100-7074 Rev 07

Genotyping With Juno Getting Started Guide

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Contents

About This Guide

IMPORTANT Before using the instrument, read and understand the safety guidelines in this document. Failure to follow these guidelines may result in undesirable effects, injury to personnel, and/or damage to the instrument or to property. For complete safety information, see Appendix C.

Purpose

This guide describes how to perform genotyping of low-concentration DNA with the Juno™ 96.96 Genotyping IFC (integrated fluidic circuit) on the Juno system. This is possible through advanced microfluidics technology that integrates preamplification and genotyping reactions of up to 96 samples and 96 genotyping assays in a single workflow on an IFC.

The IFC produces 9,216 genotypes in less than 3 hr using a simple workflow with minimal hands-on time. Samples are loaded into individual inlets of the Juno 96.96 Genotyping IFC, then distributed across multiple reaction chambers in nanoliter-volume aliquots. With high-quality samples, detecting the specific targets requires thermal-cycling for preamplification and PCR for genotyping on the instrument.

After genotyping is performed on the Juno system, the IFC is scanned on the Biomark™ HD or EP1™ system to collect genotyping data for later analysis.

How to Use This Guide

The chapters in this guide are organized according to assay type. Refer to the appropriate chapter to run the Juno 96.96 Genotyping IFC on the Juno system.

For detailed instructions on instrument and software operation, refer to the Juno System User Guide (100-7070).

Chapter 1: Product Information

Workflow

	Reagent Handling	Automated Steps	Estimated Times
1	Prepare preamplification and genotyping assay and sample mixes.		30–60 min
2	Pipet preamplification, genotyping mixes, and control line fluid into the IFC.		10–20 min
3		Run a script to preamplify and genotype the DNA.	2.5 hr (TaqMan® protocol); 3.5 hr (SNP Type™ protocol)
4		Perform genotyping analysis on the Biomark™ HD or EP1™ system	5–10 min

Materials

Required Kit Contents and Storage Conditions

The kits include the reagents required for preparing 10 IFCs to use on the Juno™ system. For suggested kits, see Suggested Kits on page 24.

IMPORTANT

- Do not pipet reagents from the TaqMan and SNP Type assay kits into the same IFC. Use a different IFC for each kit. Do not mix reagents from different kits.
- Unless otherwise specified, thaw reagents at room temperature, then use them at room temperature. Store reagents at their specified storage temperatures. Vortex reagents for 20 sec, then centrifuge reagents for 2 sec before use.

TaqMan Assay Kit

Integrated Preamp Genotyping Kit—10 IFCs (100-8362)

- Integrated Preamp GT Reagent Kit—10 IFCs (100-8361)

Component	Part Number	Cap Color	Quantity	Volume per Tube (mL)	Storage
GT Preamp Master Mix	100-8358	Light purple	1 tube	1.35	–25 °C to –15 °C
Dilution Reagent	100-8725	No color	2 tubes	1.7	
Probe GT Master Mix	100-8359	Gold	2 tubes	1.6	
GT Flux Fluid	100-8115	Purple	1 tube	1.0	

- Juno GT IFC and Control Line Fluid Kit (100-8583)

Component	Part Number	Cap Color	Quantity	Volume per Tube (mL)	Storage
Juno™ 96.96 Genotyping IFC	100-8365	—	10 IFCs	—	Room temperature
Control Line Fluid 150*	100-7131	—	2 boxes; 20 syringes per box	—	

* Control Line Fluid 150LV (100-8574) can also be used.

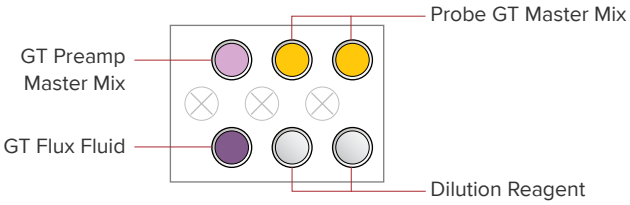


Figure 1. Integrated Preamp GT Reagent Kit—10 IFCs (100-8361)

SNP Type Assay Kit

Integrated Preamp SNP Type GT Kit—10 IFCs (100-8364)

- Integrated Preamp SNP Type GT Reagent Kit—10 IFCs (100-8363)

Component	Part Number	Cap Color	Quantity	Volume per Tube or Bottle	Storage
GT Preamp Master Mix	100-8538	Light purple	1 tube	1.35 mL	–25 °C to –15 °C
SNP Type™ GT Master Mix	100-8560	Light blue	2 tubes	1.6 mL	
60X SNP Type Reagent	100-3402	Amber	2 tubes	70 µL	
GT Flux Fluid	100-8115	Purple	1 tube	1.0 mL	
Dilution Reagent	100-8725	No color	1 tube	1.7 mL	
	101-0461		2 bottles	3.7 mL	

- Juno™ GT IFC and Control Line Fluid Kit (100-8583)

Component	Part Number	Cap Color	Quantity	Volume per Tube (mL)	Storage
Juno™ 96.96 Genotyping IFC	100-8365	—	10 IFCs	—	Room temperature
Control Line Fluid 150*	100-7131	—	2 boxes; 20 syringes per box	—	

* Control Line Fluid 150LV (100-8574) can also be used.

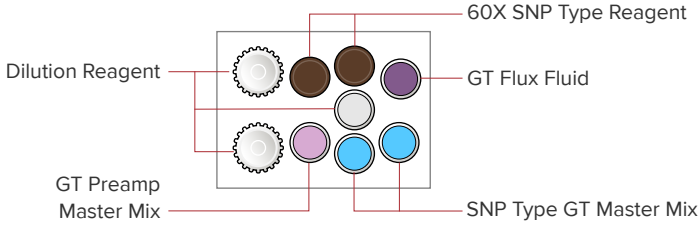


Figure 2. Integrated Preamp SNP Type GT Kit—10 IFCs (100-8363)

Required Reagents

TaqMan Assays

Product Name	Company	Part Number
20X, 40X, or 80X TaqMan genotyping assays	Thermo Fisher Scientific™	—

SNP Type Assays

Product Name	Company	Part Number
SNP Type assays specific target amplification primers (100 µM STA)	Standard BioTools™	—
SNP Type assays ASP1/ASP2 (100 µM each)	Standard BioTools	—
SNP Type assays LSP (100 µM each)	Standard BioTools	—

Suggested Reagents

Product Name	Company	Part Number
UltraPure™ DNase/RNase-Free Distilled Water	Thermo Fisher Scientific	10977-015

Required Consumables

Product Name	Company	Part Number
Juno 96.96 Genotyping IFC: • Juno 96.96 Genotyping IFC • Juno 96.96 Genotyping IFC, 10 Pack	Standard BioTools	 100-6499 100-8365
Disposable microcentrifuge tubes, polypropylene, 1.5 mL	Major laboratory supplier (MLS)*	—
96-well PCR plates	MLS†	—
MicroAmp® Clear Adhesive Film	Thermo Fisher Scientific	4306311

* Recommended: VWR® Slick Disposable Microcentrifuge Tubes, Polypropylene, 1.5 mL (VWR, 20170-666)
† Recommended: TempPlate® semi-skirted 96-well PCR plates (USA Scientific, 1402-9700)

Required Equipment

Product Name	Company	Part Number
Juno system, including system software version v3.1 or later, instrument, software, MX Interface Plate, Interface Plate Loading Fixture, Cleaning Plate, and Barrier Tape Applicator and Adapter	Standard BioTools	101-6455
For Juno 96.96 Genotyping IFC: SX Interface Plate	Standard BioTools	101-6368
Vortexer	MLS	—
Pipettes (P2, P20, P200, P1000) and appropriate low-retention tips	MLS	—
8-channel pipettes and appropriate low-retention tips	MLS	—
Microcentrifuge	MLS	—

Suggested Equipment

Product Name	Company	Part Number
2 biocontainment hoods (DNA hood and DNA-free hood) to prevent DNA contamination of lab and samples	MLS	—

Required Software

- Biomark HD Data Collection software v4.2 or later
- SNP Genotyping Analysis software v4.2 or later

IFC Type and Related Scripts

Barcode (prefix)	Scripts	Description
180x	Juno 96.96 Fast	Preamplification and genotyping of samples by TaqMan assays (180x)
180x	Juno 96.96	Preamplification and genotyping of samples by SNP Type assay (180x).

Best Practices

- Use good laboratory practices to minimize contamination of samples. Use a new pipette tip for every new sample. Whenever possible, separate pre- and post-PCR activities. Dedicate laboratory materials to designated areas.
- Unless otherwise specified, thaw reagents at room temperature, then use them at room temperature. Store reagents at their specified storage temperatures. (See Required Kit Contents and Storage Conditions on page 5.)
- Vortex reagents for 20 sec, and then centrifuge reagents for 2 sec before use.

Chapter 2: Genotyping with the Juno 96.96 Genotyping IFC Using TaqMan Assays

Prepare Assay and Sample Mixes

Prepare the Primer Pool for Preamplification

1 If necessary, adjust the concentration of TaqMan genotyping assays with DNase-free water to 18 µM (20X).

2 In a new, labeled 1.5 mL microcentrifuge tube, combine 2 µL of each 20X TaqMan genotyping assay up to a total of 96 assays. The total volume of assays is 2*Y* in Table 1, where *Y* is the number of assays used. Each assay is at a final concentration of 0.2X in the primer pool.

3 Add Dilution Reagent to the 20X TaqMan assays:

Table 1. Prepare the primer pool for preamplification

Component	Volume (µL)	Final Concentration
20X TaqMan genotyping assays, 18 µM*	2*Y* (up to 96 assays)	180 nM (0.2X)
Dilution Reagent (100-8725)	200 – 2*Y*	—
Total	**200.0**	**—**

* See Step 1.

The final concentration of each primer in the preamplification reaction is 45 nM.

NOTE The volume can be adjusted proportionally based on the number of samples to be amplified.

Prepare 2X TaqMan Assays for Genotyping

1 If necessary, adjust the concentration of TaqMan genotyping assays with DNase-free water to 18 µM (20X).

2 In a new 96-well plate, dilute the 20X TaqMan genotyping assays in Dilution Reagent or DNase-free water to a final concentration of 2X for each assay:

Component	Volume (µL)	Final Concentration
20X TaqMan genotyping assays	1.0	2X
Dilution Reagent (100-8725) or DNase-free water	9.0	—
Total	**10.0**	**—**

Prepare the Assay Mix

1 Label a new 96-well plate TAQMAN ASSAY PLATE. In a DNA-free hood, pipet 2.5 µL of Probe GT Master Mix into each well. (See Table 2.)

2 In a DNA-free hood, pipet 2.5 µL of 2X TaqMan assays into a well of the TaqMan assay plate for each assay. (See Prepare 2X TaqMan Assays for Genotyping.)

3 In unused assay inlets, combine 2.5 µL of Probe GT Master Mix with 2.5 µL DNase-free water.

4 Seal the plate with MicroAmp Clear Adhesive Film, vortex it for 5 sec, then centrifuge it at 1,000 x *g* for 1 min.

Table 2. Assay mix

Component	Volume (µL)
Probe GT Master Mix (100-8359)	2.5
2X TaqMan assays*	2.5
Total	**5.0**

* See Prepare 2X TaqMan Assays for Genotyping.

Obtain the Minimum Required Genomic DNA

For high-quality human samples, the minimum DNA required is 2.5 ng/µL in 2.75 µL. Larger genomes require higher concentrations of genomic DNA.

Prepare the Sample Mix

1 In a DNA-free hood, in a new 1.5 mL microcentrifuge tube labeled Sample Pre-Mix, combine the GT Preamp Master Mix and the primer pool for preamplification to prepare the sample pre-mix. (See Table 3.)

2 Label a new 96-well plate "SAMPLE PLATE." Pipet 2.25 µL of the sample pre-mix into each well of the plate. Skip wells that are for no template controls. Do not add sample pre-mix to no template control (NTC) wells.

IMPORTANT Prepare at least 1 NTC.

3 In a DNA sample hood, pipet 2.75 µL of genomic DNA into the appropriate wells of the sample plate.

4 In a DNA sample hood, pipet 5.00 µL of Dilution Reagent into each NTC well.

5 Seal the plate with MicroAmp® Clear Adhesive Film, vortex it for 5 sec, then centrifuge it at 1,000 x *g* for 1 min.

Table 3. Sample mix

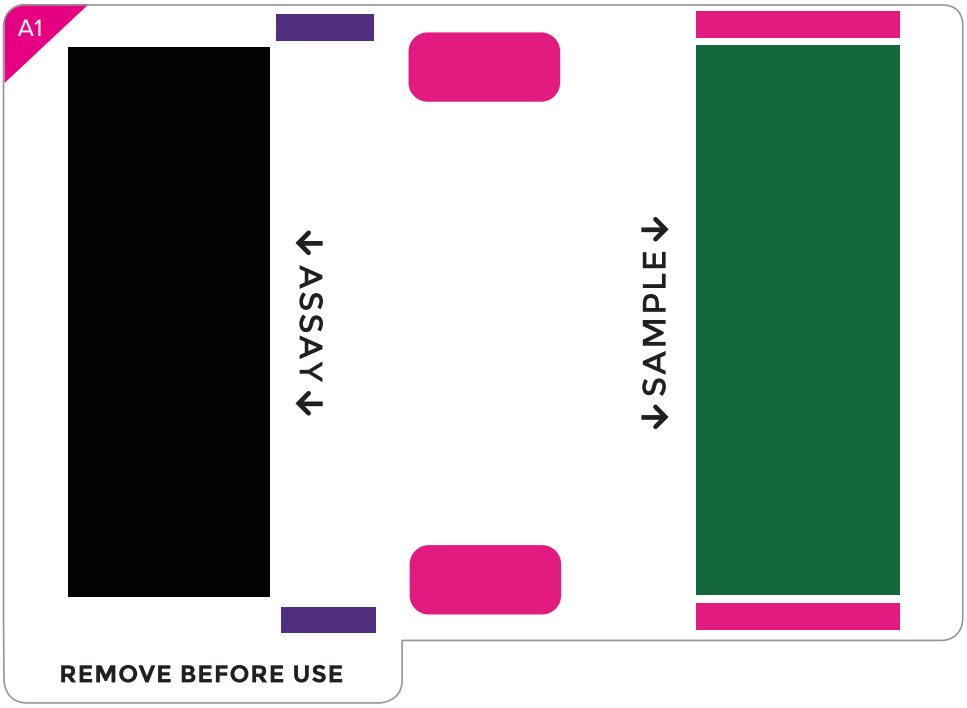
Component	Volume per Inlet (µL)	Volume per Inlet with Overage (µL)	Sample Mix for IFC with Overage† (µL)
SAMPLE PRE-MIX			
GT Preamp Master Mix (100-8358)	0.8	1.00	120.0
Primer pool for preamplification*	1.0	1.25	150.0
Genomic DNA	2.2	2.75	—
Total	**4.0**	**5.0**	**270.0**

* See Prepare the Primer Pool for Preamplification on page 9.
† 120 reactions for ease of pipetting

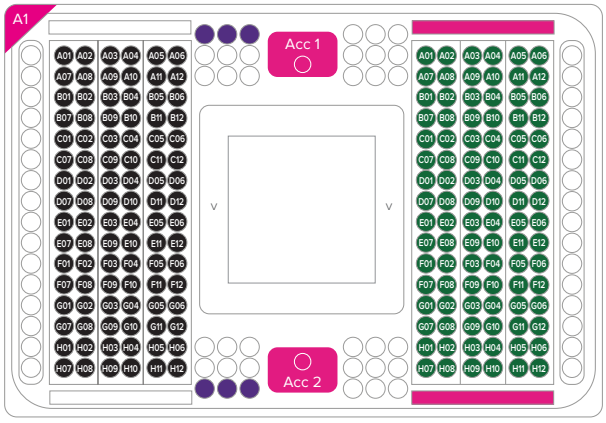
IMPORTANT Do not go past the first stop on the pipette. Doing so may introduce air bubbles into the inlets. To avoid bubbles, pipet 4.0 µL into each inlet from the 5.0 µL overage volume.

Load and Run the IFC on Juno

1 Review the loading map, which is affixed to the bottom of every new Juno™ 96.96 Genotyping IFC. The loading map is a general guide to show you how to pipet samples, assays, flux fluid, and control line fluid:



2 Review the pipetting map, which provides specific instructions for pipetting reagents in the IFC. Pipet reagents from the TaqMan assay plate and the sample plate to the IFC. On the pipetting map, each inlet is labeled with the plate well location of the sample or assay to be pipetted into that inlet:



Key			
Load 1		**Load 2**	
	Control Line Fluid 150 (100-7131)*		Assay mix, 4.0 µL
	GT Flux Fluid, 15 µL (100-8115)		Sample mix, 4.0 µL
	Control Line Fluid 150 (100-7131)*	—	Empty

* Control Line Fluid 150LV (100-8574) can also be used.

Figure 3. Pipetting map for the Juno 96.96 Genotyping IFC

3 Ensure that the notched corner of the IFC (A1) is at the top left.

4 Load an entire syringe of Control Line Fluid 150 in Acc 1 and a second syringe in Acc 2. (See pink squares on the pipetting map.) To ensure correct accumulator volume, only use Control Line Fluid 150 syringes.

5 Load an entire syringe of Control Line Fluid 150 into a reservoir and a second syringe into the second reservoir. (See long pink rectangles on the right side of the pipetting map.)

IMPORTANT Carefully dispense control line fluid into the reservoirs. If control line fluid comes into contact with the sample inlets, use a new IFC.

6 Pipet 15 µL of GT Flux Fluid into each of the 6 ports. (See purple circles on the pipetting map.)

7 Unseal the TaqMan assay plate and pipet 4.0 µL of each assay mix into an assay inlet. (See black circles on the pipetting map and Prepare the Assay Mix on page 10.)

8 Unseal the sample plate and pipet 4.0 µL of each sample mix into a sample inlet. (See green circles on the pipetting map and Prepare the Sample Mix on page 11.)

IMPORTANT Do not go past the first stop on the pipette. Doing so may introduce air bubbles into the inlets. Pipet 4.0 µL from the 5.0 µL overage volume to ensure that no air bubbles enter the inlet.

9 Pull the sticker front tab down and away from the IFC to gently peel off the loading map. Do not invert the IFC.

10 If necessary, remove any bubbles from an IFC inlet by removing the contents by pipette and then carefully re-pipetting the contents into the inlet.

11 Ensure that the SX Interface Plate (silver label) is installed in the instrument. [See the Juno System User Guide (100-7070).]

12 Place the IFC into the Juno instrument, then start the run <60 min after pipetting the reagents into the IFC.

13 On the Juno Scripts screen, tap the **Probe GT** tab, **Juno 96.96 Fast**, then **Run**. It takes approximately 2.7 hr to complete.

The script contains these thermal cycling protocols:

Cycles	Temperature	Time
Hot start	95 °C	2 min
14	95 °C	15 sec
	60 °C	4 min

Cycles	Temperature	Time
Hot start	95 °C	2 min
45	95 °C	2 sec
	60 °C	20 sec

14 After the run is finished, tap **EJECT** to eject the IFC.

IMPORTANT After a run, perform an endpoint read of the IFC in ≤1 hr. Do not leave the IFC overnight in the instrument. Doing so adversely affects the reaction.

Perform Genotyping Analysis on the Samples

Refer to the appropriate document:

- SNP Genotyping User Guide (68000098)
- Biomark™ HD Data Collection User Guide (100-2451)
- Biomark/EP1™ Data Collection User Guide (68000127).

Chapter 3: Genotyping with the Juno 96.96 Genotyping IFC Using SNP Type Assays

Prepare Assay and Sample Mixes

Prepare the 200 nM Primer Pool for Preamplification

1 In a new 1.5 mL microcentrifuge tube, combine 2 µL of 100 µM SNP Type™ assays specific target amplification primers (100 µM STA) up to a total of 96 assays. The total volume is *Y* in Table 4.

2 In the same microcentrifuge tube, combine 2 µL of 100 µM SNP Type assays locus-specific primers (100 µM LSP) up to a total of 96 assays. The total volume is *Z* in Table 4.

3 Add Dilution Reagent to the SNP Type assays:

Table 4. Pool SNP Type assays

Component	Volume (µL)	Final Concentration (nM*)
SNP Type assays specific target amplification primers (100 µM STA)	*Y* (up to 96 assays)	200.0
SNP Type assays locus-specific primers (100 µM LSP)	*Z* (up to 96 assays)	200.0
Dilution Reagent (100-8725 or 101-0461)	1,000 – (*Y* + *Z*)	—
Total	**1,000.0**	**—**

* The final concentration of each primer in the preamplification reaction is 50 nM.

NOTE

- Volume can be adjusted proportionally based on the number of samples to be amplified.
- You can store the pooled SNP Type STA assays at –20 °C for 1 year or ≤10 freeze-thaw cycles, whichever is shorter.

Prepare 2X SNP Type Assays

Prepare 50X Primer Mix for Each Single Assay Inlet

In a DNA-free hood, in a new 96-well plate, combine the following reagents for each assay:

Component	Volume per 40 µL Stock (µL)	Final Concentration (µM)
SNP Type assays allele-specific primers pooled ASP1 and ASP2 Primers (100 µM ASP1/100 µM ASP2)	3.0	7.5
SNP Type assays locus-specific primers (100 µM LSP)	8.0	20.0
Dilution Reagent (100-8725 or 101-0461)	29.0	—
Total	**40.0***	**—**

* A 40.0 µL volume is sufficient for 40 2X SNP Type assays.

Prepare 2X SNP Type Assays from the 50X Primer Mix for Genotyping

In a DNA-free hood, in a new 96-well plate, combine the following reagents for each assay:

Component	Volume per 25 µL Stock (µL)	Final Concentration
50X Primer Mix*	1.0	2X
Dilution Reagent (100-8725 or 101-0461)	24.0	—
Total	**25.0†**	**—**

* See Prepare 50X Primer Mix for Each Single Assay Inlet on page 17.

† A 25.0 µL volume is sufficient for 10 IFC runs.

NOTE You can store the 2X SNP Type assays at –20 °C for up to 1 week.

Prepare the Assay Mix

1 In a DNA-free hood, in a new 1.5 mL microcentrifuge tube labeled Assay Pre-Mix, combine the SNP Type GT Master Mix and 60X SNP Type Reagent to prepare the assay pre-mix. (See Table 5.)

2 Label a new 96-well plate SNP TYPE ASSAY PLATE. In a DNA-free hood, pipet 2.5 µL of the assay pre-mix into each well.

3 Pipet 2.5 µL of 2X SNP Type assay into each well of the SNP Type assay plate.

4 In unused assay or no-assay control inlets, combine 2.5 µL of assay pre-mix with 2.5 µL of Dilution Reagent.

5 Seal the plate with MicroAmp Clear Adhesive Film, vortex it for 5 sec, then centrifuge it at 1,000 x *g* for 1 min.

Table 5. Assay mix

Component	Volume per Inlet (µL)	Volume per Inlet with Overage (µL)	Assay Mix for IFC with Overage† (µL)
ASSAY PRE-MIX			
SNP Type GT Master Mix (100-8360)	1.933	2.417	290.0
60X SNP Type Reagent (100-3402)	0.066	0.083	10.00
2X SNP Type assays*	2.00	2.5	—
Total	**4.00**	**5.00**	**300**

* See Prepare 2X SNP Type Assays on page 17.
† 120 reactions for ease of pipetting

Obtain the Minimum Required Genomic DNA

For high-quality human samples, the minimum DNA required is 2.5 ng/µL. Larger genomes require higher concentrations of genomic DNA.

Prepare the Sample Mix

1 In a DNA-free hood, in a new microcentrifuge tube labeled Sample Pre-Mix, combine the GT Preamp Master Mix and the primer pool for preamplification to prepare the sample pre-mix. (See Table 6.)

2 Label a new 96-well plate SAMPLE PLATE, and then pipet 2.25 µL of the sample pre-mix into each well of the plate. Do not add sample pre-mix to no template control (NTC) wells.

IMPORTANT Prepare at least 1 NTC.

3 In a DNA sample hood, pipet 2.75 µL of genomic DNA into the appropriate wells of the sample plate.

4 In a DNA sample hood, pipet 5.00 µL of Dilution Reagent into each NTC well.

5 Seal the plate with MicroAmp Clear Adhesive Film, vortex it for 5 sec, then centrifuge it at 1,000 x *g* for 1 min:

Table 6. Sample mix

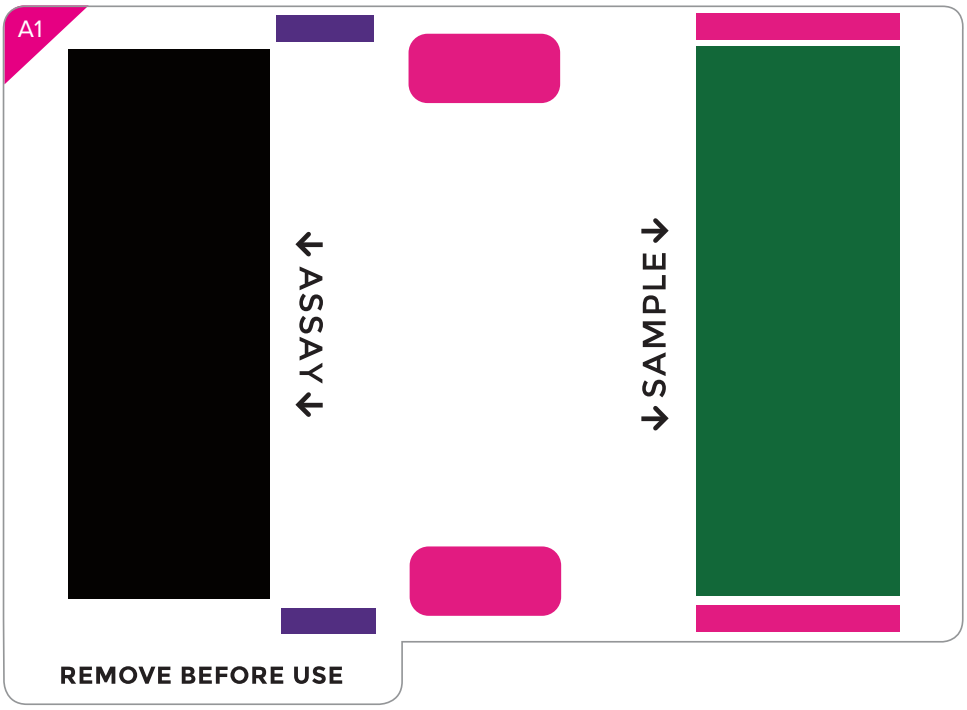
Component	Volume per Inlet (µL)	Volume per Inlet with Overage (µL)	Sample Mix for IFC with Overage† (µL)
SAMPLE PRE-MIX			
GT Preamp Master Mix (100-8358)	0.800	1.00	120
Primer pool for preamplification*	1.00	1.25	150
Genomic DNA	2.20	2.75	—
Total	**4.00**	**5.00**	**270**

* See Prepare the 200 nM Primer Pool for Preamplification on page 16.
† 120 reactions for ease of pipetting

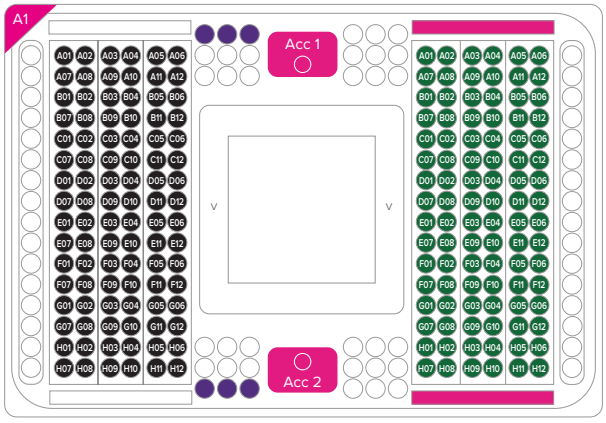
IMPORTANT Do not go past the first stop on the pipette. Doing so may introduce air bubbles into the inlets. To avoid bubbles, pipet 4.0 µL into each inlet from the 5.0 µL overage volume.

Load and Run the IFC on Juno

1 Review the loading map, which is affixed to the bottom of every new Juno™ 96.96 Genotyping IFC. The loading map is a general guide to show you how to pipet samples, assays, and control line fluid:



2 Review the pipetting map, which provides specific instructions for pipetting reagents in the IFC. Pipet reagents from the SNP Type assay plate and the sample plate to the IFC. On the pipetting map, each inlet is labeled with the plate well location of the sample or assay to be pipetted into that inlet:



Key			
Load 1		**Load 2**	
	Control Line Fluid 150 (100-7131)*		Assay mix, 4.0 µL
	GT Flux Fluid, 15 µL (100-8115)		Sample mix, 4.0 µL
	Control Line Fluid 150 (100-7131)*	—	Empty

* Control Line Fluid 150LV (100-8574) can also be used.

3 Ensure that the notched corner of the IFC (A1) is at the top left.

4 Load an entire syringe of Control Line Fluid 150 in Acc 1 and a second syringe in Acc 2. (See the pink squares on the pipetting map.) To ensure correct accumulator volume, only use Control Line Fluid 150 syringes.

5 Load an entire syringe of Control Line Fluid 150 into each of the 2 reservoirs. (See the long pink rectangles on the right side of the pipetting map.)

IMPORTANT Carefully dispense control line fluid into the reservoirs. If control line fluid comes into contact with the sample inlets, use a new IFC.

6 Pipet 15 µL of GT Flux Fluid into each of the 6 ports. (See the purple circles on the pipetting map.)

7 Unseal the SNP Type assay plate and pipet 4.0 µL of each assay mix into an assay inlet. (See the black circles on the pipetting map and Prepare the Assay Mix on page 18.)

8 Unseal the sample plate and pipet 4.0 µL of each sample mix into a sample inlet. (See the green circles on the pipetting map and Prepare the Sample Mix on page 19.)

IMPORTANT Do not go past the first stop on the pipette. Doing so may introduce air bubbles into the inlets. Pipet 4.0 µL from the 5.0 µL overage volume to ensure that no air bubbles enter the inlet.

9 Pull the sticker front tab down and away from the IFC to gently peel off the loading map. Do not invert the IFC.

10 If necessary, remove any bubbles from an IFC inlet by removing the contents by pipette and then carefully re-pipetting the contents into the inlet.

11 Ensure that the SX Interface Plate (silver label) is installed in the instrument. [See the Juno System User Guide (100-7070).]

12 Place the IFC into the Juno instrument, then start the run <60 min after pipetting the reagents into the IFC.

13 On Juno Scripts screen, tap the **SNP Type** tab**, Juno 96.96**, then **Run**. It takes 3 hr and 20 min to complete.

The script contains these thermal cycling protocols:

Table 7. Multiplex STA

Cycles	Temperature	Time
Hot start	95 °C	2 min
14	95 °C	15 sec
	60 °C	4 min

Table 8. SNP Type genotyping

Cycles	Temperature	Time
Hot start	95 °C	10 min
1	95 °C	15 sec
	64 °C	45 sec
	72 °C	15 sec
1	95 °C	15 sec
	63 °C	45 sec
	72 °C	15 sec
1	95 °C	15 sec
	62 °C	45 sec
	72 °C	15 sec
1	95 °C	15 sec
	61 °C	45 sec
	72 °C	15 sec
39	95 °C	15 sec
	60 °C	45 sec
	72 °C	15 sec

14 After the run is finished, tap **EJECT** to eject the IFC from the instrument.

IMPORTANT After a run, do not leave the IFC overnight in the instrument. Doing so adversely affects the reaction.

Perform Genotyping Analysis on the Samples

Refer to the appropriate document:

- SNP Genotyping User Guide (68000098)
- Biomark™ HD Data Collection User Guide (100-2451)
- Biomark/EP1™ Data Collection User Guide (68000127).

Appendix A: Suggested Kits

Reagents and IFCs are available separately.

IMPORTANT Unless otherwise specified, thaw reagents at room temperature, then use them at room temperature. Store reagents at their specified storage temperatures. Vortex reagents for 20 sec, then centrifuge reagents for 2 sec before use.

TaqMan Assay Kit

Integrated Preamp Genotyping Reagent Kit—10 IFCs (100-8361)

Component	Part Number	Cap Color	Quantity	Volume per Tube (mL)	Storage
GT Preamp Master Mix	100-8358	Light purple	1 tube	1.35	–25 °C to –15 °C
Dilution Reagent	100-8725	No color	2 tubes	1.7	
Probe GT Master Mix	100-8359	Gold	2 tubes	1.6	
GT Flux Fluid	100-8115	Purple	1 tube	1.0	

SNP Type Assay Kit

Integrated Preamp SNP Type™ GT Kit—10 IFCs (100-8363)

Component	Part Number	Cap Color	Quantity	Volume per Tube or Bottle	Storage
GT Preamp Master Mix	100-8538	Light purple	1 tube	1.35 mL	–25 °C to –15 °C
SNP Type GT Master Mix	100-8560	Light blue	2 tubes	1.6 mL	
60X SNP Type Reagent	100-3402	Amber	2 tubes	70 µL	
GT Flux Fluid	100-8115	Purple	1 tube	1.0 mL	
Dilution Reagent	100-8725	No color	1 tube	1.7 mL	
	101-0461		2 bottles	3.7 mL	

Suggested Reagents to Use with TaqMan Assay and SNP Type Assay Kits

Box	Component	Cap Color	Quantity	Volume per Tube or Bottle (mL)	Storage
Dilution Reagent (100-8726)	Dilution Reagent	No color	1 bottle	25	–25 °C to –15 °C
Juno 96.96 Genotyping IFC (100-8365)	Juno 96.96 Genotyping IFC	—	10 IFCs	—	Room temperature
Juno 96.96 Genotyping IFC (100-6499)	Juno 96.96 Genotyping IFC	—	1 IFC	—	Room temperature
Control Line Fluid 150 (100-7131)	Control Line Fluid 150	—	20 syringes	—	Room temperature

Appendix B: Related Documents

Go to standardbiotools.com to download these related documents.

Document Title	Document Number
Juno™ System User Guide	100-7070
Juno System Usage Quick Reference	100-7713
Control Line Fluid Loading Procedure Quick Reference	68000132

Appendix C: Safety

Safety Alert Conventions

CAUTION ABBREVIATED SAFETY ALERTS. Hazard symbols and hazard types specified in procedures may be abbreviated in this document.

Standard BioTools™ documentation uses specific conventions for presenting information that may require your attention. Refer to the following safety alert conventions.

Safety Alerts for Chemicals

For hazards associated with chemicals, this document follows the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and uses indicators that include a pictogram and a signal word that indicates the severity level:

Indicator	Description
	Pictogram (see example) consisting of a symbol on a white background within a red diamond-shaped frame. Refer to the individual safety data sheet (SDS) for the applicable pictograms and hazards pertaining to the chemicals being used.
DANGER	Signal word that indicates more severe hazards.
WARNING	Signal word that indicates less severe hazards.

Safety Alerts for Instruments

For hazards associated with instruments, this document uses indicators that include a pictogram and signal words that indicate the severity level:

Indicator	Description
	Pictogram (see example) consisting of a symbol on a white background within a black triangle-shaped frame. Refer to the instrument user guide for the applicable pictograms and hazards pertaining to instrument usage.
DANGER	Signal word that indicates an imminent hazard that will result in severe injury or death if not avoided.
WARNING	Signal word that indicates a potentially hazardous situation that could result in serious injury or death if not avoided.
CAUTION	Signal word that indicates a potentially hazardous situation that could result in minor or moderate personal injury if not avoided.
IMPORTANT	Signal word that indicates information necessary for proper use of products or successful outcome of experiments.

Safety Data Sheets

Read and understand the SDSs before handling chemicals. To obtain SDSs for chemicals ordered from Standard BioTools, either alone or as part of this system, go to standardbio.com and search for the SDS using either the product name or the part number.

Some chemicals referred to in this user guide may not have been provided with your system. Obtain the SDSs for chemicals provided by other manufacturers from those manufacturers.

General Safety

In addition to your site-specific safety requirements, Standard BioTools™ recommends the following general safety guidelines in all laboratory and manufacturing areas:

- Use the appropriate personal protective equipment (PPE): safety glasses, fully enclosed shoes, lab coats, and gloves, according to your laboratory safety practices.
- Know the locations of all safety equipment (fire extinguishers, spill kits, eyewashes/showers, first-aid kits, safety data sheets, etc.), emergency exit locations, and emergency/injury reporting procedures.
- Do not eat, drink, or smoke in lab areas.
- Maintain clean work areas.
- Wash hands before leaving the lab.

Instrument Safety

The instrument should be serviced by authorized personnel only.

WARNING Do not modify this instrument. Unauthorized modifications may create a safety hazard.

WARNING POTENTIAL BIOHAZARD. When handling biohazardous material or when using biohazardous material on the instrument, use appropriate personal protective equipment and adhere to Biosafety in Microbiological and Biomedical Laboratories (BMBL), a publication from the Centers for Disease Control and Prevention, and to your lab's safety protocol to limit biohazard risks. If biohazardous materials are used, properly label the equipment as a biohazard. For more information, see the BMBL guidelines online at cdc.gov/labs/bmbl/index.html.

CAUTION PINCH HAZARD. The instrument door and tray can pinch your hand. Make sure your fingers, hands, and shirtsleeves are clear of the door and tray when loading or ejecting an integrated fluidic circuit (IFC).

CAUTION HOT SURFACE HAZARD. The thermal cycler chuck gets hot and can burn your skin. Use caution when working near the chuck.

For a full list of the symbols on the instrument, refer to the Juno System User Guide (100-7070).

Electrical Safety

NOTE The main power disconnect is on the rear panel of the instrument.

WARNING ELECTRICAL HAZARD. DO NOT REMOVE THE COVERS. Electrical shock can result if the instrument is operated without its protective covers. No internal components are serviceable by the user.

WARNING ELECTRICAL HAZARD. Plug the instrument into a properly grounded receptacle with adequate current capacity.

Chemical Safety

The responsible individuals must take the necessary precautions to ensure that the surrounding workplace is safe and that instrument operators are not exposed to hazardous levels of toxic substances. When working with any chemicals, refer to the applicable safety data sheets (SDSs) provided by the manufacturer or supplier.

Disposal of Products

Used IFCs and reagents should be handled and disposed of in accordance with federal, state, regional, and local laws for hazardous waste management and disposal.

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