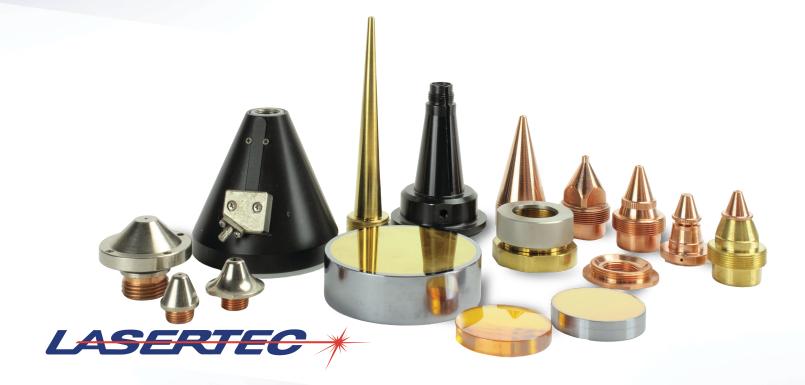
LASER CUTTING PRODUCTS



SENSORS, CONSUMABLES, LENSES, REFLECTORS AND REPLACEMENT PARTS

American Torch Tip LASERTEC[®] for Most Brands Made In the USA



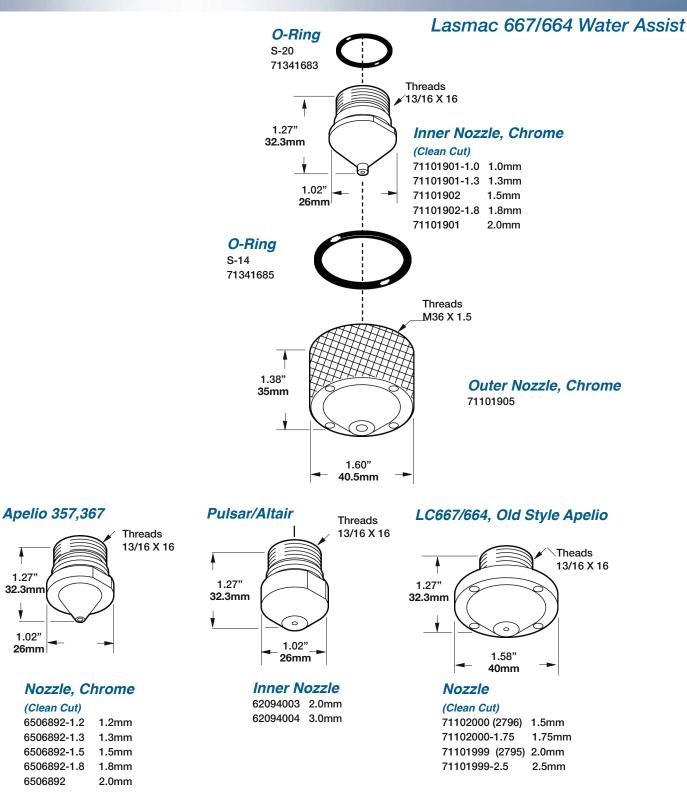
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Niigata [®]	
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Strippit [®]	
LVD [®]	
Tanaka®	
Trumpf [®]	
- 1	

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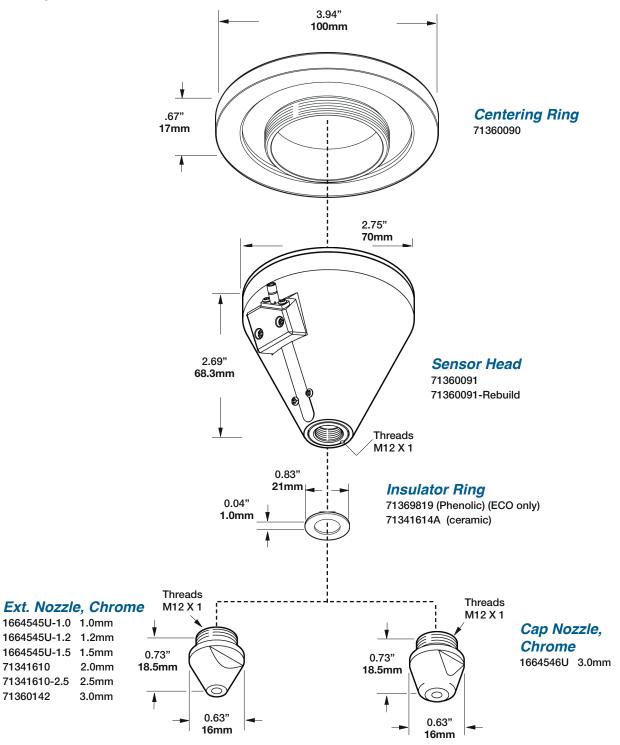
3 AMADA®





4 AMADA®

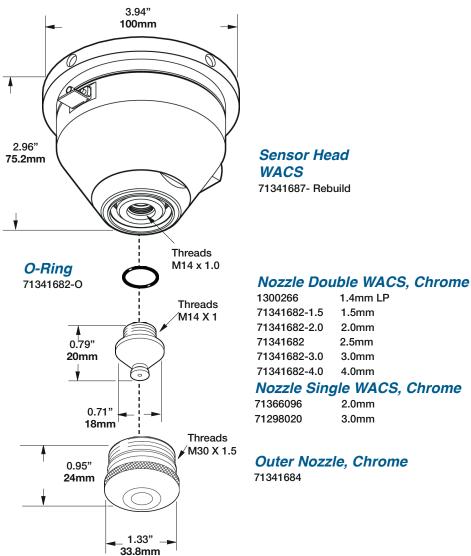
Sensor System HS95



CREATING A BETTER EXPERIENCE!



5 **AMADA**® WACS Sensor System



Sensor Head WACS 71341687- Rebuild

1.4mm LP

1.5mm

2.0mm

2.5mm

3.0mm

4.0mm

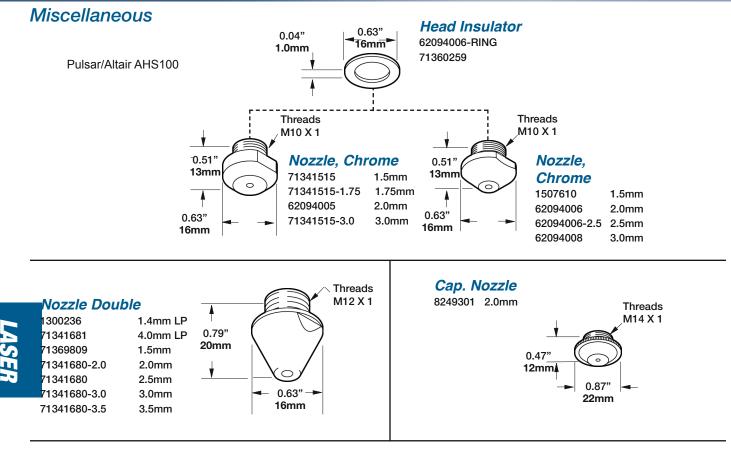
2.0mm

3.0mm

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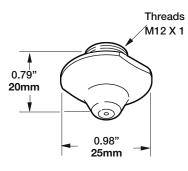


6 AMADA®



Nozzle Mushroom - Single, Chrome

1572362-1.4	1.4mm
1572362-4.0	4.0mm
71369812	1.2mm LP
71369815	2.0mm LP
71369816	3.0mm LP
71501056	1.5Mm (Single Mushroom H.C.)
71501057	2.0mm
71501058	3.0Mm (Single Mushroom Eco)



Nozzle Mushroom - Double, Chrome

1572361	1.2mm
71369813-2.0	2.0mm
71369813-2.5	2.5mm
71369813-3.0	3.0mm
71369813	1.4mm LP
71369817	4.0mm LP
71341481	4.0mm
71461026	2.5mm (Mushroom Shower Double Chrm)
71501059	2.5mm (Double Mushroom Eco)

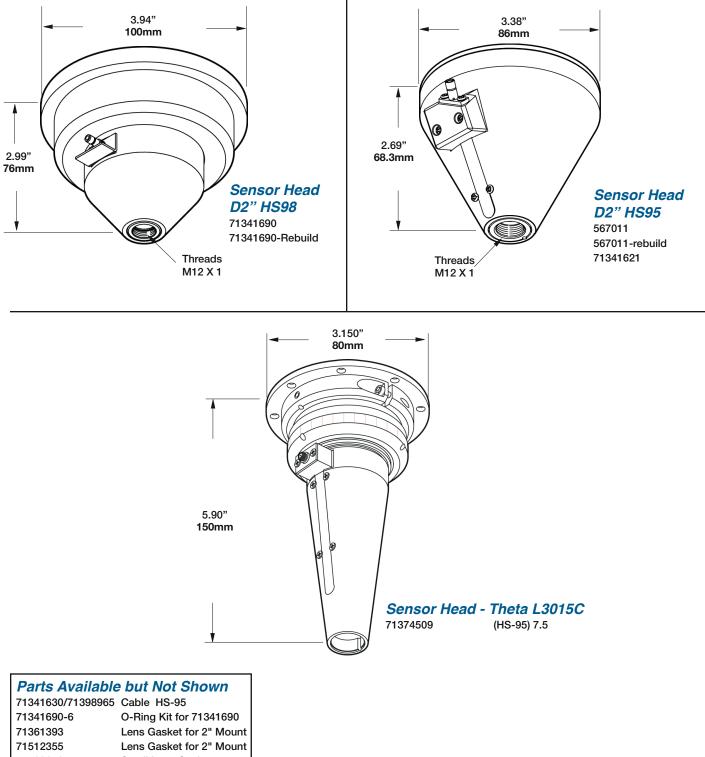
AMERICAN ATTC

CREATING A BETTER EXPERIENCE!

7 AMADA®

LASER

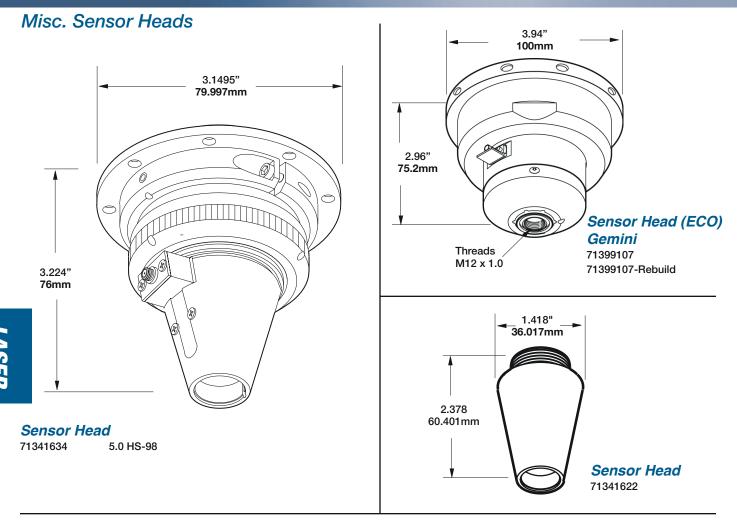




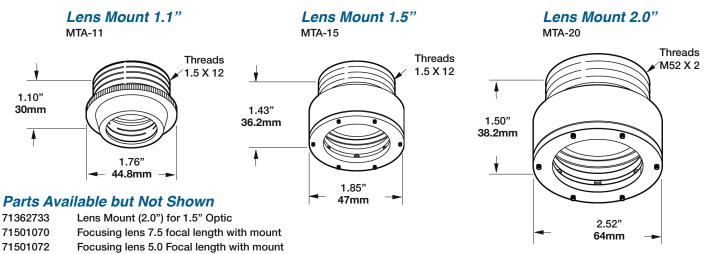
71512355Lens Gasket for 271109613Small Lens Gasket71398293Cable



8 AMADA®



Lens Mounts





9 AMADA® OPTICS FOR AMADA® LASERS

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness	
81140186	ZC20750380	ZnSe	2.0"	7.5''	.390''	
81140190	ZC11250160	ZnSe	1.1"	2.5''	.160"	
81140221	ZC15375300	ZnSe	1.5"	3.75''	.300"	
81140225	ZC11375160	ZnSe	1.1"	3.75''	.160"	
81140305	ZC11500160	ZnSe	1.1"	5.0''	.160''	
81140306	ZC15500300	ZnSe	1.5"	5.0''	.300"	
81140307	ZC20500380	ZnSe	2.0"	5.0''	.380''	
81140389	ZC11750160	ZnSe	1.1"	7.5"	.160''	
81140400	ZC15750300	ZnSe	1.5"	7.5''	.300''	

Focusing Lenses

Output Couplers

P/N	Material	Diameter	Edge Thickness	SI	S2
71198081	ZnSe	1.1"	.236''	20mcc/60%	9mcx/ar

Rear Mirrors

P/N	Material	Diameter	Edge Thickness	SI	S2	
71198087	Ge	1.1"	.236''	20mcc/99.5%	po/ar	



10 **AMADA® OPTICS FOR AMADA® LASERS**

Phase Retarders

P/N	Material	Diameter	Edge Thickness
71198085	Si	2.0''	.200''
71198088	Si	2.0"	.200''
71198091	Si	3.0''	.250''
71198545	Si	2.0"	.200''
71341532	Si	3.0''	.250''

Zero Phase Shifters

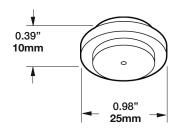
P/N	Material	Diameter	Edge Thickness
71198084	Si	2.0"	.200''
71198089	Si	2.0''	.200''
71198092	Si	3.0''	.250''
71198544	Si	2.0''	.200''
71198569	Si	3.0''	.250''
81100235	Cu	50mm	25mm

Total Reflectors

P/N	Material	Diameter	Edge Thickness
71198083	Si	2.0''	.200''
71198543	Si	2.0''	.200''
81140185	Si	2.0''	.375''

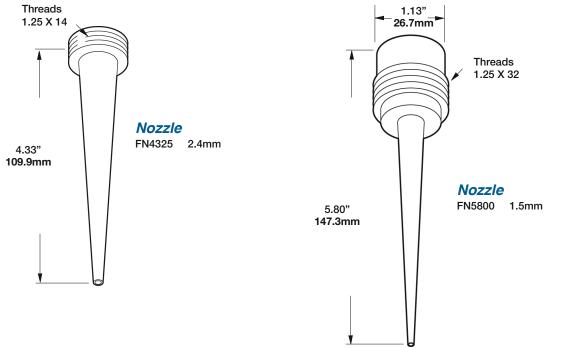


11 BEHRENS®



Nozzle

- L60 0.8mm L51 1.0mm L52 1.2mm
- L53 1.5mm

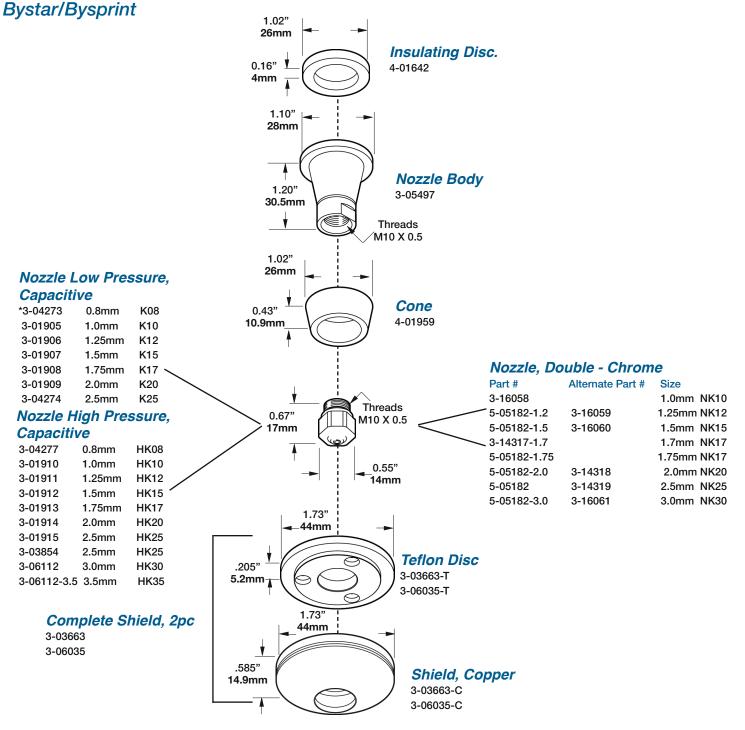


DIRECTED LIGHT®

LASER

12 BYSTRONIC®



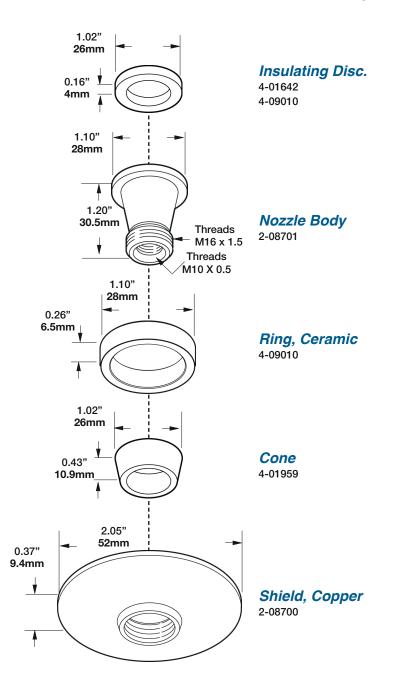


 * Available as a shower nozzle (3-04273-S)

CREATING A BETTER EXPERIENCE!



13 BYSTRONIC[®] Bystar/Bysprint



LASER

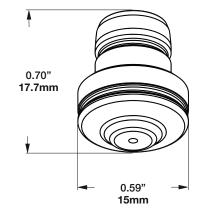


14 BYSTRONIC[®] - FIBER

ByStar/BySprint/BySmart

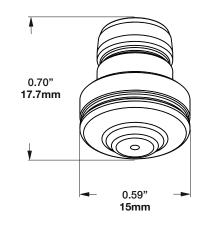
Quick Release Nozzle

Part #	Size	
10035266	1.0mm	HK10
10035267	1.2mm	HK12
10035268	1.5mm	HK15
10035269	1.7mm	HK17
10035270	2.0mm	HK20
10035271	2.5mm	HK25
10035272	3.0mm	HK30
10049744	3.5mm	HK35



Quick Release Double Nozzle

Part #	Size	
10049747	1.0mm Double	NK1015
10035275	1.2mm Double	NK1215
10035278	1.5mm Double	NK1515
10035290	1.7mm Double	NK1715
10035292	2.0mm Double	NK2015
10035294	2.5mm Double	NK2515
10035296	2.5mm Double W/ 2.0 Inner	NK2520
10035298	3.0mm Double W/ 1.7 Inner	NK3017
10035301	3.0mm Double	NK3020
10035302	3.5mm Double	NK3530



Parts Available but Not Shown

Part #Description10045746Fused Silica Protective Window

Size

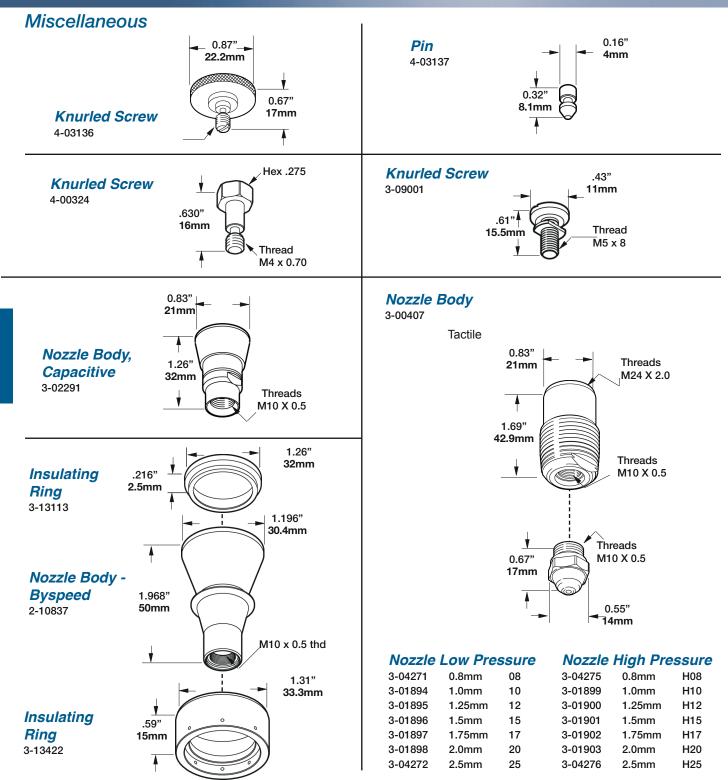
36.0mm x 5.0mm



15



16 BYSTRONIC®





17 BYSTRONIC® OPTICS FOR BYSTONIC® LASERS

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
4-00184	ZM15250236	ZnSe	1.5"	2.5"	.236''
4-00185	ZM15375236	ZnSe	1.5"	3.75"	.236''
4-00186	ZM15500236	ZnSe	1.5"	5.0''	.236
4-00187	ZM15750236	ZnSe	1.5"	7.5"	.236''
4-05094	ZM15500350	ZnSe	1.5"	5.0''	.354''
4-05095	ZM15750350	ZnSe	1.5"	7.5"	.354''

Phase Retarder

P/N	Material	Diameter	Edge Thickness
4-00226	Cu	50mm	10mm

Zero Phase Shifters

P/N	Material	Diameter	Edge Thickness	SI-Curv.	
4-00200	Cu	60mm	l Omm	Plano	
4-00203	Cu	50mm	10mm	Plano	

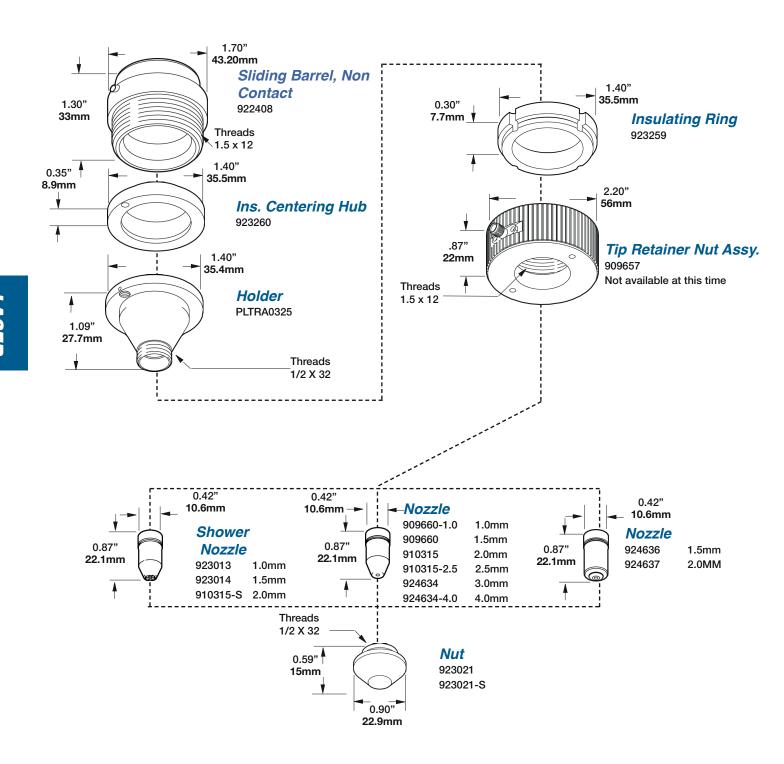
Total Reflectors

P/N	Material	Diameter	Edge Thickness	SI-Curv.
4-00201	Cu	50mm	10mm	Plano



18 CINCINNATI®

Non Contact Head

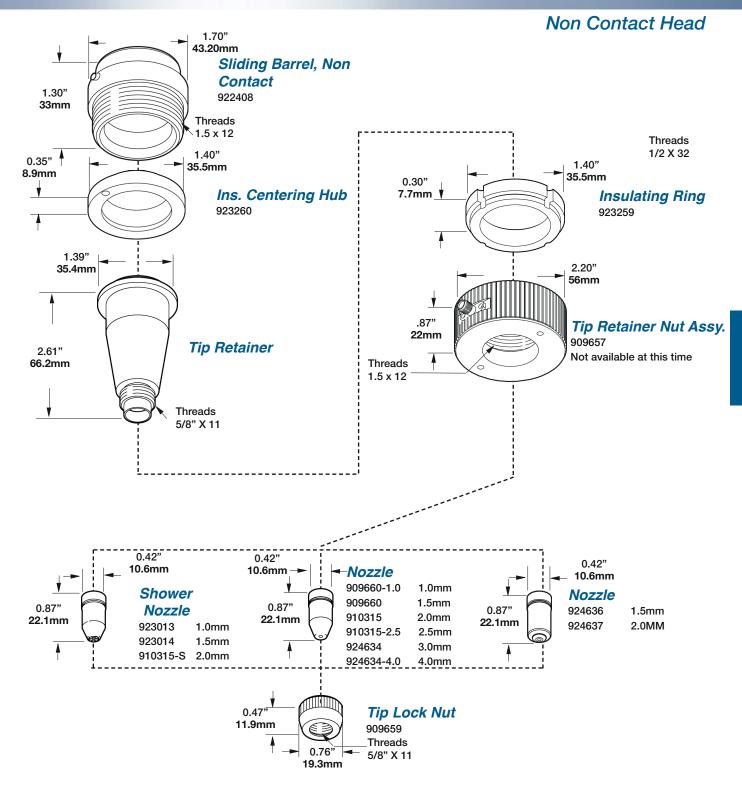




19

IASE

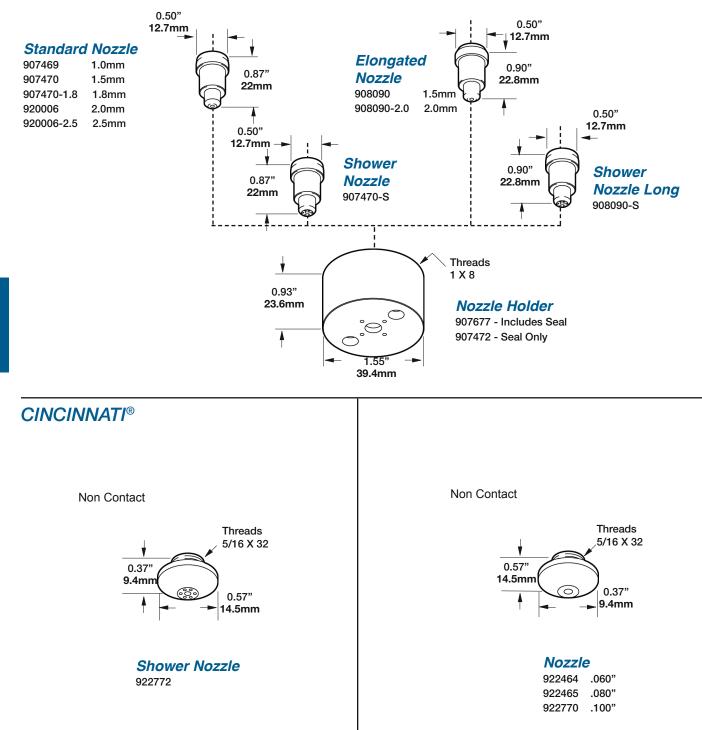
CINCINNATI®





20 Cincinnati®

Contact Head





21 CINCINNATI® OPTICS FOR CINCINNATI® LASERS

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
907557	ZC155018160	ZnSe	1.5"	5.018"	.160''
908085	ZC15513280	ZnSe	1.5"	5.18"	.280''
909484	ZC15763280	ZnSe	1.5"	7.63"	.280''
922376	ZC20769380	ZnSe	2.0''	7.69''	.380''
922377	ZC20519380	ZnSe	2.0"	5.19"	.380''

Output Couplers

P/N	Material	Diameter	Edge Thickness	SI	S2
907969	ZnSe	1.0"	.236''	30mcc/65%	30mcx/ar

Rear Mirrors

P/N	Material	Diameter	Edge Thickness	SI	S2	
907970	Ge	1.0"	.236''	l 5mcc/99.5%	po/ar	



22 CINCINNATI® OPTICS FOR CINCINNATI® LASERS

Phase Retarders

P/N	Material	Diameter	Edge Thickness
907463	Cu	50mm	10mm
909975	Cu	2.25''	10mm

Zero Phase Shifters

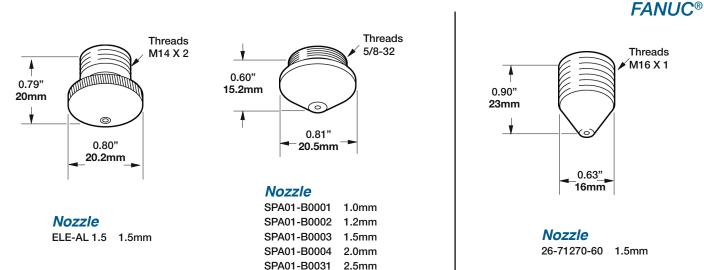
P/N	Material	Diameter	Edge Thickness
907464	Cu	50mm	l Omm
909976	Cu	2.25''	10mm
910341	Cu	3''	.500''

Total Reflectors

P/N	Material	Diameter	Edge Thickness	SI-Curv.
907971	Si	2.0"	.200''	Plano
910600	Si	2.0"	.200''	Plano
922645	Si	2.0''	.200''	Plano







OPTICS FOR FANUC® LASERS

Output Couplers

P/N	Material	Diameter	Edge Thickness	SI	S2	
A98L00010981	ZnSe	1.1"	.236''	20mcc/60%	9mcx/ar	

Rear Mirror

P/N	Material	Diameter	Edge Thickness	SI	S2	
A98L00010750	Ge	1.1"	.236''	20mcc/99.5%	po/ar	
A98L00010757	Ge	I.5"	.315"	20mcc/99.5%	po/ar	

Phase Retarder

P/N	Material	Diameter	Edge Thickness
A98L00010617	Si	2.0''	.200''

Zero Phase Shifter

P/N	Material	Diameter	Edge Thickness
A98L00010616	Si	2.0''	.200''

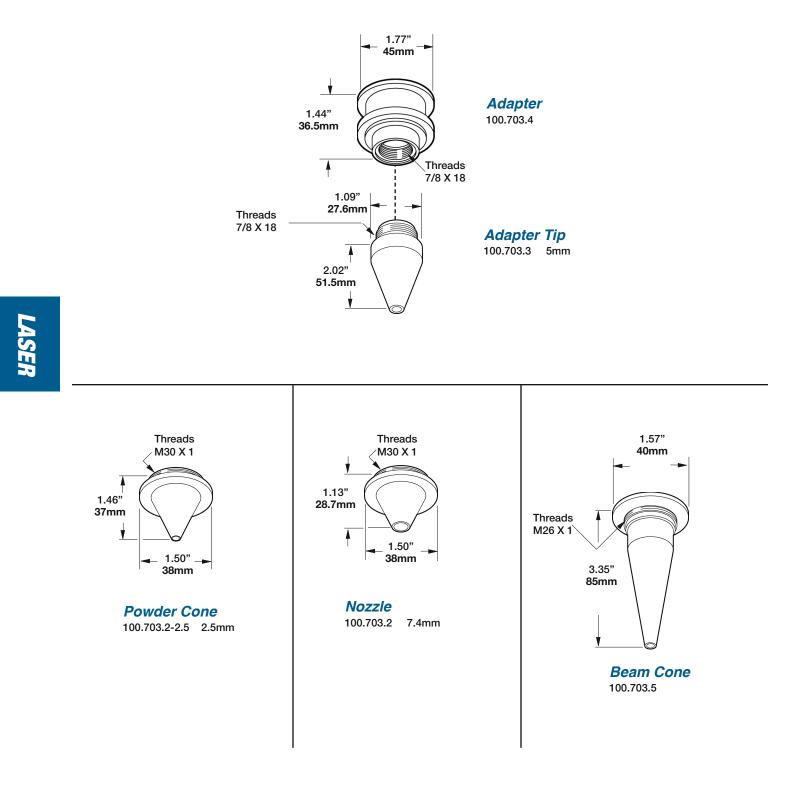
Total Reflector

P/N	Material	Diameter	Edge Thickness
A98L00010615	Si	2.0''	.200''

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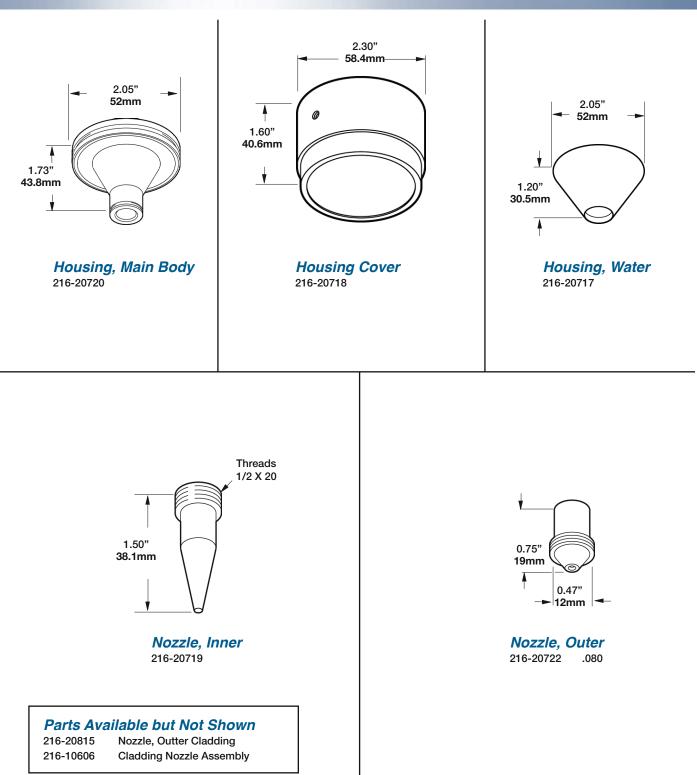


24 GREMADA®



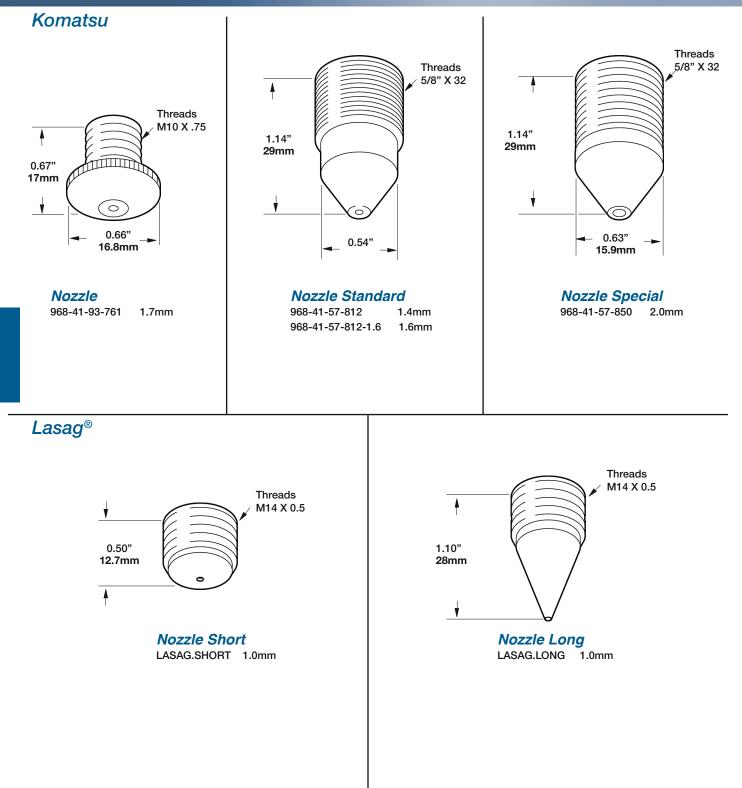


25 HUFFMAN[®]



26 KOMATSU[®] / LASAG[®]

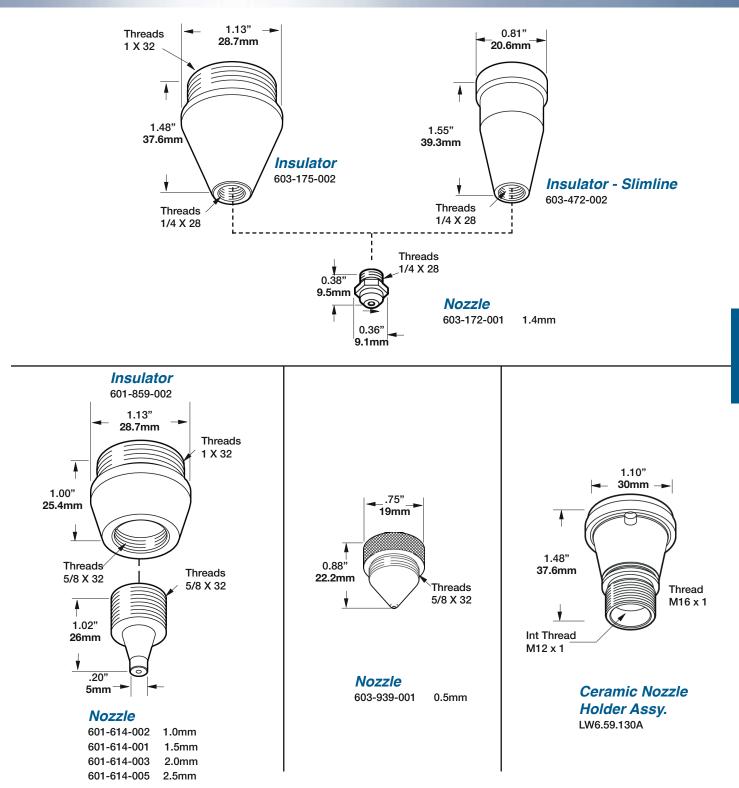






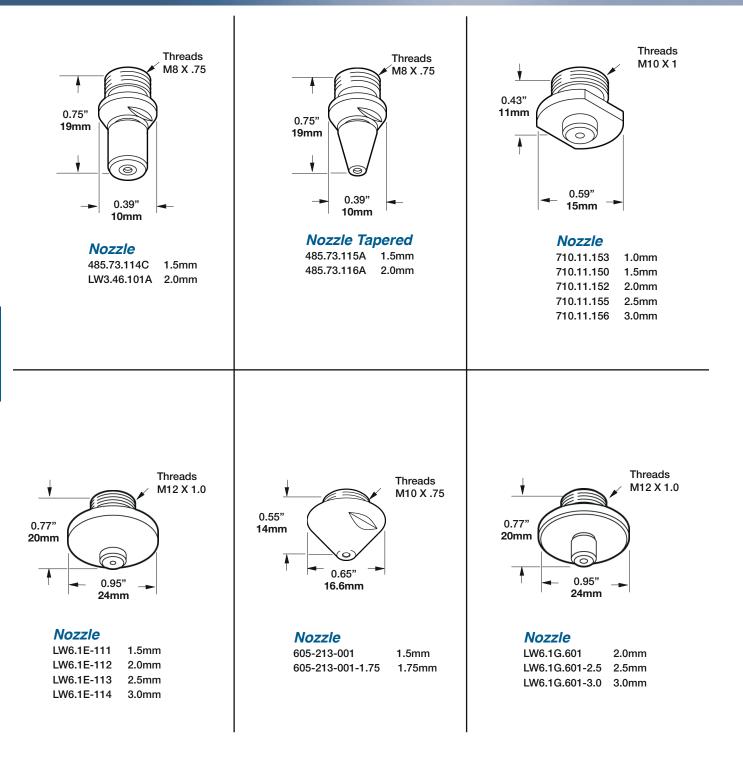
LASER

27 LASERDYNE[®] / PRIMA[®]





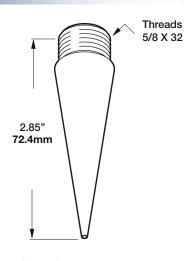
28 LASERDYNE[®] / PRIMA[®]



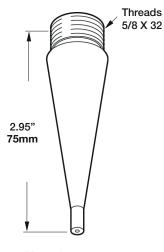


29

LASERDYNE[®] / PRIMA[®]



Nozzle 603-271-003 1.5mm

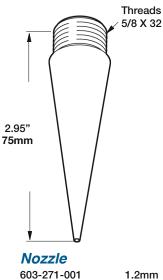


 Nozzle

 603-271-002
 1.2mm

 603-271-002-1.5S
 1.5mm

 603-271-002-2.0
 2.0mm



603-271-0011.2mm603-271-001-2.82.8mm

OPTICS FOR LASERDYNE/PRIMA® LASERS

Focusing Lens

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
834-319-001	ZC15250236	ZnSe	1.5"	2.5"	.236''
834-319-002	ZC15500236	ZnSe	1.5"	5.0"	.236''
834-319-003	ZC15750236	ZnSe	1.5"	7.5"	.236''
834-319-004	ZC15100236	ZnSe	1.5"	1.0"	.236''
834-319-009	ZCI5375236	ZnSe	1.5"	3.75"	.236''
834-319-010	ZM15375236	ZnSe	1.5"	3.75"	.236''
834-319-011	ZC15500300	ZnSe	1.5"	5.0"	.300''
834-319-012	ZCI 5750300	ZnSe	1.5"	7.5"	.300''

Phase Retarder

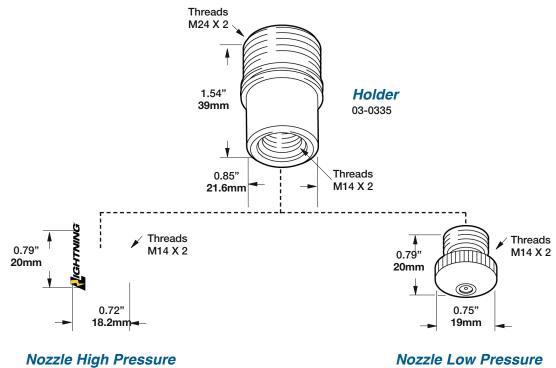
P/N	Material	Diameter	Edge Thickness
834-205-003	SI	1.5"	.160''
834-205-005	Si	2.0''	.200''
834-205-006	SI	3.0''	.250''

Zero Phase Shifters

P/N	Material	Diameter	Edge Thickness
834-207-001	Si	2.0''	.200''
834-207-002	Si	3.0''	.250''
834-207-003	Si	1.5"	.160''

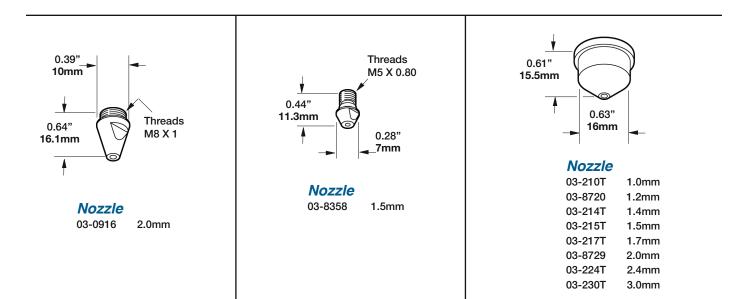


30 LASER LAB®



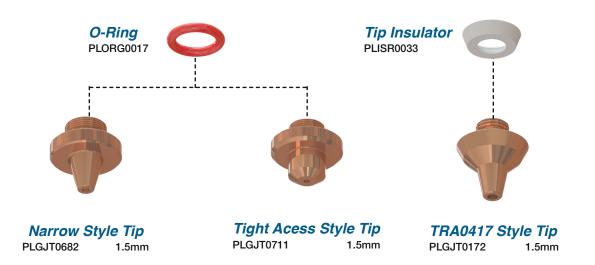
01-2293	0.5mm
00-2293	1.2mm
03-2293	1.5mm
03-2293-1.8	1.8mm
02-2293	2.0mm
02-2293-2.5	2.5mm
02-2293-3.0	3.0mm

160-1	1.0mm
160-2	1.2mm
160-3	1.5mm

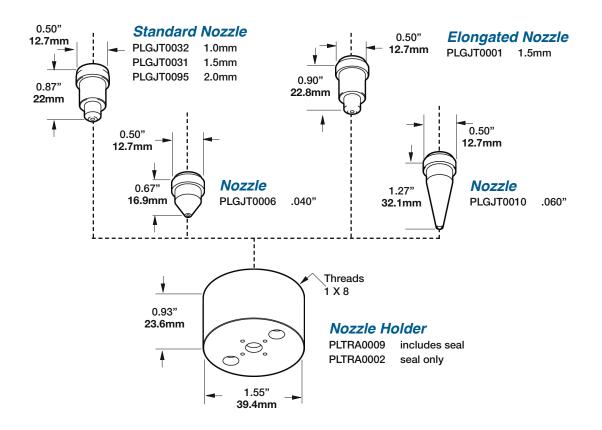




31 LASER MECHANISMS[®]

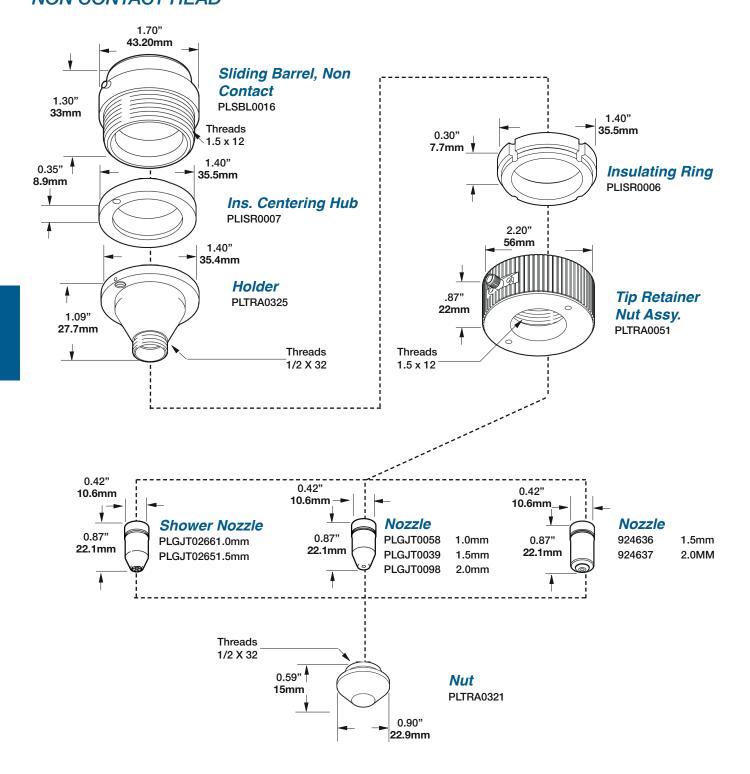


CONTACT HEAD





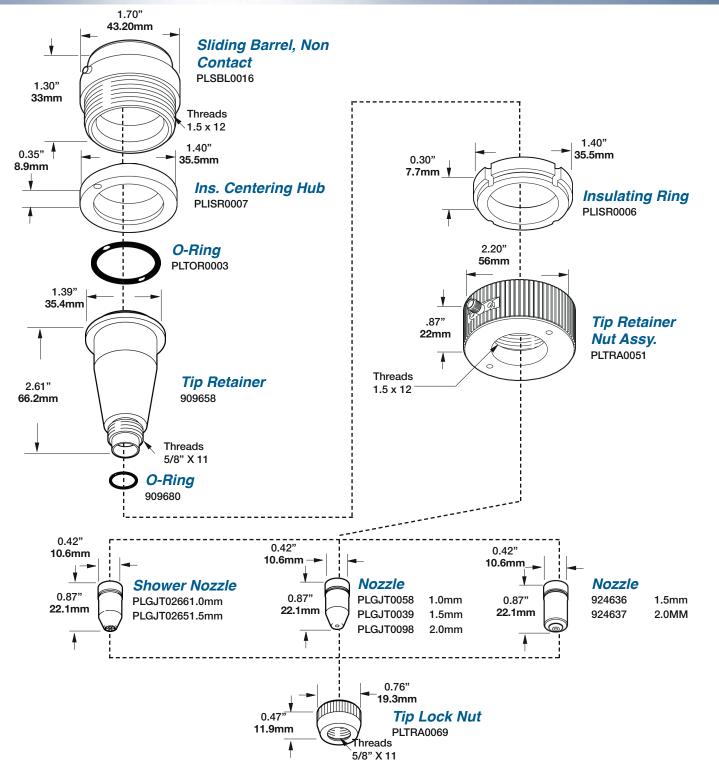
32 LASER MECHANISMS[®] NON CONTACT HEAD





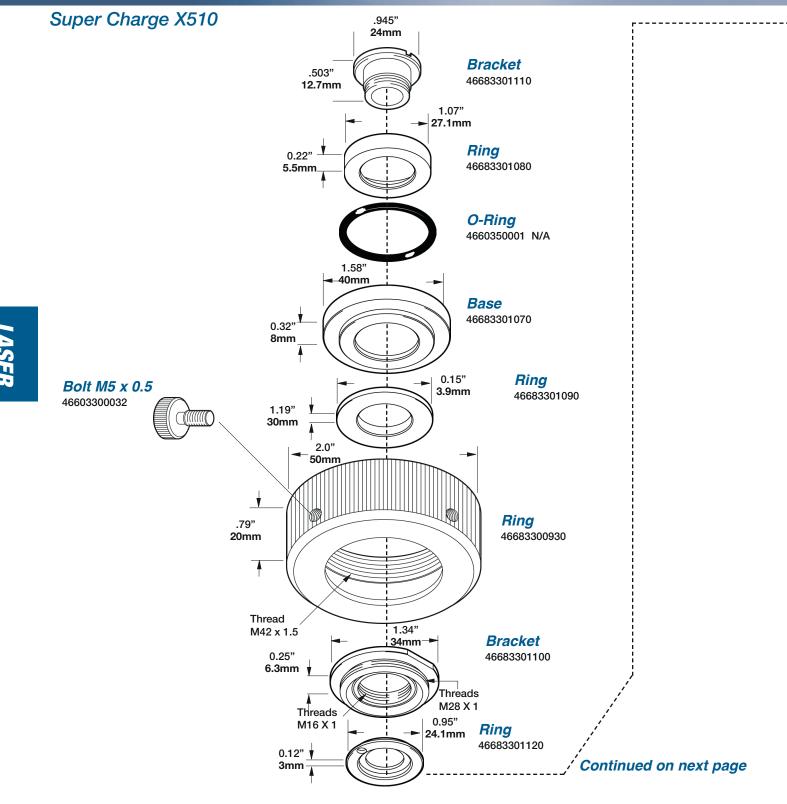
LASER







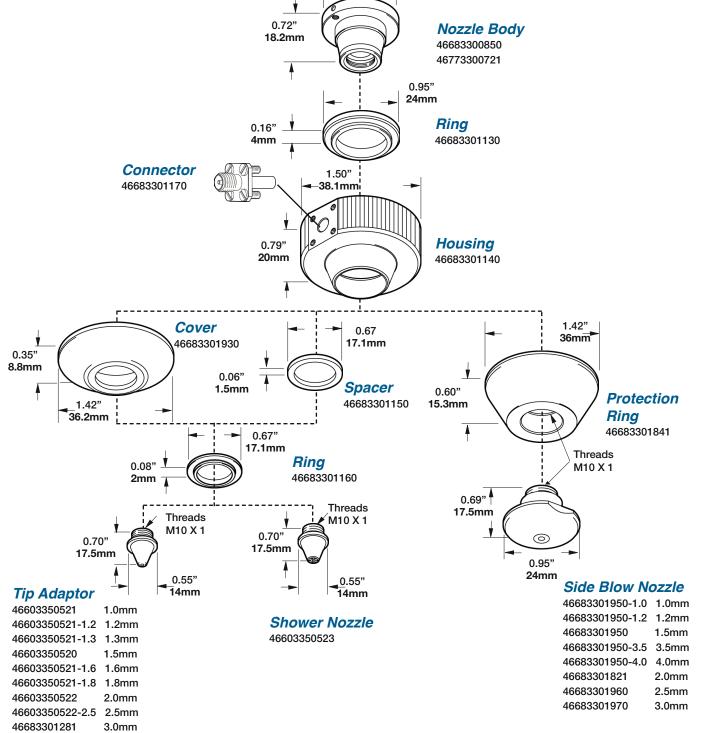
34 MAZAK®





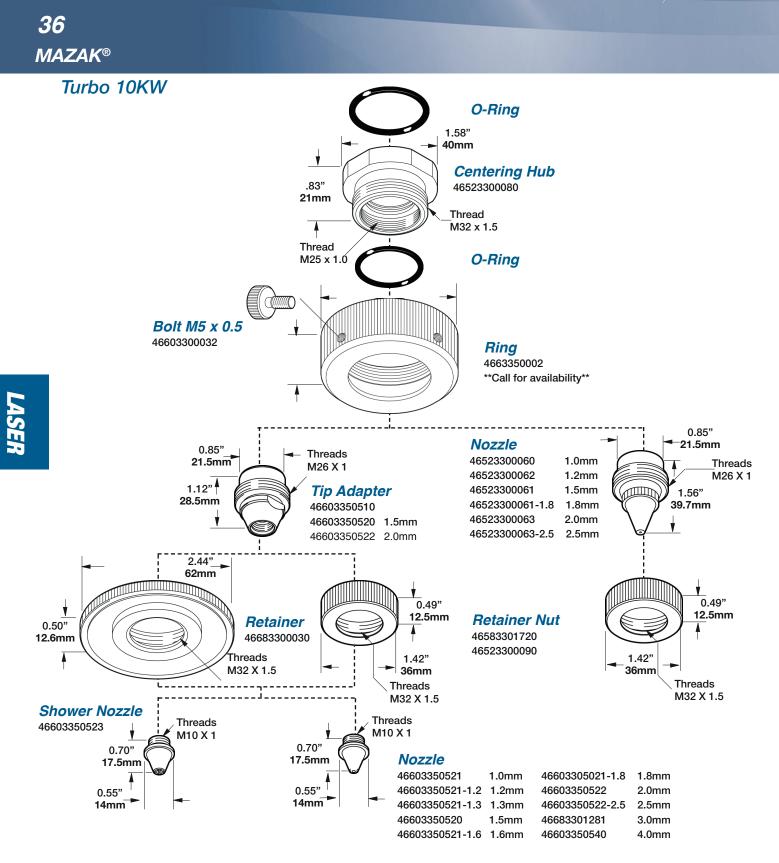


LASE



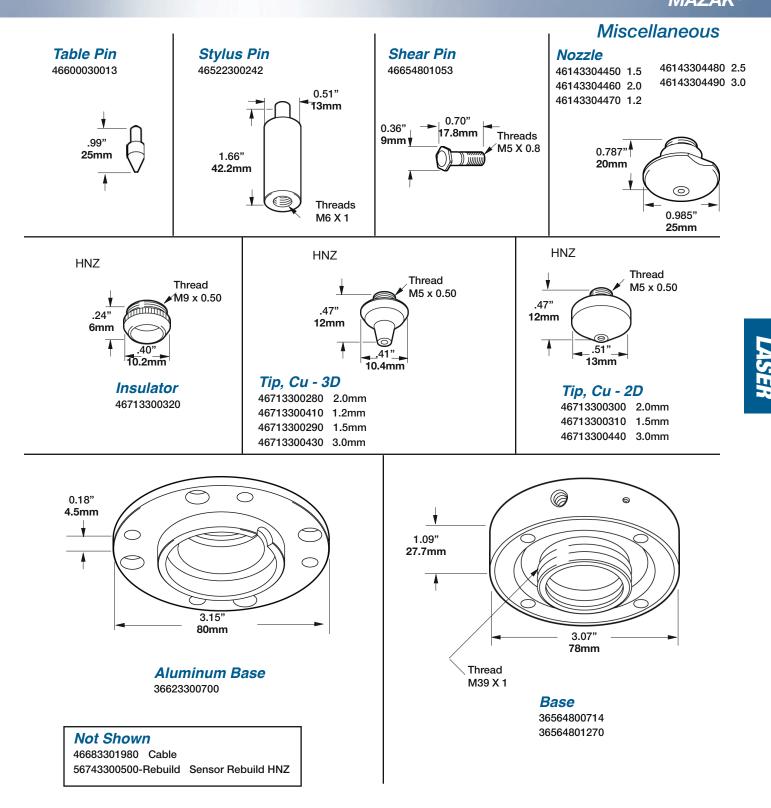
0.95" **24mm**





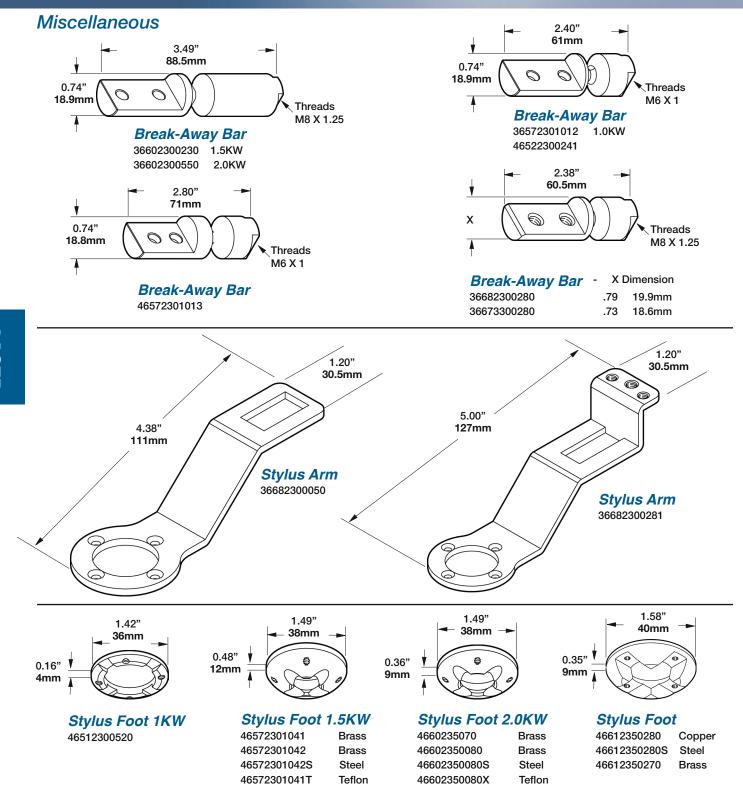


37 MAZAK®





38 MAZAK®





39 MAZAK[®] OPTICS FOR MAZAK[®] LASERS

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
Z50MB000130	ZC15500118	ZnSe	1.5"	5.0"	.118
Z50MB000160	ZC15500236	ZnSe	1.5"	5.0''	.236''
Z50MB000400	ZC15500310	ZnSe	1.5"	5.0''	.310"
Z50ZZ005150	ZC20500120		ZnSe	2.0''	5.0".120"
Z50ZZ005160	ZC20500310	ZnSe	2.0"	5.0''	.310"
Z50ZZ005190	ZC20750197	ZnSe	2.0"	7.5"	.197''
Z50ZZ005200	ZC20750380M	ZnSe	2.0''	7.5"	.380''

Phase Retarder

P/N	Material	Diameter	Edge Thickness
Z50MB000040	Cu	1.5"	.250''
Z50ZZ007260	Cu	3.0''	.250''

Zero Phase Shifters

P/N	Material	Diameter	Edge Thickness
Z50MB000030	Cu	40mm	7.5mm
Z50MB000060	Cu	60mm	10mm
Z50MB000070	Cu	50mm	10mm

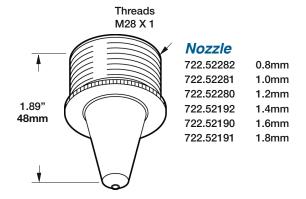
Total Reflector

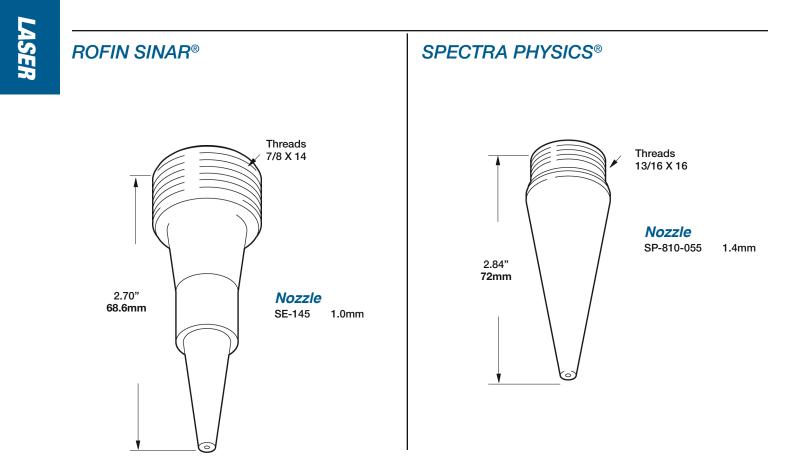
P/N	Material	Diameter	Edge Thickness
4L104184-01	Si	1.75''	.375''



40 MG®

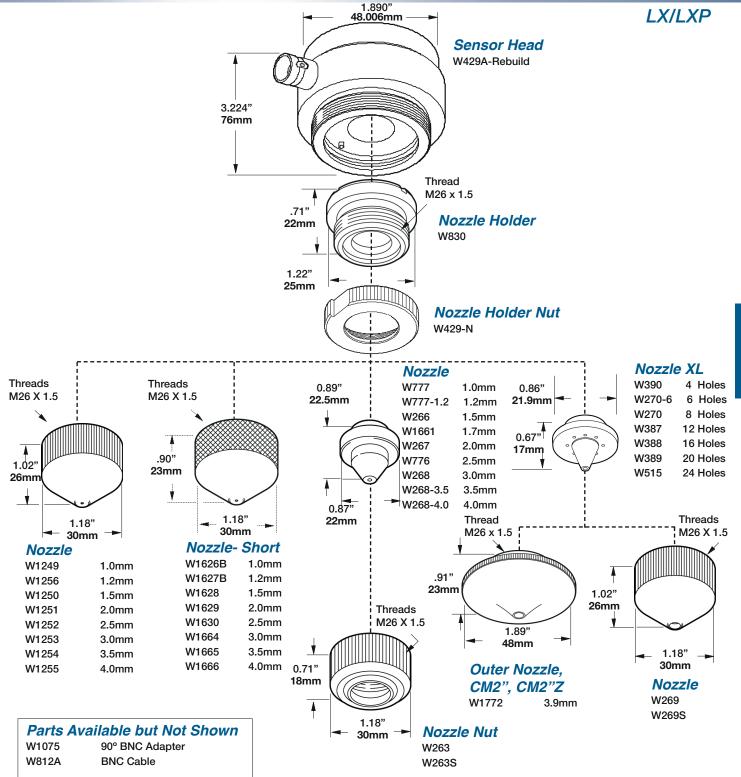
MISCELLANEOUS





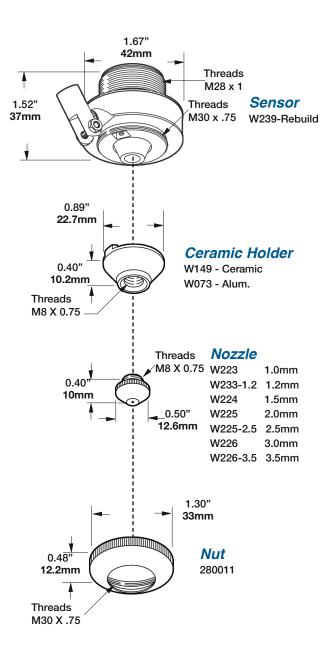


41 MITSUBISHI®



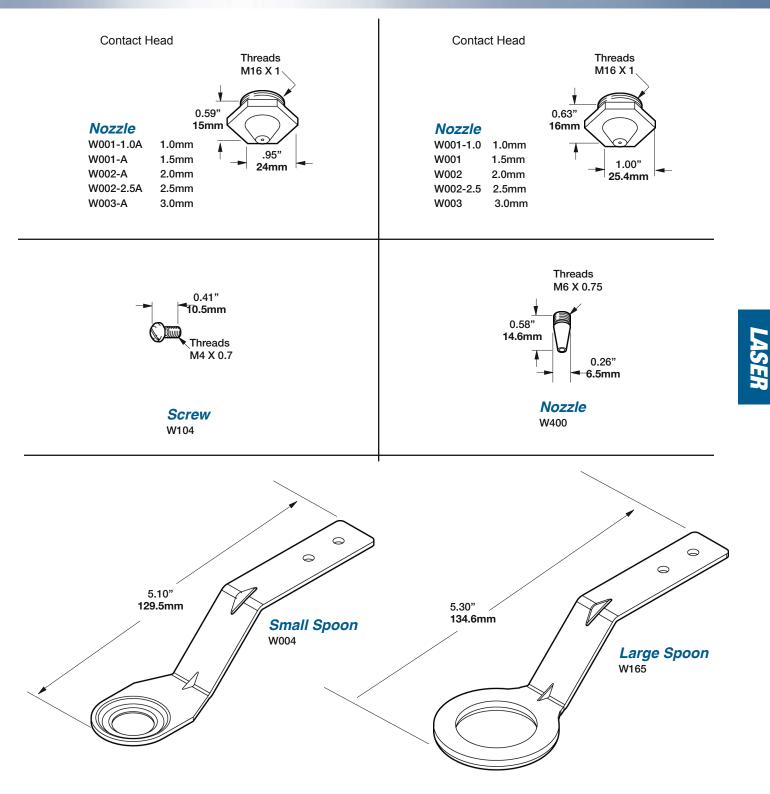


42 MITSUBISHI[®] 2.5"Z/J





43 MITSUBISHI®





44 MITSUBISHI®

OPTICS FOR MITSUBISHI® LASERS

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
W006	ZC15350118	ZnSe	1.5"	3.5''	.118''
W015	ZM20750380	ZnSe	2.0''	7.5"	.380''
W018	ZCI5750315	ZnSe	1.5"	7.5"	.315''
W500	ZC15500310	ZnSe	1.5"	5.0''	.3 0''
W505	ZC20500310	ZnSe	2.0''	5.0''	.3 0''
W510	ZC20750310	ZnSe	2.0''	7.5"	.310''
W813		ZnSe	1.5"	15000 mm	Collimator

Output Couplers

P/N	Material	Diameter	Edge Thickness	SI	S2
R259	ZnSe	1.5"	.236	10mcc/17%	l 5mcx/ar
R500	ZnSe	1.5"	.236''	20mcc/30%	po/ar
R508	ZnSe	1.5"	.236"	10mcc/30%	10mcx/ar
R519	ZnSe	1.5"	.236"	10mcc/17%	l Omc/ar
R570	ZnSe	2.0''	.236"	14mcc/17%	20mcx/ar

Rear Mirror

P/N	Material	Diameter	Edge Thickness	SI	S2	
R003	ZnSe	I.5"	.236''	20mcc/99%	po/ar	

Phase Retarder

P/N	Material	Diameter	Edge Thickness
R004	Si	2.0''	.200''

Zero Phase Shifters

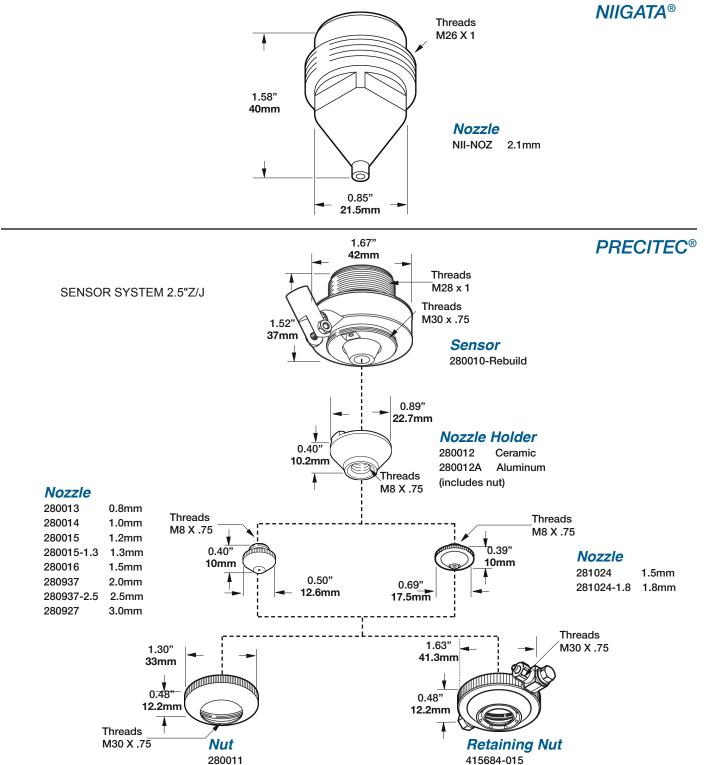
P/N	Material	Diameter	Edge Thickness
R05 I	Cu	60mm	6mm
R160	Cu	3.0"	6mm
W102	Cu	50mm	5mm

Total Reflectors

P/N	Material	Diameter	Edge Thickness
R106	Si		6mm
R107	Cu	50mm	9mm

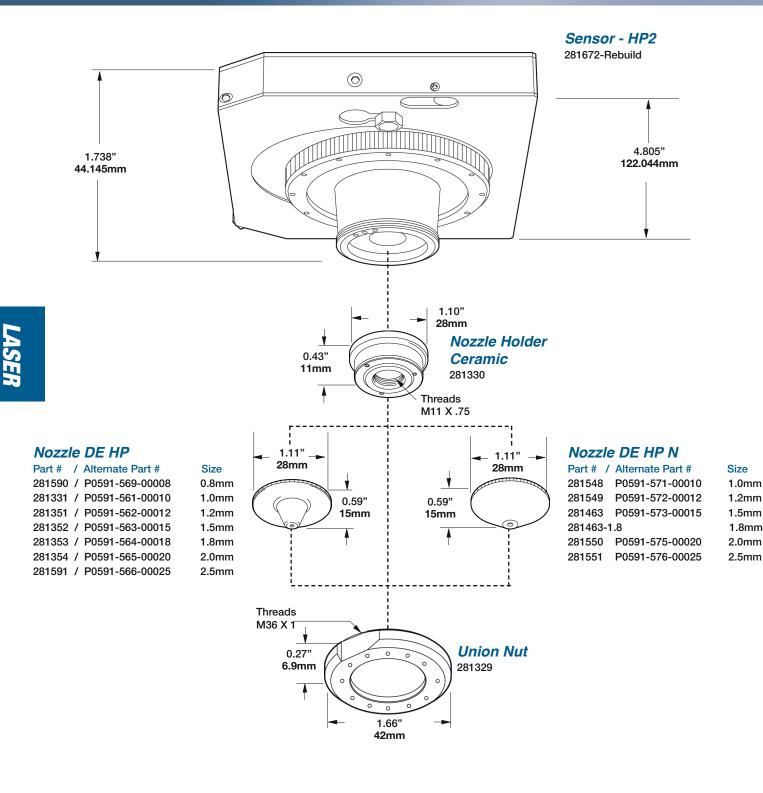






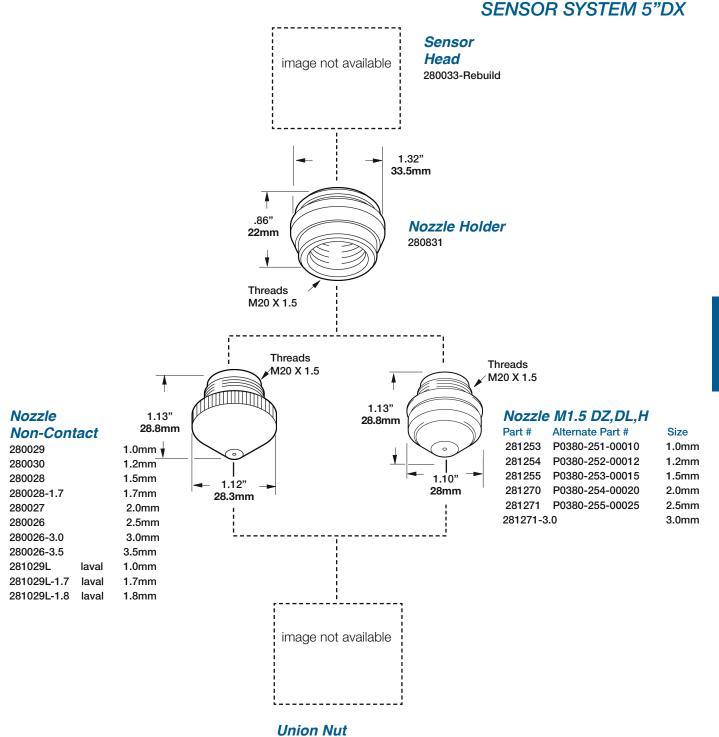


46 PRECITEC[®]





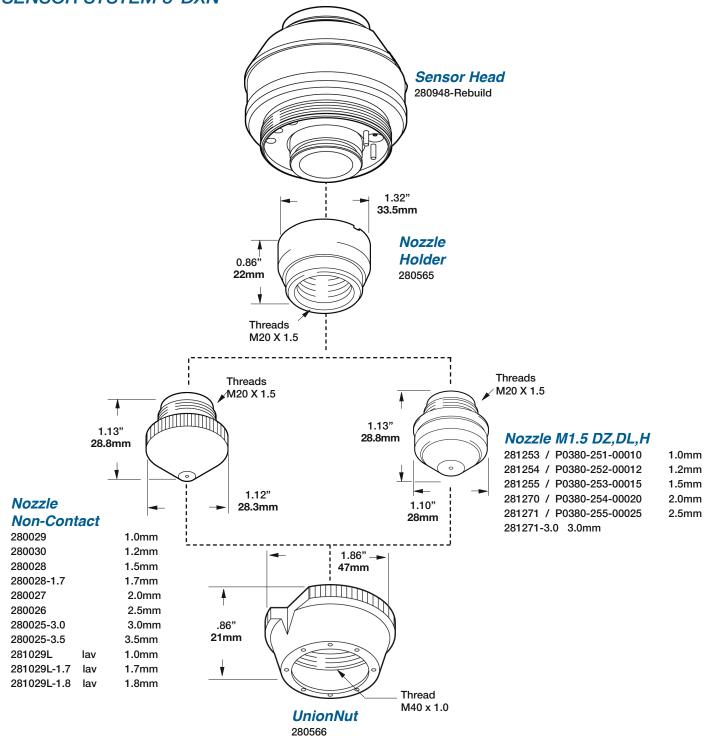
47 PRECITEC[®]



280025 Call for availability

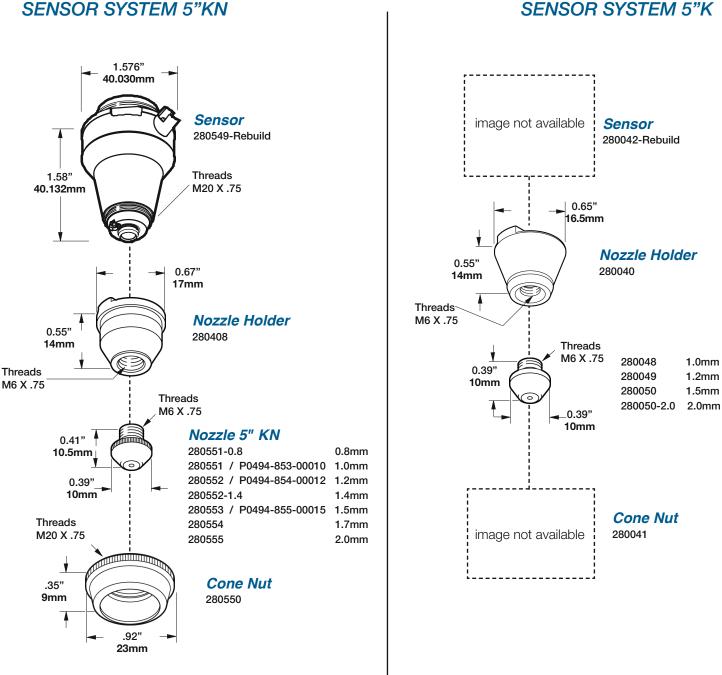






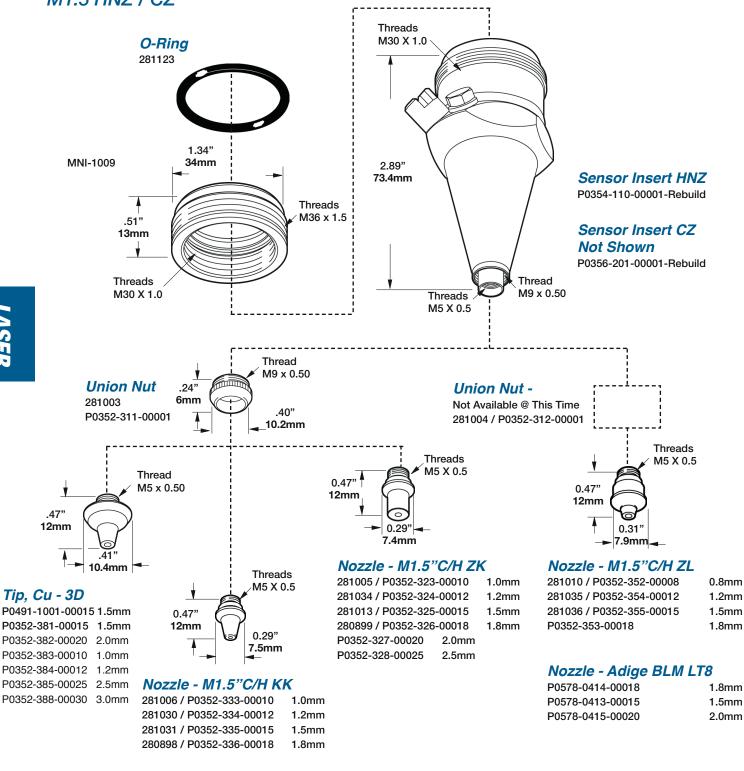






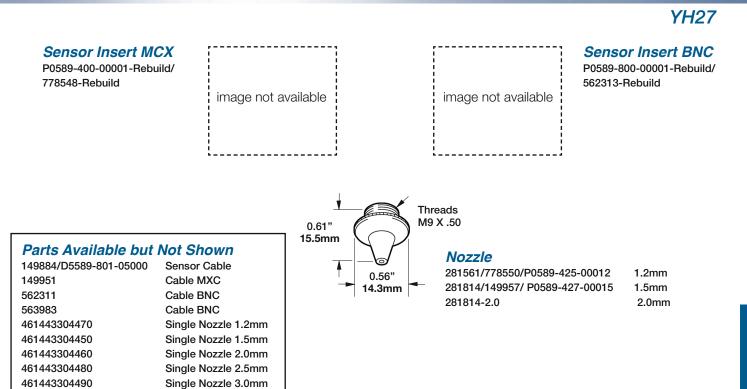


50 PRECITEC[®] M1.5 HNZ / CZ

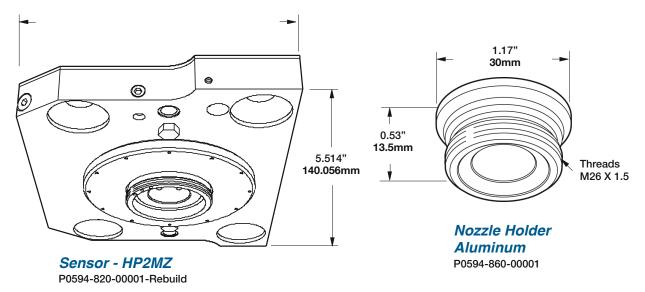




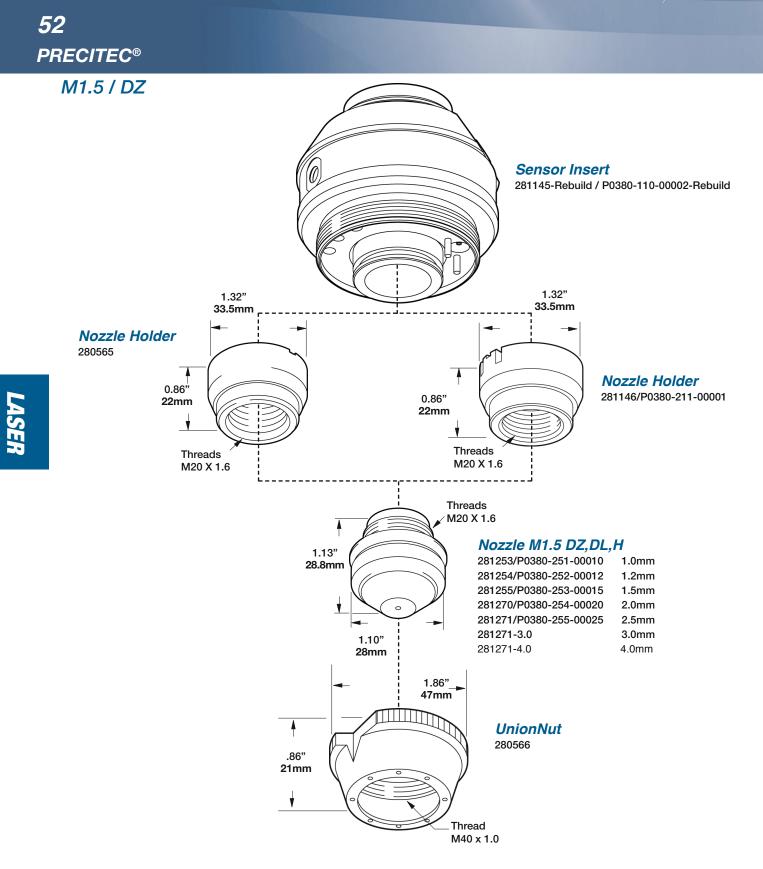
51 PRECITEC[®]



HP2MZ

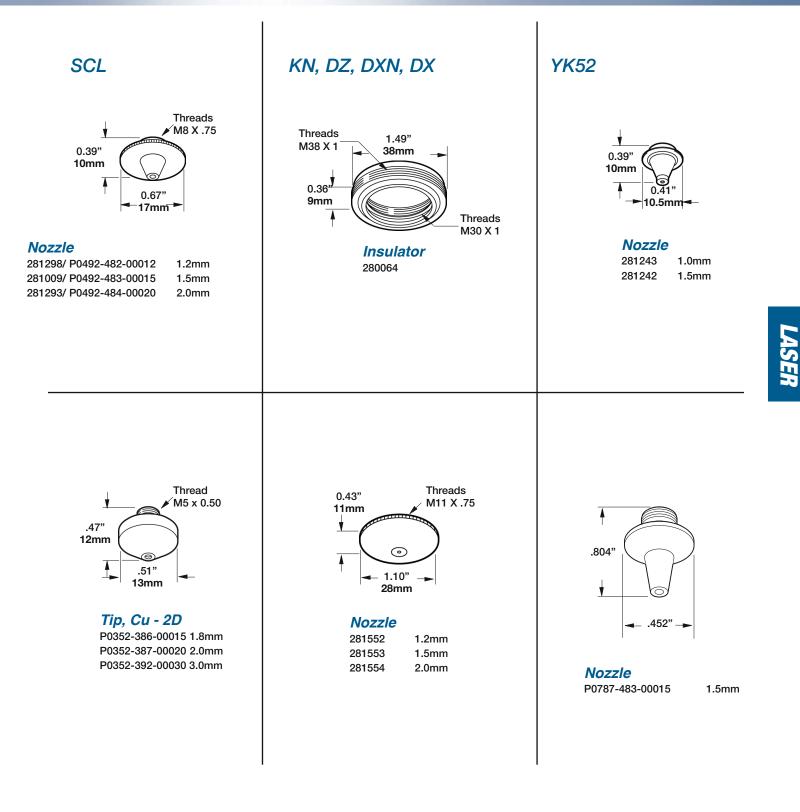






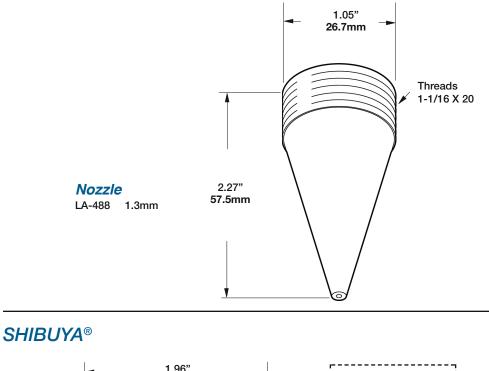


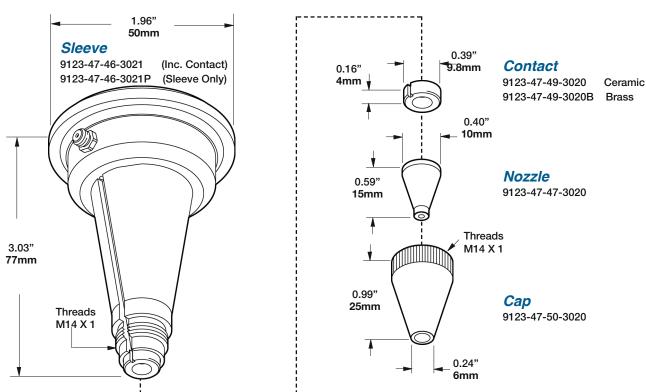






54 RAYTHEON®





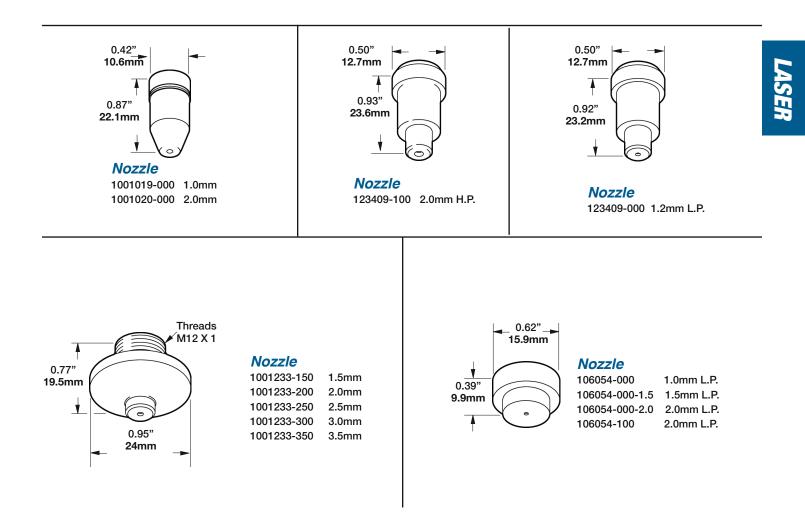
CREATING A BETTER EXPERIENCE!



55 STRIPPIT / LVD[®]



Nozzle S	tandard
7945470	1.0mm
5241982	1.2mm
7945434	1.5mm
7945452	2.0mm
7945517	2.5mm
Nozzle H	ligh Pressure
5241862	1.5mm
5241863	1.0mm
5241855	2.0mm
5241856	2.5mm
5241857	3.0mm
5241877	3.5mm
5241878	4.0mm



56 STRIPPIT / LVD®

OPTICS FOR STRIPPIT® LASERS

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
0018827-000	ZM15500291	ZnSe	1.5"	5.0"	.291"
0018827-100	ZC15500236	ZnSe	1.5"	5.0"	.236''
0800952-000	ZCI5350118	ZnSe	1.5"	3.5"	. 8''
1000746-100	ZC15750300	ZnSe	1.5"	7.5"	.300''
1001151-000	ZM15500350	ZnSe	1.5"	5.0"	.350''
1001152-000	ZM15750350	ZnSe	1.5"	7.5"	.350''
29100023	ZM15500291	ZnSe	1.5"	5.0"	.291"
29100030	ZM15750291	ZnSe	1.5"	7.5"	.291"
29100055	ZM20750380	ZnSe	2.0''	7.5"	.380''
29100061	ZM20100380	ZnSe	2.0''	10.0"	.380''
29100062	ZM20125380	ZnSe	2.0''	12.5"	.380''
29100115	ZM18500354	ZnSe	1.8"	5.0"	.354''
29100116	ZM18750354	ZnSe	1.8"	5.0''	.354''

Rear Mirror

P/N	Material	Diameter	Edge Thickness	SI	S2	
29100047	Ge	1.5"	.315"	35mcc/99.5%	po/ar	

Phase Retarder

P/N	Material	Diameter	Edge Thickness
29100003	Cu	2.0''	.375"
29100039	Si	2.0''	.200''
29100060	Cu	3.0''	.500''

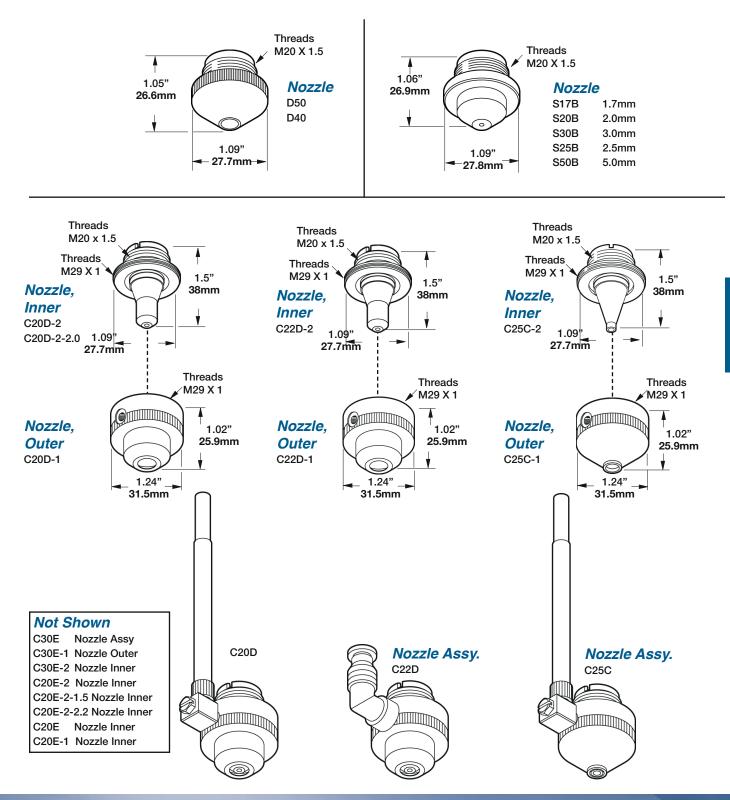
Zero Phase Shifters

P/N	Material	Diameter	Edge Thickness
29100002	Cu	2.0"	.375"
29100038	Si	2.0''	.200''
29100051	Cu	3.0''	.500''

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TANAKA®

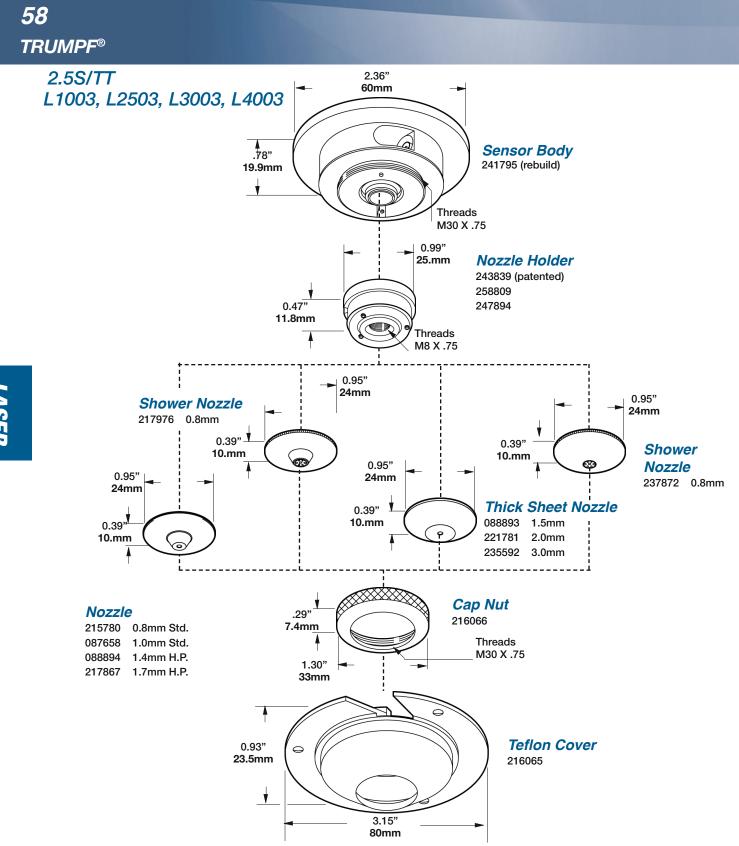




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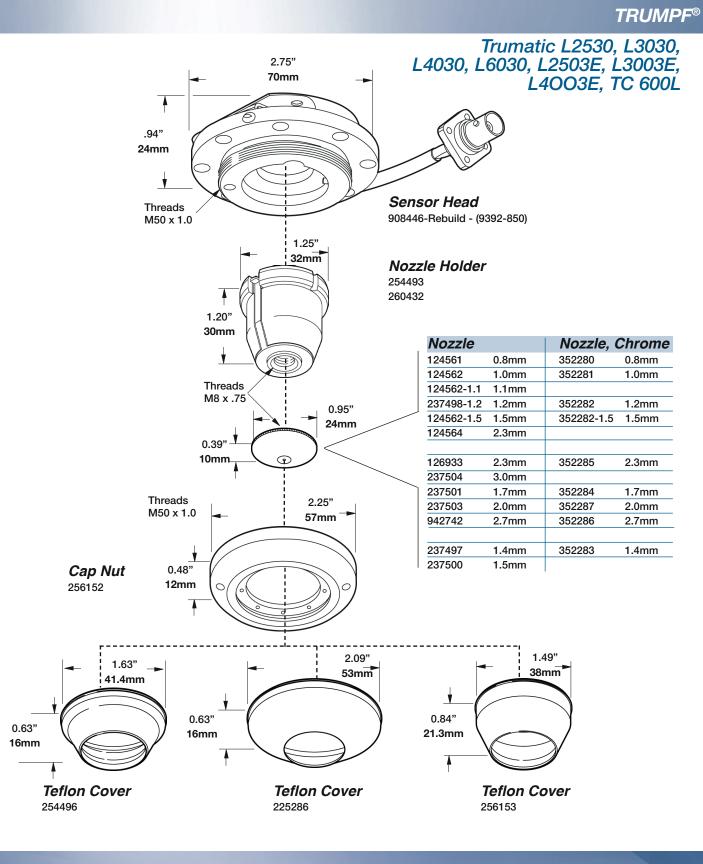
LASER





59

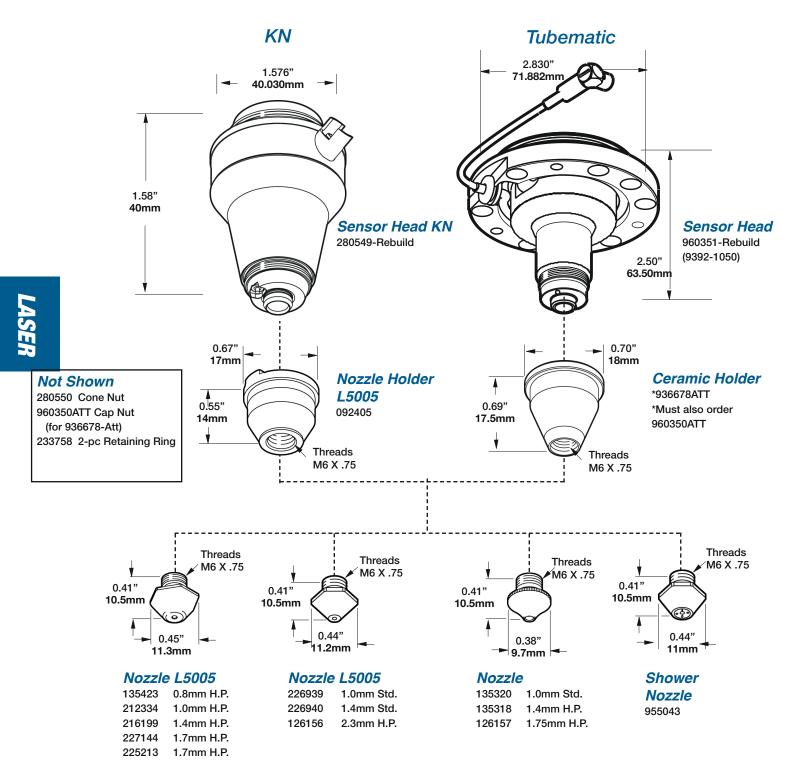






60 TRUMPF®

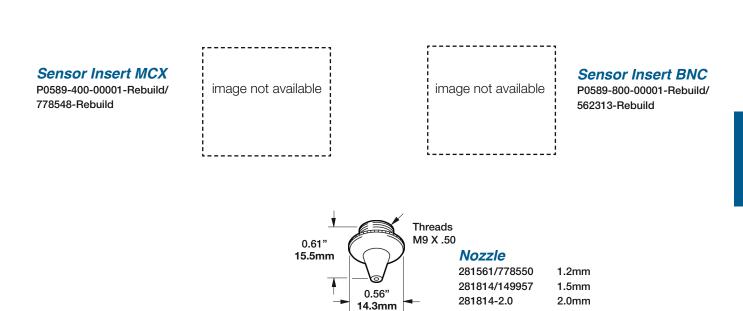
KN / Tubematic





61 TRUMPF® YH27

I SE

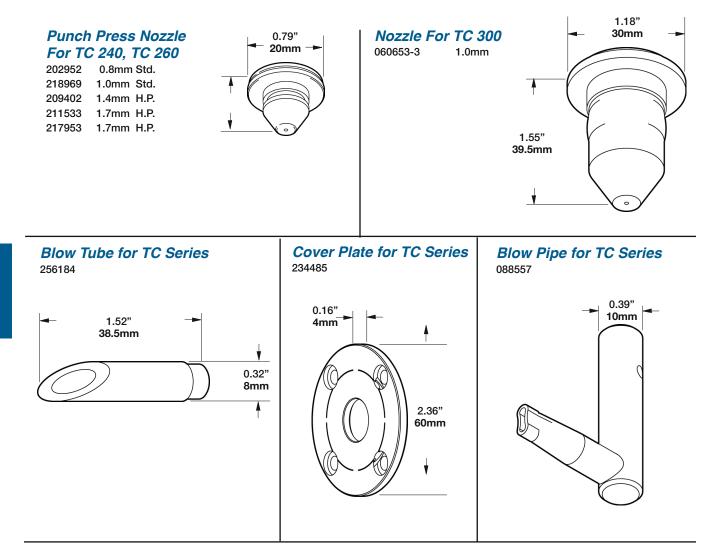


Parts Available but	Not Shown
149884/D5589-801-05000	Sensor Cable
149951	Cable MXC
562311	Cable BNC
563983	Cable BNC
778560	Focus Lens Set



62 TRUMPF®

TC 240, TC 260, TC 300 TrueLaser 3030, 5030, 5040, 5060



NOZZLE for TrueLaser 2D

1324858	.8 mm
1324860	1.0 mm
1324861	1.2 mm
1324863	1.4 mm
1324864	1.7 mm
1324865	2.0 mm
1324866	2.3 mm
1324867	2.7 mm



63 TRUMPF® LENSES / PLANO CONVEX

TRUMPF[®] FOCUSING LENSES

Focusing Lenses

P/N	Lasertec P/N	Material	Diameter	Focal Length	Edge Thickness
058398	ZM15500100	ZnSe	1.5"	5.0"	.100''
088114	ZM15500291	ZnSe	1.5"	5.0"	.291"
095273	ZM15750100	ZnSe	1.5"	7.5"	.100''
097517	ZM15750291	ZnSe	1.5"	7.5"	.291"

PLANO CONVEX FOCUSING LENSES

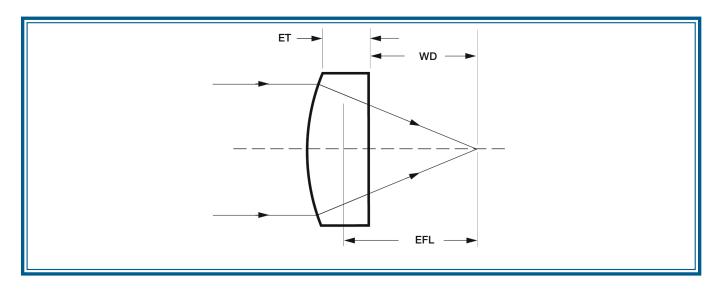
Plano convex lenses are a popular choice in high power CO₂ systems. When spot size and spherical aberration are not critical, these lenses are lower in cost than meniscus lenses, yet they still have the advantages of precise focusing and low absorption.

Standard Specifications:

Dimensional Tolerances Diameter: Thickness: Edge Thickness Variation: Focal Length:

+0.000"/-.005" <u>+</u>.010" ≤.002" +1% Surface Quality Scratch-Dig: *AR coating per surface: Clear Aperture: Absorption:

40-20 ≤.2% 90% of diameter ≤.2%



*Note: Lasertec offers a variety of focusing lenses. Please call for more information.



64 MENISCUS MENISCUS FOCUSING LENSES

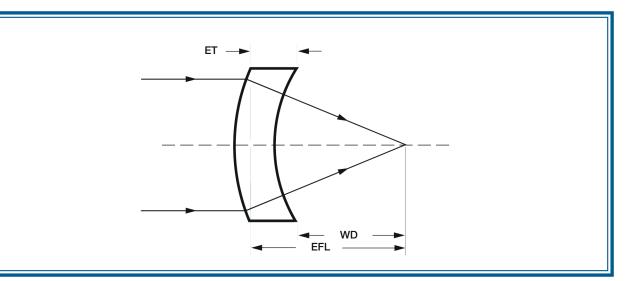
Positive meniscus lenses have two curved surfaces designed to minimize spherical aberration and achieve the smallest focal spot size. This smaller spot size gives a higher power density at the workpiece. Like the planoconvex lenses, only high quality zinc selenide is used to maintain low absorption and extend the life of Lasertec lenses.

Standard Specifications:

Dimensional Tolerances
Diameter:
Thickness:
Edge Thickness Variation:
Focal Length:

+0.000"/-.005" ±.010" ≤.002" ±1% Surface Quality Scratch-Dig: * AR coating per surface: Clear Aperture: Absorption:

40-20 ≤.2% 90% of diameter ≤.2%



*Note: Lasertec offers a variety of focusing lenses. Please call for more information.



65 PARTIAL REFLECTORS

Partial reflectors are primarily used within the laser cavity. These optics are designed to reflect a known percentage of the incident laser beam and transmit the rest. When used as output couplers, the transmitted portion of the laser beam is used for applications such as cutting and welding. Partial reflectors that transmit a very small portion (0.2 to 1.0%) of the laser's energy are used to monitor the laser's power. This application generally uses germanium (Ge) as the substrate.

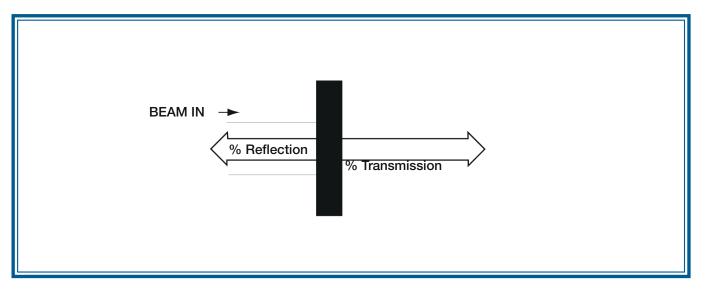
Standard Specifications:

Dimensional Tolerances: Diameter: Thickness:

Clear Aperture: Edge Thickness Variation: Parallelism: +0.000"/-0.005" +0.005"/-0.010" plano ± 0.010 " concave 90% of diameter ≤ 0.002 " ≤ 3 arc minutes plano ≤ 5 arc minutes radiused

Surface Quality

Scratch-Dig: Figure: 20-10 or better 1/40 wave at 10.6 microns



* See system pages for available partial reflectors

66 TOTAL REFLECTORS

Total reflectors, or mirrors, are designed for maximum reflectivity of a CO₂ laser beam. These mirrors are used either within a laser cavity as rear mirrors or folding mirrors, or external to the laser cavity as beam benders to deliver the beam to the work.

The three materials used are silicon, copper and molybdenum. Silicon is most common due to its low cost, good durability and thermal stability. Copper is used in high power applications because of its high thermal conductivity, but it is more costly and less durable than silicon. Molybdenum is ideal for many demanding, harsh environments due to its extremely tough surface.

Standard Specifications:

Dimensional Tolerances Diameter: Thickness: Parallelism:

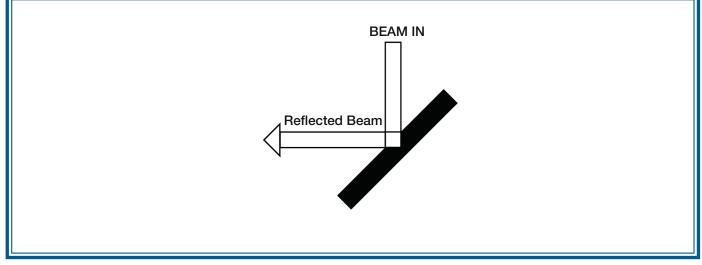
Clear Aperture:

+0.000"/-.005" \pm 0.010" \leq 3 arc minutes plano \leq 5 arc minutes raediused 90% of diameter

Surface Quality Scratch-Dig: Figure:

AMERICAN TORCH TIP

> 40-20 to 20-10 1/40 wave at 10.6 microns



* See system pages for available total reflectors



67 REFLECTIVE PHASE RETARDERS

Reflective phase retarders are used as beam bending mirrors outside the laser cavity. Ninety degree phase retarders, also known as circular polarizers, are used to eliminate kerf variations by converting linear polarization. Zero degree phase shifters are used between the 90° phase retarder and the final focusing lens in order to maintain control over the cirularly polarized beam.

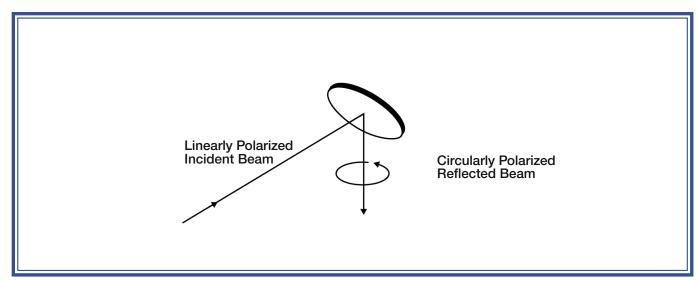
Standard Specifications:

Dimensional Tolerances
Diameter:
Thickness:
Parallelism:
Clear Aperture:

+0.000"/-0.005" <u>+</u>0.010" ≤3 arc minutes 90% of diameter

Surface Quality Scratch-Dig: Figure:

40-20 to 20-10 1/40 wave at 10.6 microns



* See system pages for available total reflectors



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