

**General  
Information**

- *Workpiece Clamping*
- *FRANKEN Advanced Milling Technology*
- *Application Forms*
- *Index of Catalog Numbers*
- *Index of EDP Tool Identification Numbers*
- *Terms & Conditions*

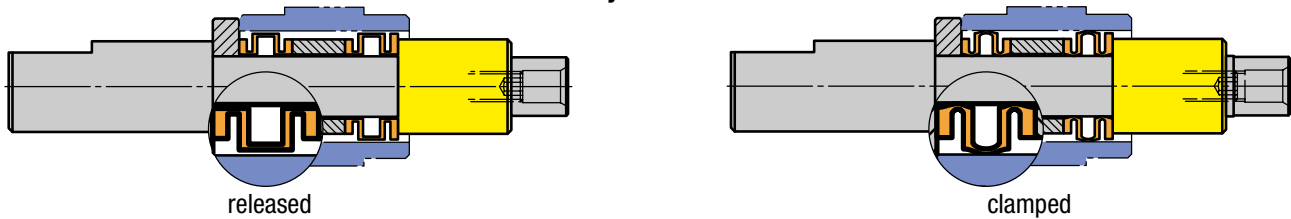
**Top Rate Clamping Systems**

EMUGE can offer you a wide range of clamping systems for solving almost any kind of problem in the field of tool or workpiece clamping. All these systems are characterized by the highest degrees of precision and  $\mu$ -exact repeatability.

If you are interested please contact our specialists or request more information.



**System SP**

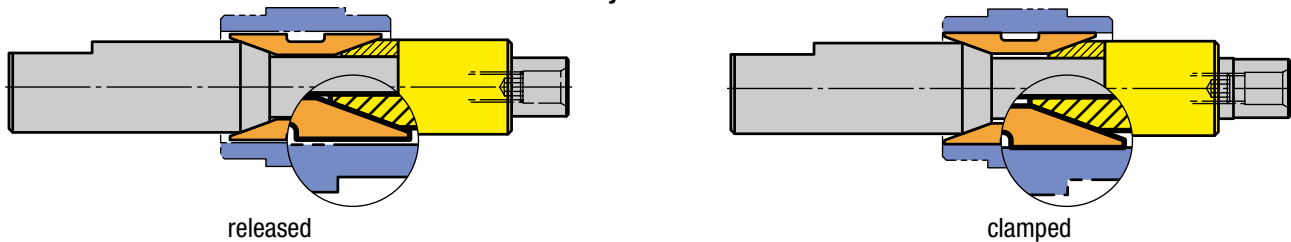


By applying an axial force the clamping sleeves move in direction of the force and expand radially. On the one hand this eliminates the clearance between clamping sleeve and body, on the other hand between clamping sleeve and workpiece. The workpiece is being clamped.

Depending on the tolerance of the workpiece, on the design of the clamping tool and of the clamping sleeves the system SP achieves concentricities of  $\leq 0,002$  mm (corresponding to  $\leq 0.0001$  inch).

Due to this high precision the system SP is not only used to clamp workpieces, it is also used to clamp tools.

**System SZ**

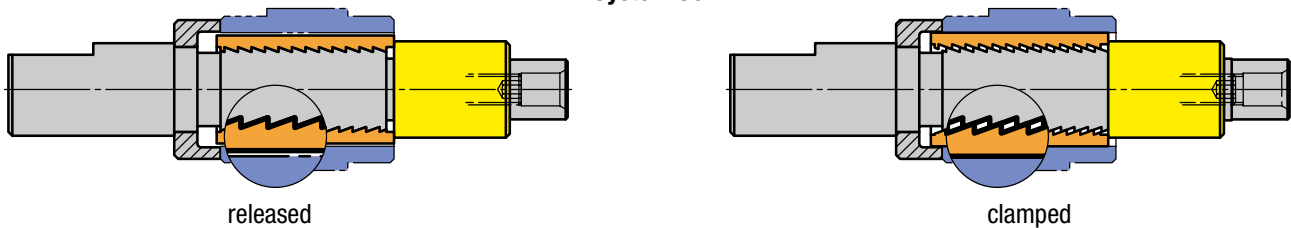


If the workpiece to be clamped has only a short clamping base or if the diameter to be clamped has a very large tolerance, system SZ is used.

By applying an axial force a slitted collet is radially expanded by a cone. Simultaneously an axial movement occurs.

The workpiece is being clamped.

**System SG**



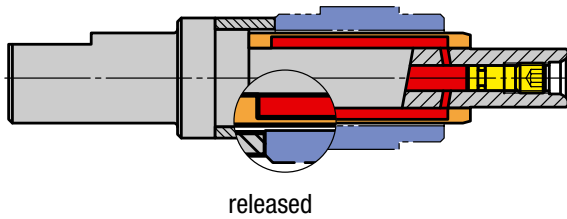
Depending on the type of design the system SP only allows radial expansion up to tolerance class IT11.

To bridge larger tolerances, system SG is used.

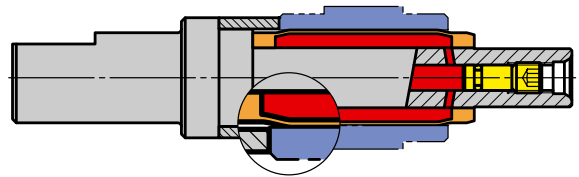
This is a slitted clamping bush with a special buttress thread. With this thread the bush is screwed onto the body. By applying an axial force the clamping bush moves in direction of the force. Due to the thread angle there is also a radial expansion. The workpiece is being clamped.

The axial component, which has an effect on the workpiece, increases the transferable torque and the stiffness of the clamping process. Consequently the workpiece is safely clamped even if it is machined with a large depth of cut.

### System SH



released

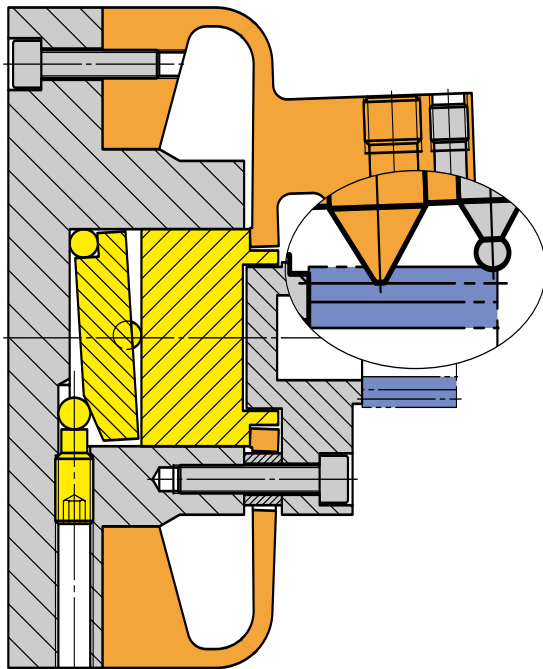


clamped

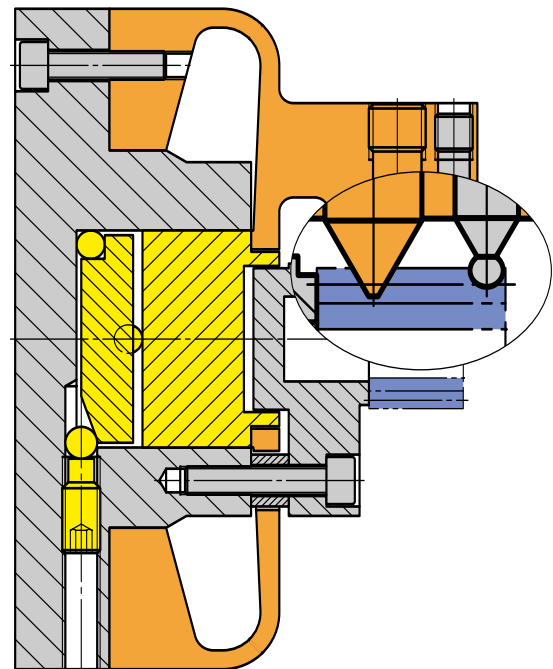
If there is not enough room for a mechanical clamping system, hydraulic system SH is used. It also allows clamping long, thin-walled workpieces or a number of similar workpieces.

System SH is a closed system filled with hydraulic oil. A force is applied on it with a piston. The hydraulic pressure radially expands the thin-walled clamping zone. The workpiece/the workpieces is/are being clamped.

### System SM



released



clamped

In order to manufacture high precision gear wheels for example, it is very important that the eccentricity between pitch circle and seating bore is very small.

For this purpose the diaphragm clamping system SM is used. For machining the seating bore it allows clamping of the gear wheel at the pitch circle.

The clamping element is a ring disk with primarily three clamping jaws. If the workpiece is thin-walled the diaphragm can also have four or six clamping jaws. These are either carved out of the diaphragm or they are screwed onto it.

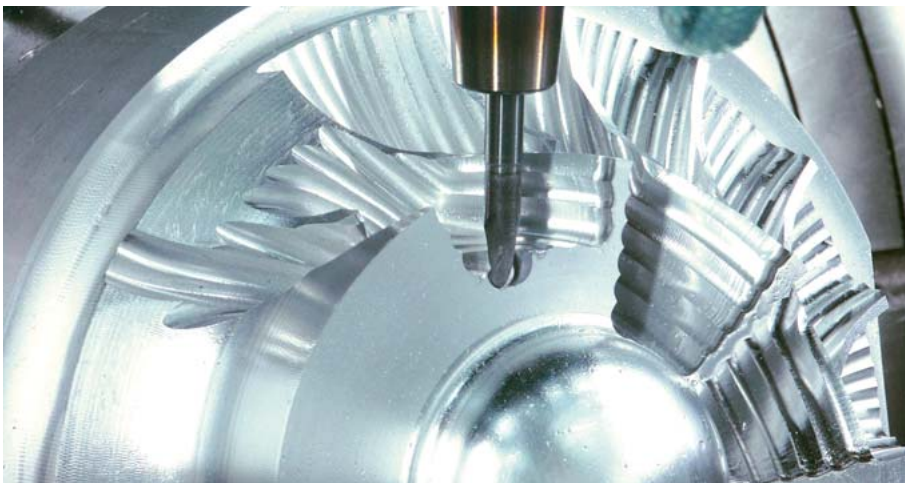
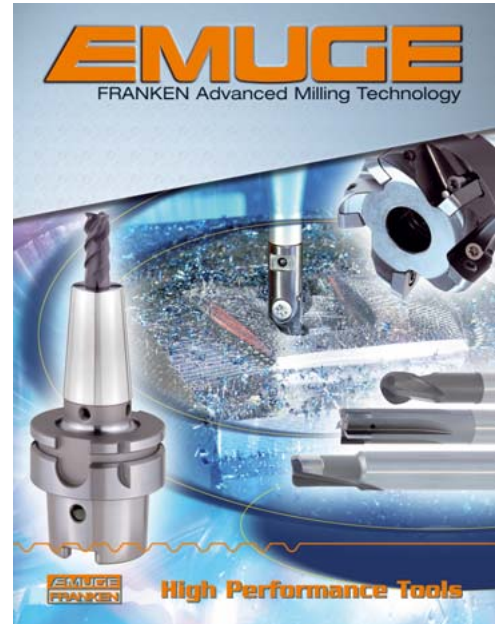
By applying an axial force onto the diaphragm, it bends in direction of the force. The clamping jaws simultaneously move axially and open in radial direction. The gear wheel is being released.

Due to its flexibility the diaphragm returns to its initial position if the axial force is reduced or taken away. The gear wheel is being clamped in axial and radial direction.

FRANKEN has a 90 year history of milling tool development, and today offers a broad range of solid carbide and HSS milling cutters. The FRANKEN program includes end mills, slot drills, die-sinking cutters, shell mills, gear cutters and highly sophisticated profile cutters that include "Christmas Tree" cutters used in the manufacture of jet engines and power generation turbines.

In addition, FRANKEN has been at the forefront of process and tooling development in the areas of Hard Machining, High Speed Cutting and High Productivity Cutting. Expertise in these areas enabled FRANKEN to develop a complete program for the Mold & Die Industry that includes extra long solid carbide ball and torus end mills, screw-in and shell type cutters with indexable inserts, as well as a complete line of tool holders and tool holding solutions with the SHRINK-MASTER induction shrink-fit system and the powRgrip® tool clamping system.

With this large variety of tool types, the highest production standards and uncompromising precision, the FRANKEN product range will answer the most unyielding quality requirements.



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 Phone (508)-595-3600 · Facsimile (508) 595-3650 · Toll Free (800) 323-3013 · www.emuge.com · emuge@emuge.com

**Customer Information**

Distributor Name:			End User Name:		
Contact Person:			Contact Person:		
City:	State:	Zip:	Street:		
Phone: ( )	Fax: ( )		City:	State:	Zip:
Customer Inquiry Number:			Phone: ( )	Fax: ( )	

**Tapping Application**

Tap Size:	Class of Fit:	<input type="checkbox"/> Through Hole	<input type="checkbox"/> Blind Hole	<input type="checkbox"/> Other:
Material:	Hardness:	Thread Length:	Thread Length:	
Tap Requirement: <input type="checkbox"/> Cutting <input type="checkbox"/> Forming <input type="checkbox"/> Either			Drill Depth:	
Number of Taps Required:		Number of Holes to Tap:		Repeat Job: <input type="checkbox"/> Yes <input type="checkbox"/> No
Machine Tool	Manufacturer/Type:			Direction of Tapping: <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical
Feed	<input type="checkbox"/> CNC Controlled <input type="checkbox"/> NC Controlled <input type="checkbox"/> Synchronous Spindle <input type="checkbox"/> Cam Followed <input type="checkbox"/> Lead Screw <input type="checkbox"/> Manual			
Tap Holder	<input type="checkbox"/> Tension/Compression <input type="checkbox"/> Rigid (Collet) <input type="checkbox"/> Floating			Tapping Attachment/Type:
Lubrication	<input type="checkbox"/> Thread Cutting Oil <input type="checkbox"/> Emulsion %: <input type="checkbox"/> Dry <input type="checkbox"/> Other:			
Method	<input type="checkbox"/> Circulation <input type="checkbox"/> Brush <input type="checkbox"/> Mist <input type="checkbox"/> Thru Tap <input type="checkbox"/> Other:			

**Special Design Specifications**

Overall Length:	Shank Diameter:
Pitch Diameter: Min: _____ Max: _____	Gage Limits: Go: _____ No Go: _____

Notes:

*Continue notes on separate sheet if necessary*

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Phone: ( )	Fax: ( )	Street:			
Contact Person:			City:	State:	Zip:
Purchase Order #:			Phone: ( )	Fax: ( )	
Ship Via:			Contact Person:		
End User Reference #:			EMUGE Customer: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Catalogs: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Engineer: <input type="checkbox"/> Yes <input type="checkbox"/> No

### Tapping Application

Tap Size:	Class of Fit:	<input type="checkbox"/> Through Hole	<input type="checkbox"/> Blind Hole	<input type="checkbox"/> Other:
Material:	Hardness:	Thread Length:	Thread Length:	
Tap Requirement: <input type="checkbox"/> Cutting <input type="checkbox"/> Forming <input type="checkbox"/> Either		Lubrication:	Drill Depth:	
Machine Tool Manufacturer/Type:		Tap Holder Manufacturer/Type:	Direction of Tapping: <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	
Number of Taps in Setup:		Tap Make Presently Used:	Performance/Comments:	
Criteria for a Successful Test:				

### EMUGE Tap Recommendation

Quantity:	EDP#:	Description:	List Price-\$/each:
Speed/SFM:	Tap Drill Size:	Lubrication:	Tap Holder:

**EMUGE taps are very free cutting and will easily cut oversize threads if fed out of lead. For the best result, we recommend the use of an EMUGE Quick-Change Tap Holder with built-in tension, compression, and overload clutch features. Always utilize your holder's tension feature by programming spindle feed to 95-98% of the calculated feed rate. CALL AN EMUGE ENGINEER AT THE HOTLINE, 800-323-3013, IF YOU NEED TECHNICAL ASSISTANCE.**

### Test Result: Please Fax a Copy Immediately to EMUGE at (508) 595-3650

Tapped Holes: <input type="checkbox"/> Yes <input type="checkbox"/> No	Thread Quality: <input type="checkbox"/> Good <input type="checkbox"/> Poor	Tap Life: <input type="checkbox"/> Long <input type="checkbox"/> Short	Overall Performance: Scale 1 to 10	Additional Testing Required: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Call Me
Comments:				Name: _____ Date: _____
				Phone: _____ Ext. _____ ( )

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Phone: ( )	Fax: ( )	Street:			
Contact Person:			City:	State:	Zip:
Purchase Order #:	Date:	Phone: ( )	Fax: ( )		
Ship Via:	To:	Contact Person:			
End User Reference #:	EMUGE Order #:	EMUGE Customer: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Catalogs: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Engineer: <input type="checkbox"/> Yes <input type="checkbox"/> No	

**Workpiece Data**

Drawing No.:		Title:			
Material:		Hardness:			
Type of Working:	<input type="checkbox"/> Turning	<input type="checkbox"/> Grinding	<input type="checkbox"/> Milling	<input type="checkbox"/> Control	
Operation:	<input type="checkbox"/> Roughing	<input type="checkbox"/> Semifinishing	<input type="checkbox"/> Finishing	<input type="checkbox"/> Other Operations	
Tolerance of Working Diameter:	Errors:	<input type="checkbox"/> Form	<input type="checkbox"/> Geometrical	<input type="checkbox"/> T.I.R.	<input type="checkbox"/> Other

**Machine Data**

Type of Machine:	RPM:	Spindlenose:	Direction of Rotation: <input type="checkbox"/> Left <input type="checkbox"/> Right		
Power Chucking:	Force:	Manual Chucking:			
Feed:	Cut Depth:	Speed-RPM:			
Other Information:					

**Clamping Device**

Chuck:	Mandrel:	Auto Load:	Manual Load:	Load Space:
Clamping Diameter:	Clamp Length:	Max. (Min.) Diameter Opening:	Stop: <input type="checkbox"/> Solid <input type="checkbox"/> Floating	

Other Information:

**Remarks/Sketch**

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Phone: (    )		Fax: (    )		Contact Person:	
Purchase Order #:	Date:		Phone: (    )		Fax: (    )
Ship Via:	To:		EMUGE Customer:	Needs Catalogs:	Needs Engineer:
End User Reference #:			EMUGE Order #:		
<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No

**Tapping Application**

Tap Size:	Machine Tool Type & Mgr:
Class of Fit:	Spindle Connection:
Material:	Tapping Horizontal:
Hardness:	Tapping Vertical:
Through Hole:	Type of Feed:
Thread Length:	Tap Holder Type being Used:
Blind Hole:	Number of Holders in Set Up:
Thread Length:	Tap Presently Used:
Drill Depth:	
Cutting Tap:	
Forming Tap:	
Performance Comments:	

Criteria for a Successful Test:

**EMUGE Tap Holder Recommendation**

Quantity:	EDP#:	Description:	List Price-\$/each:

EMUGE taps are very free cutting and will easily cut oversize threads if fed out of lead. For the best result, we recommend the use of an EMUGE Quick-Change Tap Holder with built-in tension, compression, and overload clutch features. Always utilize your holder's tension feature by programming spindle feed to 95-98% of the calculated feed rate. When using Full-Speed taps, Rigid Tapping use KSN-Softsynchro Tap Holders for best results. CALL AN EMUGE ENGINEER AT THE HOTLINE, 800-323-3013, IF YOU NEED TECHNICAL ASSISTANCE.

**Test Result: Please Fax a Copy Immediately to EMUGE at (508) 595-3650**

Comments:	Overall Performance: Scale 1 to 10	Additional Testing Required: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Call Me
		Name: _____ Date: _____
		Phone: _____ Ext. _____ (    )

Continue notes on separate sheet if necessary

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Ship Via:	To:	Contact Person:			
End User Reference #:	EMUGE Order #:	EMUGE Customer: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Catalogs: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Engineer: <input type="checkbox"/> Yes <input type="checkbox"/> No	

**Thread Milling Application**

Thread Size:	Pitch:	Class of Fit:	Hole Type: <input type="checkbox"/> Through <input type="checkbox"/> Blind
Material:	Hardness:	Thread Length:	Drill Depth:
Machine Tool Manufacturer:		Position of Spindle: <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal	
Maximum RPM of Spindle:		Type of Controller:	
Coolant System: <input type="checkbox"/> Through Spindle <input type="checkbox"/> External		Type of Shank Connection:	

**EMUGE Recommendation**

Quantity:	EDP#:	Description:	List Price-\$/each:

CALL EMUGE's THREAD MILLING DEPARTMENT IF YOU NEED TECHNICAL ASSISTANCE.

**Remarks/Sketch**

Continue notes on separate sheet if necessary

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Contact Person:			City:	State:	Zip:
Purchase Order #:	Date:	Phone: ( )	Fax: ( )		
Ship Via:	To:	Contact Person:			
End User Reference #:	EMUGE Order #:	EMUGE Customer: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Catalogs: <input type="checkbox"/> Yes <input type="checkbox"/> No	Needs Engineer: <input type="checkbox"/> Yes <input type="checkbox"/> No	

### Mold Milling Application

Machine Type:	Year of Manufacture:	Control Type:			
Maximum RPM of Spindle:	Maximum Feed Rate:	Material:	Hardness:		
Minimum RPM of Spindle:	Minimum Feed Rate:	Tool Holding System:	Programming Method:		

### Test Criteria

Please detail what factors will constitute a successful test:

### Test Tools Recommended

Tool Recommendation:			Recommended Cutting Parameters: <input type="checkbox"/> Inches <input type="checkbox"/> Metric				
Quantity:	EDP#:	Description:	Speed (RPM):	Feed (mm/min):	SFM (m/min):	Depth of Cut:	Chip per tooth:

A		
A400	M	55
A402	M-LH	55
A403	M	55
A405	M	55
A406	M "6GX"	55
A407	MF	89
A409	MF-LH	89
A411	MF "6GX"	89
A416	UNEF	42
A418	G	118
A421	G	118
A422	Rp (BSPP)	116
A450	M	56
A452	M	56
A453	M	56
A454	MF	90
A457	G	118
A459	M	56
A500	M	56
A502	M	57
A506	MF	90
A507	MF	90
A516	G	118
A550	M	57
A551	M	57
A553	M "6G"	57
A654	Rc (BSPT)	131
AU433	UNC	2
AU434	UNF	22
AU435	M	52
AU436	MF	86
AU437	M	52
AU438	MF	86
AU452	M	52
AU460	UNC	3
AU461	UNF	23
AU462	UNC	2
AU463	UNC "3B"	2
AU464	UNF	22
AU465	UNF "3B"	22
AU466	UNC "Oversize"	2
AU467	UNF "Oversize"	22
AU468	MF	86
AU469	M	52
AU470	MF	86
AU480	UNC	3
AU481	UNC "3BX"	3
AU482	UNF	23
AU483	UNF "3BX"	23
AU502	M	53
AU507	MF	86
AU512	UNC	3
AU513	UNC "3BX"	3
AU514	UNF	23
AU515	UNF "3BX"	23
AU519	M	53
AU520	MF	87
AU525	M	53
AU555	UNC	4
AU556	UNC "3B"	4
AU557	UNF	24
AU558	UNF "3B"	24
AU565	UNC	3
AU566	UNC "3B"	3
AU567	UNF	23
AU568	UNF "3B"	23

AU569	UNC "Oversize"	3
AU570	UNF "Oversize"	23
AU571	M	53
AU572	MF	87
AU573	M	53
AU574	MF	87
AU592	UNC	4
AU593	UNF	24
AU594	UNC "3B"	4
AU595	UNF "3B"	24
AU596	M	53
AU599	M	53
AU656	NPT	126
AU658	NPTF	128
AU659	NPTF	128
AU660	NPT	126
AU661	NPTF	128
AU662	NPT	126
AU663	NPTF	128
AU664	NPTF	128
AU665	NPT	126
AU666	NPTF	129
AU667	NPT	126
AU668	NPTF	129
AU682	M	54
AU683	M	54
AU684	M	54
AU685	MF	88
AU686	MF	88
AU687	MF	88
AU688	UNC	5
AU689	UNF	25
AU690	M	54
AU691	UNC	5
AU692	UNF	25
AU755	UNC	2
AU756	UNF	22
AU807	M	52

B		
B102	M	79
B103	M	79
B105	M	79
B108	M	80
B109	M	80
B113	M	81
B200	M	58
B203	M	58
B208	M	58
B209	M	59
B211	MF	91
B212	MF-LH	91
B213	MF	91
B229	M	59
B231	M	59
B234	M	59
B235	M	59
B246	M	82
B250	M	63
B251	M-LH	63
B252	M	63
B253	M	64
B254	M	65
B256	M	65
B257	M	64
B262	M "6G"	63
B263	M "6G"	65
B265	M "7G"	63

B266	MF	96
B267	MF	96
B268	MF	97
B271	MF "6G"	97
B281	STI-M	110
B287	LK-M	112
B288	M	82
B296	M	65
B297	M	64
B298	STI-M	110
B307	M	82
B308	M "7G"	65
B313	M	64
B314	MF	96
B322	M	66
B336	M	67
B341	M	67
B380	M	67
B382	M	67
B383	M	69
B386	M	67
B389	M	68
B390	M "6G"	68
B391	MF	98
B406	M	68
B409	M	69
B410	MF	98
B414	M	69
B421	M	68
B422	M	68
B425	M	69
B426	M	82
B430	M	71
B431	M-LH	71
B433	M	72
B434	M	71
B435	M	72
B436	M	71
B437	M	73
B438	M	73
B439	M	73
B440	M	74
B441	M	74
B443	M "6G"	71
B444	M "6G"	73
B446	M "7G"	71
B449	MF	100
B452	MF	100
B454	MF	101
B471	STI-M	111
B472	STI-M	111
B480	LK-M	112
B482	M	83
B486	M	72
B488	M	75
B489	M	73
B490	STI-M	111
B495	MF "6G"	101
B496	M	73
B497	MF	101
B500	M	74
B503	M	73
B504	MF	101
B509	M	75
B517	M	74
B518	M	75
B520	M	72
B521	MF	100
B522	M	75

B525	M "7G"	73
B527	M	71
B531	M	76
B532	M	76
B533	M	77
B534	M	76
B536	M "6GX"	76
B537	MF	103
B538	MF	103
B549	M	77
B554	M	77
B559	M	77
B560	LK-M	112
B561	M	77
B562	M	77
B581	M	61
B586	MF	94
B588	M	79
B589	MF	105
B594	M	62
B595	M	62
B596	MF	95
B597	MF	95
B598	G	119
B599	G	119
B600	M	61
B601	M	71
B602	MF	99
B656	M	60
B657	M	60
B658	M	60
B659	M	61
B660	M	61
B661	M	61
B662	M	61
B663	M	60
B678	M	60
B679	MF	92
B680	G	119
B681	M	58
B682	M	58
B683	M	59
B684	M	61
B693	M	59
B694	M	59
B703	M	65
B711	M	65
B712	M	65
B713	MF	97
B714	M	66
B715	M	66
B716	M	66
B717	M	66
B730	M	64
B731	STI-M	110
B800	M	70
B801	M	70
B802	M	70
B803	M	70
B804	M	70
B805	M	69
B820	M	69
B824	M	67
B825	M	69
B827	M	67
B828	M	67
B829	M	69
B847	M	74
B853	M	75

B854	M	83	BU227	UNF	26	BU577	UNF	36	BU921	UNF	36
B855	M	75	BU272	UNC	7	BU578	UNC	15	BU948	UNC	16
B862	M	75	BU273	UNC	7	BU579	UNF	35	BU949	UNF	36
B863	M	75	BU274	UNC "3B"	7	BU664	UNC	7	BU970	UNC	17
B874	M	72	BU275	UNF	27	BU665	UNF	27	BU971	UNF	37
B875	STI-M	111	BU276	UNF	27	BU666	UNC	7	BU972	UNC	17
B922	M	76	BU277	UNF "3B"	27	BU667	UNC	6	BU973	UNF	37
B924	LK-M	112	BU290	UNC	8	BU668	UNF	26			
B925	M	78	BU292	UNF	28	BU669	UNC	6			
B928	M	78	BU294	UNC "3B"	8	BU670	UNF	26			
B929	MF	103	BU295	UNF "3B"	28	BU671	UNF	27			
B930	MF	103	BU303	UNC "3BX"	9	BU672	UNC	6			
B931	MF	104	BU304	UNF "3BX"	29	BU673	UNF	26			
B942	M	78	BU305	STI-UNC	48	BU674	UNC	7			
B943	MF	104	BU306	STI-UNF	49	BU675	UNF	27			
B944	M	78	BU315	LK-UNC	50	BU676	UNC	7			
B945	MF	104	BU317	UNC "3B"	8	BU677	UNF	27			
B946	M	78	BU318	UNF "3B"	28	BU689	UNC	7			
B947	MF	104	BU319	UNC	8	BU690	UNF	27			
B975	M	79	BU325	UNC	10	BU691	UNC	6			
B976	M	79	BU326	UNF	30	BU692	UNF	26			
B977	MF	105	BU327	UNC "3BX"	10	BU700	UNF	28			
B980	M	80	BU328	UNF "3BX"	30	BU701	UNC "3B"	8			
B981	M	80	BU337	UNC "3BX"	10	BU702	UNF "3B"	28			
B982	M	80	BU338	UNF "3BX"	30	BU704	UNC	9			
B984	M	81	BU339	UNC "3BX"	10	BU705	UNF	29			
B985	M	81	BU340	UNF "3BX"	30	BU718	UNC	9			
B988	M	81	BU397	UNC	11	BU719	UNF	29			
B989	M	81	BU398	UNF	31	BU720	UNC	9			
B990	MF	105	BU401	UNC	10	BU721	UNF	29			
B995	M	81	BU402	UNF	30	BU722	UNC	9			
B996	M	81	BU403	UNC "3BX"	11	BU723	UNF	29			
BU118	UNC	19	BU404	UNF "3BX"	31	BU724	UNC	9			
BU119	UNF	39	BU411	STI-UNC	48	BU725	UNF	29			
BU120	UNC	17	BU412	STI-UNF	49	BU726	UNC	9			
BU121	UNF	37	BU417	UNC	11	BU727	UNF	29			
BU122	UNC	17	BU418	UNF	31	BU728	UNC	9			
BU123	UNF	37	BU419	UNC	11	BU729	UNF	29			
BU124	UNC	17	BU420	UNF	31	BU806	UNC	11			
BU125	UNF	37	BU423	UNC	11	BU807	UNF	31			
BU126	UNC	17	BU424	UNF	31	BU808	UNC	12			
BU127	UNF	37	BU458	UNC	12	BU809	UNF	32			
BU128	UNC	17	BU460	UNC	13	BU810	UNC	12			
BU129	UNF	37	BU462	UNC "3B"	13	BU811	UNF	32			
BU130	UNC	18	BU463	UNF	32	BU812	UNC	12			
BU131	UNF	38	BU465	UNF	33	BU813	UNF	32			
BU132	UNC	18	BU467	UNF "3B"	33	BU814	UNC	12			
BU133	UNF	38	BU483	UNC	13	BU815	UNF	32			
BU134	UNC	18	BU484	UNF	33	BU816	UNC "3BX"	11			
BU135	UNF	38	BU501	UNC	13	BU817	UNF "3BX"	31			
BU136	UNC	18	BU502	UNF	33	BU818	UNC "3BX"	11			
BU137	UNF	38	BU505	UNC "3B"	13	BU819	UNF "3BX"	31			
BU138	UNC	18	BU506	UNF "3B"	33	BU842	UNC	14			
BU139	UNF	38	BU507	STI-UNC	48	BU843	UNF	34			
BU140	UNC	19	BU508	STI-UNF	49	BU845	UNC	13			
BU141	UNF	39	BU529	LK-UNC	50	BU846	UNF	33			
BU142	UNC	19	BU543	UNC	15	BU851	UNC	14			
BU143	UNF	39	BU544	UNF	35	BU852	UNF	34			
BU144	UNC	19	BU556	UNC	15	BU864	UNC	14			
BU145	UNF	39	BU557	UNF	35	BU865	UNF	34			
BU146	UNC	19	BU568	UNC	15	BU866	UNC	14			
BU147	UNF	39	BU569	UNF	35	BU867	UNF	34			
BU148	UNC	19	BU570	UNC	16	BU868	UNC	14			
BU149	UNF	39	BU571	UNF	36	BU869	UNF	34			
BU150	UNC	19	BU572	UNC	15	BU870	UNC "3B"	13			
BU151	UNF	39	BU573	UNF	35	BU871	UNF "3B"	33			
BU152	UNC	19	BU574	UNC	16	BU872	UNC	13			
BU153	UNF	39	BU575	UNF	36	BU873	UNF	33			
BU226	UNC	6	BU576	UNC	16	BU920	UNC	16			

C		
C100	M	58
C103	M	58
C108	M	59
C110	MF	91
C115	MF	91
C122	G	120
C126	Rp (BSPP)	117
C142	NPSM/NPSC	114
C143	NPSF	115
C144	G	120
C146	M	59
C147	MF	92
C149	M	59
C150	MF	91
C153	M	59
C154	MF	92
C155	M	59
C156	MF	92
C170	M	63
C171	M-LH	63
C172	M	63
C173	M	64
C174	M	65
C176	M	65
C177	M	64
C182	M "6G"	63
C183	M "6G"	65
C184	M "7G"	63
C185	MF	96
C186	MF-LH	96
C187	MF	96
C188	MF	97
C190	MF "6G"	96
C191	MF "6G"	97
C198	UNEF	43
C199	G	121
C200	G	121
C201	G	121
C206	STI-M	110
C212	LK-M	112
C215	M	82
C226	M	64
C227	STI-M	110
C234	M	82
C235	M "7G"	65
C240	M	64
C241	MF	96
C252	M	66
C300	M	67
C302	M	67
C303	M	69
C306	M	67
C309	M	68
C310	MF	98
C313	G	121
C315	G	121
C318	M "6G"	68
C327	M	68

C328	MF	98	C501	M	84	C787	STI-M	110	CU326	UNF "3BX"	31
C329	UNEF	43	C507	MF	106-108	C793	MF	97	CU335	STI-UNC	48
C330	MF	98	C513	G	124	C811	M	67	CU336	STI-UNF	49
C333	M	69	C520	M	84	C816	M	67	CU337	UN-8	44
C341	M	69	C521	MF	106-108	C851	M	68	CU347	UNC	11
C342	MF	98	C522	G	124	C852	M	68	CU348	UNF	31
C350	M	71	C586	M	61	C855	M	69	CU349	UNC	11
C351	M-LH	71	C591	MF	94	C856	M	82	CU382	UNC	12
C354	M	72	C594	M	79	C857	M	70	CU384	UNC	13
C356	M	72	C595	MF	105	C858	M	70	CU386	UNC "3B"	13
C357	M	71	C601	G	120	C859	MF	99	CU387	UNF	32
C358	M	73	C602	M	71	C860	MF	99	CU389	UNF	33
C359	M	73	C603	MF	99	C861	M	70	CU391	UNF "3B"	33
C360	M	73	C634	M	59	C862	M	70	CU421	UNC	13
C361	M	74	C651	M	77	C863	M	70	CU422	UNF	33
C362	M	74	C653	MF	103	C864	MF	99	CU445	UNC	13
C365	M "6G"	71	C654	M	77	C865	MF	99	CU446	UNF	33
C366	M "6G"	73	C655	MF	104	C866	MF	99	CU449	UNC "3B"	13
C368	M "7G"	71	C666	M	76	C867	M	69	CU450	UNF "3B"	33
C370	M "7G"	73	C667	M	78	C882	M	69	CU451	UN-8	45
C371	MF	100	C669	M	78	C884	M	69	CU468	UN-8	45
C372	MF-LH	100	C670	MF	104	C885	MF	99	CU485	UNC	15
C374	MF	100	C671	G	123	C886	MF	98	CU486	UNF	35
C376	MF	101	C672	G	123	C887	G	121	CU499	UNC	15
C378	MF	101	C683	M	78	C897	MF	102	CU514	UNC	20
C381	MF "6G"	101	C684	MF	104	C910	M	74	CU515	UNF	40
C392	UNEF	43	C685	M	78	C916	M	75	CU516	UN-8	46
C393	G	122	C686	MF	104	C919	M	83	CU517	UN-8 "3BX"	46
C394	G	122	C687	M	78	C926	M	75	CU518	UNC "3BX"	20
C395	G	122	C688	MF	104	C927	M	75	CU519	UNF "3BX"	40
C397	G	122	C696	M	79	C940	NPSM/NPSC	114	CU558	NPT	127
C398	G	122	C697	M	79	C941	NPSF	115	CU560	NPTF	130
C400	Rp (BSPP)	117	C698	MF	105	C942	STI-M	111	CU561	NPTF	130
C405	STI-M	111	C703	M	82	C953	M	81	CU566	NPT	127
C406	STI-M	111	C712	M	60	C954	M	81	CU567	NPT	127
C414	LK-M	112	C713	M	60	C955	MF	105	CU568	NPTF	130
C419	M	83	C714	MF	92	CU137	UNC	6	CU569	NPTF	130
C420	MF	101	C715	MF	93	CU138	UNF	26	CU570	NPT	127
C424	M	72	C716	M	60	CU139	UN-8	44	CU610	UNF	38
C426	M	75	C717	M	61	CU192	UNC	7	CU611	UNC	18
C427	M	73	C718	M	61	CU193	UNC	7	CU612	UNF	38
C428	MF	100	C719	M	61	CU194	UNC "3B"	7	CU613	UNC	18
C429	MF	101	C720	MF	93	CU195	UNF	27	CU614	UNF	38
C432	STI-M	111	C721	MF	93	CU196	UNF	27	CU615	UNC	18
C435	MF	101	C722	MF	93	CU197	UNF "3B"	27	CU616	UNF	38
C436	NPSM/NPSC	114	C723	MF	93	CU217	UNC	8	CU617	UNC	18
C437	NPSF	115	C724	M	61	CU219	UNF	28	CU618	UNF	38
C440	M	73	C725	MF	93	CU221	UNC "3B"	8	CU619	UNC	19
C443	M	74	C726	M	60	CU222	UNF "3B"	28	CU620	UNF	39
C447	M	73	C737	MF	93	CU223	UN-8	44	CU621	UNC	19
C448	MF	101	C742	M	60	CU232	UNC "3BX"	9	CU622	UNF	39
C452	M	75	C743	MF	92	CU233	UNF "3BX"	29	CU623	UNC	19
C453	MF	102	C744	G	120	CU242	STI-UNC	48	CU624	UNF	39
C460	M	74	C745	M	58	CU243	STI-UNF	49	CU625	UNC	19
C461	MF	101	C746	MF	91	CU244	LK-UNC	50	CU626	UNF	39
C462	M	75	C747	G	120	CU245	UNC	8	CU627	UNC	19
C463	MF	102	C748	M	61	CU246	UNF	28	CU628	UNF	39
C466	M	72	C749	MF	93	CU247	UNC "3B"	8	CU629	UNC	19
C467	MF	100	C751	M	65	CU248	UNF "3B"	28	CU630	UNC	7
C469	M	75	C763	M	65	CU249	UNC "3B"	8	CU631	UNF	27
C471	M	76	C764	M	65	CU256	UNC	10	CU632	UNC	6
C473	M	77	C765	MF	97	CU257	UNF	30	CU633	UNF	26
C474	M	76	C766	MF	97	CU258	UNC "3BX"	10	CU650	UNF	35
C478	MF	103	C767	M	66	CU259	UNF "3BX"	30	CU664	UNC	15
C479	MF	103	C768	M	66	CU319	UNC	11	CU665	UNF	35
C482	G	123	C769	M	66	CU320	UNF	31	CU689	UNC	16
C484	MF	103	C770	MF	97	CU323	UNC	10	CU690	UNF	36
C491	M	77	C771	MF	97	CU324	UNF	30	CU691	UNC	17
C494	MF	103	C786	M	64	CU325	UNC "3BX"	11	CU692	UNF	37



A			B								
A0101001	G	118	AU503000	MF	87	B0201020	M "6G"	63	B0513700	M	74
A0101001	M	55	AU503200	UNC	3	B0201030	M "7G"	63	B051D200	M	74
A0101001	MF	89	AU503200	UNF	23	B0201050	M-LH	63	B0601000	M	71
A0101001	Rp (BSPP)	116	AU503210	UNC "3B"	3	B0201400	M	65	B0601100	M	71
A0101001	UNEF	42	AU503210	UNF "3B"	23	B0201400	MF	97	B0603000	M	73
A0101021	MF "6GX"	89	AU503243	UNC "Oversize"	3	B0201500	M	64	B0653501	M	75
A0101051	M-LH	55	AU503243	UNF "Oversize"	23	B0201700	M	65	B0911000	LK-M	112
A0101051	MF-LH	89	AU503244	UNC "Oversize"	3	B0203000	LK-M	112	B0911000	M	76
A0102501	G	118	AU503244	UNF "Oversize"	23	B0203000	M	64	B0911000	MF	103
A0102501	M	55	AU513500	UNC	4	B0203000	MF	96	B0911020	M "6GX"	76
A0102521	M "6GX"	55	AU513500	UNF	24	B0203000	STI-M	110	B0911300	M	76
A0121001	M	55	AU513510	UNC "3B"	4	B0203020	M "6G"	65	B0911400	LK-M	112
A0181000	Rc (BSPT)	131	AU513510	UNF "3B"	24	B0203020	MF "6G"	97	B0911400	M	77
A0201000	G	118	AU513700	M	53	B0203030	M "7G"	65	B0911400	MF	103
A0201000	M	56	AU513700	UNC	4	B0203701	M	65	B0919000	M	77
A0201000	MF	90	AU513700	UNF	24	B0203701	MF	97	B0921000	M	76
A0203000	M	56	AU513710	UNC "3B"	4	B0204500	M	64	B0921000	MF	103
A0221000	M	56	AU513710	UNF "3B"	24	B0204500	STI-M	110	B0921400	M	77
A0223000	M	56	AU51D200	M	53	B0206501	M	65	B0921400	MF	103
A0451000	M	56	AU921000	M	54	B020S800	M	64	B0921700	M	76
A0451000	MF	90	AU921000	MF	88	B020S800	STI-M	110	B0929000	M	77
A0463000	G	118	AU921400	M	54	B0221000	M	63	B092F000	M	78
A0463000	M	57	AU921400	MF	88	B0223000	M	65	B092F000	MF	104
A0463000	MF	90	AU921400	UNC	5	B0306001	M	66	B0961400	M	69
A0501000	M	57	AU921400	UNF	25	B0309601	M	67	B0963000	M	68
A0511020	M "6G"	57	AU921700	M	54	B030J401	M	67	B0963000	MF	98
A0513500	M	57	AU921700	UNC	5	B0401000	M	67	B0963701	M	70
AU100501	UNC	2	AU921700	UNF	25	B0401400	M	69	B0969300	M	69
AU100501	UNF	22	AU929000	M	54	B0403000	M	68	B0973500	M	73
AU109101	UNC	2	AU929000	MF	88	B040V401	M	69	B0973500	MF	101
AU109101	UNF	22	AW181000	NPT	126	B041L801	M	67	B0973700	M	74
AU110501	M	52	AW181000	NPTF	128	B0451000	M	67	B0979400	M	75
AU110501	MF	86	AW181400	NPT	126	B0451000	MF	98	B0980101	M	71
AU110601	M	52	AW181400	NPTF	128	B0453701	M	70	B0980101	MF	99
AU110601	MF	86	AW193000	NPTF	128	B0456001	M	69	B0989501	M	67
AU201400	M	52	AW193100	NPTF	128	B0459601	M	69	B099C400	M	75
AU201400	MF	86	AW483000	NPT	126	B0461400	M	68	B1069101	M	59
AU201400	UNC	3	AW483000	NPTF	128	B0463000	M	67	B1069401	M	60
AU201400	UNF	23	AW483100	NPT	126	B0463020	M "6G"	68	B1071400	M	77
AU201700	M	52	AW483100	NPTF	129	B046D100	M	68	B107F000	M	78
AU203000	M	52	AW889300	NPT	126	B046L801	M	67	B107F000	MF	104
AU203000	MF	86	AW889300	NPTF	129	B0501000	M	71	B1083701	M	65
AU203000	UNC	2				B0501000	MF	100	B1099501	M	59
AU203000	UNF	22	B0091400	M	69	B0501020	M "6G"	71	B178F001	M	66
AU203010	UNC "3B"	2	B0100501	M	59	B0501030	M "7G"	71	B1950501	M	59
AU203010	UNF "3B"	22	B0100501	MF	91	B0501050	M-LH	71	B1950901	M	61
AU203043	UNC "Oversize"	2	B0101001	M	58	B0501400	M	73	B1950901	MF	94
AU203043	UNF "Oversize"	22	B0101001	MF	91	B0503000	M	72	B1959101	M	59
AU203044	UNC "Oversize"	2	B0101051	MF-LH	91	B0503000	MF	100	B1959401	M	60
AU203044	UNF "Oversize"	22	B0102501	M	58	B0503200	M	73	B1969501	M	58
AU306001	UNC	3	B0109101	M	59	B0503200	MF	101	B1970100	M	79
AU306001	UNF	23	B0109401	M	60	B0503500	M	73	B1970100	MF	105
AU306011	UNC "3BX"	3	B010J601	M	58	B0503500	STI-M	111	B1971400	M	77
AU306011	UNF "3BX"	23	B010J901	G	119	B0503530	M "7G"	73	B197F000	M	78
AU456001	UNC	3	B010J901	M	60	B0503700	M	74	B197F000	MF	104
AU456001	UNF	23	B010J901	MF	92	B0504500	M	71	B2100501	M	82
AU456011	UNC "3BX"	3	B010K101	G	119	B0508000	M	72	B2201000	M	82
AU456011	UNF "3BX"	23	B010K101	M	62	B0508800	M	72	B2203000	M	82
AU461400	M	53	B010K101	MF	95	B0508900	STI-M	111	B2463000	M	82
AU461400	MF	87	B010R501	M	59	B0509400	M	74	B2501000	M	83
AU463000	M	53	B010T001	M	59	B050C400	M	75	B2503000	M	83
AU463000	MF	86	B0121001	M	58	B050S800	M	72	B3109401	M	60
AU46D100	M	53	B016K101	G	119	B050S800	STI-M	111	B3159401	M	61
AU501400	M	53	B016K101	M	62	B0513500	LK-M	112	B3169401	M	61
AU501400	MF	87	B016K101	MF	95	B0513500	M	73	B3179401	M	61
AU503000	M	53	B0201000	M	63	B0513500	MF	101	B3203701	M	66
			B0201000	MF	96	B0513500	STI-M	111	B3223701	M	70
						B0513520	M "6G"	73	B3233701	M	70
						B0513520	MF "6G"	101	B3243701	M	70



B3253701	M	66	BU206511	UNC "3BX"	9	BU456011	STI-UNF	49	BW213701	UNF	29
B3503700	M	75	BU206511	UNF "3BX"	29	BU456011	UNC "3BX"	11	BW553700	UNC	14
B3553700	M	75	BU219401	UNC	6	BU456011	UNF "3BX"	31	BW553700	UNF	34
B396F000	M	75	BU219401	UNF	26	BU459611	UNC "3BX"	11	BW921400	UNC	16
B4109401	M	61	BU263701	UNC	12	BU459611	UNF "3BX"	31	BW921400	UNF	36
B410B401	M	61	BU263701	UNF	32	BU45D100	UNC	11	BW921700	UNC	15
B4203701	M	66	BU293701	UNC	12	BU45D100	UNF	31	BW921700	UNF	35
B438J401	M	69	BU293701	UNF	32	BU501000	UNC	12	BW929000	UNC	16
B4503700	M	75	BU306001	UNC	10	BU501000	UNF	32	BW929000	UNF	36
B5207300	M	64	BU306001	UNF	30	BU501010	UNC "3B"	13	BW92F000	UNC	17
B5207300	MF	96	BU306011	UNC "3BX"	10	BU501010	UNF "3B"	33	BW92F000	UNF	37
B5218400	M	80	BU306011	UNF "3BX"	30	BU503200	UNC	13			
B521A800	M	81	BU309611	UNC "3BX"	10	BU503200	UNF	33			
B521N000	M	81	BU309611	UNF "3BX"	30	BU503210	UNC "3B"	13			
B521P300	M	79	BU30J411	UNC "3BX"	10	BU503210	UNF "3B"	33			
B521Q200	M	80	BU30J411	UNF "3BX"	30	BU50C400	UNC	14			
B521S800	M	79	BU339401	UNC	7	BU50C400	UNF	34			
B5238400	M	80	BU339401	UNF	27	BU513500	LK-UNC	50			
B523A800	M	81	BU33B401	UNC	7	BU513500	UNC	13			
B523A800	MF	105	BU33B401	UNF	27	BU513500	UNF	33			
B523N000	M	81	BU343701	UNC	12	BU513510	STI-UNC	48			
B523P300	M	79	BU343701	UNF	32	BU513510	STI-UNF	49			
B523P300	MF	105	BU35J411	UNC "3BX"	11	BU513510	UNC "3B"	13			
B523P900	M	81	BU35J411	UNF "3BX"	31	BU513510	UNF "3B"	33			
B523Q200	M	80	BU378400	UNC	18	BU513700	UNC	13			
B523S800	M	79	BU378400	UNF	38	BU513700	UNF	33			
B5318400	M	80	BU37A800	UNC	19	BU519400	UNC	13			
B531P900	M	81	BU37A800	UNF	39	BU519400	UNF	33			
B531Q200	M	81	BU37N000	UNC	19	BU51D200	UNC	13			
B531S800	M	79	BU37N000	UNF	39	BU51D200	UNF	33			
B5503200	M	72	BU37P300	UNC	17	BU921000	UNC	15			
B5503200	MF	100	BU37P300	UNF	37	BU921000	UNF	35			
B790A200	M	78	BU37Q200	UNC	18	BU921400	UNC	15			
B794A200	M	78	BU37Q200	UNF	38	BU921400	UNF	35			
B794A200	MF	104	BU37S800	UNC	17	BU921700	UNC	15			
B8170901	M	61	BU37S800	UNF	37	BU921700	UNF	35			
BU083701	UNC	9	BU388400	UNC	18	BU92F000	UNC	16			
BU083701	UNF	29	BU388400	UNF	38	BU92F000	UNF	36			
BU089300	UNC	9	BU38A800	UNC	19	BU931400	UNC	16			
BU089300	UNF	29	BU38A800	UNF	39	BU931400	UNF	36			
BU100501	UNC	6	BU38N000	UNC	19	BU931700	UNC	15			
BU100501	UNF	26	BU38N000	UNF	39	BU931700	UNF	35			
BU109401	UNC	6	BU38P300	UNC	17	BU939000	UNC	16			
BU109401	UNF	26	BU38P300	UNF	37	BU939000	UNF	36			
BU10J901	UNC	6	BU38P900	UNC	19	BU94C400	UNC	14			
BU10J901	UNF	26	BU38P900	UNF	39	BU94C400	UNF	34			
BU14F000	UNC	14	BU38Q200	UNC	18	BU959401	UNC	6			
BU14F000	UNF	34	BU38Q200	UNF	38	BU959401	UNF	26			
BU201000	LK-UNC	50	BU38S800	UNC	17	BU973701	UNC	12			
BU201000	UNC	7	BU38S800	UNF	37	BU973701	UNF	32			
BU201000	UNF	27	BU39A800	UNC	19	BU979300	UNC	11			
BU201010	UNC "3B"	7	BU39A800	UNF	39	BU979300	UNF	31			
BU201010	UNF "3B"	27	BU448400	UNC	18	BU999400	UNC	14			
BU201400	UNC	8	BU448400	UNF	38	BU999400	UNF	34			
BU201400	UNF	28	BU44P900	UNC	19	BW10F000	UNC	17			
BU201410	UNC "3B"	8	BU44P900	UNF	39	BW10F000	UNF	37			
BU201410	UNF "3B"	28	BU44Q200	UNC	19	BW12F001	UNC	9			
BU201700	UNC	8	BU44Q200	UNF	39	BW12F001	UNF	29			
BU201700	UNF	28	BU44S800	UNC	17	BW133701	UNC	9			
BU201710	UNC "3B"	8	BU44S800	UNF	37	BW133701	UNF	29			
BU201710	UNF "3B"	28	BU451400	UNC	11	BW159401	UNC	7			
BU203000	UNC	7	BU451400	UNF	31	BW159401	UNF	27			
BU203000	UNF	27	BU453000	UNC	10	BW169401	UNC	7			
BU203010	STI-UNC	48	BU453000	UNF	30	BW169401	UNF	27			
BU203010	STI-UNF	49	BU453701	UNC	11	BW179401	UNC	7			
BU203010	UNC "3B"	8	BU453701	UNF	31	BW179401	UNF	27			
BU203010	UNF "3B"	28	BU456001	UNC	11	BW203701	UNC	9			
BU203701	UNC	9	BU456001	UNF	31	BW203701	UNF	29			
BU203701	UNF	29	BU456011	STI-UNC	48	BW213701	UNC	9			

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C0091400	M	69
C0091400	MF	99
C0100501	G	120
C0100501	M	59
C0100501	MF	91
C0101001	G	120
C0101001	M	58
C0101001	MF	91
C0101001	NPSF	115
C0101001	NPSM/NPSC	114
C0101001	Rp (BSPP)	117
C0109101	G	120
C0109101	M	59
C0109101	MF	92
C0109401	M	60
C0109401	MF	92
C010J601	M	58
C010J601	MF	91
C010J901	G	120
C010J901	M	60
C010J901	MF	92
C010R501	M	59
C0121001	M	58
C0201000	G	121
C0201000	M	63
C0201000	MF	96
C0201000	UNEF	43
C0201020	M "6G"	63
C0201020	MF "6G"	96
C0201030	M "7G"	63
C0201050	M-LH	63
C0201050	MF-LH	96
C0201400	G	121
C0201400	M	65
C0201400	MF	97
C0201500	M	64
C0201700	M	65
C0203000	G	121
C0203000	LK-M	112
C0203000	M	64
C0203000	MF	96
C0203000	STI-M	110
C0203020	M "6G"	65
C0203020	MF "6G"	97
C0203030	M "7G"	65
C0203701	M	65
C0203701	MF	97
C0204500	M	64
C0204500	STI-M	110
C020S800	M	64
C020S800	STI-M	110
C0221000	M	63
C0223000	M	65
C0306001	M	66

C0309601	M	67	C0803001	M	84	C3169401	M	61	CU203010	STI-UNC	48
C030J401	M	67	C0803001	MF	106-108	C3169401	MF	93	CU203010	STI-UNF	49
C0401000	M	67	C0803101	G	124	C3179401	M	61	CU203010	UNC "3B"	8
C0401400	G	121	C0803101	M	84	C3179401	MF	93	CU203010	UNC "3B"	28
C0401400	M	69	C0803101	MF	106-108	C3203701	M	66	CU203701	UNC	9
C0401400	MF	98	C0911000	G	123	C3203701	MF	97	CU203701	UNF	29
C0403000	M	68	C0911000	M	76	C3223701	M	70	CU206511	UNC "3BX"	9
C0451000	G	121	C0911000	MF	103	C3223701	MF	99	CU206511	UNF "3BX"	29
C0451000	M	67	C0911400	G	123	C3233701	M	70	CU209300	UN-8	44
C0451000	MF	98	C0911400	M	77	C3233701	MF	99	CU219401	UNC	6
C0453701	M	70	C0911400	MF	103	C3243701	M	70	CU219401	UNF	26
C0453701	MF	99	C0921000	M	76	C3243701	MF	99	CU263701	UNC	12
C0456001	M	69	C0921000	MF	103	C3253701	M	66	CU263701	UNF	32
C0459601	M	69	C0921400	G	123	C3253701	MF	97	CU293701	UNC	12
C0461400	M	68	C0921400	M	77	C3503700	M	75	CU293701	UNF	32
C0463000	G	121	C0921400	MF	103	C3503700	MF	102	CU306001	UNC	10
C0463000	M	67	C0921700	M	76	C3553700	M	75	CU306001	UNF	30
C0463000	MF	98	C092F000	M	78	C3553700	MF	102	CU306011	UNC "3BX"	10
C0463000	UNEF	43	C092F000	MF	104	C4109401	M	61	CU306011	UNF "3BX"	30
C0463020	M "6G"	68	C0961400	M	69	C4109401	MF	93	CU309611	UNC "3BX"	10
C046D100	M	68	C0961400	MF	98	C410B401	M	61	CU309611	UNF "3BX"	30
C0501000	G	122	C0963000	M	68	C410B401	MF	93	CU30J411	UNC "3BX"	10
C0501000	M	71	C0963000	MF	98	C4203701	M	66	CU30J411	UNF "3BX"	30
C0501000	MF	100	C0963701	M	70	C4203701	MF	97	CU339401	UNC	7
C0501000	UNEF	43	C0963701	MF	99	C438J401	M	69	CU339401	UNF	27
C0501020	M "6G"	71	C0969300	M	69	C4503700	M	75	CU33B401	UNC	7
C0501030	M "7G"	71	C0973500	M	73	C4513700	MF	102	CU33B401	UNF	27
C0501050	M-LH	71	C0973500	MF	101	C5207300	M	64	CU343701	UNC	12
C0501050	MF-LH	100	C0973700	M	74	C5207300	MF	96	CU343701	UNF	32
C0501400	G	122	C0973700	MF	101	C521A800	M	81	CU35J411	UNC "3BX"	11
C0501400	M	73	C0979400	M	75	C521P300	M	79	CU35J411	UNF "3BX"	31
C0501400	MF	101	C0980101	M	71	C523A800	M	81	CU378400	UNC	18
C0503000	G	122	C0980101	MF	99	C523A800	MF	105	CU378400	UNF	38
C0503000	M	72	C099C400	M	75	C523P300	M	79	CU37A800	UNC	19
C0503000	MF	100	C1069101	M	59	C523P300	MF	105	CU37A800	UNF	39
C0503200	M	73	C1069101	MF	92	C5503200	M	72	CU37N000	UNC	19
C0503200	MF	101	C1069401	M	60	C5503200	MF	100	CU37N000	UNF	39
C0503500	M	73	C1069401	MF	93	C790A200	M	78	CU37P300	UNC	17
C0503500	STI-M	111	C1071400	M	77	C794A200	M	78	CU37P300	UNF	37
C0503530	M "7G"	73	C1071400	MF	104	C794A200	MF	104	CU37Q200	UNC	18
C0503700	M	74	C107F000	M	78	CU083701	UNC	9	CU37Q200	UNF	38
C0508000	M	72	C107F000	MF	104	CU083701	UNF	29	CU37S800	UNC	17
C0508800	M	72	C1083701	M	65	CU089300	UNC	9	CU37S800	UNF	37
C0508800	MF	100	C1083701	MF	97	CU089300	UNF	29	CU388400	UNC	18
C0508900	STI-M	111	C1950501	M	59	CU100501	UN-8	44	CU388400	UNF	38
C0509400	M	74	C1950501	MF	91	CU100501	UNC	6	CU38A800	UNC	19
C050C400	M	75	C1950901	M	61	CU100501	UNF	26	CU38A800	UNF	39
C050S800	STI-M	111	C1950901	MF	94	CU109401	UNC	6	CU38N000	UNC	19
C0513500	G	122	C1959101	M	59	CU109401	UNF	26	CU38N000	UNF	39
C0513500	LK-M	112	C1959101	MF	92	CU10J901	UNC	6	CU38P300	UNC	17
C0513500	M	73	C1959401	M	60	CU10J901	UNF	26	CU38P300	UNF	37
C0513500	MF	101	C1959401	MF	93	CU14F000	UNC	14	CU38P900	UNC	19
C0513500	NPSF	115	C1960901	G	120	CU14F000	UNF	34	CU38P900	UNF	39
C0513500	NPSM/NPSC	114	C1970100	M	79	CU201000	LK-UNC	50	CU38Q200	UNC	18
C0513500	Rp (BSPP)	117	C1970100	MF	105	CU201000	UNC	7	CU38Q200	UNF	38
C0513500	STI-M	111	C1971400	M	77	CU201000	UNF	27	CU38S800	UNC	17
C0513520	M "6G"	73	C1971400	MF	103	CU201010	UNC "3B"	7	CU38S800	UNF	37
C0513520	MF "6G"	101	C197F000	M	78	CU201010	UNF "3B"	27	CU39A800	UNC	19
C0513700	G	122	C197F000	MF	104	CU201400	UNC	8	CU39A800	UNF	39
C0513700	M	74	C2100501	M	82	CU201400	UNF	28	CU448400	UNC	18
C0513700	MF	101	C2201000	M	82	CU201410	UNC "3B"	8	CU448400	UNF	38
C0513700	NPSF	115	C2203000	M	82	CU201410	UNF "3B"	28	CU44P900	UNC	19
C0513700	NPSM/NPSC	114	C2463000	M	82	CU201700	UNC	8	CU44P900	UNF	39
C051D200	M	74	C2501000	M	83	CU201700	UNF	28	CU44Q200	UNC	19
C0601000	M	71	C2503000	M	83	CU201710	UNC "3B"	8	CU44Q200	UNF	39
C0603000	M	73	C3109401	M	60	CU201710	UNF "3B"	28	CU44S800	UNC	17
C0653501	M	75	C3109401	MF	93	CU203000	UN-8	44	CU44S800	UNF	37
C0653501	MF	101	C3159401	M	61	CU203000	UNC	7	CU451400	UNC	11
C0803001	G	124	C3159401	MF	93	CU203000	UNF	27	CU451400	UNF	31

CU453000	UNC	10	CU999400	UNF	34	F094...	Hi-Q/ERM	308	GF162356	M	326
CU453000	UNF	30	CW10F000	UNC	17	F094...	Hi-Q/ERMC	306-307	GF162356	UN	323
CU453701	UNC	11	CW10F000	UNF	37	F094...	PCM ET1	302-303	GF163101	M	325
CU453701	UNF	31	CW12F001	UNC	9	F094...	PGC	271	GF163106	M	325
CU456001	UN-8	44	CW12F001	UNF	29	F094...	PGP	271	GF163121	LK-M	327
CU456001	UNC	11	CW133701	UNC	9	F094...	PGR-GB	264	GF163121	M	325
CU456001	UNF	31	CW133701	UNF	29	F094...	PGS	271	GF163121	UN	322
CU456011	STI-UNC	48	CW159401	UNC	7	F094...	PGU	271	GF163126	LK-M	327
CU456011	STI-UNF	49	CW159401	UNF	27	F094...	TKC	272	GF163126	M	325
CU456011	UNC "3BX"	11	CW169401	UNC	7	F094...	VEW	272	GF163126	UN	322
CU456011	UNF "3BX"	31	CW169401	UNF	27	F211...	SFM-NP	230-231	GF163131	G	328
CU459611	UNC "3BX"	11	CW179401	UNC	7	F310...	KSN/HD	196-205	GF163131	LK-M	327
CU459611	UNF "3BX"	31	CW179401	UNF	27	F313...	KSN/Synchro	212-215	GF163131	M	325
CU45D100	UNC	11	CW181000	NPT	127	F315...	KSN/HD/Softsynchro	219-223	GF163131	UN	322
CU45D100	UNF	31	CW181000	NPTF	130	F318...	KSN/IKZ/MMS	193	GF163136	G	328
CU501000	UNC	12	CW181400	NPT	127	F318...	KSN/IKZZ/MMS	188-190	GF163136	LK-M	327
CU501000	UNF	32	CW181400	NPTF	130	F322...	KSN/HD/Softsyn./PGR	261-262	GF163136	M	325
CU501010	UNC "3B"	13	CW193000	NPTF	130	F323...	KSN/HD/ER	208-210	GF163136	UN	322
CU501010	UNF "3B"	33	CW193100	NPTF	130	F330...	Adapter Shanks	296	GF163151	G	328
CU503200	UN-8	45	CW203701	UNC	9	F330...	Assembly wrenches	297	GF163151	LK-M	327
CU503200	UNC	13	CW203701	UNF	29	F330...	Coolant-lubricant tubes	297	GF163151	M	325
CU503200	UNF	33	CW213701	UNC	9	F330...	KSN	171-185	GF163151	UN	322
CU503210	UN-8 "3B"	45	CW213701	UNF	29	F338...	SWITCH-MASTER	247-248	GF163156	G	328
CU503210	UNC "3B"	13	CW483000	NPT	127	F339...	VL-ER	304	GF163156	LK-M	327
CU503210	UNF "3B"	33	CW483100	NPT	127	F350...	EM-L/ER/IKZ	287	GF163156	M	325
CU503500	UN-8	45	CW553700	UNC	14	F356...	EM/PGR/IKZ	263	GF163156	UN	322
CU503700	UN-8	45	CW553700	UNF	34	F456...	EM/IKZ/MMS	194	GF163211	G	328
CU509400	UN-8	45	CW92F000	UNC	17	F656...	EM-S	288	GF163211	LK-M	327
CU50C400	UNC	14	CW92F000	UNF	37	F658...	EM-LS	289	GF163211	M	325
CU50C400	UNF	34				FT23...	GRN-NC	246	GF163211	UN	322
CU513500	LK-UNC	50				FT32...	GRN-NC	245	GF163216	G	328
CU513500	UN-8	45				FT39...	GRN-NC	246	GF163216	LK-M	327
CU513500	UNC	13				FZ111300		136	GF163216	M	325
CU513500	UNF	33				FZ111310		137	GF163216	UN	322
CU513510	STI-UNC	48				FZ111500		136	GF163216	UN	322
CU513510	STI-UNF	49				FZ111510		137	GF165301	M	334
CU513510	UNC "3B"	13				FZ111900		135	GF165306	M	334
CU513510	UNF "3B"	33				FZ112100		140	GF165311	M	334
CU513700	UN-8	45				FZ112110		140	GF165321	M	334
CU513700	UNC	13				FZ112300		135	GF165326	M	334
CU513700	UNF	33				FZ131500		138	GF165331	M	334
CU519400	UN-8	45				FZ131510		139	GF165336	M	334
CU519400	UNC	13							GF165351	M	334
CU519400	UNF	33							GF165356	M	334
CU51D200	UNC	13							GF1653A1	M	334
CU51D200	UNF	33							GF1653A6	M	334
CU803001	UN-8	46							GF172101	NPSF/NPSI	330
CU803001	UNC	20							GF172106	NPSF/NPSI	330
CU803001	UNF	40							GF172111	NPSF/NPSI	330
CU803011	UN-8 "3BX"	46							GF172116	NPSF/NPSI	330
CU803011	UNC "3BX"	20							GF172131	NPSF/NPSI	330
CU803011	UNF "3BX"	40							GF172136	NPSF/NPSI	330
CU921000	UNC	15							GF172151	NPSF/NPSI	330
CU921000	UNF	35							GF172156	NPSF/NPSI	330
CU921400	UNC	15							GF173101	NPT	341
CU921400	UNF	35							GF173101	Rc (BSPT)	343
CU921700	UNC	15							GF173106	NPT	339
CU921700	UNF	35							GF173106	NPTF	341
CU92F000	UNC	16							GF173106	NPTF	341
CU92F000	UNF	36							GF173106	Rc (BSPT)	343
CU94C400	UNC	14							GF173111	NPT	339
CU94C400	UNF	34							GF173111	NPTF	341
CU959401	UNC	6							GF173111	Rc (BSPT)	343
CU959401	UNF	26							GF173116	NPT	339
CU973701	UNC	12							GF173116	NPTF	341
CU973701	UNF	32							GF173116	NPTF	341
CU979300	UNC	11							GF173116	Rc (BSPT)	343
CU979300	UNF	31							GF173131	NPT	339
CU999400	UNC	14							GF173131	NPTF	341
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GF162151	G	329
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GF162311	M	326
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GF162321	M	326
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GF162326	UN	323
GF162331	M	326
GF162331	UN	323
GF162336	M	326
GF162336	UN	323
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GF173136	NPT	339	GF432201	MF	376	GZ301110		398	GZ34A002	420
GF173136	NPTF	341	GF432201	STI-M	378	GZ301130		398	GZ34A003	420
GF173136	Rc (BSPT)	343	GF432201	UNC	365	GZ301140		398	GZ514311	422
GF173151	NPT	339	GF432201	UNF	368	GZ301310		398	GZ516311	422
GF173151	NPTF	341	GF432206	M	370	GZ301320		398	GZ544311	423
GF173151	Rc (BSPT)	343	GF432206	MF	376	GZ301330		398	GZ546311	423
GF173156	NPT	339	GF432206	STI-M	378	GZ301340		398		
GF173156	NPTF	341	GF432206	UNC	365	GZ303010		400		
GF173156	Rc (BSPT)	343	GF432206	UNF	368	GZ309010		399, 407		
GF175301	NPT	340	GF432251	M	373	GZ309020		399, 401, 407		
GF175301	NPTF	342	GF432256	M	373	GZ309210		401	JM321	134
GF175306	NPT	340	GF442201	M	371	GZ311330		402	JM322	134
GF175306	NPTF	342	GF442201	UNC	366	GZ319020		403	JM323	134
GF175311	NPT	340	GF442206	M	371	GZ319060		403	JM324	134
GF175311	NPTF	342	GF442206	UNC	366	GZ340001		408	JM325	134
GF175316	NPT	340	GF442251	M	374	GZ340012		410		
GF175316	NPTF	342	GF442256	M	374	GZ340050		406		
GF175331	NPT	340	GF603111	G	399	GZ340101		408		
GF175331	NPTF	342	GF603111	M	399	GZ340112		410		
GF175336	NPT	340	GF603111	UN	399	GZ340143		412		
GF175336	NPTF	342	GF603117	G	399	GZ340153		412		
GF175351	NPT	340	GF603117	M	399	GZ341001		408		
GF175351	NPTF	342	GF603117	UN	399	GZ341012		410		
GF175356	NPT	340	GF603142	G	401	GZ341021		408		
GF175356	NPTF	342	GF603142	M	401	GZ341032		410		
GF243701	M	394	GF603147	G	401	GZ341040		406		
GF322101	G	359	GF603147	M	401	GZ341050		406		
GF322101	M	353	GF613121	M	403	GZ341101		408		
GF322101	MF	356	GF613127	M	403	GZ341112		410		
GF322101	UNC	346	GF643005	G	407	GZ341121		408		
GF322101	UNF	350	GF643005	UN, M	407	GZ341131		408		
GF322106	G	359	GF643007	G	407	GZ341153		414		
GF322106	M	353	GF643007	UN, M	407	GZ343003		414		
GF322106	MF	356	GF643105	G	409	GZ343014		416		
GF322106	UNC	346	GF643105	UN, M	409	GZ343103		414		
GF322106	UNF	350	GF643107	G	409	GZ343114		416		
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GF332101	M	354	GF643205	G	411	GZ344014		416		
GF332101	MF	357	GF643205	UN, M	411	GZ344024		416		
GF332101	UNC	347	GF643207	G	411	GZ344035		418		
GF332101	UNF	351	GF643207	UN, M	411	GZ344045		418		
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GF332106	M	354	GF643305	UN, M	413, 415	GZ344114		416		
GF332106	MF	357	GF643307	G	413, 415	GZ344124		416		
GF332106	UNC	347	GF643307	UN, M	413, 415	GZ346003		412		
GF332106	UNF	351	GF643405	G	417	GZ346013		412		
GF333101	LK-M	358	GF643405	UN, M	417	GZ346024		416		
GF333106	LK-M	358	GF643407	G	417	GZ347003		412		
GF335101	UNC	348	GF643407	UN, M	417	GZ347014		416		
GF335101	UNF	352	GF643505	UN, M	419	GZ347103		412		
GF335106	UNC	348	GF643507	UN, M	419	GZ347114		416		
GF335106	UNF	352	GF732257	M	387	GZ348003		412		
GF342101	M	355	GF732257	UNC	383	GZ348014		416		
GF342101	UNC	349	GF732257	UNF	385	GZ348024		416		
GF342106	M	355	GF733208	M	386	GZ348103		412		
GF342106	UNC	349	GF733208	UNC	382	GZ348114		416		
GF422201	M	369	GF733208	UNF	384	GZ348124		416		
GF422201	MF	375	GF753276	M	388	GZ349011		409		
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GF422201	UNC	364	GFR15106	UNC	318	GZ349013		413, 415		
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