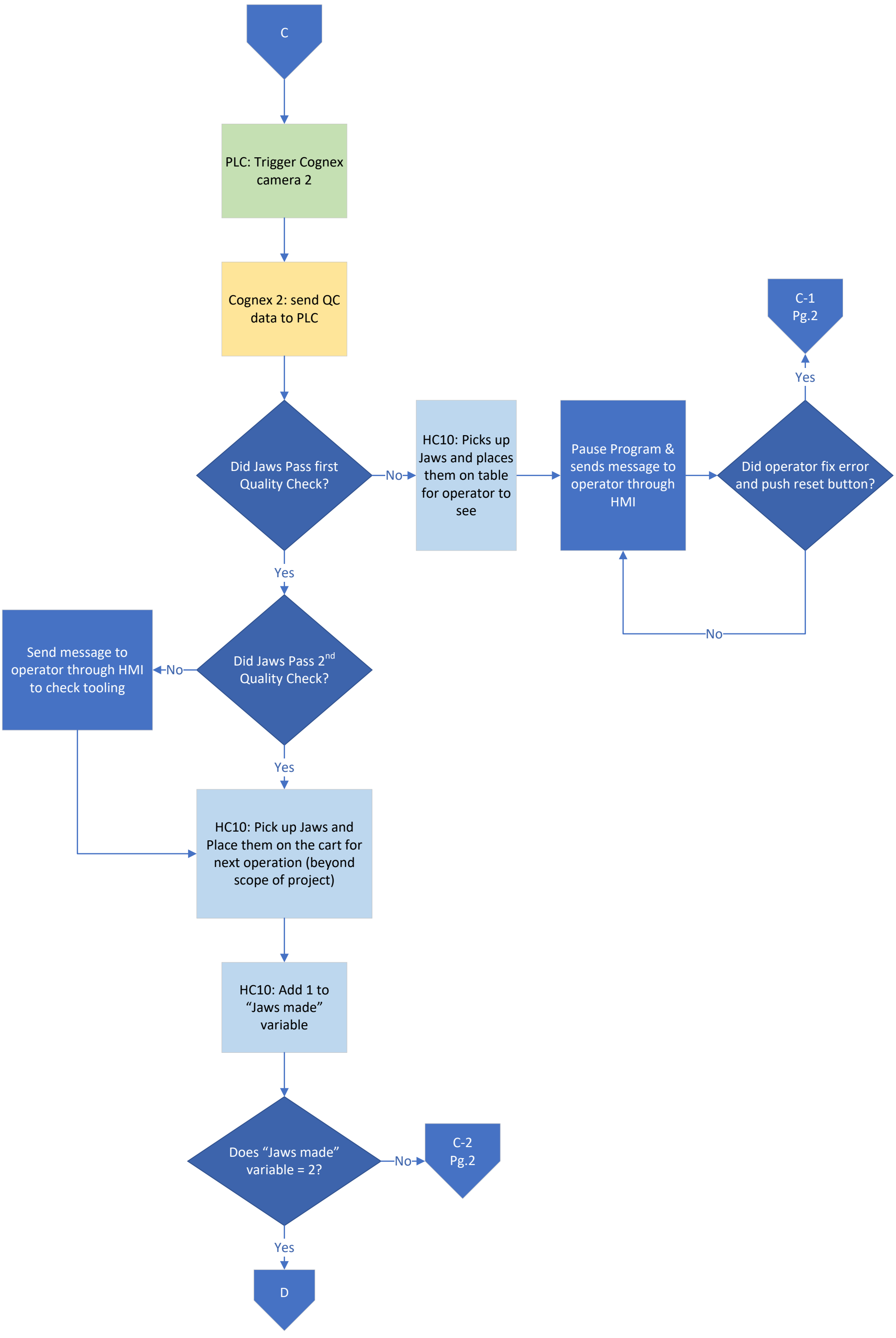
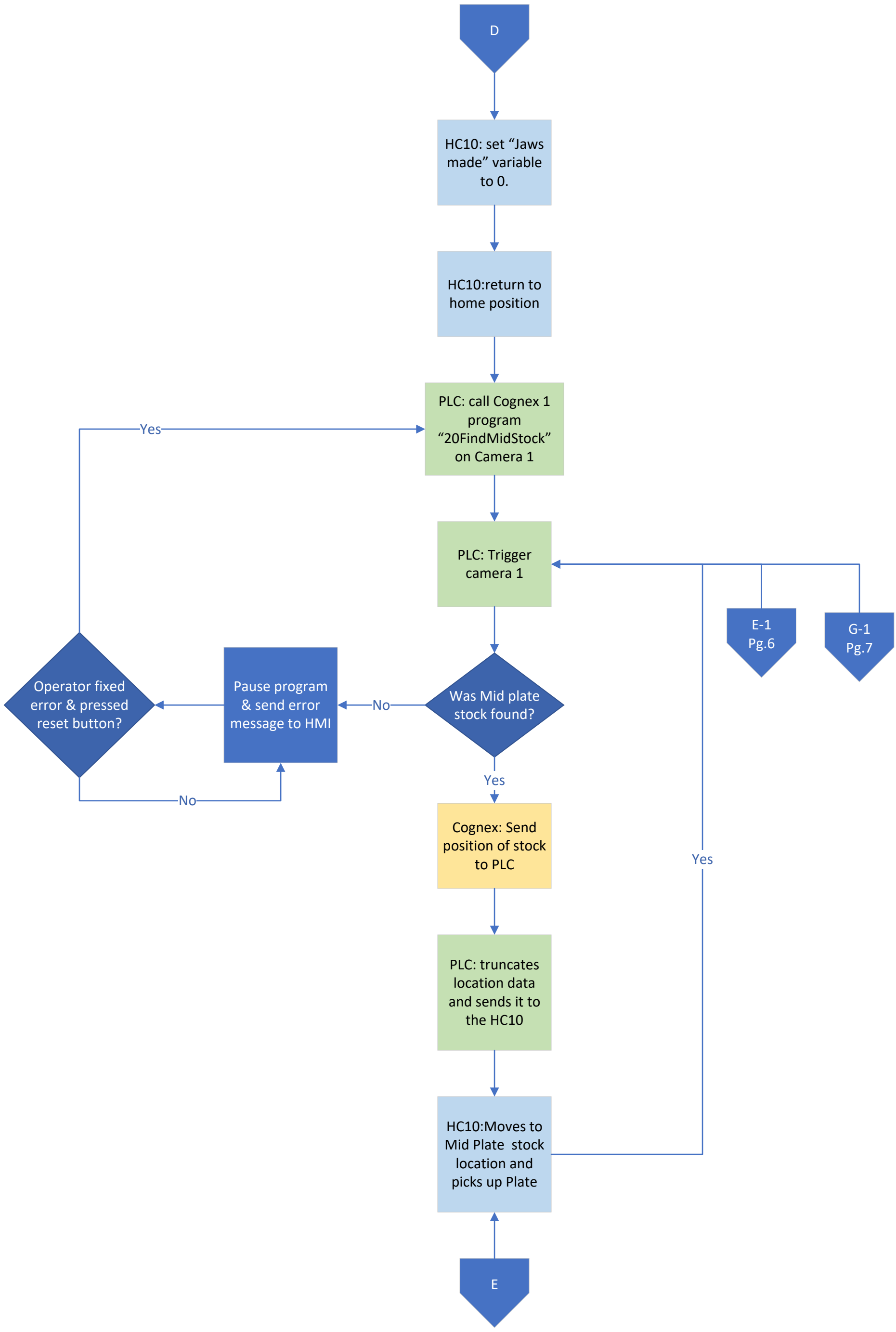
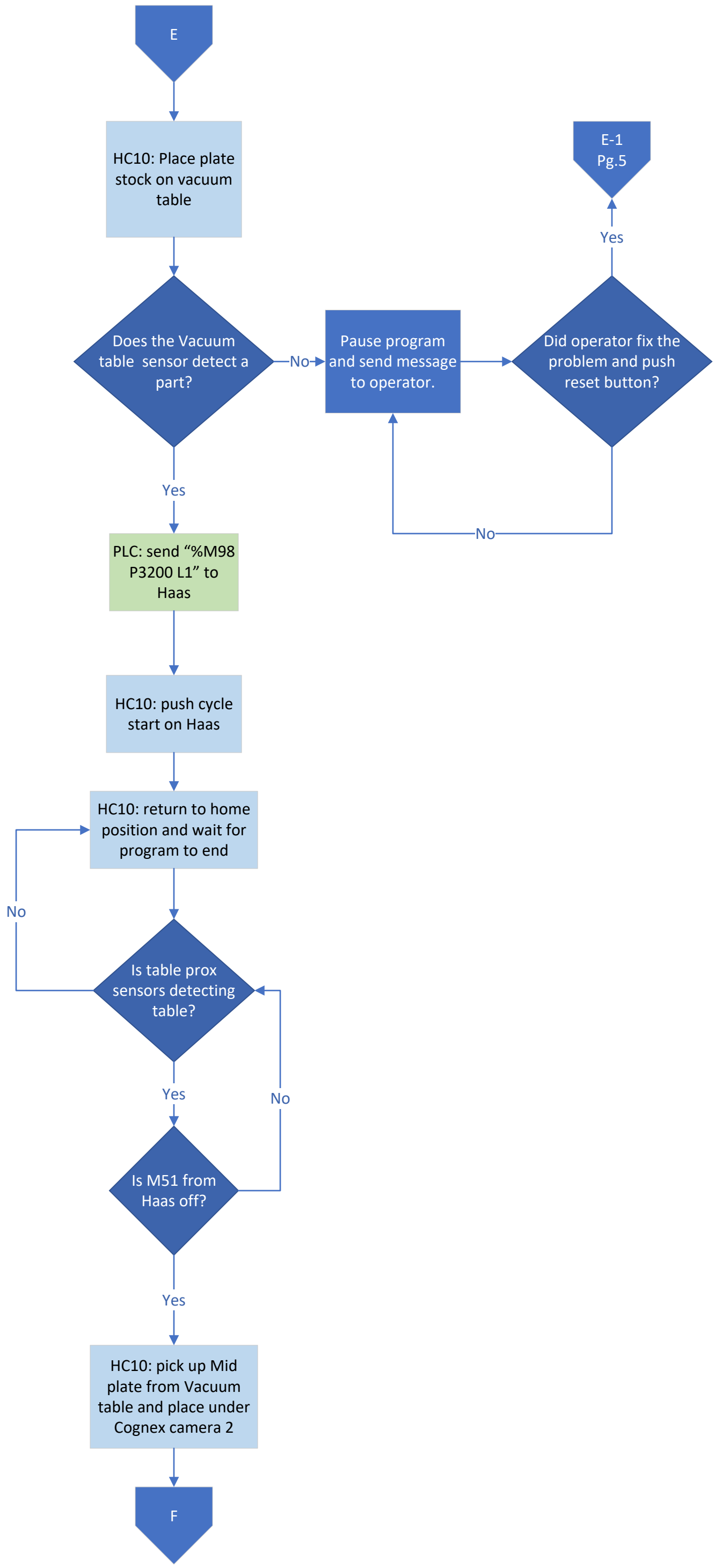

Start
Operator pushes start on HMI
No
Did Operator push start?
Yes
Operators inputs # of wrenches to make
PLC: Set “wrenches to make” variable to # of wrenches input from operator
No
Is “wrenches to make” variable >0?
PLC: Call Cognex 1 program “40FindAMR”
K-3 Pg.10
PLC: trigger Cognex camera 1
No
Was AMR found?
Yes
A

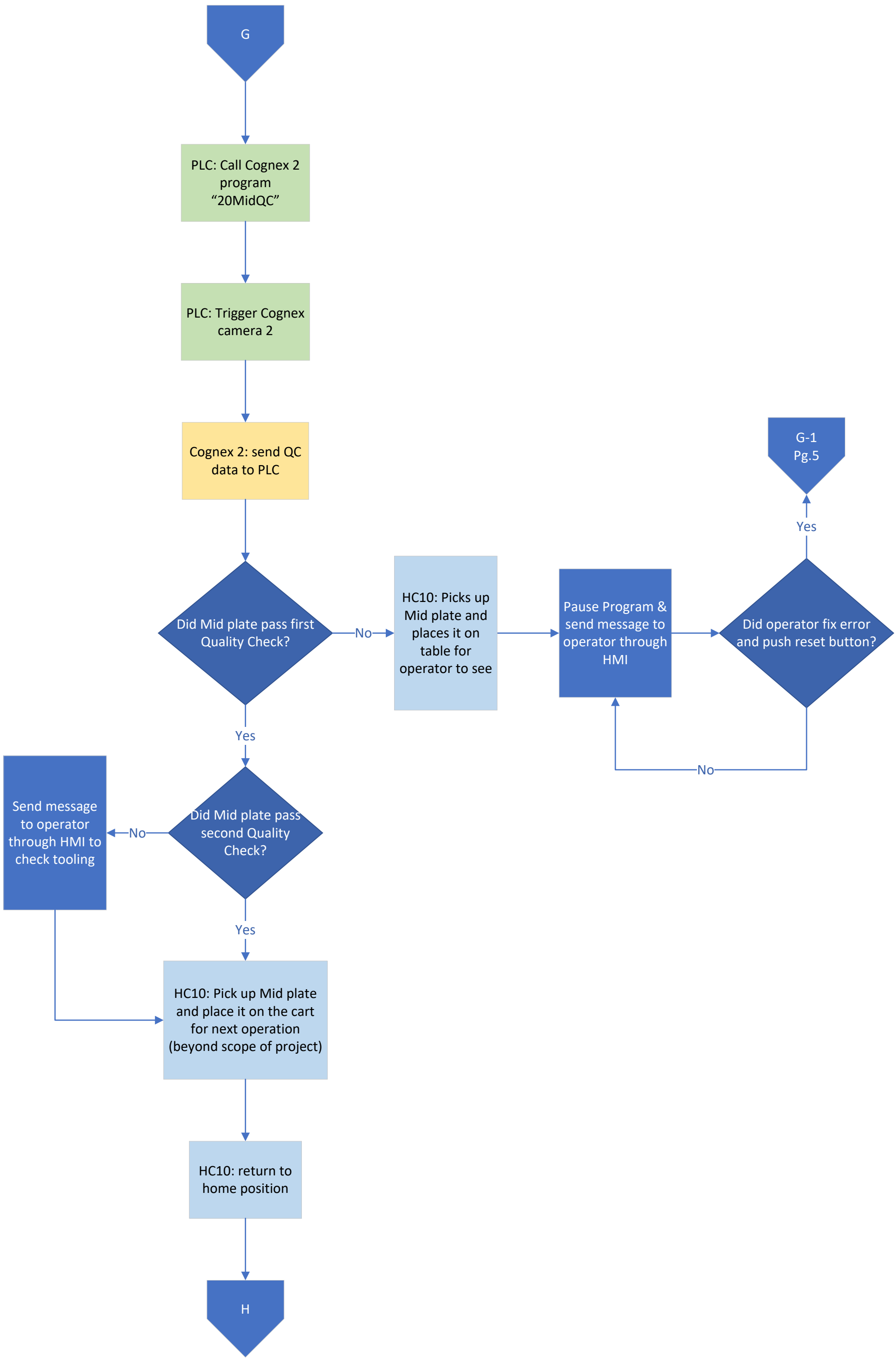

Pg.11
A
PLC: Call Cognex 1 program "10FindJawStock"
Yes
Plc: trigger Cognex camera 1
A-1
C-1 Pg.4
C-2 Pg.4
Operator fixed error & pressed reset button?
Pause program & send error message to HMI
No
Was Jaw stock found?
No
Yes
Cognex: Send position of stock to PLC
PLC: truncates location data and sends it to the HC10
HC10:Moves to jaw stock location and picks up stock
HC10: Places Jaw stock in vise
A-1
Yes
Does the Vise sensor detect a part?
No
Pause program and send message to operator.
Did operator fix the problem and push reset button?
Yes
No
B

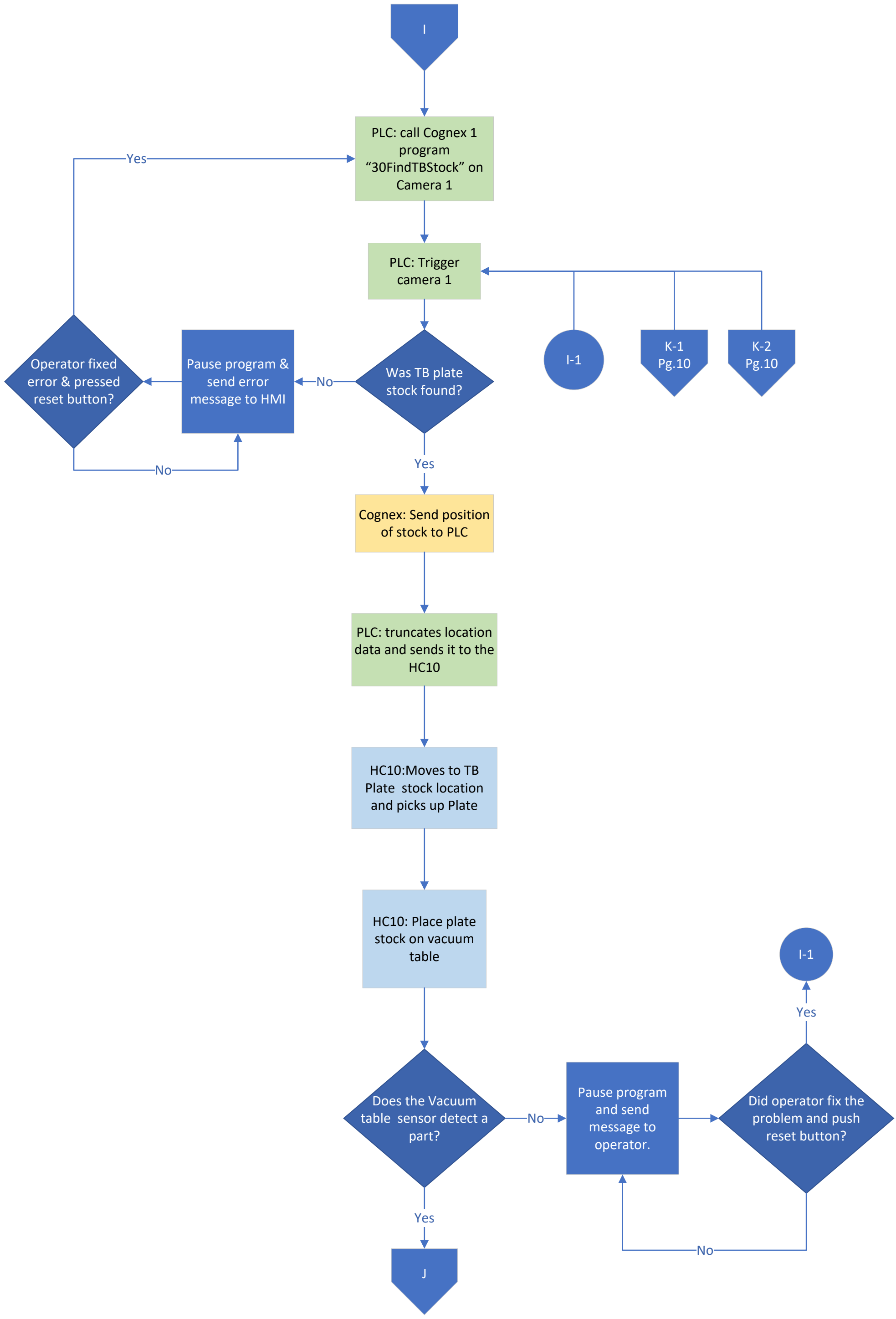

B
Yes
PLC: send “%M98 P3001 L1” to Haas
HC10: push cycle start on Haas
HC10: return to home position and wait for program to end
No
Is table prox sensors detect table?
Yes
No
Is M51 from Haas off?
HC10: picks up Jaws from vise and places them under Cognex camera 2
PLC: Call Cognex 2 program “10JawQC”
C

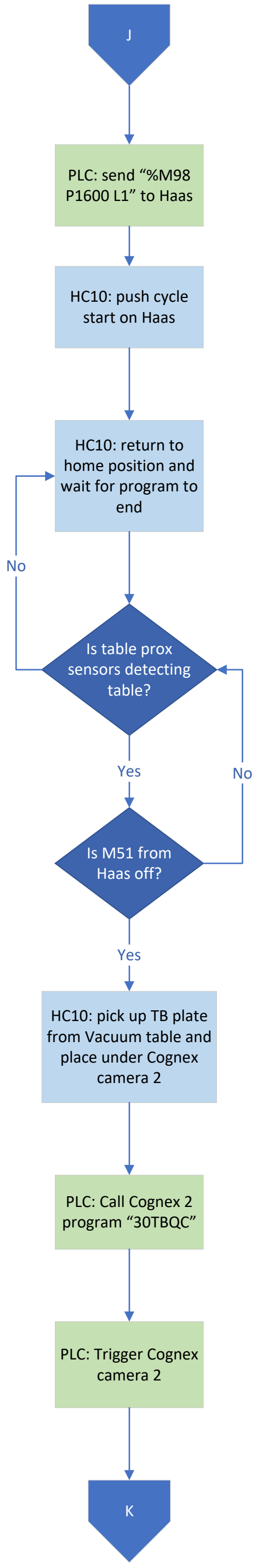

C
PLC: Trigger Cognex camera 2
Cognex 2: send QC data to PLC
Did Jaws Pass first Quality Check?
No
HC10: Picks up Jaws and places them on table for operator to see
Pause Program & sends message to operator through HMI
Did operator fix error and push reset button?
Yes
C-1 Pg.2
No
Yes
Did Jaws Pass 2nd Quality Check?
No
Send message to operator through HMI to check tooling
Yes
HC10: Pick up Jaws and Place them on the cart for next operation (beyond scope of project)
HC10: Add 1 to "Jaws made" variable
Does "Jaws made" variable = 2?
No
C-2 Pg.2
Yes
D

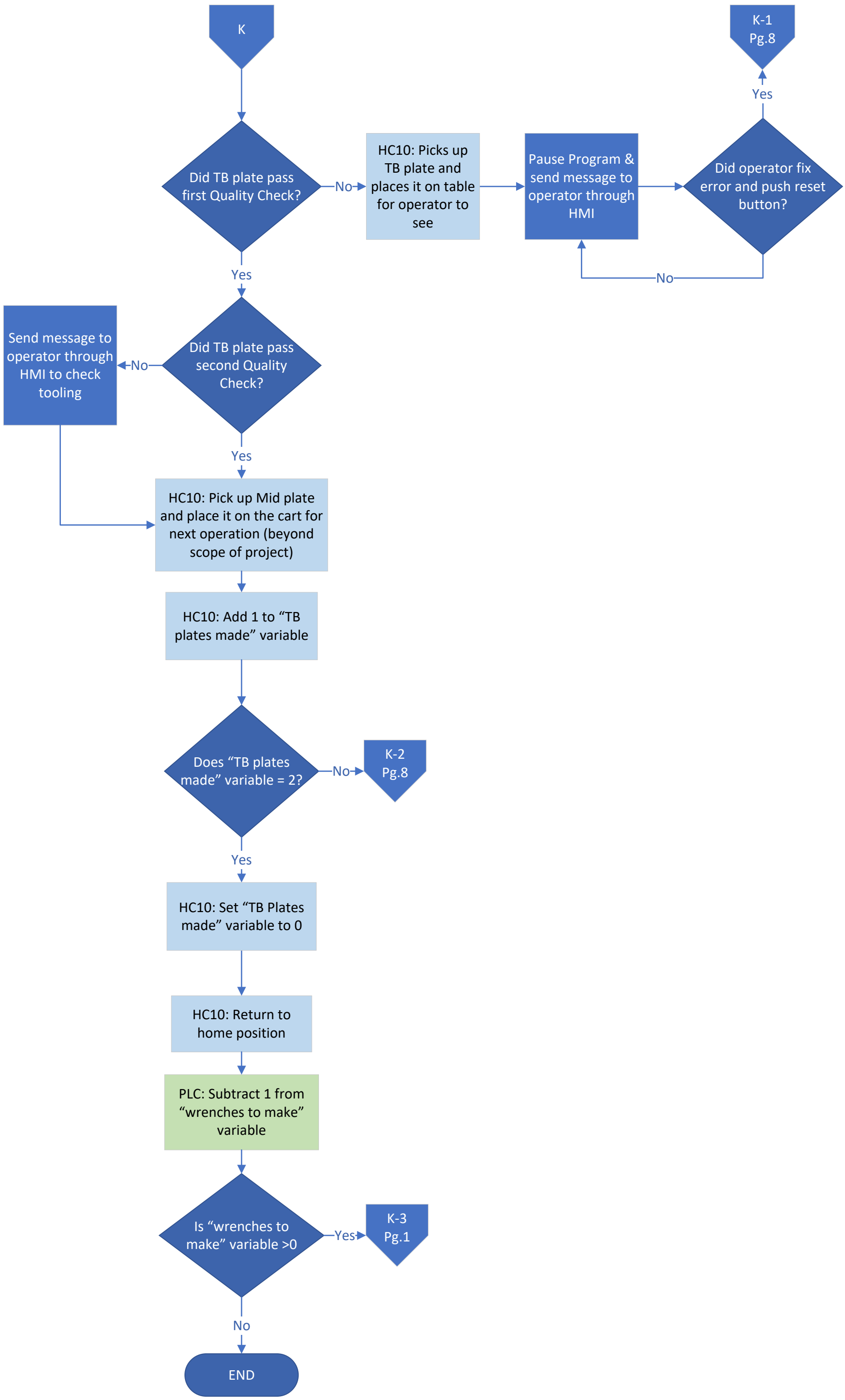

D
HC10: set “Jaws made” variable to 0.
HC10:return to home position
PLC: call Cognex 1 program “20FindMidStock” on Camera 1
Yes
PLC: Trigger camera 1
E-1 Pg.6
G-1 Pg.7
Operator fixed error & pressed reset button?
Pause program & send error message to HMI
No
Was Mid plate stock found?
Yes
No
Cognex: Send position of stock to PLC
Yes
PLC: truncates location data and sends it to the HC10
HC10:Moves to Mid Plate stock location and picks up Plate
E


E
HC10: Place plate stock on vacuum table
Does the Vacuum table sensor detect a part?
No
Pause program and send message to operator.
Did operator fix the problem and push reset button?
Yes
E-1
Pg.5
No
Yes
PLC: send "%M98 P3200 L1" to Haas
HC10: push cycle start on Haas
HC10: return to home position and wait for program to end
No
Is table prox sensors detecting table?
Yes
No
Is M51 from Haas off?
Yes
HC10: pick up Mid plate from Vacuum table and place under Cognex camera 2
F


G
PLC: Call Cognex 2 program "20MidQC"
PLC: Trigger Cognex camera 2
Cognex 2: send QC data to PLC
Did Mid plate pass first Quality Check?
No
HC10: Picks up Mid plate and places it on table for operator to see
Pause Program & send message to operator through HMI
Did operator fix error and push reset button?
Yes
G-1 Pg.5
No
Yes
Did Mid plate pass second Quality Check?
No
Send message to operator through HMI to check tooling
Yes
HC10: Pick up Mid plate and place it on the cart for next operation (beyond scope of project)
HC10: return to home position
H


I
PLC: call Cognex 1 program "30FindTBStock" on Camera 1
Yes
PLC: Trigger camera 1
I-1
K-1 Pg.10
K-2 Pg.10
Operator fixed error & pressed reset button?
Pause program & send error message to HMI
No
Was TB plate stock found?
No
Yes
Cognex: Send position of stock to PLC
PLC: truncates location data and sends it to the HC10
HC10:Moves to TB Plate stock location and picks up Plate
HC10: Place plate stock on vacuum table
I-1
Yes
Does the Vacuum table sensor detect a part?
No
Pause program and send message to operator.
Did operator fix the problem and push reset button?
Yes
No
J


J
PLC: send “%M98 P1600 L1” to Haas
HC10: push cycle start on Haas
HC10: return to home position and wait for program to end
No
Is table prox sensors detecting table?
Yes
No
Is M51 from Haas off?
Yes
HC10: pick up TB plate from Vacuum table and place under Cognex camera 2
PLC: Call Cognex 2 program “30TBQC”
PLC: Trigger Cognex camera 2
K


K
Did TB plate pass first Quality Check?
No
HC10: Picks up TB plate and places it on table for operator to see
Pause Program & send message to operator through HMI
Did operator fix error and push reset button?
Yes
K-1 Pg.8
No
Yes
Did TB plate pass second Quality Check?
No
Send message to operator through HMI to check tooling
Yes
HC10: Pick up Mid plate and place it on the cart for next operation (beyond scope of project)
HC10: Add 1 to "TB plates made" variable
Does "TB plates made" variable = 2?
No
K-2 Pg.8
Yes
HC10: Set "TB Plates made" variable to 0
HC10: Return to home position
PLC: Subtract 1 from "wrenches to make" variable
Is "wrenches to make" variable >0
Yes
K-3 Pg.1
No
END