

DETERMINATOR™ GM 2

The GM 2 **DETERMINATOR™** works on GM products using the Alpha Tech ignition.

There are three tools in the GM 2 **DETERMINATOR™** set.

The tool stamped "2 3" passes the 1 depth tumblers and catches all other depths.

The tool stamped "4" passes the 1, 2, and 3 depth tumblers and traps the 4 and 5 depths.

The tool stamped "5" passes the 1, 2, 3, and 4 depth tumblers, and traps the 5 depths.

There are a few reasons why the Alpha Tech lock is hard to decode.

- The lock has a side-bar, and the tumblers meet a shear line.
- The 2 and 3 depths are the same at the shear line, but must be cut to their exact depth specification for the side-bar to fully seat.
- The tumblers, after time, do not fully seat in their chambers. You **MUST** degrease the lock and tap the housing to get the tumblers to fully seat. Tapping the housing is very important and you should do this each time before you insert the **DETERMINATOR™**.

The numbers stamped on the **DETERMINATOR™** correspond to the tumbler space locations. When the tool is inserted into the lock, the number closest to the face of the lock indicates the space that is being determined.

When the **DETERMINATOR™** traps a tumbler, use the release tool to release the tumbler and proceed to the next space.

RULES

DEGREASE THE LOCK WELL

Tap on the housing before you insert the **DETERMINATOR™** each time.

Hold the head of the tool up, keeping it perpendicular to the keyway.

EVEN spaces are on the top side of the lock and the ODD spaces are on the bottom.

Record an "X" when you trap a tumbler with the "23" tool.

Cuts must add to be EVEN.

MACs = 2

Pull the steering wheel and shroud to tap on the ignition lock housing.



The GM 2 Determinator™ uses the regular release tool.

STEPS

1. Degrease the lock and tap on the housing to fully seat the tumblers.
2. Insert the "23" **DETERMINATOR™** fully into the lock, slowly pull the tool out. When it traps a tumbler, take note of the space and record an "X" in that space.
3. Tap on the housing and use the "23" tool on the other side of the lock. Record an "X" on the spaces that trap.
4. Spaces that did not trap with the "23" tool will be 1 depths. Record a 1 in those spaces.
5. Tap on the housing and use the "4" tool. Insert the tool into the lock and slowly pull it out. Any space that gets trapped will be recorded as a 4 depth. Use the release tool and proceed to the next space. If you had an "X" and the "4" tool traps in that space, change the X to a 4.
6. Tap on the housing and decode the other side of the lock with the "4" tool.
7. Tap on the housing and use the "5" tool. Any space that traps with the "5" tool you will change to a 5.
8. Tap on the housing and decode the other side of the lock with the "5" tool.

When you are done decoding the lock, you will have some "X"s. Count the number of "X"s you have and look on the "X" **CHARTS**. Example: You decoded the lock as 1 X X 4 X 5. You have three "X"s. Look on the "X" **CHARTS** under "GROUP 3X". The codes are in numerical order. Find your code, 1 X X 4 X 5 on the chart. The code beside 1 X X 4 X 5 is the code for your lock, 1 3 2 4 3 5.

TROUBLE SHOOTING

1. As mentioned before, you should always degrease the lock well before you start.
2. You will need to tap on the housing before you insert the **DETERMINATOR™**. You will need to do this each time. You may want to gently tap on the housing while you are slowly pulling the tool out. The reason for doing this is to free up any tumblers that may be sticking in their chambers. The tumblers should be seated properly, if not, you will get a false reading.
3. You may want to take the time to take a second reading while you are at the lock.
4. Always keep track of your findings on the chart pad.
5. If you feel a tumbler that “wanted” to trap but “slipped” off, it probably is a tumbler that should have trapped.
6. As you pull the **DETERMINATOR™** out of the lock you must keep the head of the tool perpendicular to the keyway. If you were to pull the tool out to the 3rd or 4th space, and then were to let go of the head of the tool, you will notice that the head drops. This is NOT good. You will always want to keep the head of the tool perpendicular.
7. You should practice a few times on a lock that you already know the code for. This will help you get a feel for the tool.
8. Study the “**X**” **CHARTS** and make sure you understand them.
9. Take your time, do not rush.
10. Pull the steering wheel and shroud and top on the ignition lock housing to ensure that the tumblers are seated.

FRAMON CUTTING INFORMATION

DETERMINATOR	CUTS START	CUT TO CUT	DEPTHS				
			1=.347	2=.324	3=.300	4=.277	5=.253
GM 2	.413	.098	1=.347	2=.324	3=.300	4=.277	5=.253

HPC CARD - XF206

X CHARTS

GROUP 0 X	
444545	444545
445445	445445
445454	445454
445544	445544
454454	454454
454544	454544
455444	455444
455455	455455
545444	545444
545545	545545
554545	554545
554554	554554
555445	555445
555454	555454

GROUP 1 X	
11X454	113454
11X544	113544
1X4454	124454
1X4544	124544
1X4545	134545
1X4554	134554
1X5445	135445
1X5454	135454
1X5544	135544
44454X	444543
4445X4	444534
444X11	444211
444X44	444244
444X45	444345
444X54	444354
44544X	445443
4454X1	445421
44554X	445542
44555X	445553
4455X1	445531
4455X5	445535
445X11	445311
445X44	445344
445X55	445355
44X111	443111
44X445	443445
44X454	443454
44X455	442455
44X544	443544
44X555	443555
45444X	454443
4544X1	454421
4544X4	454434
45454X	454542
45455X	454553
4545X1	454531

GROUP 1 X CONT.	
4545X5	454535
454X11	454311
454X44	454344
454X45	454245
454X55	454355
45544X	455442
45545X	455453
4554X1	455431
4554X4	455424
4554X5	455435
45554X	455543
4555X4	455534
455X45	455345
455X54	455354
45X444	453444
45X455	453455
45X545	453545
45X554	453554
4X4445	434445
4X4454	434454
4X4455	424455
4X4544	434544
4X4545	424545
4X4554	424554
4X4555	434555
4X5444	435444
4X5455	435455
4X5545	435545
4X5554	435554
5444X1	544421
5444X4	544434
54454X	544542
54455X	544553
5445X1	544531
5445X5	544535
544X11	544311
544X44	544344
544X45	544245
544X55	544355
54544X	545442
54545X	545453
5454X1	545431
5454X4	545424
5454X5	545435
54554X	545543
5455X4	545534
545X45	545345
545X54	545354
54X111	542111
54X444	543444
54X445	542445
54X454	542454

GROUP 1 X CONT.	
54X455	543455
54X545	543545
54X554	543554
55444X	554442
55445X	554453
5544X1	554431
5544X4	554424
5544X5	554435
55454X	554543
5545X4	554534
554X11	554211
554X44	554244
554X45	554345
554X54	554354
55544X	555443
5554X1	555421
5554X4	555434
555X11	555311
555X44	555344
55X111	553111
55X445	553445
55X454	553454
55X544	553544
5X4455	534455
5X4545	534545
5X4554	534554
5X5445	535445
5X5454	535454
5X5544	535544
X44454	344454
X44544	344544
X44545	244545
X44554	244554
X45444	345444
X45445	245445
X45454	245454
X45455	345455
X45544	245544
X45545	345545
X45554	345554
X54455	354455
X54545	354545
X54554	354554
X55445	355445
X55454	355454
X55544	355544

GROUP 2 X	
111X1X	111313
111X5X	111353
111XX1	111331
11X11X	113113

GROUP 2 X CONT.	
11X1X1	113131
11X1X4	113124
11X1X5	113135
11X44X	112442
	113443
11X45X	112453
11X4X1	112431
	113421
11X4X4	112424
	113434
11X4X5	112435
11X54X	113542
11X55X	113553
11X5X1	113531
11X5X5	113535
11XX11	113311
11XX45	113245
11X54	112354
1X111X	131113
1X11X1	131131
1X11X4	131124
1X11X5	131135
1X1X11	131311
1X1X44	131344
1X1X45	121345
	131245
1X1X54	121354
1X1X55	131355
1X444X	124443
	134442
1X445X	134453
1X44X1	124421
	134431
1X44X4	134424
1X44X5	134435
1X454X	124542
	134543
1X455X	124553
1X45X1	124531
1X45X4	134534
1X45X5	124535
1X4X11	124311
	134211
1X4X44	134244
1X4X45	124245
	134345
1X4X54	134354
1X4X55	124355
1X544X	135443
1X54X1	135421
1X54X4	135434
1X554X	135542

GROUP 2 X CONT.	
1X555X	135553
1X55X1	135531
1X55X5	135535
1X5X11	135311
1X5X44	135344
1X5X55	135355
1XX111	133111
1XX454	122454
	133454
1XX455	132455
1XX544	133544
1XX545	123545
1XX554	123554
4445XX	444532
444X1X	444213
	444312
444X4X	444242
444XX1	444231
	444321
444XX4	444224
	444334
444XX5	444235
4454XX	445423
	445432
4455XX	445533
445X1X	445313
445X4X	445342
445X5X	445353
445XX1	445331
445XX4	445324
445XX5	445335
44X11X	442112
	443113
44X1X1	442121
	443131
44X1X4	442134
	443124
44X1X5	443135
44X44X	442442
	443443
44X45X	442453
44X4X1	442431
	443421
44X4X4	442424
44X4X5	442435
44X54X	443542
44X55X	443553
44X5X1	443531
44X5X5	443535
44XX11	442211

X CHARTS

GROUP 2 X CONT.	
X44X54	244354
X44X55	344355
X4544X	245443
	345442
X4545X	345453
X454X1	245421
	345431
X454X4	245434
	345424
X454X5	345435
X4554X	245542
	345543
X4555X	245553
X455X1	245531
X455X4	345534
X455X5	245535
X45X11	245311
X45X44	245344
X45X45	345345
X45X54	345354
X45X55	245355
X4X111	243111
	342111
X4X444	242444
	343444
X4X445	243445
	342445
X4X454	243454
	342454
X4X455	242455
	343455
X4X544	243544
X4X545	343545
X4X554	343554
X4X555	243555
X5444X	354442
X5445X	354453
X544X1	354431
X544X4	354424
X544X5	354435
X5454X	354543
X545X4	354534
X54X11	354211
X54X44	354244
X54X45	354345
X54X54	354354
X5544X	355443
X554X1	355421
X554X4	355434
X5554X	355542
X555X1	355531
X555X5	355535

GROUP 2 X CONT.	
X55X11	355311
X55X44	355344
X55X55	355355
X5X111	353111
X5X445	353445
X5X454	353454
X5X544	353544
X5X555	353555
XX4445	324445
XX4454	234454
	324454
XX4544	234544
	324544
XX4545	224545
	334545
XX4554	224554
	334554
XX5444	235444
XX5445	335445
XX5454	335454
XX5455	235455
XX5544	335544
XX5545	235545
XX5554	235554

GROUP 3 X	
11X1XX	112132
	113122
	113133
11X4XX	112422
	112433
	113423
	113432
11X5XX	113533
11XX1X	112213
	112312
	113212
	113313
11XX4X	112242
	112343
	113243
	113342
11XX5X	113353
11XXX1	112231
	112321
	113221
	113331
11XXX4	113234
	113324

GROUP 3 X CONT.	
1X11XX	121132
	131122
	131133
1X1X1X	121312
	131212
	131313
1X1X4X	121242
	121343
	131243
	131342
1X1X5X	131353
1X1XX1	121231
	121321
	131221
	131331
1X1XX4	131234
	131324
1X1XX5	121235
	131335
1X44XX	124423
	124432
	134422
	134433
1X45XX	124533
	134532
1X4X1X	124212
	124313
	134213
	134312
1X4X4X	124243
	124342
	134242
	134343
1X4X5X	124353
1X4XX1	124221
	124331
	134231
	134321
1X4XX4	124234
	124324
	134224
	134334
1X4XX5	124335
	134235
1X54XX	135423
	135432
1X55XX	135533
1X5X1X	135313
1X5X4X	135342
1X5X5X	135353
1X5XX1	135331
1X5XX4	135324

GROUP 3 X CONT.	
1X5XX5	135335
1XX11X	123112
	132112
	133113
1XX1X1	122131
	123121
	132121
	133131
1XX1X4	123134
	132134
	133124
1XX1X5	122135
	133135
1XX44X	122443
	123442
	132442
	133443
1XX45X	123453
	132453
1XX4X1	122421
	123431
	132431
	133421
1XX4X4	123424
	132424
1XX4X5	123435
	132435
1XX54X	123543
	133542
1XX55X	133553
1XX5X1	133531
1XX5X4	123534
1XX5X5	133535
1XXX11	122311
	123211
	132211
	133311
1XXX44	132244
1XXX45	132345
	133245
1XXX54	123354
	132354
444XXX	444222
	444233
	444323
	444332
445XXX	445322
	445333
44X1XX	442123
	442132
	443122
	443131
	443123
	443132

GROUP 3 X CONT.	
44X4XX	442422
	442433
	443423
	443432
44X5XX	443533
44XX1X	442213
	442312
	443212
	443313
44XX4X	442242
	442343
	443243
	443342
44XX5X	443353
44XXX1	442231
	442321
	443221
	443321
44XXX4	442224
	442334
	443234
	443324
44XXX5	442235
	443335
454XXX	454223
	454232
	454322
	454333
455XXX	455323
45X1XX	453123
	453132
45X4XX	453422
	453433
45X5XX	453532
45XX1X	453213
	453312
45XX4X	453242
	453343
45XXX1	453231
	453321
45XXX4	453224
	453334
45XXX5	453235
4X11XX	421122
	421133
	431123
	431132
4X1X1X	421212
	421313
	431213
	431312

X CHARTS

GROUP 3 X CONT.	
4X1X4X	421243 421342 431242 431343
4X1X5X	421353
4X1XX1	421221 421331 431231 431321
4X1XX4	421234 421324 431224 431334
4X1XX5	421335 431235
4X44XX	424422 424433 434423 434432
4X45XX	424532 434533
4X4X1X	424213 424312 434212 434313
4X4X4X	424242 424343 434243 434342
4X4X5X	434353
4X4XX1	424231 424321 434221 434331
4X4XX4	424224 424334 434234 434324
4X4XX5	424235 434335
4X54XX	435422 435433
4X55XX	435532
4X5X1X	435312
4X5X4X	435343
4X5XX1	435321
4X5XX4	435334
4XX11X	422112 423113 432113 433112

GROUP 3 X CONT.	
4XX1X1	422121 423131 432131 433121
4XX1X4	422134 423124 432124 433134
4XX1X5	423135 432135
4XX44X	422442 423443 432443 433442
4XX45X	422453 433453
4XX4X1	422431 423421 432421 433431
4XX4X4	422424 423434 432434 433424
4XX4X5	422435 433435
4XX54X	423542 433543
4XX55X	423553
4XX5X1	423531
4XX5X4	433534
4XX5X5	423535
4XX11	422211 423311 432311 433211
4XX44	422244 423344 432344 433244
4XX45	422345 423245 432245 433345
4XX54	422354 433354
4XX55	423355 432355
544XXX	544223 544232 544322 544333

GROUP 3 X CONT.	
545XXX	545323 545332
54X1XX	542122 542133 543123 543132
54X4XX	542423 542432 543422 543433
54X5XX	543532
54XX1X	542212 542313 543213 543312
54XX4X	542243 542342 543242 543343
54XX5X	542353
54XXX1	542221 542331 543231 543321
54XXX4	542234 542324 543224 543334
54XXX5	542335 543235
554XXX	554222 554233 554323 554332
555XXX	555322 555333
55X1XX	553122 553133
55X4XX	553423 553432
55X5XX	553533
55XX1X	553212 553313
55XX4X	553243 553342
55XX5X	553353
55XXX1	553221 553331
55XXX4	553234 553324
55XXX5	553335

GROUP 3 X CONT.	
5X11XX	531122 531133
5X1X1X	531212 531313
5X1X4X	531243 531342
5X1X5X	531353
5X1XX1	531221 531331
5X1XX4	531234 531324
5X1XX5	531335
5X44XX	534422 534433
5X45XX	534532
5X4X1X	534213 534312
5X4X4X	534242 534343
5X4XX1	534231 534321
5X4XX4	534224 534334
5X4XX5	534235
5X54XX	535423 535432
5X55XX	535533
5X5X1X	535313
5X5X4X	535342
5X5X5X	535353
5X5XX1	535331
5X5XX4	535324
5X5XX5	535335
5XX11X	532112 533113
5XX1X1	532121 533131
5XX1X4	532134 533124
5XX1X5	533135
5XX44X	532442 533443
5XX45X	532453
5XX4X1	532431 533421
5XX4X4	532424 533434
5XX4X5	532435
5XX54X	533542
5XX55X	533553
5XX5X1	533531
5XX5X5	533535

GROUP 3 X CONT.	
5XXX11	532211 533311
5XXX44	532244 533344
5XXX45	532345 533245
5XXX54	532354
5XXX55	533355
X111XX	211123 211132 311122 311133
X11X1X	211213 211312 311212 311313
X11X4X	211242 211343 311243 311342
X11X5X	311353
X11XX1	211231 211321 311221 311331
X11XX4	211224 211334 311234 311324
X11XX5	211235 311335
X1X11X	212113 213112 312112 313113
X1X1X1	212131 213121 312121 313131
X1X1X4	212124 213134 312134 313124
X1X1X5	212135 313135
X1X44X	212443 213442 312442 313443
X1X45X	213453 312453

X CHARTS

GROUP 3 X CONT.	
X1X4X1	212421 213431 313421
X1X4X4	212434 213424 312424 313434
X1X4X5	213435 312435
X1X54X	213543 313542
X1X55X	313553
X1X5X1	313531
X1X5X4	213534
X1X5X5	313535
X1XX11	212311 213211 312211 313311
X1XX44	212344 213244 312244 313344
X1XX45	212245 312345 313245
X1XX54	213354 312354
X1XX55	212355 313355
X444XX	244422 244433 344423 344432
X445XX	244532 344533
X44X1X	244213 244312 344212 344313
X44X4X	244242 244343 344243 344342
X44X5X	344353
X44XX1	244231 244321 344221 344331

GROUP 3 X CONT.	
X44XX4	244224 244334 344234 344324
X44XX5	244235 344335
X454XX	245423 245432 345422 345433
X455XX	245533 345532
X45X1X	245313 345312
X45X4X	245342 345343
X45X5X	245353
X45XX1	245331 345321
X45XX4	245324 345334
X45XX5	245335
X4X11X	242112 243113 342113 343112
X4X1X1	242121 243131 342131 343121
X4X1X4	242134 243124 342124 343134
X4X1X5	243135 342135
X4X44X	242442 243443 342443 343442
X4X45X	242453 343453
X4X4X1	242431 243421 342421 343431
X4X4X4	242424 342434 343424
X4X4X5	242435 343435

GROUP 3 X CONT.	
X4X54X	243542 343543
X4X55X	243553
X4X5X1	243531
X4X5X4	343534
X4X5X5	243535
X4XX11	242211 243311 342311 343211
X4XX44	242244 243344 342344 343244
X4XX45	242345 243245 342245 343345
X4XX54	242354 343354
X4XX55	243355 342355
X544XX	354422 354433
X545XX	354532
X54X1X	354213 354312
X54X4X	354242 354343
X54XX1	354231 354321
X54XX4	354224 354334
X54XX5	354235
X554XX	355423 355432
X555XX	355533
X55X1X	355313
X55X4X	355342
X55X5X	355353
X55XX1	355331
X55XX4	355324
X55XX5	355335
X5X11X	353113
X5X1X1	353131
X5X1X4	353124
X5X1X5	353135
X5X44X	353443
X5X4X1	353421
X5X4X4	353434
X5X54X	353542
X5X55X	353553

GROUP 3 X CONT.	
X5X5X1	353531
X5X5X5	353535
X5XX11	353311
X5XX44	353344
X5XX45	353245
X5XX55	353355
XX111X	221113 231112 321112 331113
XX11X1	221131 231121 321121 331131
XX11X4	231134 321134 331124
XX11X5	221135 331135
XX14X1	321431
XX1X11	221311 231211 321211 331311
XX1X44	231244 321244 331344
XX1X45	221245 231345 321345 331245
XX1X54	231354 321354
XX1X55	221355 331355
XX444X	224442 234443 334442
XX445X	224453 334453
XX44X1	224431 234421 324421 334431
XX44X4	224424 234434 334424
XX44X5	224435 334435

GROUP 3 X CONT.	
XX454X	224543 234542 324542 334543
XX455X	234553 324553
XX45X1	234531 324531
XX45X4	224534 334534
XX45X5	234535 324535
XX4X11	224211 234311 324311 334211
XX4X44	224244 234344 334244
XX4X45	224345 234245 324245 334345
XX4X54	224354 334354
XX4X55	234355 324355
XX544X	235442 335443
XX545X	235453
XX54X1	235431 335421
XX54X4	235424 335434
XX54X5	235435 335435
XX554X	235543 335542
XX555X	335553
XX55X1	335531
XX55X4	235534
XX55X5	335535
XX5X11	335311
XX5X44	335344
XX5X45	235345
XX5X54	235354
XX5X55	335355
XXX111	223111 232111 322111 333111
XXX444	332444

X CHARTS

GROUP 3 X CONT.	
XXX445	232445
	322445
XXX454	223454
	232454
	322454
	333454
XXX455	323455
	332455
XXX544	223544
	333544
XXX545	233545
	323545
XXX554	233554
	323554

GROUP 4 X	
11XXXX	112323
	112332
	113223
	113232
	113322
1X1XXX	131223
	131232
	131322
	131333
1X4XXX	124223
	124232
	124322
	134222
	134233
	134323
	134332
1X5XXX	135322
	135333
1XX1XX	123123
	123132
	132123
	132132
	133122
	133133
1XX4XX	122423
	122432
	123422
	123433
	132422
	132433
	133423
	133432
1XX5XX	123532
	133533

GROUP 4 X CONT.	
1XXX1X	122313
	123213
	123312
	132213
	132312
	133212
1XXX4X	133313
	122243
1XXX5X	122342
	123242
	123343
	132242
1XXXX1	123343
	132242
	132343
	132343
	132343
	133243
	133243
	133342
	122353
	133353
1XXXX4	122331
	123231
	123321
	132231
	132321
1XXXX4	133221
	123224
	132224
	132224
1XXXX5	123235
	132235
44XXXX	442233
	442323
	442332
	443223
	443232
	443322
45XXXX	453222
	453233
	453323
	453332
4X1XXX	421223
	421232
	421322
	421332
	421333
	431222
4X4XXX	424222
	424233
	424323
	424332
	434223
	434322
1XXX1X	122313
	123213
	123312
	132213
	132312
	133212
133313	133212
	133212
	133313

GROUP 4 X CONT.	
1XXX4X	122243
	122342
	123242
	123343
	132242
	132343
1XXX5X	133243
	133342
1XXXX1	122353
	133353
1XXXX4	123224
	132224
1XXXX5	123235
	132235
44XXXX	442233
	442323
	442332
	443223
	443232
	443322
45XXXX	453222
	453233
	453323
	453332
4X1XXX	421223
	421232
	421322
	421332
	431222
	431233
4X4XXX	431323
	431332
	424222
	424233
	424323
	424332
4X5XXX	434322
	434333
4X5XXX	435323
	435332

GROUP 4 X CONT.	
4XX1XX	422123
	422132
	423122
	423133
	432122
	432133
4XX4XX	433123
	433132
4XX5XX	422422
	422433
	423423
	423432
4XX1X	423432
	423432
	432423
	432423
	432432
	433422
4XX4X	423533
	433532
	422213
	422312
	423212
	423313
4XX5X	432212
	432313
	432212
	432313
	433213
	433312
4XX4X	422242
	422343
	423243
	423342
	432243
	432342
4XX5X	423353
	432353
4XXXX1	422231
	422321
	423221
	423331
	432221
	432331
4XXXX4	433231
	433321
	422234
	422334
	423234
	423324
4XXXX5	432234
	432324
	423335
	432335
	432335
	433235

GROUP 4 X CONT.	
54XXXX	542223
	542232
	542322
	542333
	543222
	543233
55XXXX	543323
	543332
5X1XXX	553223
	553232
	553322
5X4XXX	531223
	531232
	531322
	531322
	531333
5X5XXX	534222
	534233
	534323
5XX1XX	534332
	535322
	535333
5XX4XX	532123
	532132
	533122
5XX5XX	533133
	532422
	532433
X1XX4X	533423
	533432
	533533
	212243
	212342
	213242
213343	
X1XX5X	312242
	312343
X1XXX1	313243
	313243
	313342
X1XXX1	212353
	212353
X1XXX1	212331
	213231
	213321
	312231
	312321

X CHARTS

GROUP 4 X CONT.	
X1XXX4	212234
	212324
	213224
	213334
	312224
	312334
	313234
	313324
X1XXX5	212335
	213235
	312235
	313335
X44XXX	244222
	244233
	244323
	244332
	344223
	344232
	344322
	344333
X45XXX	245322
	245333
	345323
	345332
X4X1XX	242123
	242132
	243122
	243133
	342122
	342133
	343123
	343132
X4X4XX	242422
	242433
	243423
	243432
	342423
	342432
	343422
	343433
X4X5XX	243533
	343532
X4XX1X	242213
	242312
	243212
	243313
	342212
	342313
	343213
	343312

GROUP 4 X CONT.	
X4XX4X	242242
	242343
	243243
	243342
	342243
	342342
	343242
	343343
X4XX5X	243353
	342353
X4XXX1	242231
	242321
	243221
	243331
	342221
	342331
	343231
	343321
X4XXX4	242224
	242334
	243234
	243324
	342234
	342324
	343224
X4XXX5	242235
	243335
	342335
	343235
X54XXX	354222
	354233
	354323
	354332
X55XXX	355322
	355332
	355333
X5X1XX	353122
	353133
X5X4XX	353423
	353432
X5X5XX	353533
X5XX1X	353212
	353313
X5XX4X	353243
	353342
X5XX5X	353353
X5XXX1	353221
	353331
X5XXX4	353234
	353324
X5XXX5	353335

GROUP 4 X CONT.	
XX11XX	221133
	231123
	231132
	321123
	321132
	331122
	331133
XX1X1X	221313
	231213
	231312
	321213
	321312
	331212
	331313
XX1X4X	221243
	221342
	231242
	231343
	321242
	321343
	331243
	331342
XX1X5X	221353
	331353
XX1XX1	221331
	231231
	231321
	321231
	321321
	331221
	331331
XX1XX4	221234
	221324
	231224
	231334
	321224
	321334
	331234
	331324
XX1XX5	221335
	231235
	321235
	331335
XX44XX	224422
	224433
	234423
	234432
	324423
	324432
	334423
	334432

GROUP 4 X CONT.	
XX45XX	224532
	234533
	324533
	334532
XX4X1X	224213
	224312
	234212
	234313
	324212
	324313
	334213
	334312
XX4X4X	224242
	224343
	234243
	234342
	324243
	324342
	334242
	334343
XX4X5X	234353
	324353
XX4XX1	224231
	224321
	234221
	234331
	324221
	324331
	334231
	334321
XX4XX4	224224
	224334
	234234
	234324
	324234
	324324
	334224
	334334
XX4XX5	224235
	234335
	324335
	334235
XX54XX	235422
	235433
	335423
	335432
XX55XX	235532
	335533
XX5X1X	235312
	335313

GROUP 4 X CONT.	
XX5X4X	235343
	335342
XX5X5X	335353
XX5XX1	235321
	335331
XX5XX4	235334
	335324
XX5XX5	335335
XXX11X	223113
	232113
	233112
	322113
	323112
	332112
	333113
XXX1X1	223131
	232131
	233121
	322131
	323121
	332121
	333131
XXX1X4	223124
	232124
	233134
	322124
	323134
	332134
	333124
XXX1X5	223135
	232135
	322135
	333135
XXX44X	222442
	223443
	232443
	233442
	322443
	323442
	332442
	333443
XXX45X	222453
	233453
	323453
	332453

X CHARTS

GROUP 4 X CONT.	
XXX4X1	222431
	223421
	232421
	233431
	322421
	323431
	332431
	333421
XXX4X4	222424
	223434
	233424
	322434
	323424
	332424
XXX4X5	233435
	323435
	332435
XXX54X	223542
	233543
	323543
	333542
XXX55X	223553
	333553
XXX5X1	223531
	333531
XXX5X4	233534
	323534
XXX5X5	223535
	333535
XXXX11	223311
	232311
	233211
	322311
	323211
	332211
XXXX44	232344
	233244
	322344
	332244
XXXX45	223245
	232245
	322245
	323345
	332345
	333245
XXXX54	233354
	323354
	332354
XXXX55	232355
	322355

GROUP 5 X	
1XXXXX	122322
	123233
	132233
	133223
	133322
4XXXXX	422233
	422323
	422332
	423223
	423232
	432223
	432232
	432322
	432333
	433222
	433233
	433323
5XXXXX	532233
	532323
	532332
	533223
	533232
	533322
X1XXXX	212223
	212232
	212322
	213222
	213223
	213232
	213322
	213323
	213332
	312233
	312323
	312332
	313223
	313232
	313322
X4XXXX	242233
	242323
	242332
	243223
	243232
	243322
	342223
	342232
	342322
	342333
	343222
	343233
	343323
	343332

GROUP 5 X CONT.	
X5XXXX	353223
	353232
	353322
XX1XXX	221223
	221232
	221322
	231222
	231233
	231323
	231332
	321222
	321233
	321323
	321332
	331223
	331232
	331322
XX4XXX	224233
	224323
	224332
	234223
	234232
	234322
	234333
	234333
	324223
	324232
	324322
	324333
	334222
	334233
	334323
	334332
XX5XXX	235323
	235332
	235322
XXX1XX	223122
	223133
	232122
	232133
	233122
	233132
	322122
	322133
	322222
	322233
	322322
	322333
	332122
	332132
	332132
	332132
	333122

GROUP 5 X CONT.	
XXX4XX	223423
	223432
	232423
	232432
	233422
	233433
	322423
	322432
	323422
	323433
	332422
	332433
	333423
	333432
XXX5XX	223533
	233532
	323532
XXXX1X	222312
	223212
	223313
	232212
	232313
	233213
	233312
	322212
	322313
	323213
	323312
	332213
	333212
	333212
XXXX4X	223243
	223342
	232243
	232342
	233242
	233343
	322243
	322342
	323242
	323343
	332242
	332343
	333243
XXXX5X	223353
	232353
	322353

GROUP 5 X CONT.	
XXXXX1	222321
	223221
	223331
	232221
	232331
	233231
	233321
	322331
	323231
	323321
	332231
	332321
	333221
XXXXX4	223234
	223324
	232234
	232324
	233224
	332224
	332334
XXXXX5	232335
	233235
	322335
	323235
	332235

GROUP 6X

XXXXXX	233222
	233233
	323222
	333223