

5H079749B1700 Single Stage DSI Control

Introduction

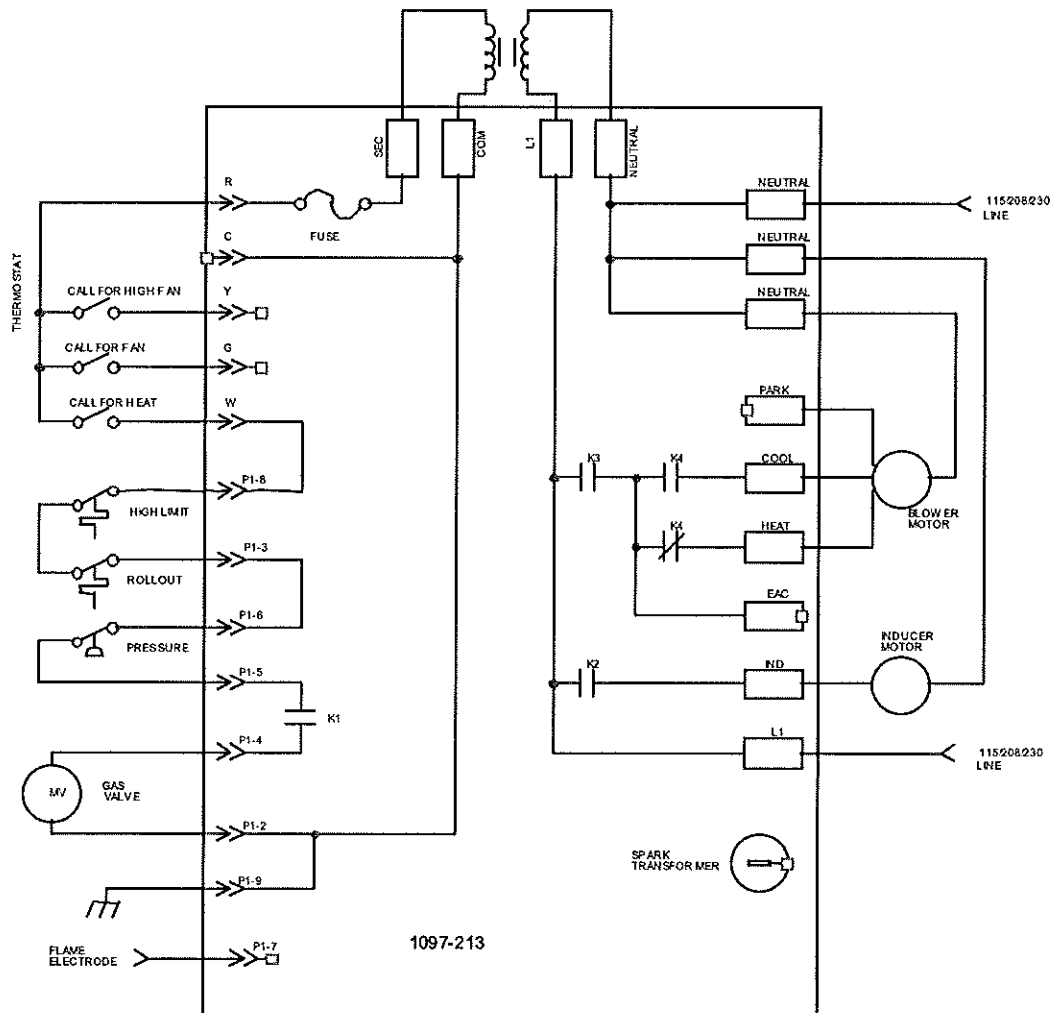
The 5H079749B1700 Single Stage DSI Control combines all control functions needed for an induced draft residential furnace on a single printed circuit board package. The control provides outputs for an indoor blower motor, single speed inducer motor, electronic air cleaner, and main gas valve. The control receives inputs from the thermostat (W and G), pressure switch, high temperature limit switches, and senses flame.

General requirements

System configuration

The integrated DSI control shall be a single printed circuit board assembly and provide the following features:

- 1) Control of heating, high speed fan, and continuous fan functions in response to a standard thermostat.
- 2) Direct Spark Ignition using a microprocessor to control timing, flame sensing, and ignition retries.
- 3) Monitoring of system pressure switch and limit switches.
- 4) Control of gas valve, indoor fan, induced draft motor, and electronic air cleaner based on thermostat demand and the status of safety inputs.
- 5) User selectable blower off delays.
- 6) Diagnostic indicators to provide information on power to the control, control status, and flame current.
- 7) Optional twinning of identical controls.





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Environmental

Temperature

The control shall not be adversely affected when subjected to the ambient temperature ranges of:

Operating: -30° to +80°C (-22° to 176°F)
Storage: -40° to +85°C (-40° to 185°F)

Humidity

The control shall not be adversely affected when subjected to the following relative humidities:

Operating: 10% to 95%, non-condensing, -30° to +45°C (-22° to 113 °F)
Storage: 10% to 95%, non-condensing

Agency Approvals

The control shall be approved to ANS Z21.20 and CAN/CSA C22.2 No. 199-M89. Software shall comply with UL 1998.

Terminals

Connector P1 - 9 pin female socket shall accept AMP 1-480706-0 connector and have the following pinout:

Pin 1 - Not used
Pin 2 - Gas valve 24 VAC common
Pin 3 - Limit switch input (Common with pin 6)
Pin 4 - Main gas valve output
Pin 5 - Pressure switch input
Pin 6 - Pressure switch output (common with pin 3)
Pin 7 - Flame sense input
Pin 8 - Thermostat "W" for limit switch output
Pin 9 - Flame sense/chassis ground (24VAC common)

All field wired thermostat connections shall be #6-32 screw terminals with the following designators: "C", "W", "R", "G", "Y"

All remaining interconnections shall be 0.250 x 0.032" male quick connect terminals. Terminal designators are: "COM", "SEC", "L1" (2), "NEUTRAL" (4), "PARK" (2), "HEAT", "IND"

Tolerances

Unless otherwise noted, all timing is accurate +/-1 second over full temperature and voltage range at 60Hz. All timings are 20% longer when operated with 50 Hz. power supply.

Control Status

A Green LED labeled "OK" is provided to indicate system faults.

Steady OFF	Internal control fault or no power
Steady ON	Normal operation, no call for heat
Fast Flash	Normal operation, call for heat present
1 flash	Pressure switch does not close within 30 seconds of inducer energized.
2 flashes	Pressure switch is closed before inducer is energized.
3 flashes	Limit switch is open
4 flashes	In lockout from failed ignitions or flame losses
5 flashes	Twin communications fault
6 flashes	Limit Switch tripped 5 times during heat cycle
7 flashes	5 flames losses during one heat cycle.

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Soft Lockout

The control shall not initiate a call for heat or call for continuous fan while in lockout. A call for cooling operates as normal. The control will still respond to an open limit and undesired flame. Lockout shall automatically reset after 1 hour. Lockout may be manually reset by removing power from the control for more than 1 second or removing the thermostat call for heat for more than 1 and less than 20 seconds.

Hard lockout

If the control detects a fault on the control board, the status LED will be de-energized and the control will lockout as long as the fault remains. A hard lockout will automatically reset if the hardware fault clears.

Flame status

A Yellow LED labeled "Flame" is provided to indicate flame status. When flame is sensed, the flame LED is lit. If the flame current is below 1.0 uA (+/-50%), the flame LED will flash slowly to indicate "weak" flame. The Flame LED will flash fast if flame is present with gas valve off.

Timings

Pre-Purge	30 Seconds
Ignition Trial	7 Seconds
Blower On Delay	30 Seconds
Post Purge	15 Seconds
Blower Off Delay	90 Seconds
Inter-Purge	15 Seconds
Flame Losses Allowed	5 In One Call for Heat
Limit Trips Allowed	5 In One Call for Heat

Twinning option

The control provides provisions to synchronize blower operation with another furnace.

Field installation of twinning consists of connecting wires between the "C" and "Twin" terminals of the two controls and the "W" terminals of both controls to the thermostat call for heat. The furnace supplying power to thermostat "R" will supply power to the gas valves of both furnaces.

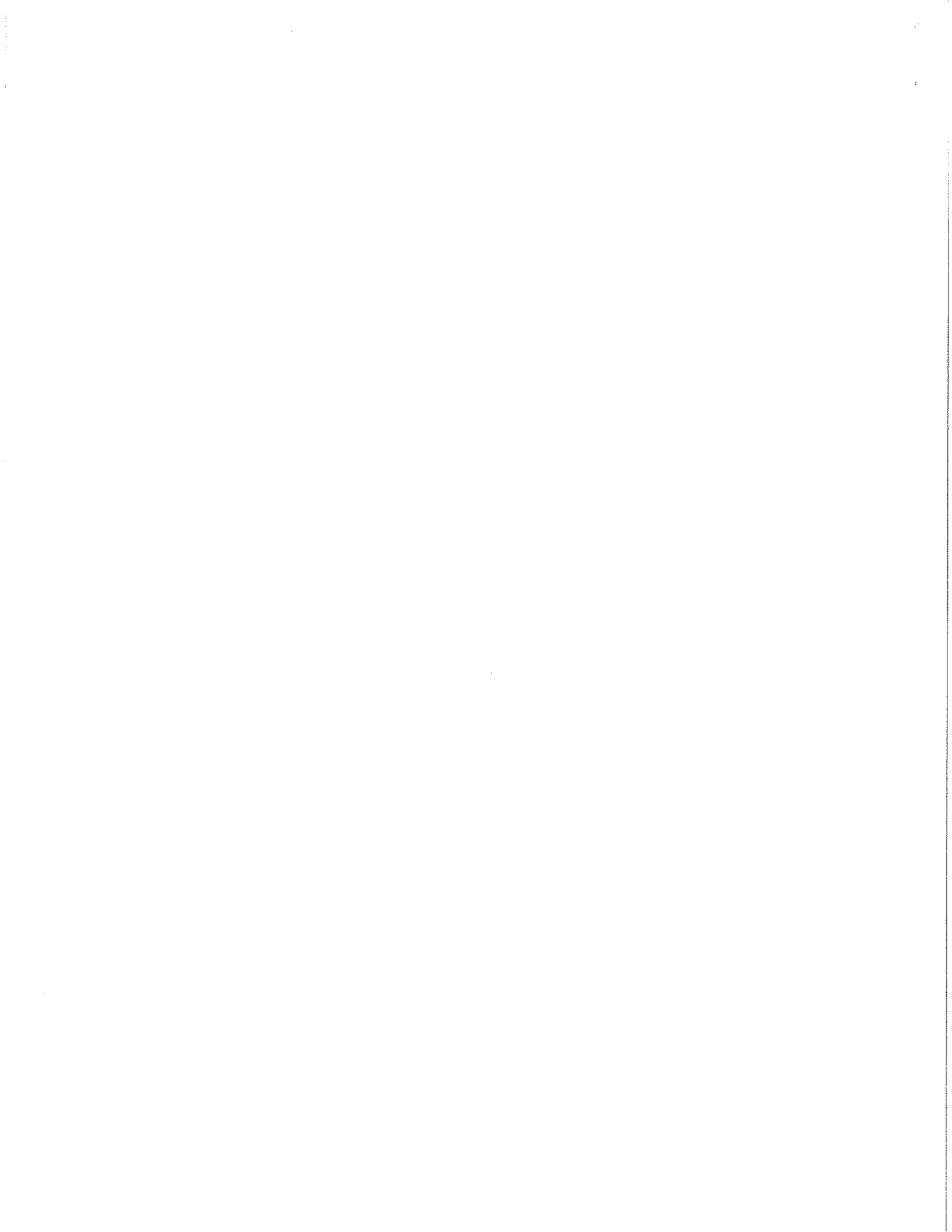
Failure to establish flame, or undesired flame on one furnace shall not affect the other furnace except for the possibility of causing it's fan to run.

A limit switch opening on either twin will interrupt the heat cycle on both furnaces. The heat cycle resumes when the limit switch re-closes.

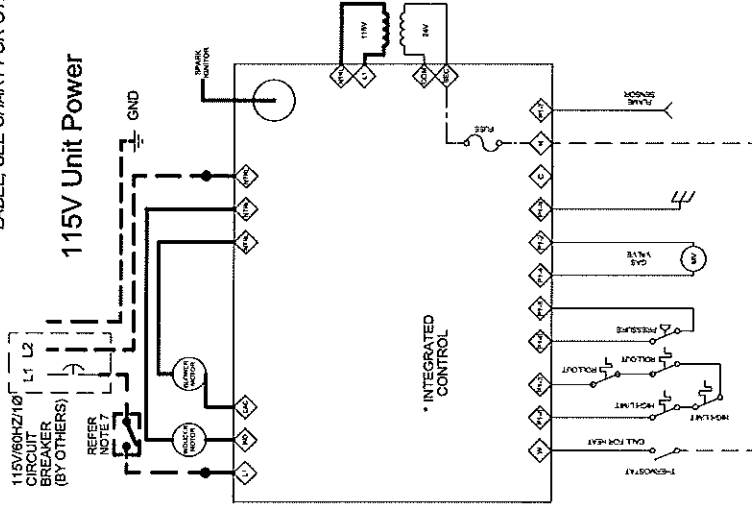
While a Twin Fault exists, the control does not respond to thermostat commands and flashes "5" on the status LED. Open limit and undesired flame response are still operational.

If a twin fault occurs during a heat cycle, both furnaces terminate the call for heat immediately.

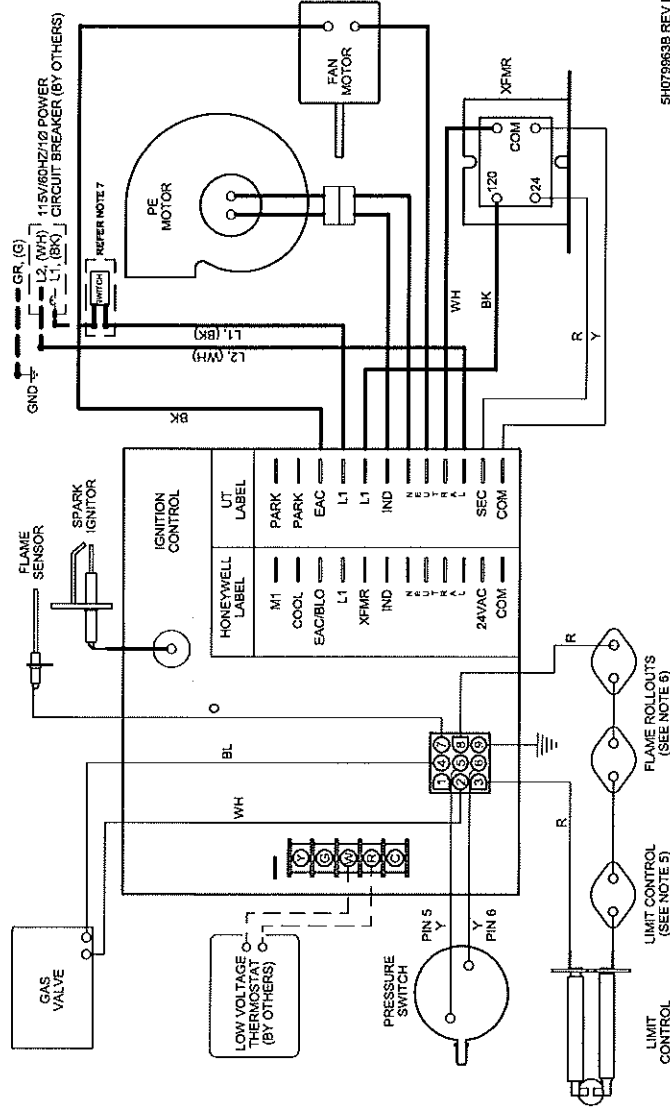
If a twin fault occurs during continuous fan, both controls shut blowers off immediately.



*SHOWN WITH UNITED TECHNOLOGIES LABEL, SEE CHART FOR OTHER LABELS



115V Unit Power



5H079963B REV L

SINGLE STAGE, DIRECT SPARK IGNITION, 100% SHUT-OFF, MULTIPLE RETRY W/ AUTO RESET FROM LOCKOUT

NOTES TO INSTALLER:

1. ALL WIRING MUST COMPLY WITH NATIONAL ELECTRIC CODE AND ALL LOCAL CODES.
2. ALL COMPONENTS MUST AGREE WITH THEIR RESPECTIVE POWER SOURCE.
3. VERIFY THE POWER SOURCE AND THE UNIT POLARITY.
4. USE TYPE 105°C REPLACEMENT WIRE 300V OR GREATER.
5. USED ON PROPELLER MODELS 100 AND LARGER.
6. TWO SWITCHES: 30-75, ONE SWITCH: 100-125 NOT USED ON 150-400 UNITS.
7. OPTIONAL UNIT DISCONNECT SWITCH.

MOTOR LEAD COLOR FOR DIRECT DRIVE BLOWER MOTORS ONLY.

WH-NEUTRAL
BK-HI
BL-MED
RD-LO

ATTACH WIRES NOT USED TO "PARK" TERMINALS

UNITS ARE FACTORY WIRED FOR HIGH SPEED OPERATION.

CAUTION:
FAILURE TO WIRE THIS UNIT ACCORDING TO THIS WIRING DIAGRAM MAY RESULT IN INJURY TO THE INSTALLER OR USER. FOR DEVIATIONS CONTACT THE FACTORY.

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WIRING DIAGRAM, SINGLE STAGE