

SF SERIES LOW CLEARANCE SPLIT FRAME

TABLE OF CONTENTS

SECTION I.	STANDARD EQUIPMENT	1
SECTION II.	SAFETY	
	Safety Instructions	2-5
SECTION III.	EC DECLARATION OF CONFORMITY	6
SECTION IV.	MACHINE SPECIFICATIONS	7
SECTION V.	SET UP & OPERATING PROCEDURES.....	8-14
	A. Pre Set-Up inspection.....	8
	B. Split Frame Mounting & Setup Procedures.....	8-10
	C. LCSF Installation on Open Ended Pipe/Tube.....	10-11
	D. LCSF Centering.....	11
	E. Tooling Adjustment Procedure.....	11-13
	F. Counterbore Setup & Operation.....	13-14
	G. Machine Disassembly & Removal.....	14
SECTION VI.	MAINTENANCE.....	15-19
	Extended Star Tool Slide Trip Assembly Configuration.....	15
	“V” Bearing Adjustment Procedure.....	16-17
	LCSF Lubrication Information.....	18
SECTION VII.	OPERATIONAL CHARTS & GRAPHS.....	20-24
	Radial & Axial Clearance Diagram & Chart.....	21
	SF/3 Clamp Pad Extension Chart.....	22-23
	LCSF/3 Setup & Operating Quick Reference Guide.....	24
SECTION VIII.	CONSUMABLE SELECTION CHARTS.....	25-26
SECTION IX.	TROUBLE SHOOTING.....	27-28
SECTION X.	LCSF PARTS LISTS AND EXPLODED VIEWS.....	29-63
SECTION XI.	ORDERING INFORMATION.....	64

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION I

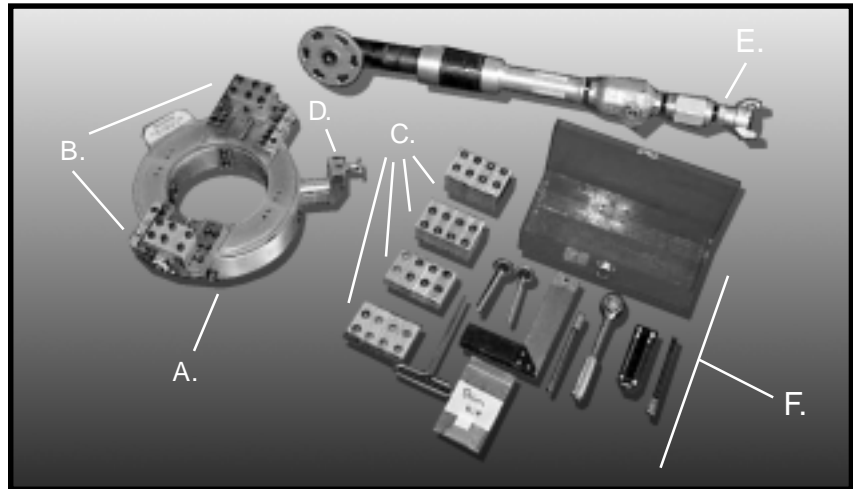
STANDARD EQUIPMENT

INTRODUCTION:

The Wachs Low Clearance Cutting System offers unmatched versatility. It can cut, bevel, double bevel, or counterbore. It can be used for heavy wall or thin wall applications as well as socket weld removal. The Wachs LCSF machines do it all.

PACKAGING:

The Split Frame machine is packaged in a high impact, heavy duty molded plastic storage case. Inside the storage case is a molded foam insert that is custom cut to house the machine, accessories, tools, and tooling required for its operation. Split frame machines larger than 1420 are packaged in a portable wooden container with molded foam insert, custom cut to house the machine, accessories, tools and tooling required for operation.



FEATURES:

Lightweight, rugged design makes the Low Clearance Split Frame ideal for cutting and prepping in tight places.

Simple design boasts a significant 40% reduction in total moving parts while increasing part interchangeability.

Heavy duty applications are made easy with the low clearance split frame, capable of severing 4" diameter bar stock using the four inch machine.

Flexibility and ease of use are important characteristics wherein the machines 3/4" stroke will bevel 3/4" wall without having to reset the tool.

Fasteners are captivated and require only one wrench size for adjustments.

Preloaded adjustable bearings work in conjunction with hardened and ground bearing raceways to maximize dependability and performance.

The clamping system is engineered to simply and automatically square to the pipe.

Tool slides are hardened and ground for strength, long life and maximum precision.

Precise counterbore capability is available with a unique new pivoting "cross frame" mounting bridge slide.

Available in hydraulic or pneumatic drive.

Wachs LCSF Standard Equipment:

- A. Split Frame Machine
- B. Tool Slides
- C. Clamp Pad Extensions
- D. Trip Assembly
- E. Air Motor
- F. Tool Kit

LCSF Optional Equipment:

- Single Point Bridge Slide
- Low Clearance Tool Slides
- Extended Tool Slides
- "Swing away" Counterbore Bridge Slide
- Pneumatic, Electric or Hydraulic Drive
- Extension Legs
- Tooling (standard and custom)
- Rounding Shoes for thin wall applications

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION II

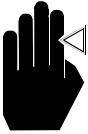

SAFETY INSTRUCTIONS

The E. H. Wachs Company takes great pride in manufacturing safe, quality products with user safety a priority.

The E.H. Wachs Company recommends that all users comply with the following safety rules and instructions when operating our equipment.



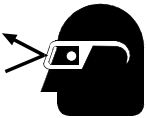
Read the following thoroughly before proceeding.

	CAUTION Keep hands, arms and fingers clear of all rotating or moving parts. Always disconnect power source before attempting any adjustments requiring contact with the machine or it's accessories.
	CAUTION Always disconnect machine from power source before moving machine and/or removing motor.


1. **READ THE OPERATING MANUAL!!** Reading the setup and operating instructions prior to beginning the setup procedures can save valuable time and help prevent injury to operators or damage to machines.
2. **INSPECT MACHINE & ACCESSORIES!** Prior to machine setup physically inspect the machine and it's accessories. Look for worn tool slides, loose bolts or nuts, lubricant leakage, excessive rust, etc. A properly maintained machine can greatly decrease the chances for injury.
3. **ALWAYS READ PLACARDS & LABELS!** All placards, labels and stickers must be clearly legible and in good condition. Replacement labels can be purchased from the manufacturer.
4. **SECURE LOOSE CLOTHING & JEWELRY!** Loose fitting clothing, jewelry; long, unbound hair can get caught in the rotating parts on machines. By keeping these things secure or removing them you can greatly reduce the chance for injury.
5. **KEEP WORK AREA CLEAR!** Be sure to keep the work area free of clutter and nonessential materials. Only allow those personnel directly associated with the work being performed to have access to the area if possible.

For your safety and the safety of others, read and understand these safety recommendations and operating instructions before operating.


ALWAYS WEAR PROTECTIVE EQUIPMENT:

	WARNING Impact resistant eye protection must be worn while operating or working near this tool.
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For additional information on eye and face protection, refer to federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

	CAUTION Personal hearing protection is recommended when operating or working near this tool.
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Hearing protectors are required in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises and resonant structures can substantially contribute to and increase the noise level in the area. For additional information on hearing protection, refer to federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.

	CAUTION Some individuals are susceptible to disorders of the hands and arms when exposed to tasks which involve highly repetitive motions and/or vibration. Disorders such as Carpal tunnel syndrome and tendonitis can be caused or aggravated by repetitious, forceful exertions of the hands and arms.
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- Use minimum hand grip force.
- Keep wrists straight.
- Avoid prolonged, continuous vibration exposure.
- Avoid repeated bending of wrists and hands.
- Keep hands and arms warm and dry.

	CAUTION Gloves are not a form of protection and should not be worn while operating machinery. Chips and debris which are generated during operation should be disposed of in a safe manner. This should be done with the use of a dust pan and broom to avoid exposure to hands.
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SICHERHEITSVORSCHRIFTEN

D

Seit 1883 hat EH Wachs seinen Ruf für Qualität und Zuverlässigkeit seinen Kunden aufgebaut. Wachs übernimmt demgemäß die zusätzliche Verantwortung, sein Bestes zu tun, einen möglichst sicheren Umgang mit seiner Ausrüstung zu gewährleisten, und hat daher eine Liste von Sicherheits-Gedächtnisstützen zusammengestellt, die den Kunden in der Erschaffung einer möglichst sicheren Arbeitsumgebung zu unterstützen. Wir empfehlen, die aufgeführten Vorsichtsmaßnahmen genau zu beachten.



BITTENACHFOLGENDESSORGFÄLTIGVORDEM FORTFAHRENDURCHLESEN!

- DIE BETRIEBSANLEITUNG LESEN!**
Bedienungsmänner können wertvolle Zeit einsparen und Verletzungen und Beschädigungen der Maschine vermeiden, wenn Sie die Aufbau- und Betriebsanleitungen vor dem Aufbau durchlesen.
- MASCHINE UND ZUSATZGERÄTE ÜBERPRÜFEN!**
Vor dem Aufbau der Maschine sollte diese und die Zusatzgeräte physisch überprüft werden. Prüfen Sie, ob abgenutzte Werkzeugschlitten, lockere Bolzen und Schraubenmütter, Schmiermittelabgänge, übermäßiger Rost, usw. bestehen. Mit einer ordnungsgemäß gewarteten Maschine kann die Wahrscheinlichkeit eines Unfalls stark verringert werden.
- IMMER INFORMATIONEN UND ETIKETTEN LESEN!**
Alle Informationen, Etiketten und Aufkleber müssen gut lesbar und in gutem Zustand sein. Vom Hersteller können Ersatzetiketten angefordert werden.
- BLEIBEN SIE ROTIERENDEN TEILEN FERN!**
Die Hände, Arme und Finger sollten von allen sich drehenden Teilen ferngehalten werden. Vor der Durchführung von Nachstellungen, die Sie in Berührung mit der Maschine oder deren Zusatzgeräte bringen, die Maschine stets abschalten!
- WEITE KLEIDUNG UND SCHMUCK BEFESTIGEN!**
Weite Kleidung, Schmuck und lange, nicht gelöstes Haar können in den rotierenden Teilen der Maschine hängenbleiben. Die Wahrscheinlichkeit einer Verletzung kann stark herabgesetzt werden, wenn Sie diese Dinge befestigen bzw. abnehmen.
- ARBEITSBEREICH FREIHALTEN!**
Stets darauf achten, daß sich keine unnötigen Materialien, usw. im Arbeitsbereich befinden. Nur dem direkt mit der zu leistenden Arbeit in Zusammenhang stehenden Personal Zugang zum Arbeitsbereich gestatten!

STETS SCHUTZAUSRÜSTUNG TRAGEN!

WARNUNG!
Schlagblegfeste Augenschutz-zbrillen müssen stets bei Betrieb dieses Werkzeugs oder in der Nähe dieses Werkzeugs getragen werden.

ACHTUNG!
Ein Ohrenschutz muß stets bei Betrieb dieses Werkzeugs oder in der Nähe dieses Werkzeugs getragen werden.

ACHTUNG!
Manche Personen leiden an Funktionsstörungen der Hände und Arme, wenn sie sich dauernd wiederholende Aufgaben auszuführen haben, die andauernde Bewegungen und/oder Schwingungen mit sich führen. Funktion-störungen, wie beispielsweise Handwurzeln- und Sehnenentzündungen, können durch eine sich wiederholende und mit viel Kraft ausgeübter Anwendung der Hände und Arme entweder hervorgerufen oder verschlimmert werden.

ACHTUNG!
Während des Betriebs von allen rotierenden Teilen Abstand halten. Außer während des An- und Abhaltens sollten Hände und Arme nicht näher als 60 cm an die sich bewegenden Teile herankommen.

ACHTUNG!
Handschuhe stellen keinen Schutz dar und sollten nicht während des Betriebs der Maschinen getragen werden. Alle während des Betriebs entstandenen Splitter und Überreste sollten auf sichere Art und Weise entsorgt werden. Verwenden Sie dazu eine Kehrschaufel und vermeiden Sie den direkten Kontakt mit den Händen.

CONSIGNE DE SÉCURITÉ

F



Lisez ce qui suit avant d'aller plus avant

- LIRE LE MANUEL D'UTILISATION !!**
En lisant les instructions de réglage et de fonctionnement avant de commencer les procédures de réglage, vous pourrez économiser un temps précieux et vous éviterez aux machinistes de se blesser et d'abîmer les machines.
- INSPECTER LA MACHINE ET LES ACCESSOIRES !**
Avant de régler la machine, inspectez-la à l'oeil nu ainsi que ses accessoires. Recherchez les outils coulissants usagés, les boulons ou les écrous desserrés, les fuites de lubrifiant, les dépôts de rouille excessifs, etc. Avec une maintenance adéquate, vous diminuerez sensiblement les risques d'accidents.
- LIRE SYSTÉMATIQUEMENT LES AFFICHES ET ÉTIQUETTES !**
Toutes les affiches, étiquettes et autocollants doivent être parfaitement lisibles et en bon état. Vous pouvez acheter de nouvelles étiquettes auprès du fabricant.
- SE TENIR À DISTANCE DES PIÈCES ROTATIVES !**
Tenez vos mains, bras et doigts éloignés de toutes pièces rotatives ou mobiles. Arrêtez toujours la machine avant de tenter de procéder au moindre réglage nécessitant un contact avec la machine ou ses accessoires.
- PRENDRE GARDE AUX VÊTEMENTS AMPLES ET AUX BIJOUX !**
Les vêtements amples, les bijoux, et les cheveux longs qui ne sont pas attachés peuvent être pris dans les pièces rotatives des machines. Enlevez ou attachez ce qui gêne de façon à réduire au maximum les risques d'accident.
- CONSERVER UNE AIRE DE TRAVAIL DÉGAGÉE !**
Ayez bien soin d'enlever les débris et les matériaux qui ne sont pas indispensables. N'autorisez que la présence des employés chargés du travail en cours d'exécution pour dégager au mieux l'aire de travail.

PORTER TOUJOURS UN ÉQUIPEMENT DE PROTECTION

AVERTISSEMENT
Protégez vos yeux avec des lunettes de sécurité antichoc lorsque cet outil est en marche ou si vous travaillez à proximité.

ATTENTION
Il est absolument indispensable de vous protéger contre les oreilles lorsque cet outil est en marche ou si vous travaillez à proximité.

ATTENTION
Certaines personnes sont particulièrement sujettes aux troubles articulaires des mains et des bras lorsqu'elles sont soumises à des tâches nécessitant des gestes très répétitifs ou/et lorsqu'elles sont exposées à des vibrations. Le syndrome du canal carpien et les tendinites peuvent résulter ou être aggravés par des efforts rigoureux des bras et des mains.

ATTENTION
Tenez-vous à distance des pièces rotatives pendant le fonctionnement. Éloignez vos mains et vos bras d'au moins 60 cm de toutes les pièces en mouvement, sauf au démarrage et à l'arrêt.

ATTENTION
Les gants ne constituent pas une forme de protection et ne doivent pas être portés pour faire fonctionner la machinerie. Les éclats et débris qui sont produits pendant l'opération doivent être débarrassés avec précaution. Pour cela, il convient d'utiliser un balai et une pelle pour éviter de les toucher à mains nues.

INSTRUCCIONES DE SEGURIDAD

E

Desde 1883, EH Wachs ha ido forjando una reputación de calidad y compromiso hacia la satisfacción del cliente. De acuerdo con esto, Wachs debe aceptar la responsabilidad adicional de hacer todo lo posible para asegurar el uso seguro de nuestros equipos. Hemos reunido una lista de recordatorios de seguridad para ayudarle a crear el ambiente de trabajo más seguro posible. Recomendamos se observen cuidadosamente los pasos de precaución enumerados en la misma.



Lea lo siguiente detenidamente antes de proceder

- ¡ LEA EL MANUAL DE OPERACIONES !!**
La lectura de las instrucciones de instalación y operación antes de comenzar los procedimientos de instalación puede ahorrarle tiempo valioso y ayudarle a evitar daños a operarios o daño a las máquinas.
- ¡ INSPECCIONE LA MÁQUINA Y LOS ACCESORIOS !**
Antes de la instalación de la máquina inspeccione físicamente la máquina y sus accesorios. Busque muecas de herramientas usadas, pernos o tuercas flojas, fugas de lubricante, excesiva corrosión, etc. Una máquina mantenida adecuadamente puede disminuir grandemente las ocasiones de daños.
- ¡ LEA SIEMPRE LOS LETREROS Y ETIQUETAS !**
Todos los letreros, etiquetas y adhesivos deben ser claramente legibles y estar en buenas condiciones. Pueden comprarse etiquetas de repuesto del fabricante.
- ¡ MANTÉNGASE ALEJADO DE PIEZAS GIRATORIAS !**
Mantenga las manos, brazos y dedos alejados de todas las piezas rotatorias o en movimiento. Desconecte siempre la máquina antes de intentar ningún ajuste que requiera entrar en contacto con la máquina o sus accesorios.
- ¡ ASEGURE LA ROPA SUELTA Y JOYERÍA !**
La ropa suelta, joyería, pelo largo y sin atar pueden engancharse en las partes rotatorias de las máquinas. Usted puede reducir grandemente las oportunidades de un accidente asegurando estas cosas o despojándose de ellas.
- ¡ MANTENGA LIMPIA EL ÁREA DE TRABAJO !**
Asegúrese de mantener el área de trabajo libre de obstáculos y materiales no esenciales. Si es posible permita solamente el acceso al área a aquellas personas directamente asociadas con el trabajo que se está realizando.

USE SIEMPRE EQUIPO PROTECTOR:

AVISO
Debe usarse protección ocular resistente al impacto mientras se opere o trabaje cerca de esta herramienta.

PRECAUCIÓN
e requiere en todo momento protección auditiva personal cuando opere o trabaje cerca de esta herramienta.

PRECAUCIÓN
Algunos individuos son susceptibles a desórdenes de brazos y manos cuando son sometidos a tareas que llevan consigo movimientos altamente repetitivos y/o vibración. Desórdenes tales como el síndrome del túnel carpiano y ten-doritis pueden ser causados o agravados por esfuerzos repetitivos y energéticos de las manos y brazos.

PRECAUCIÓN
Manténgase alejado de las partes giratorias durante la operación. Las manos y los brazos deben mantenerse a una distancia mínima de 60 cm (2') de las partes móviles, excepto al empezar y al detener la operación.

PRECAUCIÓN
Los guantes no son un medio de protección y no deben usarse al operar la maquinaria. Se deben desechar los fragmentos y escombros generados durante la operación, tomando en cuenta la seguridad de las personas. Esto debe hacerse con una pala para recoger basura y una escoba para evitar el contacto con las manos.

INDICAZIONI PER LA SICUREZZA D'USO

I

Fin dal 1883, l'EH Wachs si è guadagnata una reputazione per quanto riguarda qualità e impegno nella soddisfazione dei clienti. In questa ottica, alla Wachs dobbiamo anche assumerci la responsabilità di fare del nostro meglio per garantire la massima sicurezza d'uso dei nostri apparecchi. Abbiamo preparato un elenco di avvisi di sicurezza come ausilio nel creare il più sicuro ambiente di lavoro possibile. Raccomandiamo di seguire attentamente le precauzioni elencate.



Leggere attentamente quanto segue prima di proseguire.

- LEGGERE IL MANUALE D'USO !!**
Leggere le istruzioni per la messa a punto e l'uso prima di iniziare la messa a punto per risparmiare tempo prezioso e prevenire lesioni e danni al macchinario.
- CONTROLLARE LA MACCHINA E GLI ACCESSORI !**
Prima di mettere a punto la macchina, controllare sia la macchina che gli accessori. Verificare che le slitte portautensili non siano consumate, che i bulloni e i dadi non siano allentati, che non vi siano perdite di lubrificante, ruggine eccessiva, ecc. Una macchina ben mantenuta può ridurre notevolmente le possibilità di danni.
- LEGGERE SEMPRE TARGHETTE ED ETICHETTE !**
Tutte le targhette, le etichette e gli adesivi devono essere chiaramente leggibili e in buone condizioni. Si possono acquistare etichette di ricambio presso il produttore.
- NON AVVICINARSI A PARTI IN MOVIMENTO !**
Tenere mani, braccia e dita ben lontane da tutte le parti in movimento. Spegnerle sempre la macchina prima di effettuare regolazioni che richiedono il contatto con la macchina o i suoi accessori.
- FISSARE INDUMENTI E GIOIELLERIA !**
Indumenti larghi, gioielli pendenti o lunghi; capelli lunghi sciolti possono rimanere incastrati nelle parti rotanti sulle macchine. Fissandoli o rimuovendoli si può ridurre notevolmente il rischio di lesioni.
- MANTENERE L'AREA DI LAVORO SGOMBRATA !**
Mantenere l'area di lavoro sgombra da materiale non essenziale. Se possibile, consentire l'accesso solamente al personale direttamente interessato nel lavoro svolto.

INDOSSARE SEMPRE INDUMENTI PROTETTIVI:

ATTENZIONE
Indossare occhiali di sicurezza resistenti all'urto durante l'uso di questo strumento o quando si lavora in sua prossimità.

AVVERTENZA
Indossare sempre protezione auricolare durante l'uso di questo strumento o quando si lavora in sua prossimità.

AVVERTENZA
Alcuni individui possono soffrire disturbi alle mani e alle braccia nell'esecuzione di mansioni che comportino movimenti alta-mente ripetitivi e/o vibrazione. Disturbi quali la sindrome del tunnel carpale e tendiniti possono essere causati o aggravati da sforzi ripetitivi delle mani e delle braccia.

ATTENZIONE
Stare lontani da parti rotanti durante l'uso. Tenere mani e braccia ad almeno 60 centimetri di distanza da parti in movimento tranne durante l'avvio e l'arresto.

ATTENZIONE
I guanti non costituiscono una forma di protezione e non dovrebbero essere indossati durante l'uso delle macchine. Schegge e detriti generati durante l'uso devono essere smaltiti in modo sicuro, usando una palette e una scopa per evitare di toccarli con le mani.

VEILIGHEIDSRICHTLIJNEN

N

Sinds 1883 heeft de firma E.H.Wachs een reputatie opgebouwd voor kwaliteit en heeft zich geëngageerd om voldoening te schenken aan de gebruiker. Dienovereenkomstig heeft E.H.Wachs de bijkomende verantwoordelijkheid op zich genomen het uiterste te betrekken om het gebruik van onze apparatuur onder de meest veilige omstandigheden te verzekeren.

We hebben een lijst samengesteld van veiligheidsaanbevelingen teneinde de meest veilige werkomgeving te scheppen.



We raden aan de hieronder vermelde voorzorgsmaatregelen strikt na te leven. Lees het volgende aandachtig vooraleer verder te gaan.

1. LEES HET BEDIENINGSHANDBOEK!

Lees de opstel- en bedieningsrichtlijnen vooraleer met de opstelwerkzaamheden te beginnen om kostbare tijd te besparen en om persoonlijke letsels en schade aan de machines te voorkomen.

2. INSPECTEER DE MACHINE EN TOEBEHOREN

Vooraleer de machine op te stellen, inspecteer de machine en haar toebehoren. Kijk uit voor versleten gereedschapsleden, losse bouten en moeren, olie lekken, overmatige roest, enz.. Een goed onderhouden machine kan de kans voor kwetsuren aanzienlijk verminderen.

3. LEES ALTIJD DE PLAKKAATEN EN ETIKETTES

Alle plakkaaten, etiketten en zelfklevers moeten duidelijk leesbaar zijn en in goede staat. Vervangingsetiketten kunnen bij de fabrikant gekocht worden.

4. HOUD AFSTAND VAN DRAAIENDE ONDERDELEN

Houd handen, armen en vingers weg van alle draaiende of bewegende onderdelen. Schakel de machine uit vooraleer afregelingen te verrichten die contact vereisen met de machine of haar toebehoren.

5. VERMIJD LOSSE KLEDING EN SIERADEN

Los zittende kleding, sieraden, en lang los haar kunnen door draaiende machineonderdelen gegrepen worden. Door ze vast te maken of ze te verwijderen kunt u de kans op verwondingen aanzienlijk verkleinen.

6. HOUD DE WERKRUIJME VRIJ

Zorg ervoor dat de werkruijme vrij is van rommel en onnodige materialen. Toegang tot de werkruijme moet indien mogelijk enkel verleend worden aan personen die direct betrokken zijn bij het uit te voeren werk.

DRAAG ALTIJD BESCHERMENDE UITRUSTING

WAARSCHUWING

Een veiligheidsbril moet gedragen worden bij het bedienen van dit gereedschap of bij het werken in de buurt van dit gereedschap.

VOORZICHTIG

Persoonlijke gehoorbeschermering is aangeraden bij het bedienen van dit gereedschap of bij het werken in de buurt van dit gereedschap.

VOORZICHTIG

Sommige personen zijn vatbaar voor hand- en arm-letsels wanneer zij blootgesteld zijn aan trillingen of handelingen die hoogst rep-ettieve bewe-gingen ver-gen. Letsels zoals Carpal tunnel syndroom en tendinitis kunnen veroor-zaakt worden of verergeren door rep-ettieve krachtingspanningen van handen en armen.

VOORZICHTIG

Blijf tijdens het bedrijf op veilige afstand van draaiende onderdelen. Houd handen en armen minstens 5 cm weg van bewegende onderdelen, behalve tijdens het starten en stoppen.

VOORZICHTIG

Handschoenen zijn geen vorm van bescherming en mogen niet worden gedragen terwijl u de machines bedient. Dooltes en rommel die tijdens het bedrijf ontstaan, moeten op een veilige manier worden opgeruimd. Dit dient te worden gedaan met een bezem en in blik om blootstelling van de handen te voorkomen.

SÄKERHETSANVISNINGAR

S

EH Wachs har sedan 1883 etablerat ett gott anseende när det gäller kvalitet och kundtillfredsställelse. Wachs känner sig därför förpliktigt att göra sitt yttersta för att garantera säkrast möjliga användning av Wachs-utrustning.

Vi har ställt samman en lista av säkerhetsanvisningar som ett led i vår strävan att skapa säkrast möjliga arbetsmiljö. Vi rekommenderar att de försiktighetsåtgärder som förtecknats följs noggrant.



Läs igenom nedanstående ordentligt innan du fortsätter.

1. LÄS IGENOM BRUKSANVISNINGEN!

Genomläsning av anvisningarna för klargöring och drift innan klargöringen påbörjas kan medföra en värdelöst tidsbesparing och bidra till att person- och maskinskador undviks.

2. KONTROLLERA MASKINEN OCH DESS TILLBEHÖR!

Kontrollera maskinen och besiktiga dess tillbehör. Se efter om verktyghållare är slita, skruvar och muttrar lösa, smörjmedel läcker, kraftigt rost förekommer o.d. En korrekt underhållen maskin medför kraftigt minskad risk för personskador.

3. LÄS ALLTID SKYLTYR OCH ETIKETTER!

Alla skyltar och etiketter måste vara helt läsbara och i gott skick. Utbytestiketter kan inköpas från tillverkaren.

4. HÅLL DIG BORTA FRÅN Roterande DELAR!

Håll händer, armar och fingrar borta från roterande eller rörliga delar. Slå alltid av maskinen innan justering som kräver kontakt med maskinen eller dess tillbehör utförs.

5. STOPPA IN LÖST SITTANDE KLÄDER OCH SMYCKEN!

Löst sittande kläder och smycken samt långt, hängande hår kan fastna i maskinens roterande delar. Genom att säkra dessa eller avlägsna kläder och smycken kan du minska risken för skador avsevärt.

6. HÅLL ARBETSSTÄLLET RENT!

Var noga med att hålla arbetsstället fritt från skräp och ej behövligt material. Ge om möjligt tillgång till arbetsstället endast till personal som är direkt inbegripen i det arbete som utförs.

ANVÄND ALLTID SKYDDSUSTRUSTNING:

VARNING!

Stötsäkra skyddsglasögon måste bäras vid användning av eller arbete nära detta redskap.

OBS!

Hörselskydd krävs alltid vid användning av eller arbete nära detta redskap.

OBS!

Vissa personer är känsliga för de effekter som kan uppstå i händer och armar när de utför rörelser som är i hög grad repetitiva och/eller utsäts för vibrationer. Tillstånd såsom carpal tunnel syndrom och seninflammation kan orsakas eller förvärras om händer och armar används för att utföra repetitivt och ansträngande arbete

VARNING!

Undvik roterande delar under drift. Händer och armar bör hållas på minst 0,6 m avstånd från rörliga delar utom när maskinen startas eller slås från

VARNING!

Handskar skyddar inte och bör ej användas medan maskinen körs. Fusor och andra restprodukter som skapas under drift bör kasseras på ett säkert sätt. Använd kvast och sopskyffel för att undvika kontakt med händer.

INSTRUÇÕES DE SEGURANÇA

P

Já desde 1883 que a EH Wachs tem vindo a criar uma reputação de qualidade e um compromisso de satisfação dos consumidores. Nesta linha de conduta, a Wachs tem que assumir a acrescida responsabilidade de fazer o seu melhor para garantir a máxima segurança na utilização dos nossos equipamentos.

Acabámos de compilar uma lista de lembretes de segurança destinados a ajudar na criação de um ambiente de trabalho o mais seguro possível. Aconselhamos que sejam observadas com todo o cuidado as várias fases precaucionárias descritas a seguir.



Ante de continuar, leia com o máximo cuidado o que vai a seguir

1. Leia o Manual de Operações!

A leitura das instruções de montagem e de funcionamento antes de iniciar os procedimentos de montagem poderá poupar um tempo precioso e prevenir ferimentos no operador ou danos nas máquinas.

2. Inspeccione a máquina e respectivos acessórios!

Antes de efectuar a sua montagem, faça uma inspeção física da máquina e seus acessórios. Dirija a sua busca para peças desluzadas já usadas, parafusos e porcas soltos, derrame de lubrificantes, ferrugem excessiva, etc. A manutenção adequada do maquinismo diminuirá os riscos de ferimentos.

3. Leia sempre os cartazes e as etiquetas!

Todos os cartazes, etiquetas e autocollantes deverão ser claramente legíveis e estar em perfeitas condições. Etiquetas acessórias de substituição poderão ser encomendadas directamente do fabricante.

4. Mantenha-se fora do alcance de peças rotatórias!

Mantenha as mãos, braços e dedos fora do alcance de todas as peças rotatórias e em movimento. Desligue, primeiro, a máquina sempre que tiver de proceder a ajustamentos que requirem contacto com a máquina ou com as suas peças.

5. Aperte bem a roupa folgada e peças de joalharia!

Roupa folgada, joalharia e cabelo solto e comprido poderão ser apanhados pelas peças rotatórias das máquinas. Manter estes artigos amarrados ou desfazer-se deles será a melhor maneira de reduzir a possibilidade de ferimentos.

6. Mantenha livre a área de trabalho!

Procure manter a área de trabalho livre de ajuntamentos e de materiais não essenciais. O acesso a essa área só deverá ser permitido ao pessoal directamente envolvido no trabalho que estiver a ser executado, tanto quanto possível.

USE SEMPRE EQUIPAMENTO DE PROTECÇÃO:

AVISO!

Sempre que trabalhar com esta ferramenta ou perto dela deverá usar uma protecção para a vista, à prova de choque.

CUIDADO!

É obrigatório usar protecção individual para os ouvidos durante todo o tempo que trabalhar com esta ferramenta ou perto dela.

CUIDADO!

Há pessoas que são propensas a sofrer certos sintomas nas mãos ou nos braços quando expostos a tarefas que envolvam movimentos altamente repetitivos, acompanhados ou não de vibrações. Sintomas como, por exemplo, o síndrome do túnel carpeo e a tendinite poderão ser causados ou agravados elo uso esforçado e repetitivo das mãos e dos braços.

ATENÇÃO!

Mantenha distância das partes giratórias durante a operação. Braços e mãos devem ser mantidos a no mínimo 2 pés (60cm) das partes móveis, exceto durante a partida e parada.

ATENÇÃO!

Luvas não são uma forma de protecção e não devem ser utilizadas durante a operação do equipamento. Deve-se desfazer adequadamente das lascas e aparas produzidas durante a uso. Isto deve ser feito com a usa de pá de lixo e vassoura para evitar a cantata com as mãos.

TURVALLISUUSOHJEET

FIN

EH Wachs on tunnettu korkeasta laadusta ja tyytyväisistä asiakkaitaan jo vuodesta 1883. Wachs huolehtii myös siitä, että laitteiden käyttö on mahdollisimman turvallista.

Olemme koonneet tähän turvallisuutta koskevan muistilistan, jota noudattamalla työympäristöstä saadaan mahdollisimman turvallinen. Kehotamme noudattamaan tässä esitettyjä varoitimenpiteitä huolellisesti.



Lue seuraavat kohdat huolellisesti, ennen kuin jatkat.

1. LUE KÄYTTÖOHJEKIRJA!

Asennus- ja käyttöohjeisiin perehtyminen ennen asennuksen aloittamista säästää aikaa ja auttaa vähentämään tapaturmavaaraa ja koneiden vaurioitumisriskiä.

2. TARKASTA KONE JA LISÄLAITTEET!

Ennen kuin aloitat asennuksen, tarkasta kone ja lisälaitteet. Varmista, että teräkelkat eivät ole kuluneet, pultteja ja mutteriteita ei ole löysällä, voiteluainetta ei vuoda, konessa ei ole liikaa ruostetta jne. Hyvässä kunnossa pidetty kone voi vähentää tapaturmavaaraa huomattavasti.

3. LUE KAIKKI KILVET JA MERKINNÄT!

Kaikkien kilpien, merkintöjen ja tarrojen on oltava selkeästi luettavissa ja hyvässä kunnossa. Vaihottarvoja voit ostaa valmistajalta.

4. PYSYTTLE ETÄÄLLÄ PYÖRIVISTÄ OSISTA!

Pidä kädet, käsivarret ja somet loitolla kaikista pyörivistä tai liikkuvista osista. Kytke kone aina pois päältä ennen kuin suoritat säätöjä, joissa joudut koskemaan koneeseen tai sen lisälaitteisiin.

5. SIDO LÖYSÄT VAATTEET JA HIUKSET KIINNI!

Löysät vaatteet, korut ja pitkät hiukset voivat takertua koneen pyöriviin osiin. Vähennät tapaturmavaaraa huomattavasti, kun poistat tai sidot kiinni löysät vaatteet ja korut ja sidot hiukset kiinni.

6. PIDÄ TYÖSKENTELYALUEELLE SIISTINÄ!

Varmista, että työskentelyalueella ei ole roskia eikä tarpeetonta materiaalia. Päästä työskentelyalueelle vain käsillä olevaan työhön osallistuvia henkilöitä, mikäli mahdollista.

KÄYTÄ AINA SUOJAVÄLINEITÄ:

VAROITUS

Käytä iskunkestäviä suojalaseja, kun käytät tätä työkalua tai työskentelet sen lähellä.

HUOMAA

Kuulosuojainten käyttöä vaaditaan aina, kun käytät tätä työkalua tai työskentelet sen lähellä.

HUOMAA

Pitkään jatkuva altistuminen toistuvalla liikkeellä ja/tai tärinällä voi aiheuttaa käsien ja käsivarsien sairauksia ja käsivarsien ja käsivarsiin kohdistuva tu-toistua ja voimakas liike voi aiheuttaa tai pahentaa sairauksia kuten rannekanavaoirey-hymä ja jännetulehdus.

VAROITUS

Pysyttele loitolla pyörivistä osista käytön aikana. Kädet ja käsivarret tulee pitää vähintään 60 cm:n päässä liikkuvista osista paitsi käynnistyksen ja pysäytyksen aikana.

VAROITUS

Käsineet eivät toimi suojavälineinä, eikä niitä tule käyttää koneita käytettäessä. Käytön aikana syntyvät lastut ja jätte tulee hävittää turvallisella tavalla. Tämä tulee tehdä. Rikkalapiota ja harjaa käyttäen käsien altistumisen välttämiseksi.

ANVISNING I SIKKERHED

DK

Siden 1883 har EH Wachs haft ry for deres kvalitet og varetagelse af kundetilfredshed og vi også gøre vort bedste for at sikre, at vore maskiner benyttes på en sikker og forsvarlig måde.

Vi har lavet en liste over påmindelser, der skal bidrage til at skabe det sikrest mulige arbejdsmiljø. Vi anbefaler, at sikkerhedsforanstaltningerne på listen omhyggeligt overholdes.



Læs følgende grundigt, inden der foretages andet

1. LÆS BRUGSANVISNINGEN!!

Hvis man læser anvisningerne i klargøring og drift, inden man begynder at gøre maskinen klar, kan man spare tid og forhindre person- og maskinskade.

2. INSPICÉR MASKINE OG Udstyr!

Inden maskinen gøres klar, skal man inspicere maskinen og udstyret. Se efter slide fittings, løse bolte og møtrikker, olielækager, rust osv. Når maskinen holdes i god stand, er der langt mindre risiko for personskade.

3. LÆS ALTID SKILTE OG ETIKETTER!

Alle skilte og etiketter skal være letlæselige og i god stand. Nye skilte og etiketter fås hos forhandleren.

4. HOLD AFSTAND TIL BEVÆGELIGE DELE!

Hold hænder, arme og fingre væk fra alle roterende og bevægelige dele. Man skal altid slukke for maskinen, inden man påbegynder justering, hvor man kommer i kontakt med maskinen eller udstyret.

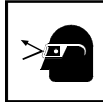
5. BRUG IKKE LØSTHÆNGENDE TØJ OG SMYKKER!

Løsthængende tøj, smykker og langt, løsthængende hår kan blive fanget i maskinens bevægelige dele. Man kan i høj grad nedsætte risikoen for personskade ved ikke at bruge løsthængende tøj og smykker og ved at samle langt hår op på hovedet.

6. HOLD ARBEJDSSTEDET RYDDET!

Arbejdsstedet skal holdes ryddeligt og fri for materialer, der ikke hører til. Uvedkommende personer bør ikke have adgang til arbejdsstedet, hvis det er muligt.

BRUG ALTID BESKYTTELSESDUSTYR:



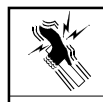
ADVARSEL

Man skal bruge slag-resistente sikkerhedsbriller, når man arbejder med eller i nærheden af denne maskine.



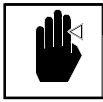
FORSIGTIG

Man skal altid bruge høreværn, når man arbejder med eller i nærheden af denne maskine.



FORSIGTIG

Nogle mennesker er disponeret for lidelser i hænder og arme, når de udsættes for opgaver, der involverer stærkt repetitiv bevægelse og/eller vibration. Sygdomme, såsom karpal-tunnelsyndrom og ten-dinitis, kan forårsages eller forværres af repetitiv, kraftig brug af hænder og arme.



FORSIGTIG

Hold dig på afstand af roterende dele under drift. Hold hænder og arme mindst 60 cm væk fra bevægelige dele, undtagen ved start og stands fling.



FORSIGTIG

Handsker er ikke en form for beskyttelse. Gå ikke med handsker, mens maskinen beljenes. Spåner og findelt materiale, som udvikles under drift, skal bortskaffes på forsvarlig måde. Dette skal gøres ved brug af en fejebakke og en kost, for at undgå påvirkning af hænderne.

ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

GR



Πριν προχωρήσετε διαβάστε όλες τις παρακάτω υποδείξεις

1. ΔΙΑΒΑΣΤΕ ΤΟ ΒΙΒΛΙΟ ΟΔΗΓΙΩΝ!

Εάν διαβάσετε τις οδηγίες πριν από την έναρξη της λειτουργίας, μπορείτε να αποφύγετε ατυχήματα και να εξοικονομήσετε χρόνο.

2. ΕΠΙΒΕΒΛΩΣΤΕ ΤΗ ΜΗΧΑΝΗ ΚΑΙ ΤΑ ΕΡΓΑΛΙΑ!

Πριν από την έναρξη της λειτουργίας, ελέγξτε την κατάσταση της μηχανής και των εργαλείων. Ελέγξτε για βλάβες, χαλαρά μπουλόνια ή βίδες, λάδια ή βρωμιά. Ελέγξτε επίσης την κατάσταση των ελαστικών και των αντιστατών.

3. ΤΑΝΤΑ ΔΙΑΒΑΣΤΕ ΤΙΣ ΠΙΝΑΚΙΔΕΣ ΚΑΙ ΤΙΣ ΕΤΙΚΕΤΕΣ!

Οι πινακίδες και οι ετικέτες περιέχουν σημαντικές πληροφορίες σχετικά με την ασφάλεια. Διαβάστε προσεκτικά όλες τις πινακίδες και τις ετικέτες.

4. ΑΠΟΝΕΜΙΣΤΕ ΑΠΟ ΤΑ ΚΙΝΗΤΑ ΜΕΡΗ ΚΑΙ ΤΑ ΕΡΓΑΛΙΑ!

Κρατήστε τα χέρια, τα πόδια και τα μαλλιά μακριά από τα κινούμενα μέρη της μηχανής και τα εργαλεία. Μην φοράτε ρούχα ή αξεσουάρ που μπορεί να γίνουν παγιδευμένα.

5. ΜΑΖΕΥΤΕ ΤΑ ΑΥΤΑ ΡΟΥΠΑ ΚΑΙ ΟΞΕΜΑΤΑ!

Μην αφήνετε ρούχα ή αξεσουάρ να κρέμονται από τη μηχανή ή τα εργαλεία. Μην αφήνετε οξέματα να συσσωρεύονται.

6. ΔΕΙΞΤΕ ΠΡΟΣΟΧΗ ΣΤΟ ΧΕΙΡΙΣΜΟ!

Χρησιμοποιήστε τη μηχανή και τα εργαλεία σύμφωνα με τις οδηγίες. Μην χρησιμοποιείτε τη μηχανή ή τα εργαλεία για άλλους σκοπούς.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

Αποφύγετε να έρχεστε σε επαφή με τα κινούμενα μέρη της μηχανής και τα εργαλεία. Η επαφή μπορεί να προκαλέσει σοβαρά τραυματισμούς.

ΠΡΟΣΟΧΗ

Κρατήστε τα χέρια, τα πόδια και τα μαλλιά μακριά από τα κινούμενα μέρη της μηχανής και τα εργαλεία.

ΠΡΟΣΟΧΗ

Μην φοράτε ρούχα ή αξεσουάρ που μπορεί να γίνουν παγιδευμένα. Μην αφήνετε οξέματα να συσσωρεύονται.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION III

EC Declaration of Conformity

Name and address of manufacturer (if different)

E.H. Wachs Company

100 Shepard St.

Wheeling, Il. 60090 USA

Distributed in the EC by:

Business address:

We declare that the machine described below conforms with the EHSR of the machinery directive 89/392/EEC and amendments 91/368/EEC, 93/44/EEC and 93/68/EEC

Machine Title:

Low Clearance Split Frame Machine

Model Number:

LCSE/3 60-000-01 thru 60-000-36

Machine Description:

Portable machinery to cut and prep pipe and tubing.

Serial Number:

Harmonized Standards Used:

EN 292, EN 292-2, EN 294, EN 349

Other Safety Standards Used:

PR: EN 982, PR: EN 983: 10/95 PR: EN 792-1 PR: EN 1050

Name of person authorized to sign on behalf of the E.H. Wachs Companies:

Rodger P. Soeldner

Position:

Vice President/CFO

Signature:



Date:

October 20, 1997

SPECIFICATIONS

Cutting tool surface speed:	60 feet per minute (30p cm.)
Machine Drive:	Pneumatic, Hydraulic or Electric
Air Requirements:	55 cfm @ 80-100 psi (1 m @ 5.6-7 Bar)
Hydraulic Requirements:	8 gpm @ 1500 psi (15-19 l/s @ 106 Bar)
Electric Requirements:	110v
Feed Method:	Starwheel Feed
Feed Rate:	Fixed @ .0026 per revolution (Starwheel)
Finish:	Hard Chrome Coating
Packaging:	Heavy Duty Carry Case



MACHINE NOISE LEVELS:

NOTE: NOISE LEVELS HAVE BEEN MEASURED AT 1 METER HIGH AND 1.6 METERS AWAY.

CONTINUOUS "A"-WEIGHTED SOUND PRESSURE LEVEL AT WORK STATION.....62dBA

PEAK "C"-WEIGHTED MAXIMUM SOUND PRESSURE.....95dBA

SOUND POWER LEVEL EMMITED BY MACHINE.....89dBA

LCSF Optional Equipment:

- Single Point Bridge Slide
- Low Clearance Tool Slides
- Extended Tool Slides
- "Swing away" Counterbore Bridge Slide
- Pneumatic, Electric or Hydraulic Drive
- Extension Legs
- Tooling (standard and custom)
- Rounding Shoes for thin wall applications

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET UP & OPERATING PROCEDURES

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION

A. Pre-Setup Inspection:

Split Frame Machine:

The LCSF ring consists of one rotating ring and one stationary ring. Each ring splits into two pieces. When assembled the rotating ring and stationary rings are integrated and split apart simultaneously for mounting on in-line piping applications. These rings are pre-assembled and adjusted prior to leaving the factory.

Tool Slides:

Wachs manufactures three sizes of tool slides for the LCSF; these are the **Low Clearance**, **Extended** and **Super Extended** slides. The low clearance slides are special order slides used when minimal radial clearance is required. Extended slides are commonly referred to as "standard" slides on split frames up to LCSF 1420. Super extended slides are used on LCSF 1824 through LCSF 3036. Check the packing list to see which slides you should have received with your Split Frame.

Clamp Pad Extensions:

These are necessary for the LCSF to cover its entire range of pipe diameters. Check Clamp Pad Chart on page 22 and 23 for size required for pipe diameter being cut.

Trip Assembly:

The trip assembly is comprised of a trip housing, a trip pin and two extension blocks. The trip can be engaged or disengaged depending upon feed requirements, by lowering or raising the trip pin. Refer to Tool Slide Mounting Location and Trip Assembly Configuration on page 15.

Air Motor:

Wachs Low Clearance Split Frames have two air motors available according to Split Frame size and application requirements. Generally, LCSF models 051 through 1420 are equipped with a 1-1/2 hp motor while models 1824 and above are equipped with a 2-1/2 hp motor. Both motors are interchangeable by design and can be used on any size Split Frame as needed.

Tool Kit:

Each LCSF is delivered from the factory with all hand tools necessary for setup and operation.

Counterbore Slide (optional):

This attachment is used for precision I.D. machining. Check the packing list to see if this attachment is part of your Split Frame package.

B. Split Frame Mounting & Setup Procedures:

NOTE: Occasionally we will reference the Split Frame to the positions on a clock. The positions are outlined in illustration A.

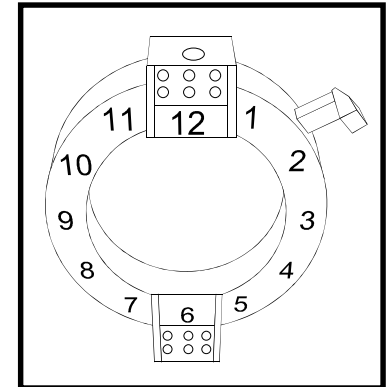


ILLUSTRATION A

1. **Remove the LCSF from the storage case.** (LCSF 051 through 1420 are packaged in a plastic carrying case. 1824 and above are housed in a custom wooden storage container.)



CAUTION: On LCSF machines 1824 and above it will be necessary to utilize additional personnel and/or equipment such as adequate rigging materials to install machine and avoid injury to personnel and damage to equipment.

2. **Insert the frame locking detent pins** (figure 1). These pins prevent the machine halves from separating when the machine is split for in-line pipe cutting applications.
3. **Install the tool slides.** For this procedure it will be assumed that the "standard" or extended slides are being used.

NOTE: Low Clearance Tool Slides have only one mounting position, Super Extended have three.

4. On the back of each of the tool slides are two rows of three holes and two fast pins (see illustration B). The holes represent the three possible mounting positions; high, mid and low range. Drop one mounting pin location for every 2" drop in pipe size from Split Frame's maximum size.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

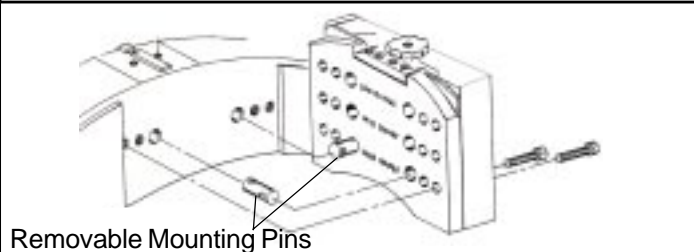
- Place the two detent pins (ball side into tool slide) into the appropriate mounting location holes for the pipe diameter being cut (see illustration B).

WARNING

INSERT END OF PIN WITH BALL DETENT SIDE INTO TOOL SLIDE WHEN CHANGING RANGE LOCATIONS. FAILURE TO DO THIS MAY CAUSE DAMAGE TO ROTATING RING BEARING ASSEMBLIES.

- Mount the tool slide to the rotating frame by tightening the four 5/16-18 SHCS in each with the supplied hex key set.

EXTENDED TOOL SLIDE



SUPER EXTENDED TOOL SLIDE

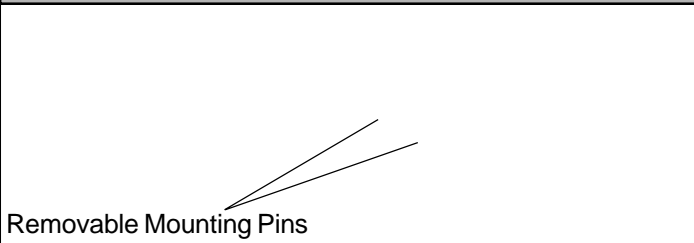


ILLUSTRATION B

- Rotate the Starwheel with the provided Hex Key set bringing the Tool Post Tool Holder to its uppermost position.

- Install the trip assembly** next by tightening the three 5/16-18 SHCS.

NOTE: Depending on tool slide range setting, it may be necessary to add a combination of extension blocks (see illustration C).

NOTE: Once the trip assembly has been properly secured, make certain that the trip pin is pulled out or in the "UP" (disengaged) position (figure 1).

TRIP RANGE CONFIGURATION 24" - 48" MACHINES

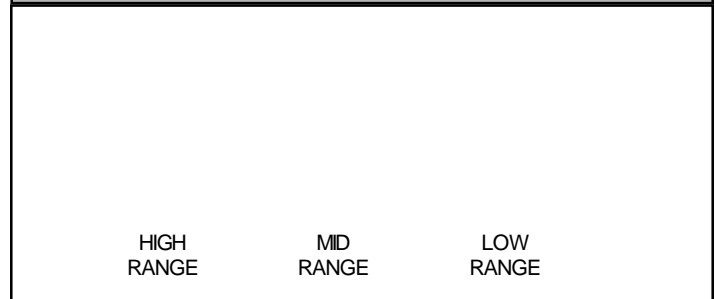


ILLUSTRATION C

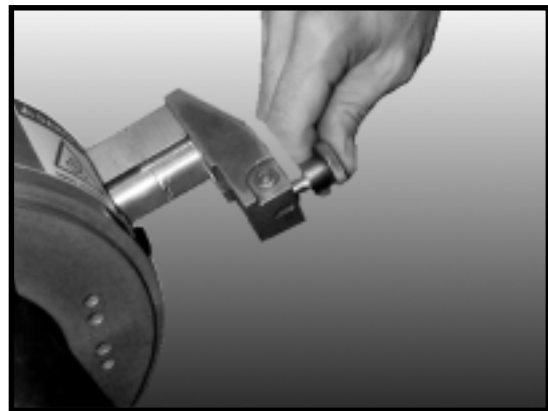


FIGURE 1

TRIP RANGE CONFIGURATION 2" - 20" MACHINES

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

9. Install the parting and beveling tools into the appropriate tool holders so the tool is resting on the entire clamping area. The cutting edge should be above the pipe O.D.(Figure 2).

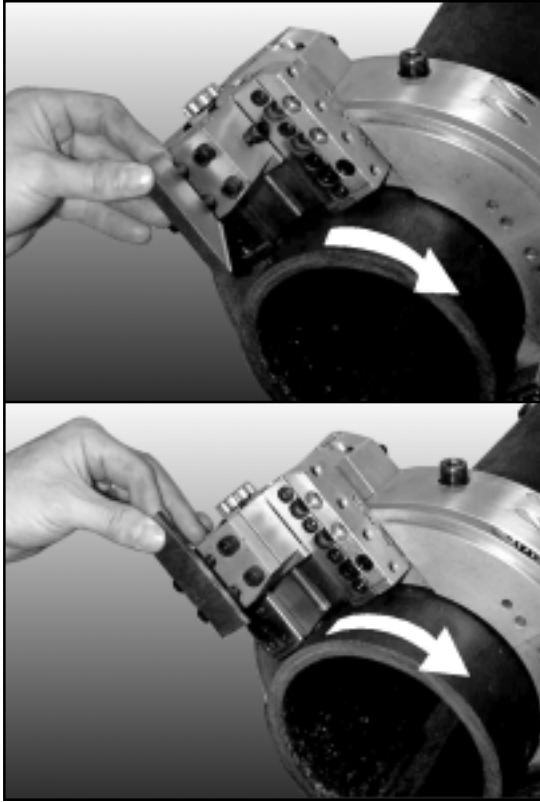


FIGURE 2

NOTE: Tighten bits into position lightly, you will be positioning them for cutting later.

NOTE: Be sure that the cutting edge of each tool bit faces clockwise when viewing machine from the front.

Install Clamp Pads

10. Measure the O.D. of the pipe to be machined and determine whether clamp pad extensions will be necessary. (Refer to the clamp pad extension chart, pages 22, 23). If clamp pad extensions are required, install them at this time (Figure 3). Part number and range is stamped on every leg.

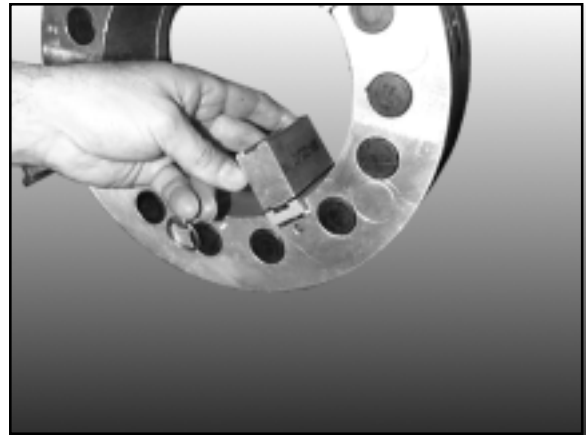


FIGURE 3

NOTE: Clamp Pads are secured with Integrated Captivated SHCS to secure themselves to the Stationary Ring.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

NOTE: If machine is to be used on open-ended pipe, continue to step #11. If split is needed, proceed to step #12.

C. LCSF Installation on open ended pipe/tube

11. For open ended workpieces, slide machine over pipe end. It may be necessary to utilize lifting equipment such as a hoist for larger models, proceed to step # 17.

NOTE: When mounting machine to the pipe, keep in mind clearances for the air motor and trip assembly. Try to allow for easiest access to both of these.

Splitting Procedure for mounting on in-line pipe



FIGURE 4

12. Loosen the six frame locking SHCS completely (figure 4).
13. Separate the machine halves. Be sure to use an equal

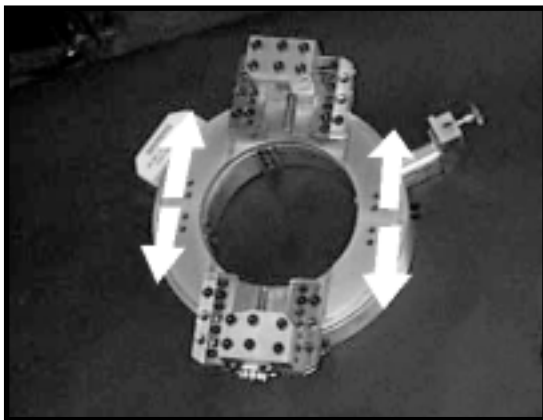


FIGURE 5

amount of force when separating to prevent the halves from binding (Figure 5).

14. With the halves split, place the upper half (the half with

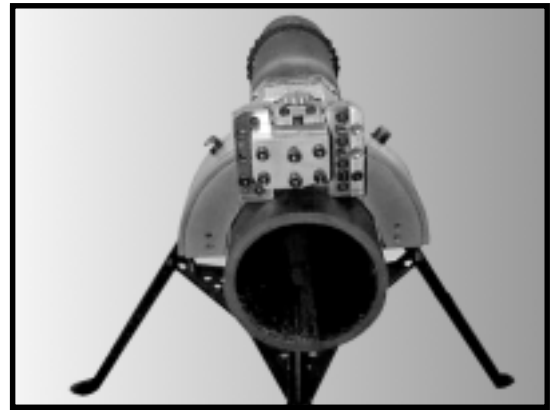


FIGURE 6

- the pinion housing) on top of the workpiece (Figure 6).
15. Bring the remaining half to a position at the bottom of the pipe directly under the half already mounted. Align the dowel pin holes with the dowel pins to ensure proper

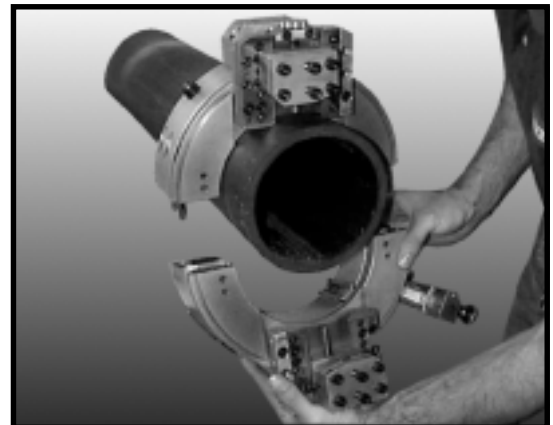


FIGURE 7

- fit and press the halves together (Figure 7).
16. Partially tighten one of the frame locking SHCS in the rotating frame. This will secure the machine while the other bolts are tightened.
17. With machine securely seated on the pipe, remove the frame locking detent pins (Figure 8).

Clamp Pad Adjustment Centering Procedure

18. Slide machine to desired cut line using the tip of the Parting Tool as your guide.
19. Starting with the clamp pad in the 12 o'clock position, or as near to the 12 o'clock position as possible, tighten the clamp pad screw until the gap at the top and the bottom



CAUTION: Be certain to tighten all bolts equally; failure to do so could cause machine to bind. Serious injury or machine damage could result.

10.

of the machine are approximately equal.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

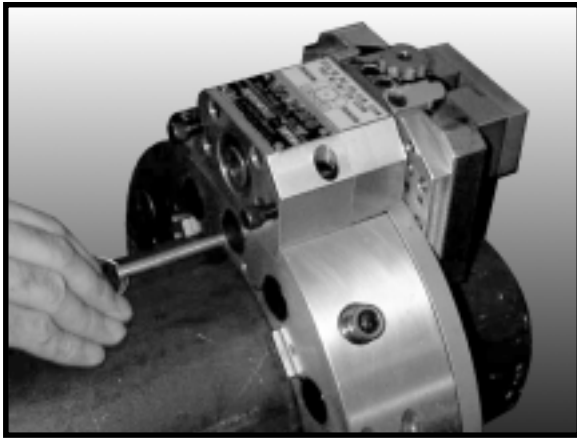


FIGURE 8



CAUTION: Be sure that all frame locking SHCS are equally tightened before continuing with mounting procedure. Failure to do so may cause damage to drive gears.

20. Snug the clamp pad at the 6 o'clock position.
21. Move to the 3 and 9 o'clock positions. At this point the machine should be fairly square.
22. Rough square the machine using the provided square. Check the LCSF's squareness to the pipe O.D.

NOTE: The machine should still be able to be shifted slightly at this time. If necessary, SLIGHTLY loosen the clamp pads at the 3 and 9 o'clock positions and re adjust as needed.

23. Once the machine is square to the pipe, tighten the frame locking SHCS completely.

D. LCSF Centering

24. Manually rotate the parting tool to the 12 o'clock position.
25. Lower the tool until it is roughly 1/8" above the pipe O.D.
26. Rotate the tool to the 6 o'clock position and add just the clamp pad as necessary to center.

NOTE: If tool is closer to the pipe at the 6 o'clock position

than at the 12 o'clock position, loosen the clamp pad at 12 o'clock SLIGHTLY and tighten the clamp pad at the 6 o'clock position. This will effectively move the tool away at 6 o'clock and closer at 12 o'clock further centering machine.

E. Tooling Adjustment Procedure

27. At this time, adjust your tooling to ensure proper operation and avoid damage to the machine.
 - a. the parting tool should extend beyond the bottom of the tool holder a distance equal to the wall thickness of the workpiece plus 1/8".
 - b. The beveling tool should extend beyond the bottom of the tool holder a distance equal to the wall thickness of the workpiece plus 1/8".
28. **Secure tools in place** by installing the tool holder cover

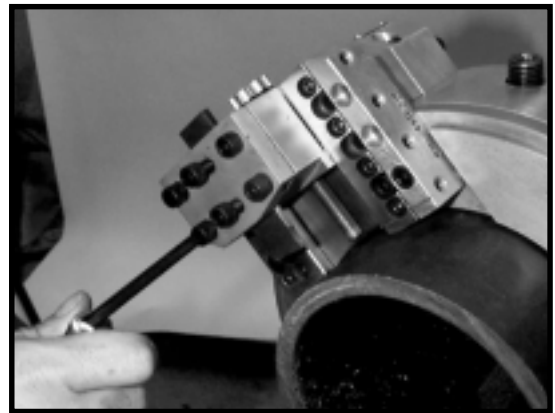


FIGURE 9

plates. Tighten the four corner bolts on each tool holder cover (figure 9).

NOTE: In the case of the Parting Tool, be sure that the gap between the cover plate and the tool holder is equal on either side of the parting tool.

29. With the cover plates installed, snug the two remaining SHCS on each cover plate as well as the single SHCS on the side of the beveling tool holder.
30. Time the starwheel feed system.
 - a. Always rotate the starwheel counter clockwise. Be sure to remove all backlash from the feed screw and the feed nut.
 - b. Align any point of the starwheel with the red line on the top of the tool slide (see illustration D on following page).

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

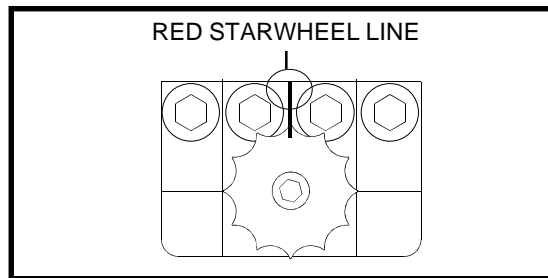


ILLUSTRATION D

- c. Repeat for other tool slide.

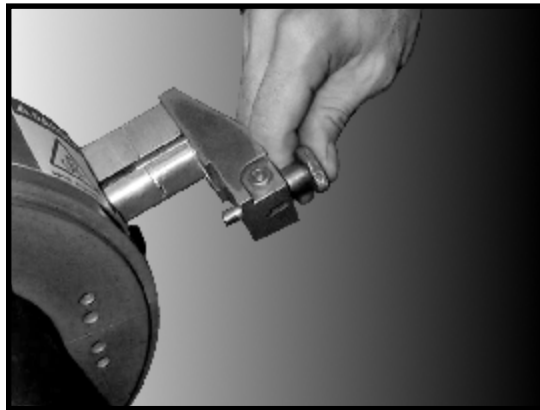


FIGURE 10

31. Engage the trip pin by pushing the knob downward (Figure 10).
32. **Install the air motor** (Figure 11). Begin by loosening the two 5/16-18" SHCS located on the back of the pinion housing.

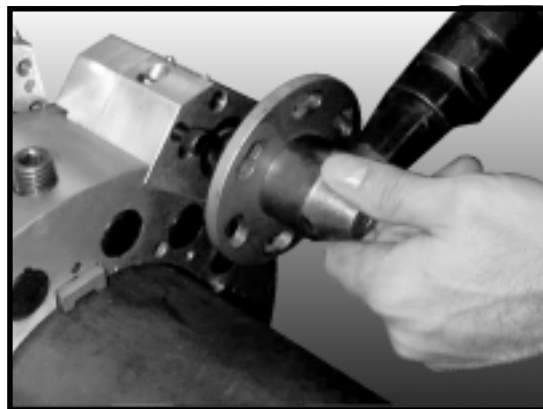


FIGURE 11

ing. Align two of the bolt holes in the air motor mounting flange with the two SHCS's in the pinion housing and slip the flange over the SHCS.

NOTE: The air motor can be positioned in several different positions. The air motor should be mounted in such a way as to allow the operator the easiest and safest access possible.

NOTE: The drive hex on the air motor must insert fully into the socket in the pinion housing. If need be, by hand, turn the rotating frame slightly, back and forth, until the drive hex seats itself properly.

33. Tighten the two SHCS's and secure air motor. Re-time Starwheel (see step 30).

Verify tool bit clearance

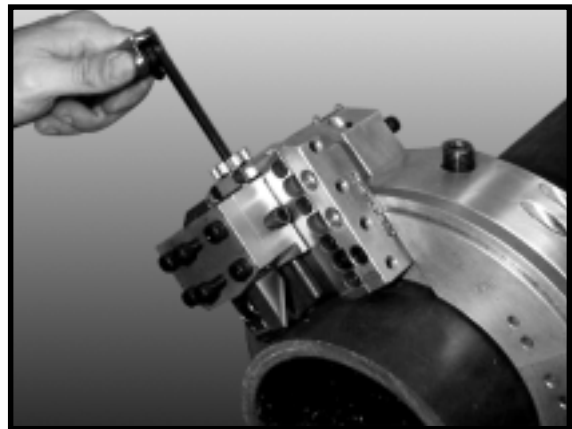


FIGURE 12

Using the provided hex key set, rotate the part and Beveling slide starwheels counter-clockwise until the parting tool bit is roughly 1/16" above pipe surface and the Beveling Bit is 1/8" above the pipe surface (Figure 12).

NOTE: By staggering the tools in this way, you will ensure that the parting tool penetrates the pipe wall first allowing for the beveling tool to perform its functions much more effectively.

34. Connect the motor air line to a clean, dry air supply line, adjust as needed.

Begin the cutting operation

35. To begin the cutting process, engage the air motor. The machine should initially rotate at 3-4 rpms to verify proper starwheel timing.

NOTE: If starwheel does not contact the trip pin smoothly, stop machine immediately and follow starwheel timing procedures (see step 30).

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION V

SET-UP AND OPERATION (cont.)

36. Increase speed to roughly 10-12 rpm.
37. Once the tool bits begin to remove material from the workpiece, be sure to apply liberal amounts of coolant for the duration of the machining process.



CAUTION: When cutting, never extend the Male Tool Holder of the tool beyond the "red" line scribed on the Tool Slide Body.

NOTE: If counterboring will be performed, take care to leave an oversized land. This will allow for the opening of the pipe I.D.

38. If counterboring is to be performed, proceed to step number 25. If no counterbore is to be performed, skip to "Machine Disassembly and Removal" on the next page.

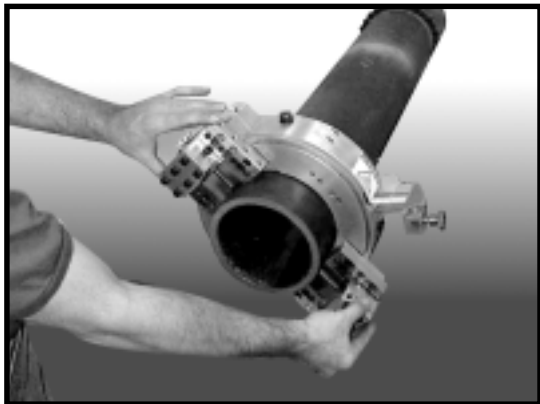


FIGURE 13

F. Counterbore Set-up and Operation

39. Return the parting and beveling tools to their uppermost (12 and 6 o'clock) position by rotating starwheels clockwise (Figure 13).
40. Remove the trip assembly.
41. Mount the counterbore locking block to the LCSF rotating frame. Secure in place by tightening the two 5/16-18" SHCS.
42. Secure the counter bore slide pivot block to the oppo-

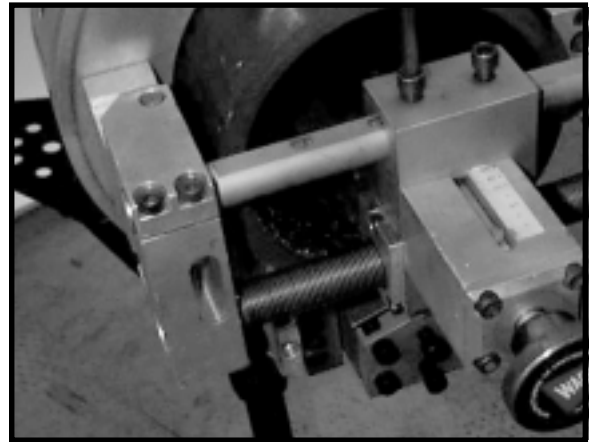
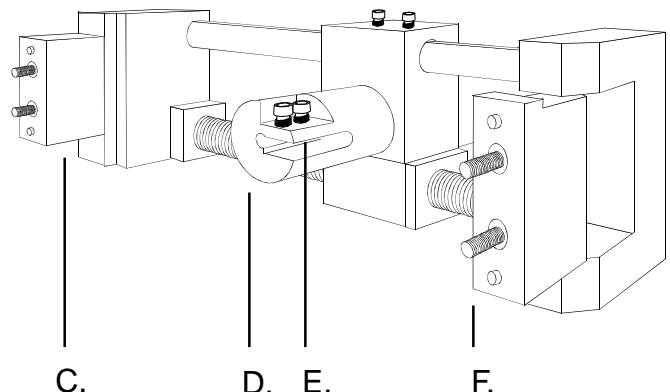
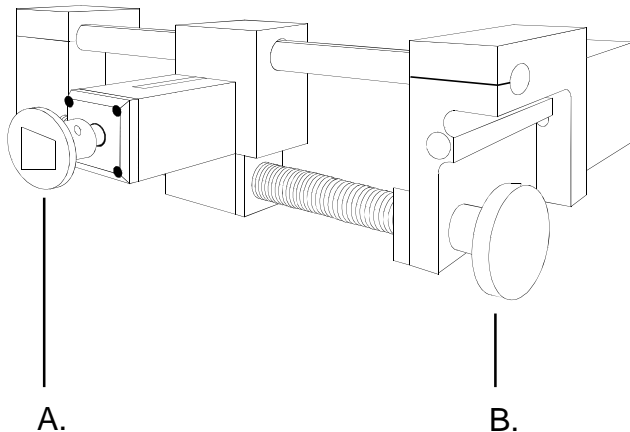


FIGURE 14

site side of the rotating frame by tightening the two 5/16-18" SHCS.

LCSF Counterbore Slide Assembly

- | | | | |
|----|--------------------|----|-------------------------------|
| A. | Axial Feed Handle | D. | Boring Bar |
| B. | Radial Feed Handle | E. | Tool Holder |
| C. | Feed Block | F. | Counterbore Slide Pivot Block |



43. Counterbore slide will now hinge on the pivot block (Figure 14).
44. With the counterbore slide in the open or hinged out position, insert the counterbore tool into the boring bar. Lock in place with the two 5/16-18" locking bolts.
45. Close the counterbore slide and tighten the 5/16-18" bolt located in the feed block to prevent the counterbore slide from swinging outward.

NOTE: It may be necessary to change tool bit position to avoid making contact with pipe wall as counterbore slide swings closed. Rotating the radial feed knob clockwise will move the cutting edge of the tool bit away from the

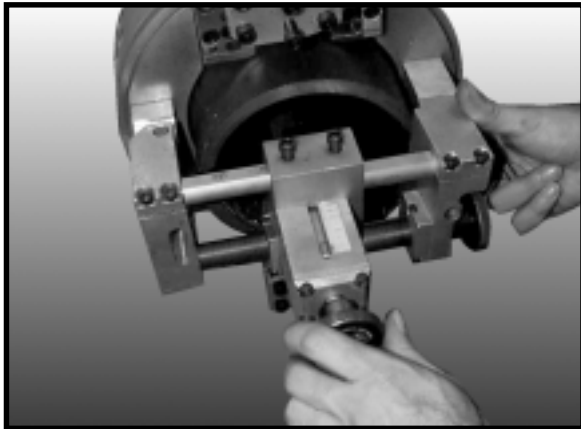


FIGURE 15

pipe wall.

46. Feed cutting tool into the pipe by turning the axial feed handle counter clockwise until the flat of the tool is inside the pipe face (Figure 15).
47. Turn the radial feed handle counterclockwise until the cutting tool lightly touches the pipe wall.
48. Turn the axial feed knob clockwise to move the cutting tool away from the pipe face.
49. Adjust the counterbore slide for the first cut.

NOTE: The incremental decal on the radial feed handle is the radial feed depth indicator. Each line on the decal represents a .020" cut on the overall I.D.
50. Turn the feed handle to make a .020" cut on the I.D.
51. Tighten the two 3/8-16" set screws on the feed block. This will prevent the cutter from moving radially during the cut.

14.

52. Engage air motor and set the RPM's at approximately 6-8 rpm's.
53. Hold the axial feed handle as the machine rotates. This feeds the tool into the pipe.
54. Once the tool begins to cut, release the axial feed handle.



CAUTION: Cutting chips are **VERY** sharp. **DO NOT** touch them with bare hands. Serious injury could result.

By holding the feed handle for approximately 1/4 turn per revolution the tool will be fed into the pipe gradually. The longer the handle is held the greater the feed rate.

55. By utilizing the depth gauge on the support block monitor, observe the depth of the counterboring operation. As soon as the desired depth is reached, stop the machine.
56. Retract the cutting tool by turning the Radial Feed Handle Clockwise.



CAUTION: On LCSF machines 1824 and above it will be necessary to utilize additional personnel and/or equipment such as adequate rigging materials to remove machine and avoid injury to personnel and damage to equipment.

57. Loosen the locking bolt in the feed block and swing the slide open.
58. Measure the I.D. of the pipe. If the desired I.D. had been attained, remove the counterbore assembly. If the I.D. measurement required has not been achieved, repeat steps 38 - 43.

G Machine Disassembly and Removal:

59. Remove Counterbore Slide (if applicable).
60. Retract the Tool Slides.
61. Disconnect power source and remove air motor from Split Frame.
62. Loosen the four Clamp Pads that hold the Split Frame in position.
63. Remove Split Frame from pipe.
64. When the preceding operations have been satisfactorily completed and the machine is ready for storage, be sure that it is free of debris such as metal chips and excess coolant. It is recommended that the machine halves be opened and the bearing race ways examined for metal

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VI

MACHINE ADJUSTMENTS & MAINTENANCE

SF SERIES LOW CLEARANCE SPLIT FRAME

FEED TRIP & TOOL SLIDE CUTTING RANGE CHANGE OUT PROCEDURES

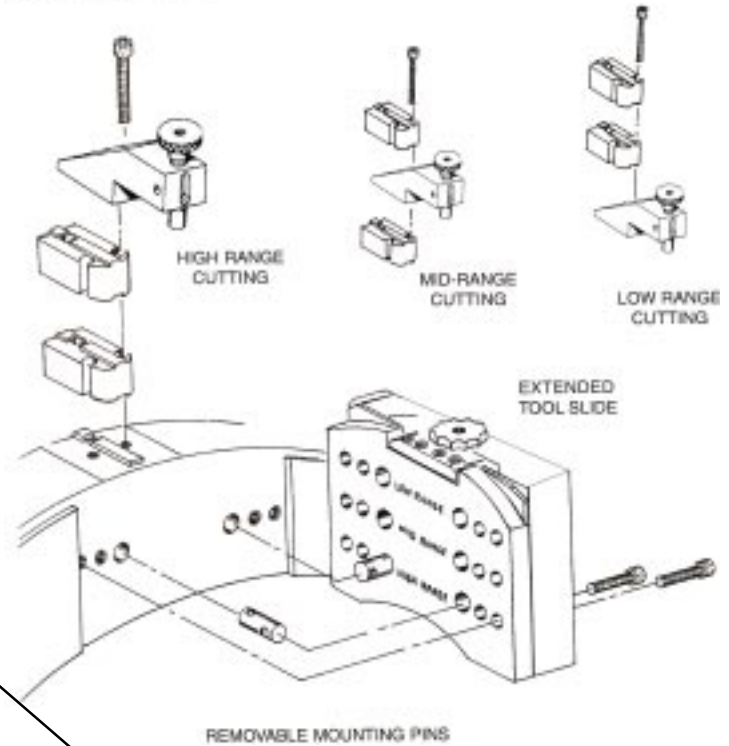
REFERENCE: TOOL SLIDE CUTTING RANGE
MOUNTING PIN CHANGE OUT PROCEDURE

WARNING

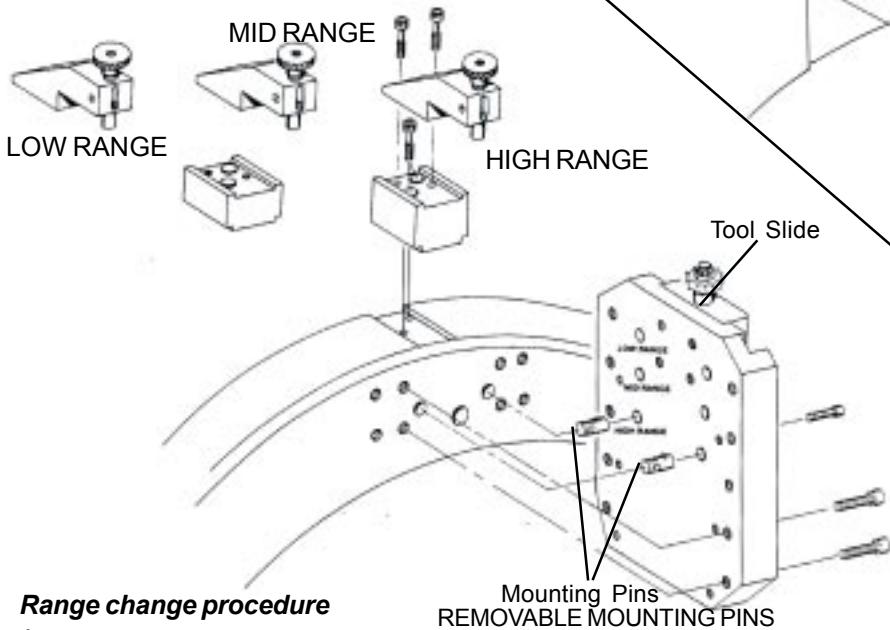
INSERT END OF PIN WITH BALL DETENT SIDE INTO TOOL SLIDE WHEN CHANGING RANGE LOCATIONS. FAILURE TO DO THIS MAY CAUSE DAMAGE TO ROTATING RING BEARING ASSEMBLIES.

Trip Assembly Configuration

2" thru 20" Machines
Trip Assembly Configuration



24" thru 48" Machines
Trip Assembly Configuration



Range change procedure
***Insert end of pin with all**
detent side into tool
slide.

Range change procedure
***Insert end of pin with all**
detent side into tool
slide.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VI

MAINTENANCE-MACHINE ADJUSTMENTS

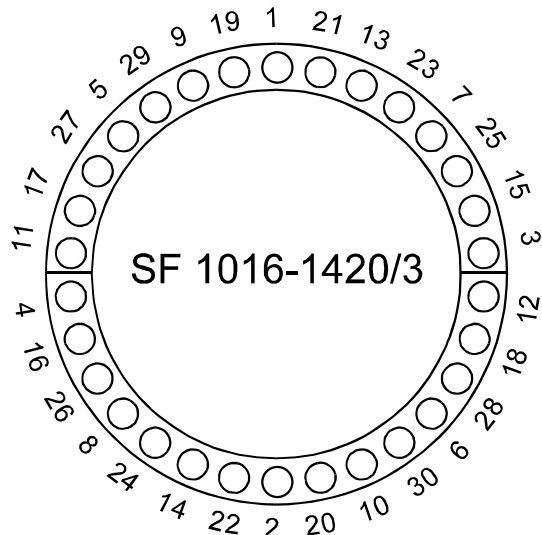
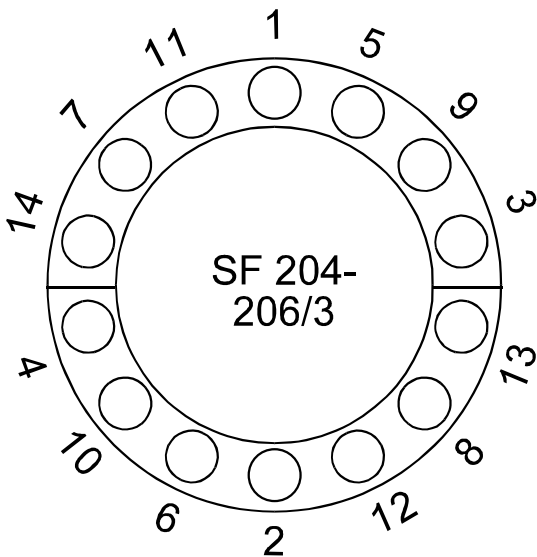
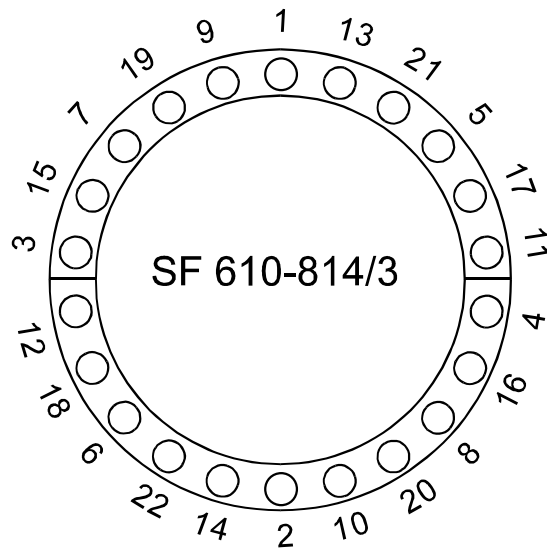
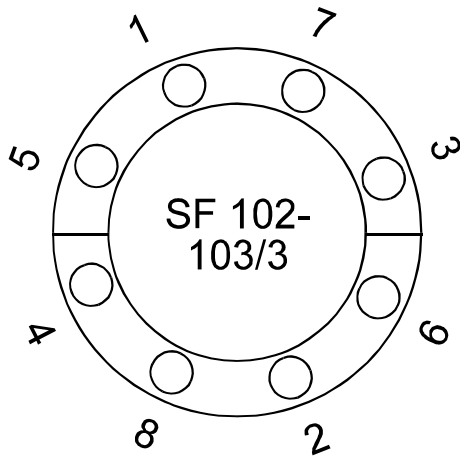
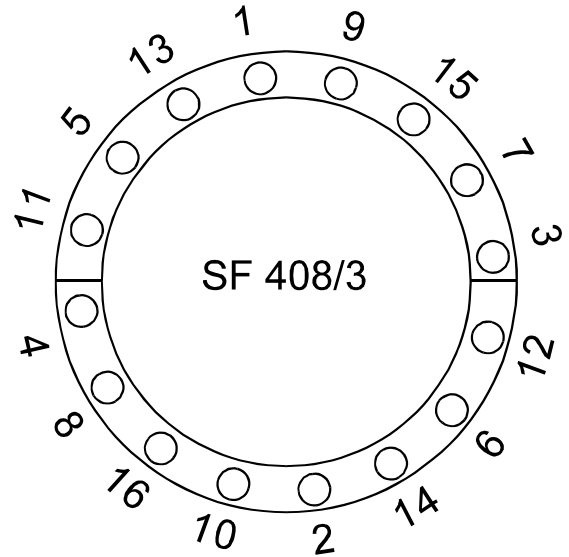
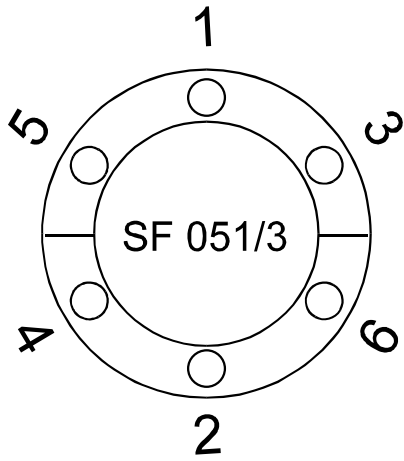
“V” BEARING ADJUSTMENT PROCEDURE

1. WITH ROTATING FRAME REMOVED, INSTALL ECCENTRIC SHAFT, WHEEL BEARING, AND SPACER ONTO STATIONARY FRAME ASSEMBLY.
 2. LIGHTLY FASTEN WITH 5/16 AN WASHER AND 5/16-18 NYLOCK NUT.
 3. TURN ALL ECCENTRIC SHAFTS TO THE “BOTTOM” POSITION (USING A 3/16" HEX KEY OR “T HANDLE”), AS INDICATED BY THE LINE MACHINED INTO EACH BEARING. AT THIS POINT ALL LINES SHOULD POINT TOWARD THE MACHINE’S I.D.
 4. SLIDE ROTATING FRAME INTO STATIONARY FRAME. SECURE ALL CAPTIVATED FRAME LOCKING SET SCREWS.
- NOTE: PAY SPECIAL ATTENTION TO THE ROTATING FRAME LOCKING SCREWS.**
- NOTE: PRIOR TO ATTEMPTING TO ADJUST “V” BEARINGS, BOTH TOOL SLIDES MUST BE REMOVED.**
5. PLACE BEARING PRELOAD PLATES (#60-205-00) AT THE #1 AND #2 POSITIONS (SEE CORRESPONDING DIAGRAM)
 6. PLACE 1 HEX DRIVE ADAPTER (1/4" TO 3/16") IN EACH POSITION. THIS IS DONE BY INSERTING THE DRIVER INTO THE HOLE IN BEARING PRELOAD PLATE.
 7. ONCE DRIVE ADAPTER IS PROPERLY SEATED INTO THE ECCENTRIC SHAFT, SECURE BEARING PRELOAD PLATE WITH TWO 5/16-18 x 5/8 SHCS.
 8. STARTING AT THE #1 POSITION, TOUCH BEARING OFF TO THE ROTATING FRAME “V” GROOVE. SNUG 5/16-18 NYLOCK NUT BUT DO NOT TIGHTEN COMPLETELY.
 9. PROCEED TO THE #2 POSITION AND REPEAT STEP #8. DO THE SAME FOR POSITIONS #3 AND #4.
 10. RETURN TO POSITION #1 AND TORQUE BEARING TO 7 INCH POUNDS MINIMUM USING APPROPRIATE TORQUE WRENCH.
 11. MOVE TO POSITIONS 2,3, AND 4 AND REPEAT STEP #10.
12. WITH BEARINGS AT POSITIONS #1-4 SECURE, TWO CHECKS MUST BE CONDUCTED TO INSURE PROPER BEARING ALIGNMENT AND PRELOAD
 1. CHECK MACHINE RINGS FOR SQUARENESS USING PROVIDED SQUARE. I.D. OF BOTH RINGS SHOULD BE FLUSH WITH ONE AN OTHER.
 2. CHECK PINION BACKLASH. TO DO THIS THE PINION HOUSING MUST BE MOUNTED TO THE MACHINE.
 13. RETURN TO THE #1 POSITION. USING THE “INCH POUND” TORQUE WRENCH THE 5/16-18 NYLOCK NUT EACH POSITION TO 150 INCH POUNDS.
 14. CHECK FLUSHNESS AT EACH OF THE FOUR POSITIONS ADJUSTED ONCE AGAIN.
 15. ONCE POSITIONS #1-4 HAVE BEEN PROPERLY ADJUSTED, FOLLOW THE NUMERIC SEQUENCE OF THE CORRESPONDING DIAGRAM AND REPEAT THE SAME PROCEDURE FOR ALL REMAINING BEARINGS.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VI

MAINTENANCE-MACHINE ADJUSTMENTS



SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VI

MAINTENANCE-LUBRICATION

LCSFLubrication Information:

Tool Slide # 60-416-00 / 60-415-00	
Point of Application:	All moving parts.
Service Interval:	Every 10 hrs. of operation
Type of Lubricant:	Mobil-lith AW-2 or Equivalent
Pinion Gear Housing	
Point of Application:	Front needle bearing (# 60-126-00)
Service Interval:	Every 50 hrs. of operation
Type of Lubricant:	Mobil-lith AW-2 or Equivalent

SECTION VII

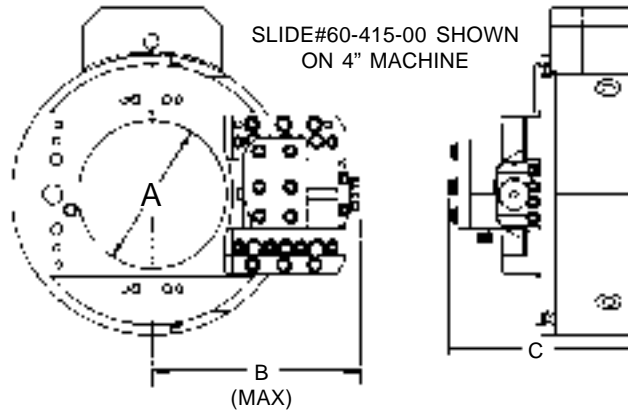
**OPERATIONAL
CHARTS
&
GRAPHS**

SF SERIES LOW CLEARANCE SPLIT FRAME

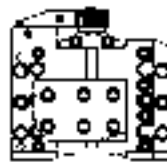
SECTION VII

MISCELLANEOUS CHARTS AND GRAPHS

RADIAL AND AXIAL CLEARANCE DIAGRAM AND CHART



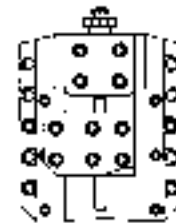
60-402-01 (PARTING)
60-403-01 (BEVEL)
60-402-04 (PARTING)
60-403-04 (BEVEL)
STAR FEED



60-418-00 (PARTING)
60-419-00 (BEVEL)
CAM FEED



60-415-00 (PARTING)
60-416-00 (BEVEL)
STAR FEED



60-437-00 (PARTING)
60-438-00 (BEVEL)
STAR FEED

MODEL	SF 204/3	SF 206/3	SF 408/3	SF 610/3	SF 612/3	SF 814/3	SF 1016/3	SF 1420/3	SF 1824	SF 2228	SF 2632	SF 3036	SF 3642	SF 4248
"A" Dim. (inches)	4.75	6.88	8.88	11.0	13.0	14.25	16.25	20.25	24.5	28.5	32.5	36.5	42.5"	48.5
"A" Dim (millimeters)	121.60	176.12	227.32	279.40	330.20	361.95	412.75	514.35	622.30	723.90	825.50	927.10	1079.5	1219.2

LOW CLEARANCE TOOL SLIDE (TOOL STROKE: .50") (12.7MM) USING SLIDE # 60-402-01/04

"B" DIM. (INCH)	4.50"	5.56"	6.56"	7.88"	8.88"	9.50"	10.75"	12.75"	--	--	--	--	--	--
"B" DIM. (mm)	114.3	141.22	166.62	200.15	225.55	241.3	273.05"	323.85	--	--	--	--	--	--
"C" DIM. (INCH)	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	--	--	--	--	--	--
"C" DIM. (mm)	152.40	152.40	152.40	152.40	152.40	152.40	152.40	152.40	--	--	--	--	--	--

EXTENDED TOOL SLIDE (TOOL STROKE: 1.50") (50.8 mm) USING SLIDE #60-415-00

"B" DIM. (INCH)	6.45"	7.51"	8.51"	9.94"	10.94"	11.45"	12.70"	14.70"	16.63"	18.63"	20.63"	22.63"	--	--
"B" DIM. (mm)	163.83	190.75	216.15	252.47	277.87	290.83	322.58	373.38	422.40	473.20	524.00	574.80	--	--
"C" DIM. (INCH)	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	7.0"	7.0"	7.0"	7.0"	--	--
"C" DIM. (mm)	152.40	152.40	152.40	152.40	152.40	152.40	152.40	152.40	177.80	177.80	177.80	177.80	--	--

SUPER EXTENDED TOOL SLIDE (TOOL STROKE 2.00") (50.8mm) USING SLIDE # 60-437-00

"B" DIM. (INCH)	--	--	--	--	--	--	--	--	19.0"	21.0"	23.0"	25.0"	28	31
"B" DIM. (mm)	--	--	--	--	--	--	--	--	482.60	533.40	584.20	635.00	711.2	787.4
"C" DIM. (INCH)	--	--	--	--	--	--	--	--	7.0"	7.0"	7.0"	7.0"	7"	7"
"C" DIM. (mm)	--	--	--	--	--	--	--	--	177.80	177.80	177.80	177.80	177.80	177.80

MACHINE CAPACITY:

INCHES:	1-4"	2-6"	4-8"	6-10"	6-12"	8-14"	10-16"	14-20"	18-24"	22-28"	26-32"	30-36"	36-42	42-48	
MM:	51-152	102-204	152-254	152-254	152-305	203-356	254-406	356-508	457-610	559-711	660-812	812-914	914-1066	1066-1219	1219.2

WEIGHT:

(LBS):	30	37	43	53	63	73	88	103	175	200	230	260	310	360
(KGS):	13.6	16.78	19.5	24.04	28.57	33.11	39.91	46.72	79.38	90.72	104.32	117.93	140.6	163.29

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VII

MISCELLANEOUS CHARTS AND GRAPHS

SF/3 CLAMP PAD EXTENSION CHART

CLAMPING RANGE		SF051		SF102		SF103		SF204		SF206	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
WITH NO EXTENSION	MAX.	1.32*	33.53	2.38	60.45	3.50	88.90	4.50	114.30	6.83	168.40
	MIN.	.57*	14.48*	1.63	41.40	2.75	69.85	3.50	88.90	5.63	143.00
60-408-05 1/2" EXTSET	MAX.					2.50	63.50	3.50	88.90	5.63	143.00
	MIN.					1.75	44.45	2.50	63.50	4.63	117.60
60-408-07 3/4" EXTSET	MAX.					2.00	50.80	3.00	76.20	5.13	130.30
	MIN.					1.63	41.40	2.00	50.80	4.13	104.90
60-408-10 1" EXT SET	MAX.							2.50	63.50	4.63	117.60
	MIN.							2.00	50.80	3.63	92.20
60-408-15 1-1/2" EXT SET	MAX.									3.63	92.20
	MIN.									2.63	66.80
60-408-20 2" EXT SET	MAX.									2.63	66.80
	MIN.									2.00	50.80
00-406-25 2-1/2" EXTSET	MAX.										
	MIN.										
60-408-40 3" EXT SET	MAX.										
	MIN.										
60-408-31 3-1/8" EXT SET	MAX.										
	MIN.										

CLAMPING RANGE		SF408		SF610		SF612		SF814		SF1016	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
WITH NO EXTENSION	MAX.	8.63	219.20	10.75	273.05	12.75	323.85	14.00	355.00	16.00	406.40
	MIN.	7.63	193.80	9.50	241.30	11.50	292.10	12.75	323.85	14.75	374.65
60-408-05 1/2" EXT. SET	MAX.	7.63	193.80	9.75	247.65	11.75	298.45	13.00	330.20	15.00	381.00
	MIN.	6.63	168.40	8.50	215.90	10.50	266.70	11.75	298.45	13.75	349.25
60-408-07 3/4" EXTSET	MAX.	7.13	181.10	9.25	234.95	11.25	285.75	12.50	317.50	14.50	368.30
	MIN.	6.13	155.70	8.00	203.20	10.00	254.00	11.25	285.75	13.25	336.55
60-408-10 1" EXT SET	MAX.	6.63	168.40	8.75	222.25	10.75	273.05	12.00	304.80	14.00	355.60
	MIN.	5.63	143.00	7.50	190.56	9.50	241.30	10.75	273.05	12.75	323.85
60-408-15 1-1/2" EXT SET	MAX.	5.63	143.00	7.75	196.85	9.75	247.65	11.00	279.40	13.00	304.80
	MIN.	4.63	117.60	6.50	165.10	8.50	215.90	9.75	247.65	11.75	298.45
60-408-20 2" EXT SET	MAX.	4.63	117.60	6.75	171.45	8.75	222.25	10.00	254.00	12.00	304.80
	MIN.	3.63	92.20	5.50	139.70	7.50	190.50	8.75	222.25	2.00	273.05
00-406-25 2-1/2" EXTSET	MAX.					7.75	196.85	9.00	228.60	11.00	279.40
	MIN.					6.50	165.10	7.75	196.85	9.75	247.65
60-408-40 3" EXT SET	MAX.					6.75	171.45				
	MIN.					5.50	139.70				
60-408-31 3-1/8" EXT SET	MAX.										
	MIN.										

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VII

MISCELLANEOUS CHARTS AND GRAPHS

SF/3 CLAMP PAD EXTENSION CHART (cont.)

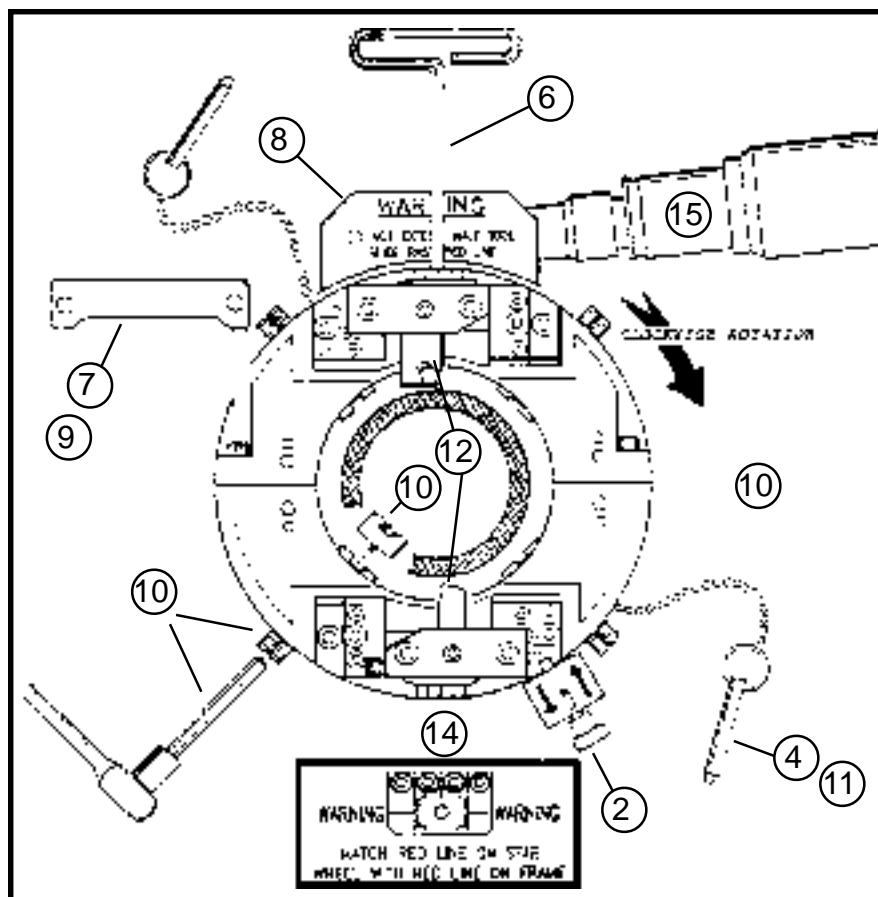
CLAMPING RANGE		SF1420		SF1824		SF2228		SF3642		SF4248	
		INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
WITH NO EXTENSION	MAX.	20.00	508	24.00	610	28.00	711	42.00	1067	48.00	1219
	MIN.	18.75	476	22.75	578	26.75	679	40.75	1035	46.75	1187
60-408-05 1/2" EXT. SET	MAX.	19.00	483	23.00	584	27.00	666	41.00	1041	47.00	1197
	MIN.	17.75	451	21.75	552	25.75	654	39.75	1010	45.75	1162
60-408-07 3/4" EXTSET	MAX.	18.50	46990	22.50	572	26.50	673	40.50	1029	46.50	1181
	MIN.	17.25	438	21.25	540	25.25	641	39.25	997	45.25	1149
60-408-10 1" EXT SET	MAX.	18.00	457	22.00	559	26.00	660	40.00	1016	46.00	1168
	MIN.	16.75	425	20.75	527	24.75	629	38.75	984	44.75	1137
60-408-15 1-1/2" EXT SET	MAX.	17.00	432	21.00	533	25.00	635	39.00	991	45.00	1143
	MIN.	15.75	400	19.75	502	23.75	603	37.75	959	43.75	1111
60-408-20 2" EXT SET	MAX.	16.00	406	20.00	508	24.00	610	38.00	965	44.00	1118
	MIN.	14.75	375	18.75	476	22.75	578	36.75	933	42.75	1086
00-408-25 2-1/2" EXTSET	MAX.	15.00	381	19.00	483	23.00	584	37.00	940	43.00	1092
	MIN.	13.75	349	17.75	451	21.75	552	35.75	908	41.75	1060
60-408-30 3" EXT SET	MAX.	14.00	356	18.00	457	22.0	559	36.0	914	42.00	1067
	MIN.	12.75	324	16.75	425	20.75	527	34.75	883	40.75	1035
60-408-31 3-1/8" EXT SET	MAX.										
	MIN.										

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION VII

MISCELLANEOUS CHARTS AND GRAPHS

LCSF/3 SET-UP & OPERATING "QUICK REFERENCE" GUIDE



1. Remove machine from case.
2. Disengage trip pin or cam feed lever.
3. Align rotating frame splits with stationary frame splits.
4. Insert frame locking pins (SF 204-1012 only)
5. Select extension pads, if necessary.
6. Retract tool slides.
7. For in-line pipe, loosen lock bolts (swing bolts on machines 1824 and above). Split machine.
8. Place pinion portion on top of pipe and join halves.
9. Tighten locking bolts.
10. Adjust clamp pads.
11. Remove locking pins.
12. Install tooling.
13. Check tool bit clearance and centering.
14. Set starwheel timing.
15. Mount drive system.

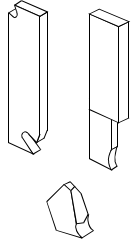



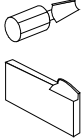
SECTION VIII

**CONSUMABLE
SELECTION CHART**

SECTION VIII

CONSUMABLE SELECTION CHART

TOOLING CHART - LCSF STANDARD RANGE TOOLING

TOOL BIT			TOOLING COMPOSITION			DESCRIPTION
Type	Part Number	T-15 HSS	Coated	Carbide		
	Insert Holder	43-704-00	N/A**	N/A**	Self grip double sided insert holder	
	Insert	43-705-00	‡	‡	"Quick change" insert for severing	
	HSS Severing*	43-711-00	‡	‡	excellent for severing stainless steel	
	Form Beveler	43-702-05	‡	‡	30° inside bevel	
	Form Beveler	43-703-05	‡	‡	37.5° inside bevel	
	Form Beveler	43-707-05	‡	‡	30° outside bevel	
	Form Beveler	43-708-05	‡	‡	37.5° outside bevel	
	Form Beveler	43-709-05	‡	‡	30° double bevel	
	Form Beveler	43-710-05	‡	‡	37.5° double bevel	
	Counterbore	60-700-01	‡	‡	Recommended for LCSF 051-103	
	Counterbore	60-700-04	‡	‡	Recommended for LCSF 204-1016	

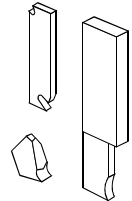
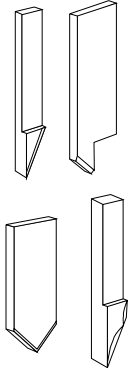
*T-15 HSS: A Tungsten-type High Speed Steel, very high hardness, recommended for difficult materials.

**N/A = Not Applicable ‡ = Available

Coated: A layer of Titanium Nitride to increase cutting life and performance.

Carbide: Super-hard composite steel material offering maximum edge strength.

TOOLING CHART - LCSF EXTENDED RANGE TOOLING

TOOL BIT			TOOLING COMPOSITION			DESCRIPTION
Type	Part Number	T-15 HSS	Coated	Carbide		
	Insert Holder	47-701-00	N/A**	N/A**	N/A**	Self grip double sided insert holder
	Insert	47-702-00	‡	‡	‡	"Quick change" insert for severing
	HSS Severing*	47-711-00	‡	‡		excellent for severing stainless steel
	Beveler	53-703-00	‡	‡		37.5° inside bevel
	Beveler	53-707-00	‡	‡		37.5° outside bevel
	Double Beveler	53-708-00	‡	‡		37.5° inside & outside bevel
	Beveler	53-703-01	‡	‡		30° inside bevel
	Beveler	53-707-01	‡	‡		30° outside bevel
	Double Beveler	53-708-01	‡	‡		37.5° inside & outside bevel
	Counterbore	53-704-00	‡	‡		10° x 30° inside bevel
	Counterbore	53-700-00	‡	‡		10° x 37.5° inside bevel

*T-15 HSS: A Tungsten-type High Speed Steel, very high hardness, recommended for difficult materials.

**N/A = Not Applicable ‡ = Available

Coated: A layer of Titanium Nitride to increase cutting life and performance.

Carbide: Super-hard composite steel material offering maximum edge strength.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION IX

TROUBLE SHOOTING

Trouble	Possible Cause	Remedy
Machine won't turn	Detent Pins not removed Power supply not on..... Improper bearing preload	Remove pins. Check power supply Refer to maintenance for proper adjustment procedure.
Machine Runs Slowly	Improper Speed or Gear Box Setting	Refer to Speed Control adjustment.
Tool slides do not feed	Trip pin not engaged Trip pin assembly in wrong position.....	Engage trip pins Refer to tool slide setup diagrams.
Machine moves during cutting	Loose clamp pads	Tighten clamp pads
Machine chatters during cutting	Speed control set too fast	Slow down cutting speed.
Poor cutting quality	Tool bit is dull Improper tool installation..... Lubricant necessary.....	Replace tool bit. Refer to tool bit installation instructions. Refer to lubricant information in operation instructions.

If a problem persists or is not listed in the above chart, cease operation and consult the manufacturer for additional instructions.

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION IX

PARTS LISTS & EXPLODED VIEW DRAWINGS

SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-01			LCSF 051/3
REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	6	Bearing, guide wheel
038	43-038-00	2	Liner
100	60-100-01	1	Frame, Stationary
101	60-101-01	1	Frame, Rotating
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	6	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-01	3	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-01	3	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-00		Extension Leg set to cover entire clamping range
128	60-128-00	6	spacer, Frame Bearing
133	60-133-00	6	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	3	Ring, Retaining
166	60-166-01	3	Guard, Chip
179	60-179-00	4	Frame Plug
FASTENERS:			
1	90-065-53	6	5/16" an washer
2	90-065-03	6	5/16-18 Nylok Washer
3	90-060-08	3	5/16-18 x 7/8" shcs
4	90-064-03	3	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	3	1/4-20 x 3/8" Shcs
7	90-042-03	3	10-24 x 3/8 bhcs
8	90-056-03	3	1/4 x 1/2 dowel pin
9	90-056-05	6	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	6	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine

60-000-02			LCSF 102/3
REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	8	Bearing, guide wheel
038	43-038-00	2	Liner
100	60-100-01	1	Frame, Stationary
101	60-101-01	1	Frame, Rotating
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	8	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-01	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-01	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-00		Extension Leg set to cover entire clamping range
128	60-128-00	8	spacer, Frame Bearing
133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
166	60-166-01	4	Guard, Chip
179	60-179-00	4	Frame Plug
FASTENERS:			
1	90-065-53	8	5/16" an washer
2	90-065-03	8	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	3	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	4	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine

SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-03

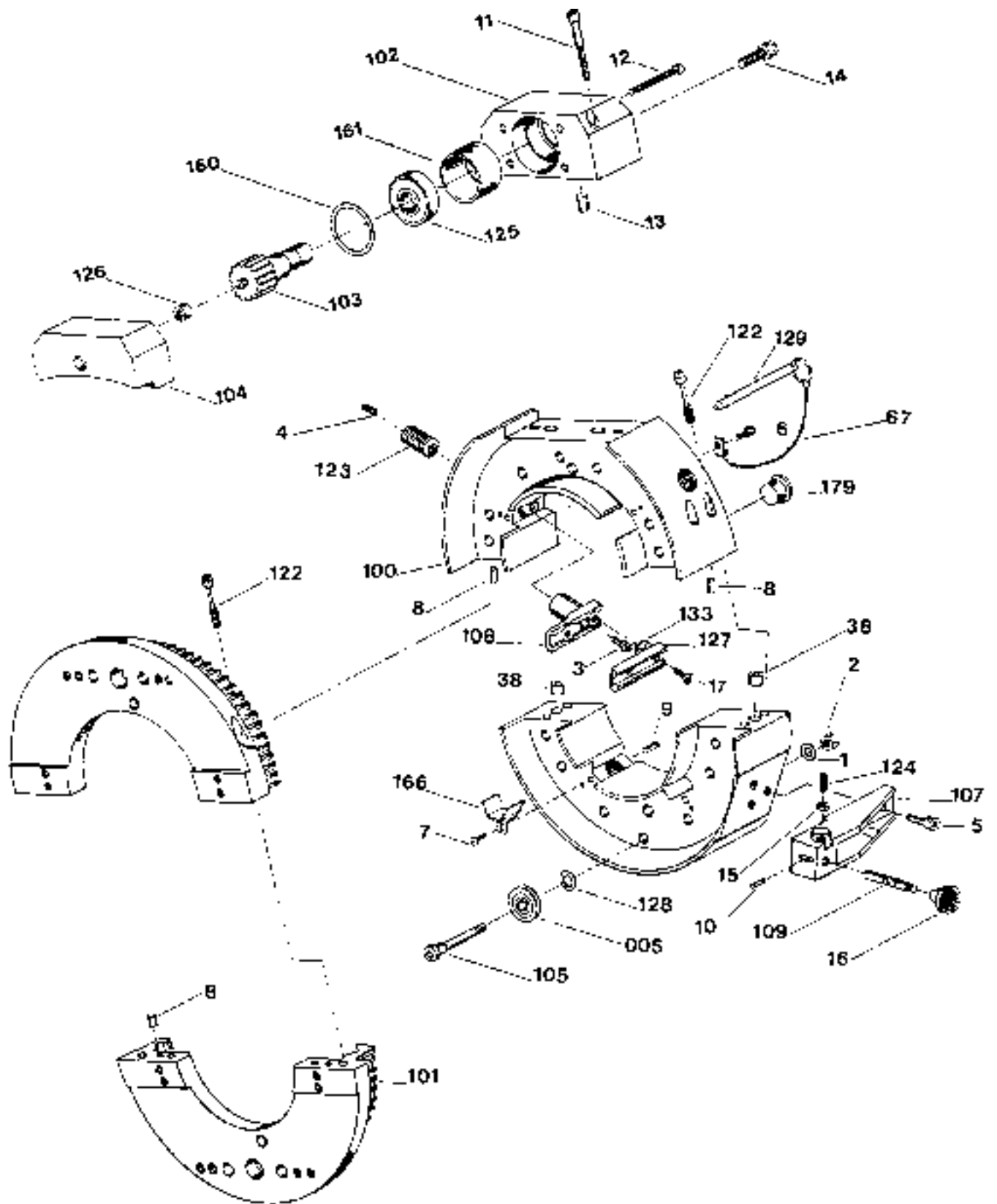
LCSF 103/3

60-000-04

LCSF 204/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	8	Bearing, guide wheel
038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain
100	60-100-03	1	Frame, Stationary 1"
101	60-101-03	1	Frame, Rotating 1"
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	8	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-01	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-01	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-00		Extension Leg set to cover entire clamping range
128	60-128-00	8	spacer, Frame Bearing
129	60-129-00	2	Frame lock pin
133	60-133-00	6	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	3	Ring, Retaining
166	60-166-01	3	Guard, Chip
179	60-179-00	4	Frame Plug
			FASTENERS:
1	90-065-53	8	5/16" an washer
2	90-065-03	8	5/16-18 Nylok Washer
3	90-060-08	3	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	4	5/16-18 x 3/4" shcs
6	90-050-03	3	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00-	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine

REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	14	Bearing, guide wheel
038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain
100	60-100-04	1	Frame, Stationary 4"
101	60-101-04	1	Frame, Rotating 4"
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	14	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-04	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-04	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-00		Extension Leg set to cover entire clamping range
128	60-128-00	14	spacer, Frame Bearing
129	60-129-00	2	Frame lock pin
133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug
			FASTENERS:
1	90-065-53	14	5/16" an washer
2	90-065-03	14	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	3	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	4	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00-	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine



SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-06

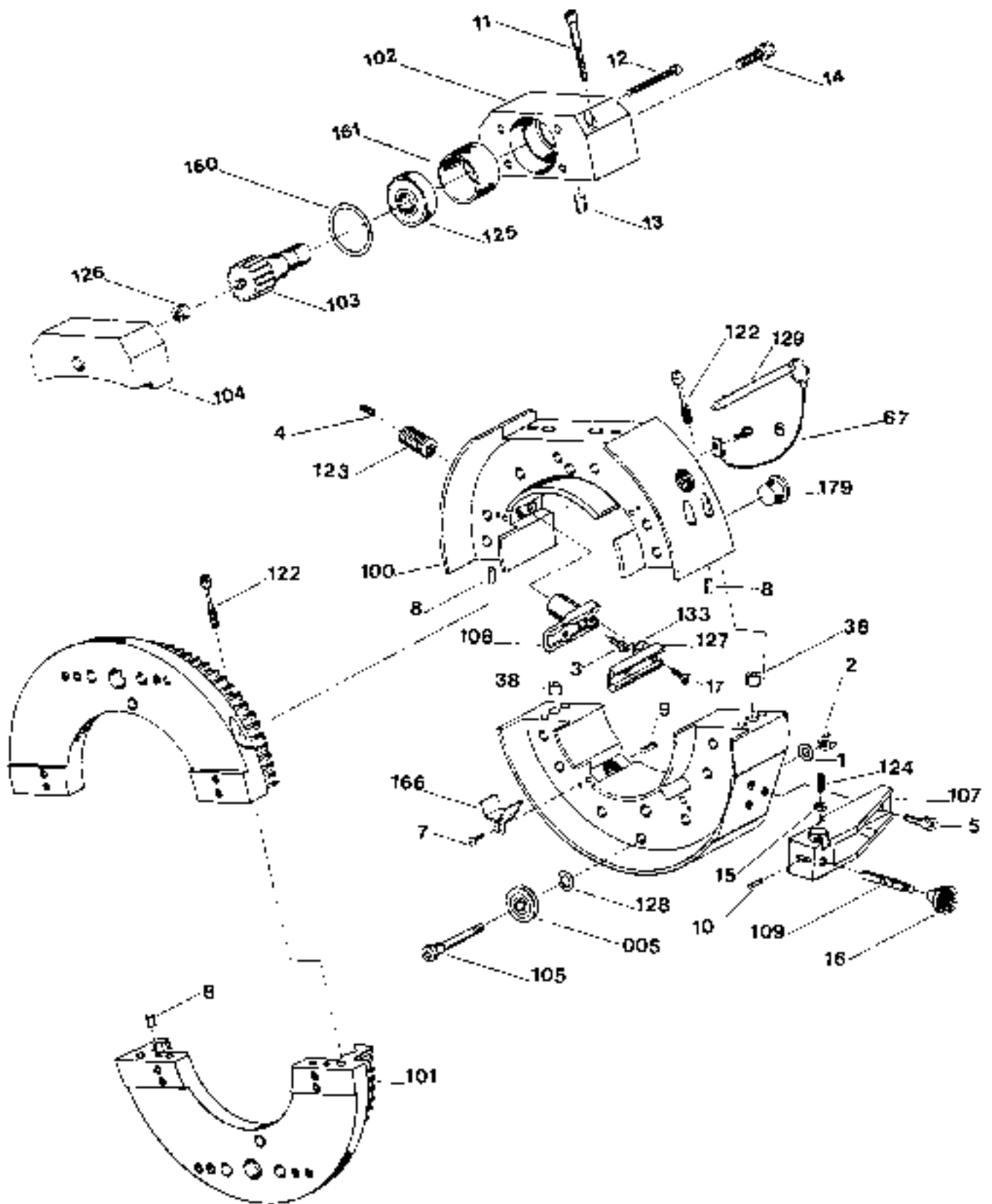
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60-000-08

LCSF 408/3

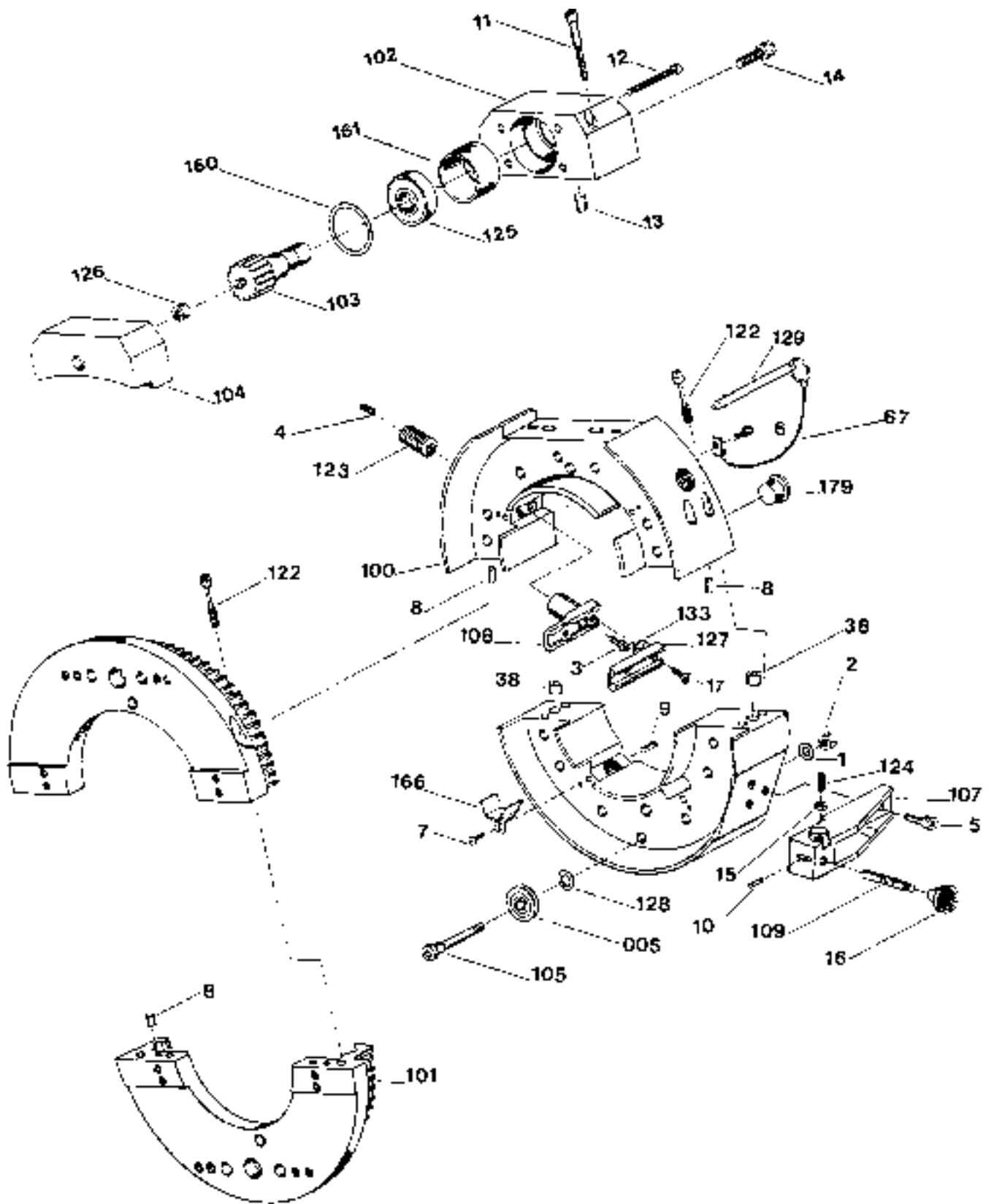
REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	14	Bearing, guide wheel
038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain
100	60-100-06	1	Frame, Stationary 6"
101	60-101-06	1	Frame, Rotating 6"
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	14	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-01	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-04	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-50		Extension Leg set to cover entire clamping range
128	60-128-00	6	Spacer, Frame Bearing
129	60-129-00	2	Pin, Frame Lock
133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	4	Ring, Retaining
166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug
			FASTENERS:
1	90-065-53	14	5/16" an washer
2	90-065-03	14	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00-	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine

REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	16	Bearing, guide wheel
038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain
100	60-100-08	1	Frame, Stationary 8"
101	60-101-08	1	Frame, Rotating 8"
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion
105	60-105-00	16	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-04	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-04	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-54		Extension Leg set to cover entire clamping range
128	60-128-00	16	Spacer, Frame Bearing
129	60-129-00	2	Pin, Frame Lock
133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug
			FASTENERS:
1	90-065-53	16	5/16" an washer
2	90-065-03	16	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	4	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00-	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine



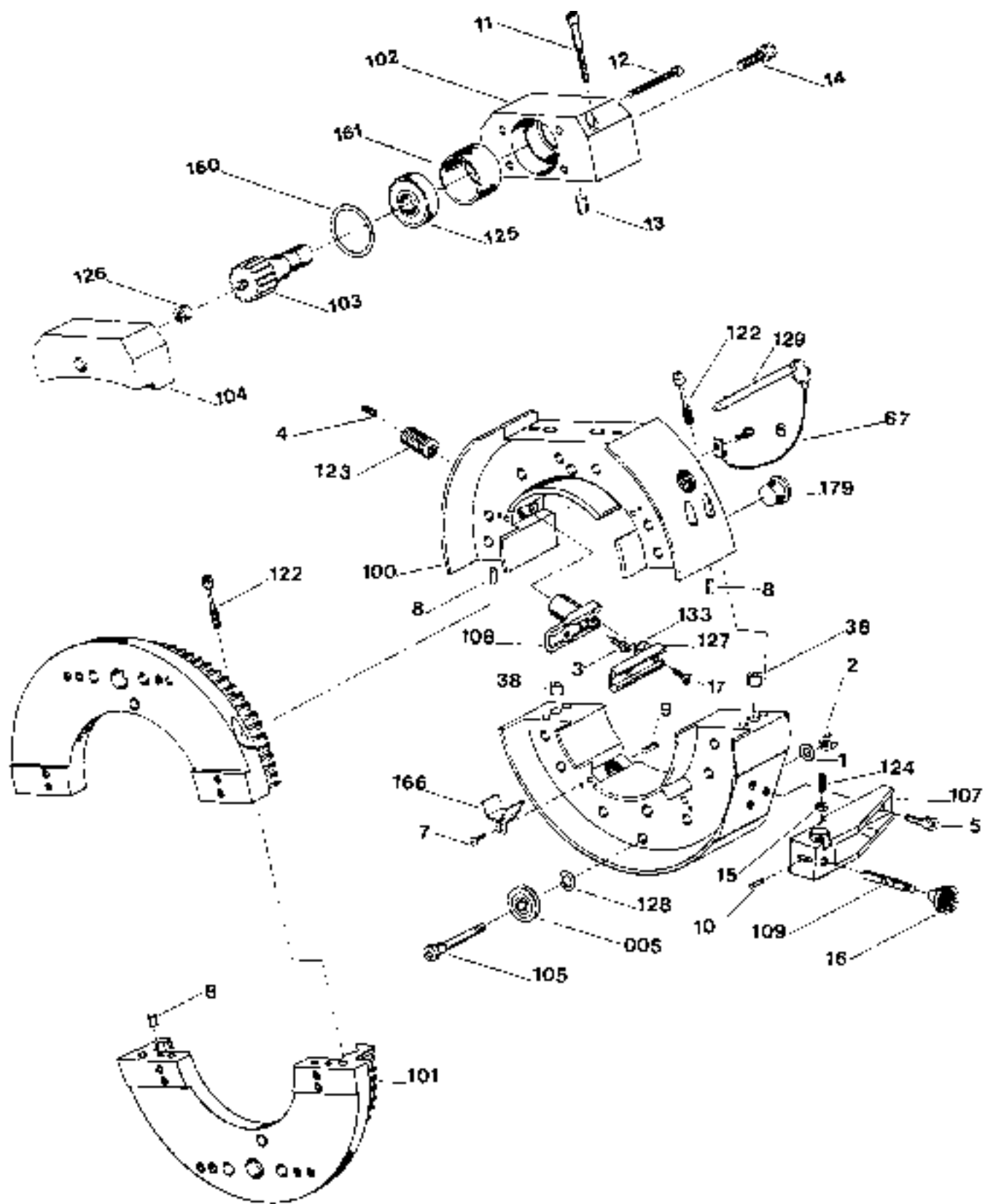
SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-10				LCSF 610/3				60-000-12				LCSF 612/3			
REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	22	Bearing, guide wheel	005	37-005-00	22	Bearing, guide wheel	005	37-005-00	22	Bearing, guide wheel	005	37-005-00	22	Bearing, guide wheel
038	43-038-00	2	Liner	038	43-038-00	2	Liner	038	43-038-00	2	Liner	038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain
100	60-100-10	1	Frame, Stationary 10"	100	60-100-12	1	Frame, Stationary 12"	100	60-100-12	1	Frame, Stationary 12"	100	60-100-12	1	Frame, Stationary 12"
101	60-101-10	1	Frame, Rotating 10"	101	60-101-12	1	Frame, Rotating 12"	101	60-101-12	1	Frame, Rotating 12"	101	60-101-12	1	Frame, Rotating 12"
102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion
105	60-105-00	22	Shaft, Eccentric	105	60-105-00	22	Shaft, Eccentric	105	60-105-00	22	Shaft, Eccentric	105	60-105-00	22	Shaft, Eccentric
107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting
108	60-108-01	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp
109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive
123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front
127	60-408-54		Extension Leg set to cover entire clamping range	127	60-408-51		Extension Leg set to cover entire clamping range	127	60-408-51		Extension Leg set to cover entire clamping range	127	60-408-51		Extension Leg set to cover entire clamping range
128	60-128-00	22	spacer, Frame Bearing	128	60-128-00	22	spacer, Frame Bearing	128	60-128-00	22	spacer, Frame Bearing	128	60-128-00	22	spacer, Frame Bearing
129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock
133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining
166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug
			FASTENERS:				FASTENERS:				FASTENERS:				FASTENERS:
1	90-065-53	22	5/16" an washer	1	90-065-53	22	5/16" an washer	1	90-065-53	22	5/16" an washer	1	90-065-53	22	5/16" an washer
2	90-065-03	22	5/16-18 Nylok Washer	2	90-065-03	22	5/16-18 Nylok Washer	2	90-065-03	22	5/16-18 Nylok Washer	2	90-065-03	22	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown				Not Shown				Not Shown				Not Shown			
	43-053-00	1	Storage case		43-053-00	1	Storage case		43-053-00	1	Storage case		43-053-00	1	Storage case
	43-054-00	1	Insert, foam		43-054-00	1	Insert, foam		43-054-00	1	Insert, foam		43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning
	60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning
	60-209-00	1	Seal, Pinion Housing		60-209-00	1	Seal, Pinion Housing		60-209-00	1	Seal, Pinion Housing		60-209-00	1	Seal, Pinion Housing
	59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine



SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-14				LCSF 814/3				60-000-16				LCSF 1016/3			
REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION	REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	22	Bearing, guide wheel	005	37-005-00	30	Bearing, guide wheel	005	37-005-00	30	Bearing, guide wheel	005	37-005-00	30	Bearing, guide wheel
038	43-038-00	2	Liner	038	60-208-00	2	Bushing, Jig	038	60-208-00	2	Bushing, Jig	038	60-208-00	2	Bushing, Jig
067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain	067	46-067-00	2	Pin Chain
100	60-100-14	1	Frame, Stationary 14"	100	60-100-16	1	Frame, Stationary 16"	100	60-100-16	1	Frame, Stationary 16"	100	60-100-16	1	Frame, Stationary 16"
101	60-101-14	1	Frame, Rotating 14"	101	60-101-16	1	Frame, Rotating 16"	101	60-101-16	1	Frame, Rotating 16"	101	60-101-16	1	Frame, Rotating 16"
102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear	102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion	103	60-103-00	1	Gear, Drive Pinion
104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion	104	60-104-01	1	Housing, Pinion
105	60-105-00	22	Shaft, Eccentric	105	60-105-00	30	Shaft, Eccentric	105	60-105-00	30	Shaft, Eccentric	105	60-105-00	30	Shaft, Eccentric
107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting	107	60-107-00	1	Block, Mounting
108	60-108-10	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp	108	60-108-04	4	Pad, Clamp
109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip	109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive	122	60-122-00	6	Screw, Captive
123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad	123	60-123-10	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball	124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear	125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front	126	60-126-00	1	Bearing, Pinion Front
127	60-408-53		Extension Leg set to cover entire clamping range	127	60-408-52		Extension Leg set to cover entire clamping range	127	60-408-52		Extension Leg set to cover entire clamping range	127	60-408-52		Extension Leg set to cover entire clamping range
128	60-128-00	22	spacer, Frame Bearing	128	60-128-00	30	spacer, Frame Bearing	128	60-128-00	30	spacer, Frame Bearing	128	60-128-00	30	spacer, Frame Bearing
129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock	129	60-129-00	2	Pin, Frame Lock
133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set	133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining	160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining	161	60-161-00	1	Ring, Retaining
166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip	166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug	179	60-179-00	4	Frame Plug
			FASTENERS:				FASTENERS:				FASTENERS:				FASTENERS:
1	90-065-53	22	5/16" an washer	1	90-065-53	30	5/16" an washer	1	90-065-53	30	5/16" an washer	1	90-065-53	30	5/16" an washer
2	90-065-03	22	5/16-18 Nylok Washer	2	90-065-03	30	5/16-18 Nylok Washer	2	90-065-03	30	5/16-18 Nylok Washer	2	90-065-03	30	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs	3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss	4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs	5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs	6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs	7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin	8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin	9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin	10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs	11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs	12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin	13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs	14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut	15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push	16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs	17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown				Not Shown				Not Shown				Not Shown			
	43-053-00	1	Storage case		43-053-00	1	Storage case		43-053-00	1	Storage case		43-053-00	1	Storage case
	43-054-00	1	Insert, foam		43-054-00	1	Insert, foam		43-054-00	1	Insert, foam		43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert		90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert		90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert		90-219-75	4	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning		60-180-00	1	Decal, Slide Warning
	60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning		60-181-00	1	Decal, Gear Warning
	59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine		59-117-00	1	Decal, Open Machine

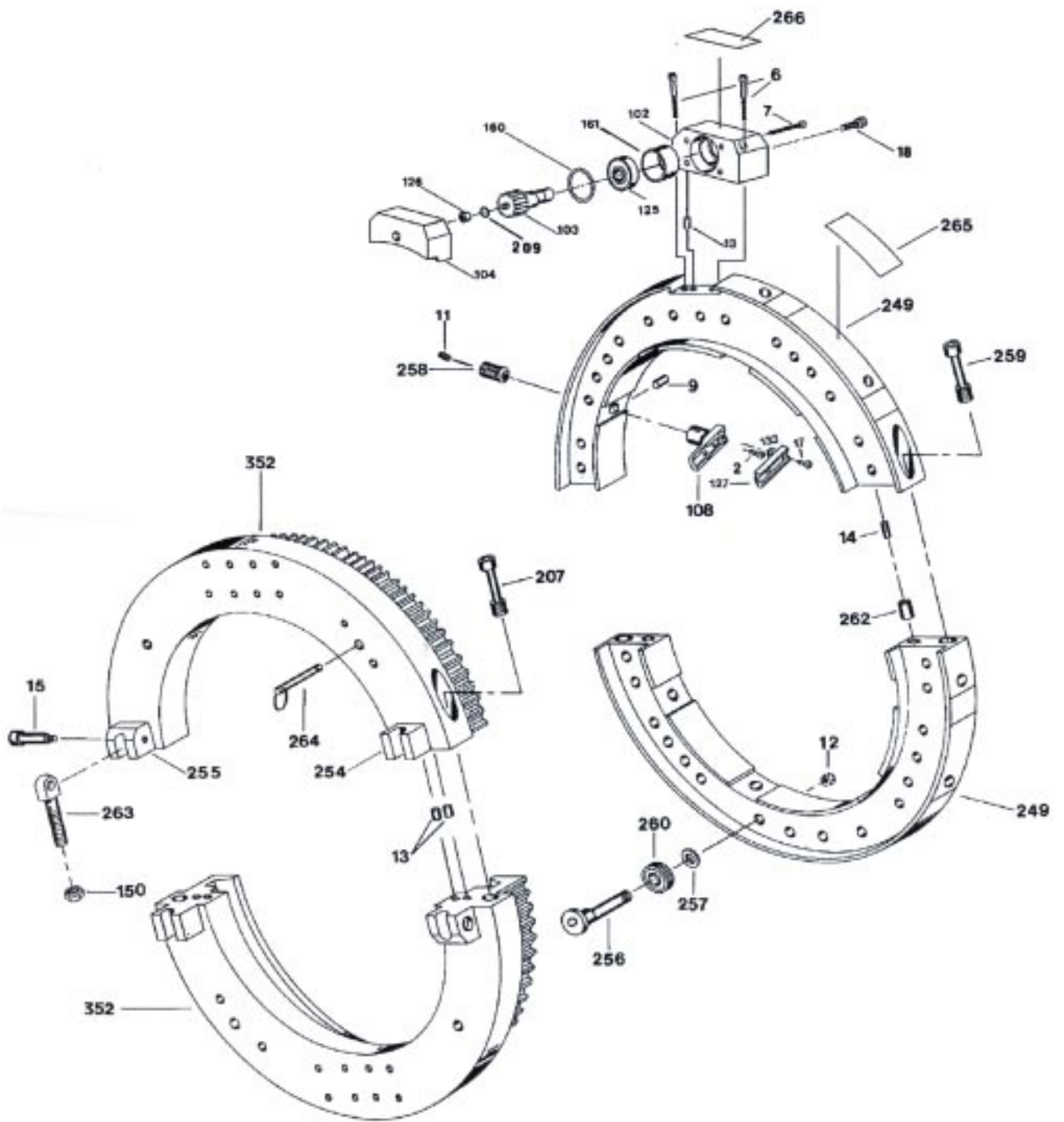


SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-20

LCSF 1420/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
005	37-005-00	30	Bearing, guide wheel
038	43-038-00	2	Liner
067	46-067-00	2	Pin Chain
100	60-100-20	1	Frame, Stationary 20"
101	60-101-20	1	Frame, Rotating 20"
102	60-102-00	1	Housing, Pinion-rear
103	60-103-00	1	Gear, Drive Pinion
104	60-104-20	1	Housing, Pinion
105	60-105-00	30	Shaft, Eccentric
107	60-107-00	1	Block, Mounting
108	60-108-01	4	Pad, Clamp
109	60-338-00	1	Pin, Trip
122	60-122-00	6	Screw, Captive
123	60-123-10	4	Screw, Clamp Pad
124	60-124-00	1	Plunger, Ball
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-51		Extension Leg set to cover entire clamping range
128	60-128-00	30	spacer, Frame Bearing
129	60-129-00	2	Pin, Frame Lock
133	60-133-00	8	Nut, Push 5/16" set
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
166	60-166-04	4	Guard, Chip
179	60-179-00	4	Frame Plug
			FASTENERS:
1	90-065-53	22	5/16" an washer
2	90-065-03	22	5/16-18 Nylok Washer
3	90-060-08	4	5/16-18 x 7/8" shcs
4	90-064-03	4	5/16-18 x 3/8" sss
5	90-060-07	3	5/16-18 x 3/4" shcs
6	90-050-03	2	1/4-20 x 3/8" Shcs
7	90-042-03	4	10-24 x 3/8 bhcs
8	90-056-03	6	1/4 x 1/2 dowel pin
9	90-056-05	4	1/4 x 3/8 dowel pin
10	90-026-55	1	1/8 x 1/2 roll pin
11	90-060-20	2	5/16-18 x 2 shcs
12	90-050-20	4	1/4-20 x 2 shcs
13	90-076-07	2	3/8" x 3/4" dowel pin
14	90-060-07	2	5/16-18 x 3/4" shcs
15	90-055-04	1	1/4-20 jam nut
16	90-900-63	1	Knob, Push
17	90-060-05	8	5/16-18 x 1/2" shcs
Not Shown			
	43-053-00	1	Storage case
	43-054-00	1	Insert, foam
	90-059-12	4	1/4-20 x 1/2" insert
	90-069-12	9	5/16-18 x 1/2" insert
	90-219-75	3	3/4-10 x 3/4 insert
	60-180-00	1	Decal, Slide Warning
	60-181-00	1	Decal, Gear Warning
	60-209-00	1	Pinion seal
	59-117-00	1	Decal, Open Machine



SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-24

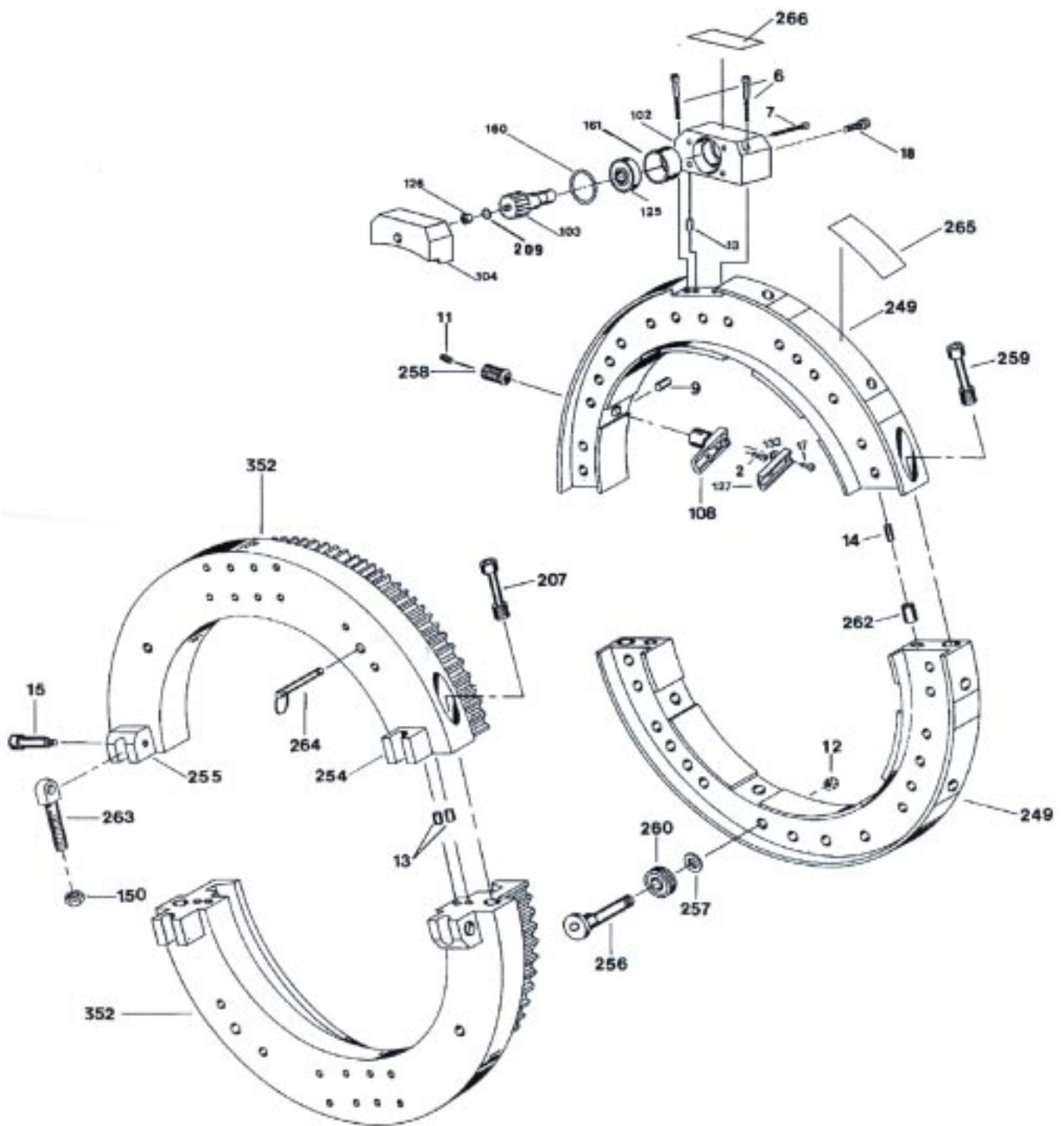
LCSF 1824/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
249	60-249-24	1	Ring, Stationary
352	60-352-24	1	Ring, Rotating
254	60-254-00	2	Latch, Slotted
255	60-255-00	2	Latch, Pivot
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-00	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
182	60-182-01	1	Pinion Drive
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
			FASTENERS:
2	90-060-08	8	SHCS, 5/16-18x7/8
6	90-060-02	2	5/16-18 x 2" shcs
7	90-050-17	4	1/4-20 x 1-3/4" shcs
9	90-056-06	8	1/4 x 5/8" Dowel Pin
11	90-056-05	4	1/4 x 3/8 dowel pin
12	90-075-05	2	Nylock nut
13	90-050-20	4	1/4-20 x 2 shcs
14	90-076-07	2	3/8" x 3/4" dowel pin
15	90-097-65	2	5/16-18 x 3/4" shcs
16	90-055-04	1	1/4-20 jam nut
17	90-060-05	8	5/16-18 x 1/2" shcs
18	90-060-07	2	5/16-18 x 3/4" shcs
Not Shown			
	59-117-00	1	Decal, Open Machine
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag

60-000-28

LCSF 2228/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
249	60-249-28	1	Ring, Stationary
352	60-352-24	1	Ring, Rotating
254	60-254-00	2	Latch, Slotted
255	60-255-00	2	Latch, Pivot
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-00	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
182	60-182-01	1	Pinion Drive
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
			FASTENERS:
2	90-060-08	8	SHCS, 5/16-18x7/8
6	90-060-02	2	5/16-18 x 2" shcs
7	90-050-17	4	1/4-20 x 1-3/4" shcs
9	90-056-06	8	1/4 x 5/8" Dowel Pin
11	90-056-05	4	1/4 x 3/8 dowel pin
12	90-075-05	2	Nylock nut
13	90-050-20	4	1/4-20 x 2 shcs
14	90-076-07	2	3/8" x 3/4" dowel pin
15	90-097-65	2	5/16-18 x 3/4" shcs
16	90-055-04	1	1/4-20 jam nut
17	90-060-05	8	5/16-18 x 1/2" shcs
18	90-060-07	2	5/16-18 x 3/4" shcs
Not Shown			
	59-117-00	1	Decal, Open Machine
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag



SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-32

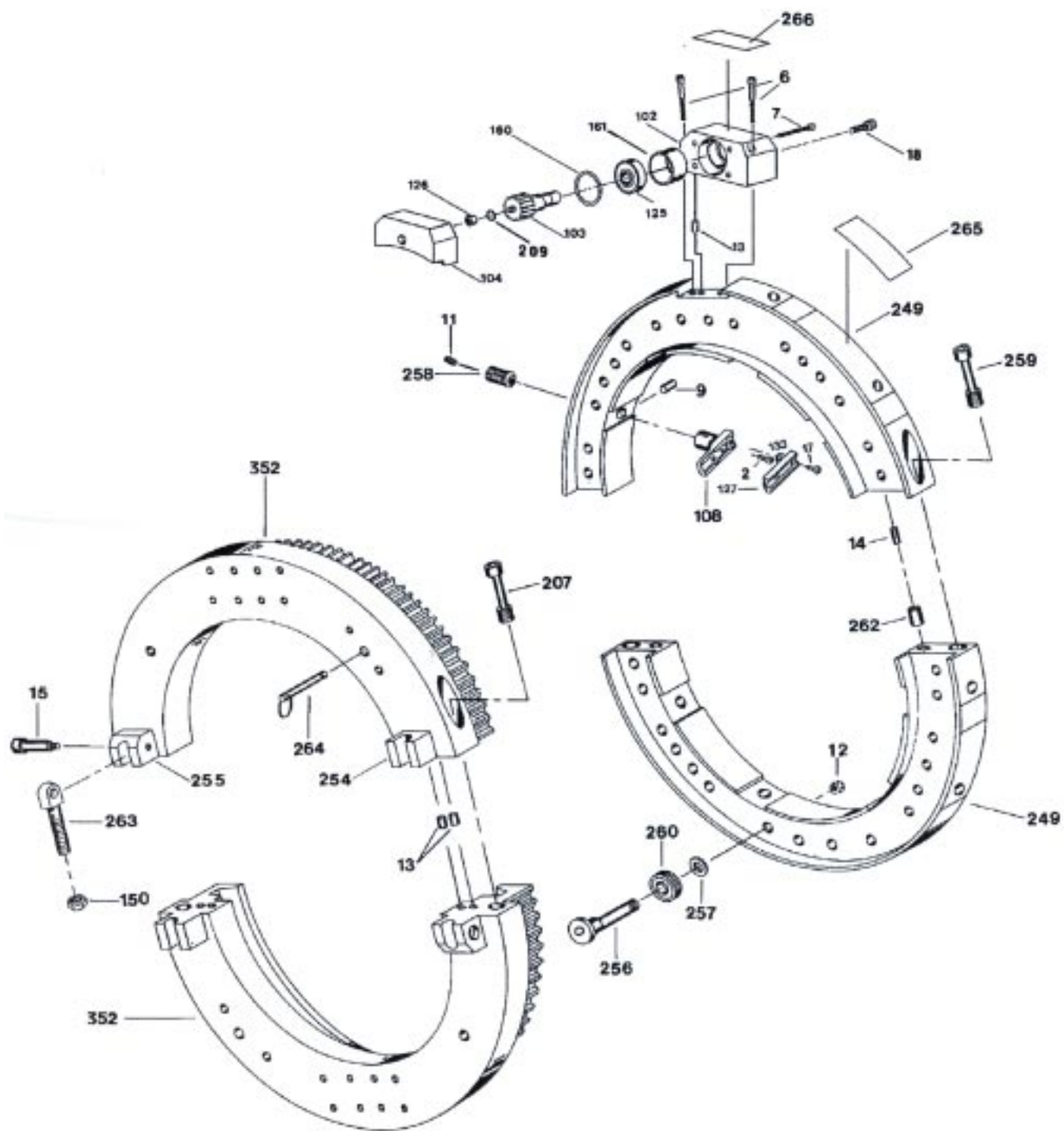
LCSF 2632/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
249	60-249-32	1	Ring, Stationary
352	60-352-32	1	Ring, Rotating
254	60-254-00	2	Latch, Slotted
255	60-255-00	2	Latch, Pivot
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-00	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
182	60-182-01	1	Pinion Drive
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
			FASTENERS:
2	90-060-08	8	SHCS, 5/16-18x7/8
6	90-060-02	2	5/16-18 x 2" shcs
7	90-050-17	4	1/4-20 x 1-3/4" shcs
9	90-056-06	8	1/4 x 5/8" Dowel Pin
11	90-056-05	4	1/4 x 3/8 dowel pin
12	90-075-05	2	Nylock nut
13	90-050-20	4	1/4-20 x 2 shcs
14	90-076-07	2	3/8" x 3/4" dowel pin
15	90-097-65	2	5/16-18 x 3/4" shcs
16	90-055-04	1	1/4-20 jam nut
17	90-060-05	8	5/16-18 x 1/2" shcs
18	90-060-07	2	5/16-18 x 3/4" shcs
Not Shown			
	59-117-00	1	Decal, Open Machine
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag

60-000-36

LCSF 3036/3

REF. NO.	PART NO.	QTY.	DESCRIPTION
249	60-249-36	1	Ring, Stationary
352	60-352-36	1	Ring, Rotating
254	60-254-00	2	Latch, Slotted
255	60-255-00	2	Latch, Pivot
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-00	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
182	60-182-01	1	Pinion Drive
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
			FASTENERS:
2	90-060-08	8	SHCS, 5/16-18x7/8
6	90-060-02	2	5/16-18 x 2" shcs
7	90-050-17	4	1/4-20 x 1-3/4" shcs
9	90-056-06	8	1/4 x 5/8" Dowel Pin
11	90-056-05	4	1/4 x 3/8 dowel pin
12	90-075-05	2	Nylock nut
13	90-050-20	4	1/4-20 x 2 shcs
14	90-076-07	2	3/8" x 3/4" dowel pin
15	90-097-65	2	5/16-18 x 3/4" shcs
16	90-055-04	1	1/4-20 jam nut
17	90-060-05	8	5/16-18 x 1/2" shcs
18	90-060-07	2	5/16-18 x 3/4" shcs
Not Shown			
	59-117-00	1	Decal, Open Machine
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag



SF SERIES LOW CLEARANCE SPLIT FRAME

60-000-42

LCSF 3642

REF.NO.	PARTNO.	QTY.	DESCRIPTION
249	60-249-42	1	Ring, Stationary
352	60-352-42	1	Ring, Rotating
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-01	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
FASTENERS:			
7	90-050-20	4	SHCS, 1/4-20 x 2"
6	90-060-20	2	SHCS 5/16-18 x 2"
13	90-076-07	6	Dowel 3/18" x 3/4"
9	90-056-06	8	Dowel 1/4" x 5/8"
12	90-075-05	32	Nut, Nylock 3/8-16
14	90-096-10	2	Dowel, 1/2 x 1
15	90-097-65	2	1/2 x 1 1/2 Shoulder
11	90-064-03	8	SSS, 5/16-18 x 3/8
2	90-060-08	8	SHCS 5/16-18 X 7/8
18	90-060-07	2	SHCS 5/16-18 X 3/4
3	90-075-54	32	Washer, 3/8 AN
Not Shown			
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag

60-000-48

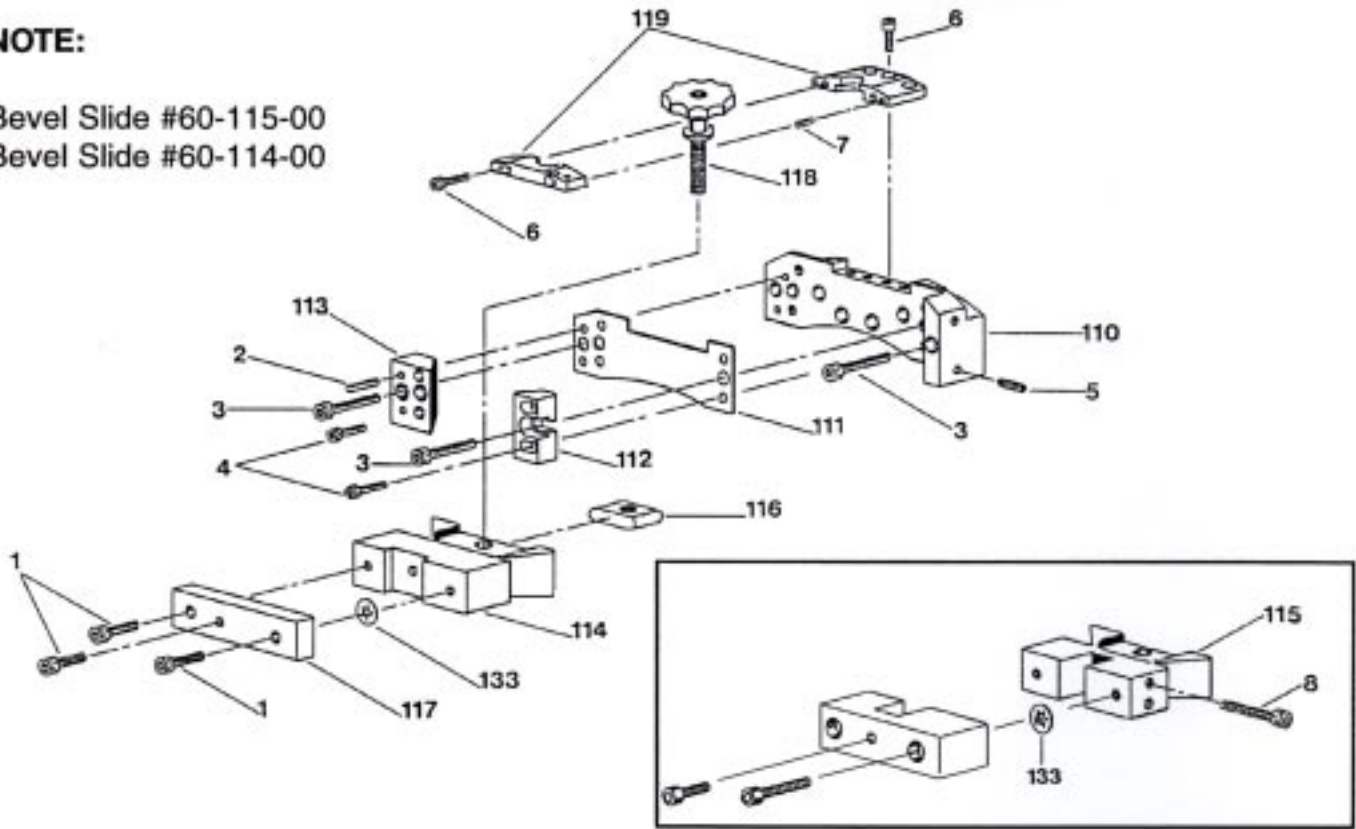
LCSF 4248

REF.NO.	PARTNO.	QTY.	DESCRIPTION
249	60-249-48	1	Ring, Stationary
352	60-352-48	1	Ring, Rotating
256	60-256-00	32	Eccentric Shaft
257	60-257-00	32	Spacer, Bearing
258	60-258-00	8	Screw, Clamp pad
259	60-259-00	2	Screw, Captivated
260	60-260-00	32	Bearing, Guide Wheel
262	60-262-00	2	Bushing drill
263	60-263-00	2	Bolt, Swing
264	60-264-00	4	Pin, Detent
265	59-117-00	1	Label, Open Machine
266	60-180-00	1	Decal, Slide Warning
150	22-150-00	2	Nut, 1/2-13" flange
108	60-108-10	8	Pad, Clamp
207	60-207-00	2	Screw, Captivated
102	60-102-00	1	Housing, Pinion Rear
103	60-103-01	1	Gear, Pinion
104	60-104-36	1	Housing, Pinion Front
125	60-125-00	1	Bearing, Pinion Rear
126	60-126-00	1	Bearing, Pinion Front
127	60-408-49		Extension Leg set to cover entire clamping range
133	60-133-00	16	Nut, Push 5/16
160	60-160-00	1	Ring, Retaining
161	60-161-00	1	Ring, Retaining
209	60-209-00	1	Seal, Pinion
FASTENERS:			
7	90-050-20	4	SHCS, 1/4-20 x 2"
6	90-060-20	2	SHCS 5/16-18 x 2"
13	90-076-07	6	Dowel 3/18" x 3/4"
9	90-056-06	8	Dowel 1/4" x 5/8"
12	90-075-05	32	Nut, Nylock 3/8-16
14	90-096-10	2	Dowel, 1/2 x 1
15	90-097-65	2	1/2 x 1 1/2 Shoulder
11	90-064-03	8	SSS, 5/16-18 x 3/8
2	90-060-08	8	SHCS 5/16-18 X 7/8
18	90-060-07	2	SHCS 5/16-18 X 3/4
3	90-075-54	32	Washer, 3/8 AN
Not Shown			
	90-099-91	1	Eye Bolt 1/2-13
	60-324-00	1	Serial Tag

SF SERIES LOW CLEARANCE SPLIT FRAME

NOTE:

Bevel Slide #60-115-00
 Bevel Slide #60-114-00



TOOL SLIDE ASSEMBLY PART/BEVEL STARFEED LC1 -3

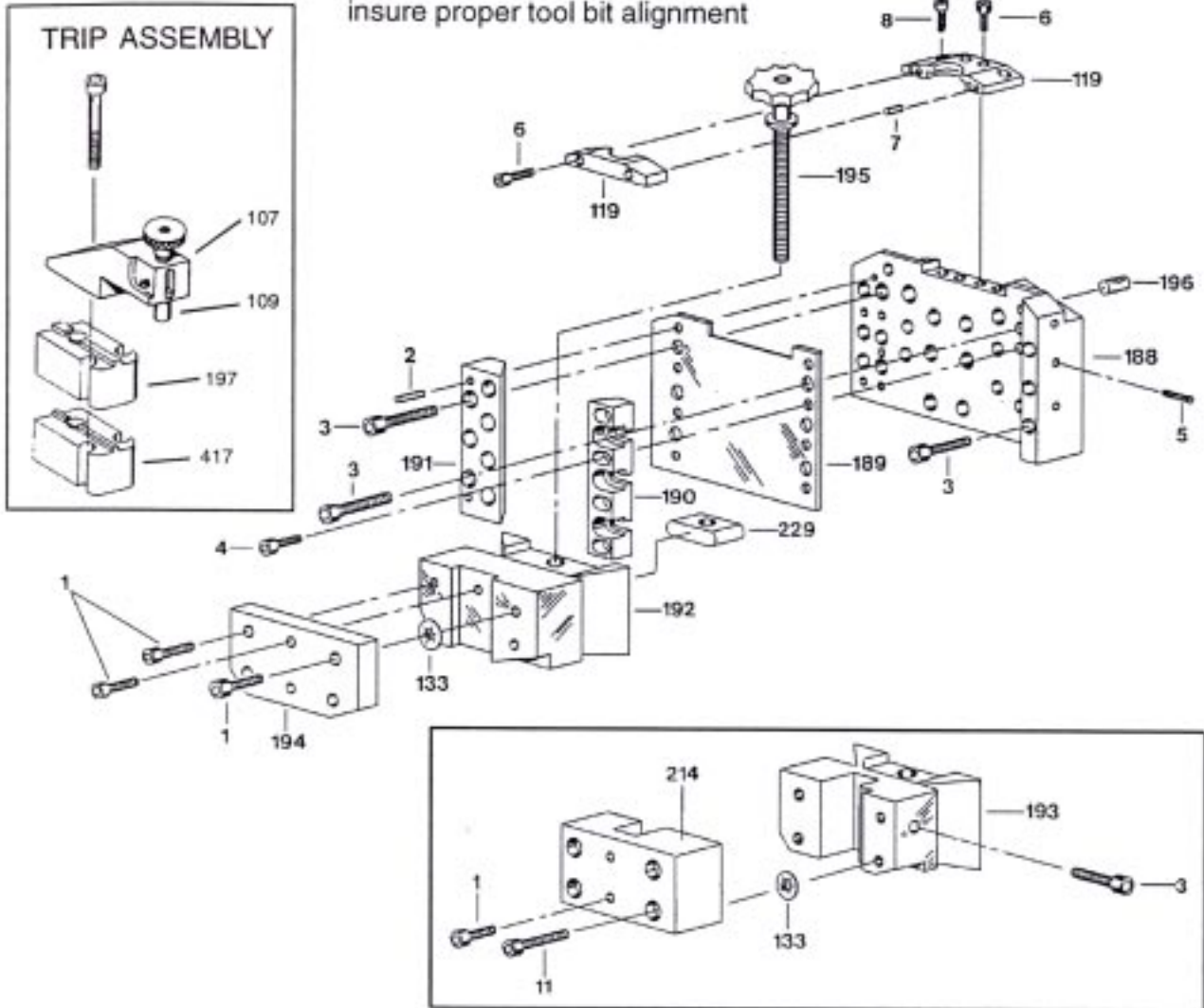
REF.	PART NO.	DESCRIPTION	QUANTITY	REF.	PART NO.	DESCRIPTION	QUANTITY
110	60-110-01	SUPPORT,SUDE	1	3	90-060-15	5'16-18X1-1/4 SHCS	3
111	60-111-01	PLATE,WEAR	1	4	90-050-08	1/4~20X7/8 SHCS	4
112	60-112-01	DOVETAILADJ	1	5	90-054-03	11~20X1/2 SSS	2
113	60-113-04	DOVETAILFIX	1	6	90-060-05	11420X1/2 SHCS	4
116	60-116-00	NUT,FEED	1	7	90-046-02	3/16'X1/4~DOWEL PIN (BEVEL SLIDE ONLY)	2
117	60-117-00	COVER,TOO	1	8	90-060-15	5/1~1BX1/2" LHCS	2
118	60-118-04	SCREW,FEED	1	NOT SHOWN			
119	60-119-00	ASSY,FEEDSCREW	1	90-069-12	1/4-20 x 1/2 INSERTS	8	
133	60-133-00	NUT, PUSH 5/16	2	60-181-00	DECAL, TIMING	1	
1	90-060-00	5/16-18 x 7/8 SHCS	3				
2	90-046-12	3/16 x 1-1/4 DOWEL PIN	2				

TOOL SLIDE ASSEMBLY PART/BEVEL STARFEED LC 4-20

REF.	PART NO.	DESCRIPTION	QUANTITY	REF.	PART NO.	DESCRIPTION	QUANTITY
110	60-110-04	SUPPORT,SLIDE	112	3	90-060-15	5/1818X1-1/4SHCS	3
111	60-111-04	PLATE,WEAR		4	90-050-08	1/~20X7/8SHCS	4
	60-112-04	DOVETAILADJ.		5	90-064-00	1/~20x 1/2 SSS	2
113	60-113-04	DOVETAIL, FIX		6	90-050-05	1/~20X1/2 SHCS	6
116	60-118-00	NUT,FEED		7	90-046-02	3/16X1/4DWLPIN(BEVEL SLIDE ONLY)	2
117	60-117-00	COVER,TOOL		8	90-060-15	5/1618x1/2' LHCS	2
118	60-118-04	SCREW, FEED		NOT SHOWN			
119	60-119-00	ASSY, FEED SCREW		90-059-12	1/4-20X1/2INSERT	10	
FASTENERS				60-184-00	DOUBLEIBEVELCOVER	1	
1	90-060-00	5/16-18 x 7/8 SHCS		60-181-00	DECAL TIMING	1	
2	90-056-12	1/4 x 1-1/4 DOWL PIN					

SF SERIES LOW CLEARANCE SPLIT FRAME

NOTE: Using proper shim kit will insure proper tool bit alignment



Part # 60-415-00 Extended Beveling Slide
Part # 60-416-00 Extended Parting Slide

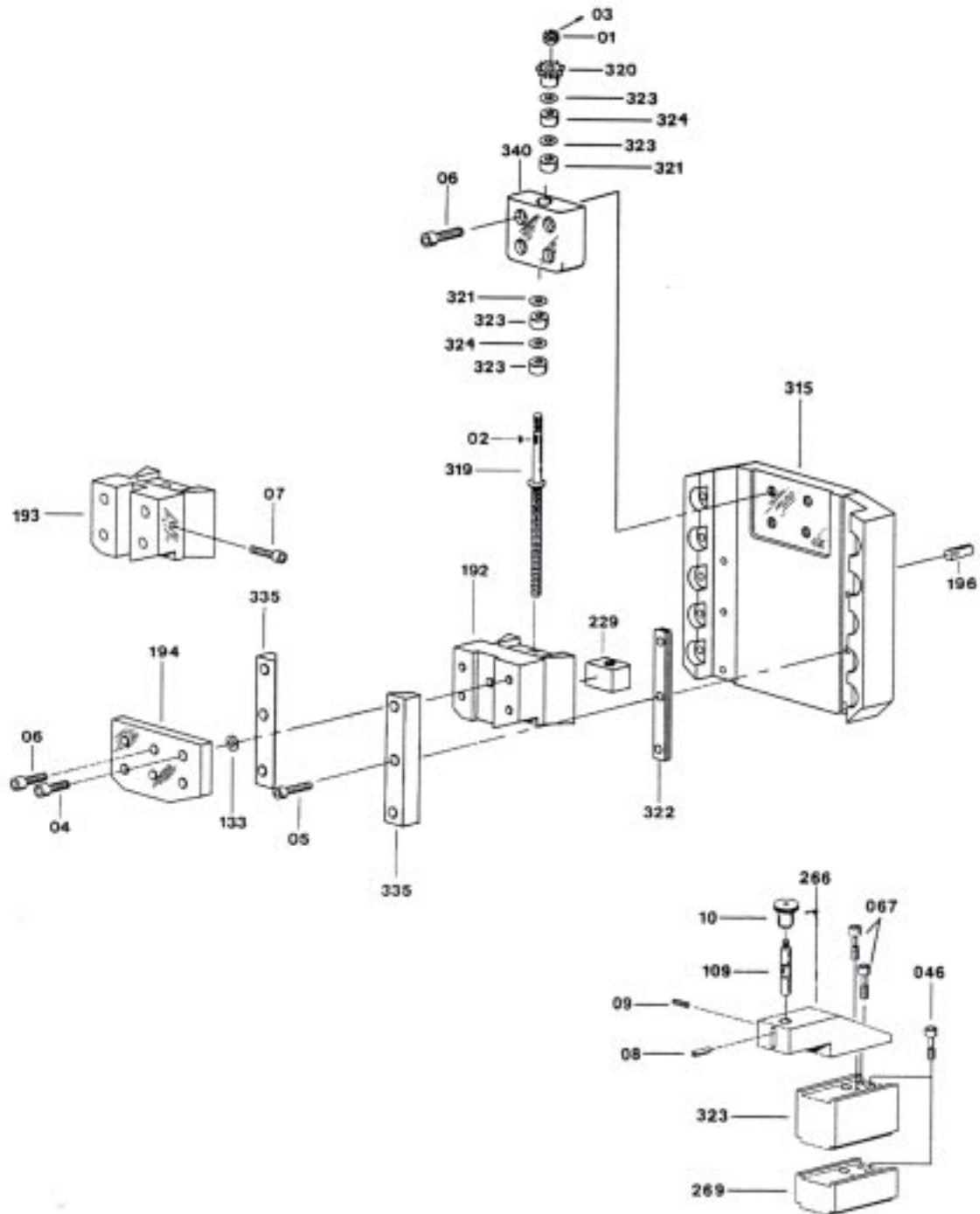
REF.	PART NO.	DESCRIPTION	QUANTITY	REF.	PART NO.	DESCRIPTION	QUANTITY
119	60-119-00	FEED SCREW PLATE ASSY.	1	1	90-060-08	SHCS 5/16-18 x 7/8	2
133	60-133-00	NUT PUSH 5/16	8	2	90-056-12	DOWEL PIN, 1/4x1-1/4	2
181	60-181-00	DECAL,TIMING WARNING(n/s)	1	3	90-060-12	SHCS 5/16-18 x 1-1/4	4
188	60-188-00	SUPPORT, TOOLSUDE	1	4	90-050-08	SHCS 1/4-20 x 7/8	8
189	60-189-00	PLATE. WEAR	1	5	90-051-00	SSS 1~20 x 1/2	4
190	60-190~00	DOVETAIL ADJUST.	1	6	90-050-05	SHCS 1/4-20 x 1/2	4
191	60-191-00	DOVETAIL FIXED	1	7	90-046-02	DOWEL PIN 3/16 x 1/4	2
192	60-192-00	SLIDE, MALE PARTING	1	8	90-059-05	LHCS 1/4-20 x 1/2	2
193	60-193-00	SLIDE, MALE HEAVY DUTY	1	11	90-060-17	SHCS 5/16-18 x 1-3/4	3
194	60-194-00	COVER, TOOL SLIDE	1	12	90-060-10	SHCS, 5/16-18x1	4
195	60-195-00	SCREW, FEED	1	NOT SHOWN			
196	60-196-00	PIN AUGMENT	2		60-331-00	KIT, SHIM DOUBLE BEVEL	1
197	60-197-00	SPACER, TRIP ASSY	1		60-332-00	KIT, SHIM "J" BEVEL	1
107	60-107-00	BLOCK, MOUNTING	1				
109	60-338-00	PIN,TRIP	1				
417	60-417-00	EXTENSION. TRIP ASSY.	1				
214	60-214-00	COVER, DOUBLE BEVEL	1				
229	60-229-00	NUT FEED, HEAVY DUTY STAR	1				

SF SERIES LOW CLEARANCE SPLIT FRAME

Super Extended Starfeed Tool Slides

REF. NO.	PART NO.	QTY.	DESCRIPTION
	60-440-00		Extended Slide Group
	60-437-00	1	Slide Parting (Ass'y)
	60-438-00	1	Slide Beveling (Ass'y)
	660-439-00	2	Extended Trip Blocks
			Slide Assembly
314	60-314-00	1	Slide, Parting
315	60-315-00	1	Slide, Beveling
316	60-316-00	2	Dovetail
318	60-318-00	1	Feed Screw Block
319	60-319-00	1	Feed Screw
320	60-320-00	1	Star Wheel
321	60-321-00	2	Bushing
322	60-322-00	14	Shim
323	43-043-00	4	Thrust Washer
324	43-064-00	2	Bearing
192	60-192-00	1	Slide, Male Parting
193	60-193-00	1	Slide, Male Beveling
194	60-194-00	1	Cover, Tool
196	60-196-00	2	Alignment Pin
229	60-229-00	1	Nut, Feed
133	60-133-00	4	Nut, Push
			FASTENERS:
01	90-065-05	1	5/16" Nut, Slotted
02	90-019-43	1	Key, 3/32 x 3/8"
03	90-016-55	1	3/32 x 1/2" Pin, Roll
04	90-060-10	4	5/16-18 x 1" shcs
05	90-060-08	6	5/16-18 x 7/8" shcs
06	90-050-07	6	1/4-20 x 3/4" shcs
07	90-060-12	1	5/16-18 x 1-1/4" shcs
			Not Shown
	60-330-00	1	Shim Starwheel Nut
	60-331-00	1	Dbl. Bevel shim kit
	60-332-00	1	"J" Bevel shim kit
			TRIP ASSEMBLY
323	60-323-00	1	Block, Trip Extension
269	60-269-00	1	Block, Extension
046	43-046-00	4	Screw, Clamp
266	60-266-00	1	Housing Trip
067	43-067-00	2	Screw, Captive
109	60-109-00	1	Pin, Trip
			FASTENERS:
08	90-026-55	1	1/8" x 1/2" Roll Pin
09	90-059-08	1	Plunger, Spring
10	90-900-52	1	1/4-20 Push Knob

SF SERIES LOW CLEARANCE SPLIT FRAME



SF SERIES LOW CLEARANCE SPLIT FRAME

60-428-20 BRIDGE SLIDE (12"-20" RANGE)

60-428-28 BRIDGE SLIDE (22"-28" RANGE)

REF.	PART NO.	DESCRIPTION	QUANTITY
067	43-067-00	SCREW, CAPTIVATED	2
071	60-230-00	SCREW, CAPTIVATED	4
252	43-252-00	NUT, FEED	1
137	53-137-00	BLOCK, TEMPLATE	2
142	53-142-00	SLIDE, FEMALE	1
143	53-143-00	GIB	1
147	53-147-00	RAIL, SUPPORT	2
152	53-152-00	SPRING	1
153	53-153-00	ROLLER TRACK	2
154	53-154-00	SHAFT	2
155	53-155-00	PLATE, GIB	1
215	53-215-00	SCREW, TOOL HOLDER ADJ.	1
222	60-327-00	NUT FEED	1
225	53-225-00	KNOB, ADJUST SCREW	1
270	60-270-00	SCREW, FEED	1
271	60-271-00	BLOCK, FEED	1
272	60-272-20	BRIDGE	1
273	60-273-01	SUPPORT, TOP	1
274	60-274-00	SUPPORT, BOTTOM	1
275	60-275-00	STARWHEEL	1
276	60-276-00	GEAR, STARWHEEL	1
277	60-277-00	GEAR, FEED SCREW	1
278	60-278-00	MALE, SLIDE	1
282	60-282-00	PLATE, SPRING	1
283	60-283-00	PLATE, TOOL FEED	1
284	60-284-00	SCREW, FEED	1
285	60-285-00	BLOCK	1
286	60-286-00	KNOB	1
287	60-287-00	PLATE, COVER	1
288	60-288-00	BEARING, SHOULDER	2
289	60-289-00	BEARING, SHOULDER	2
701	60-705-00	HOLDER, TOOL	1
703	60-703-00	INSERT, BEVEL	1
325	60-325-00	BUSHING	1
326	60-326-00	BUSHING	1
706	60-706-00	TOOL HOLDER, C'BORE	1
	60-337-00	LABEL, SINGLE POINT (N/S)	1
FASTENERS			
2	90-040-06	SHCS, 10-24 x 5/8	2
3	90-040-07	SHCS, 10-24 X 3/4	5
4	90-045-07	NUT, 10-32 JAM	3
5	90-050-07	SHCS, 1/4-20 X 3/4	27
6	90-050-08	SHCS, 1/4-20 X 7/8	10
7	90-053-12	FHCS, 1/4-20 X 1-1/4	4
8	90-053-07	FHCS, 1/4-20 X 3/4	16
9	90-054-04	SSS, 1/4-20 X 3/8	7
10	90-036-57	Pin, Roll 5-32" x 3/4"	2
16	90-090-20	SHCS, 1/2-1 3x 3	4
18	90-095-10	Nut, Hex Slotted 1/2-20	2
20	90-040-57	SHCS, 10-32 x 3/4	2
21	90-026-58	PIN, ROLL 1/8 x 7/8	1
22	90-029-43	1/8 x 1/2 WOODRUFF	2
23	90-019-43	KEY, 3/32 x 5/8"	1
24	90-036-57	PIN ROLL, 5/32 x 3/4	2
26	90-054-10	SSS 1/4-20 x 1"	2

REF.	PART NO.	DESCRIPTION	QUANTITY
067	43-067-00	SCREW, CAPTIVATED	2
071	60-230-00	SCREW, CAPTIVATED	4
252	43-252-00	NUT, FEED	1
137	53-137-00	BLOCK, TEMPLATE	2
142	53-142-00	SLIDE, FEMALE	1
143	53-143-00	GIB	1
147	53-147-00	RAIL, SUPPORT	2
151	53-151-00	STUD	1
152	53-152-00	SPRING	1
153	53-153-00	ROLLER TRACK	2
154	53-154-00	SHAFT	2
155	53-155-00	PLATE, GIB	1
215	53-215-00	SCREW, TOOL HOLDER ADJ.	1
222	60-327-00	NUT FEED	1
225	53-225-00	KNOB, ADJUST SCREW	1
270	60-270-00	SCREW, FEED	1
271	60-271-00	BLOCK, FEED	1
272	60-272-28	BRIDGE	1
273	60-273-00	SUPPORT, TOP	1
274	60-274-00	SUPPORT, BOTTOM	1
275	60-275-00	STARWHEEL	1
276	60-276-00	GEAR, STARWHEEL	1
277	60-277-00	GEAR, FEED SCREW	1
278	60-278-00	MALE, SLIDE	1
282	60-282-00	PLATE, SPRING	1
283	60-283-00	PLATE, TOOL FEED	1
284	60-284-00	SCREW, FEED	1
285	60-285-00	BLOCK	1
286	60-286-00	KNOB	1
287	60-287-00	PLATE, COVER	1
288	60-288-00	BEARING, SHOULDER	2
289	60-289-00	BEARING, SHOULDER	2
701	60-705-00	HOLDER, TOOL	1
703	60-703-00	INSERT, BEVEL	1
325	60-325-00	BUSHING	1
326	60-326-00	BUSHING	1
706	60-706-00	TOOL HOLDER, C'BORE	1
	60-337-00	LABEL, SINGLE POINT (N/S)	1
FASTENERS			
2	90-040-06	SHCS, 10-24 x 5/8	2
3	90-040-57	SHCS, 10-32 x 3/4	2
4	90-045-01	NUT, 10-32 JAM	2
5	90-050-07	SHCS, 1/4-20 X 3/4	20
6	90-050-08	SHCS, 1/4-20 X 7/8	10
7	90-050-12	SHCS, 1/4-20 X 1-1/4	4
8	90-053-07	FHCS, 1/4-20 X 3/4	20
9	90-054-04	SSS, 1/4-20 X 3/8	7
10	90-036-57	Pin, Roll 5-32" x 3/4"	2
12	90-070-04	SHCS, 3/8-16 x 1-1/2	4
16	90-090-20	SHCS, 1/2-13 x 2	4
17	90-095-09	NUT, JAM 1/2-13	2
18	90-075-07	NUT, SLOTTED 3/8	1

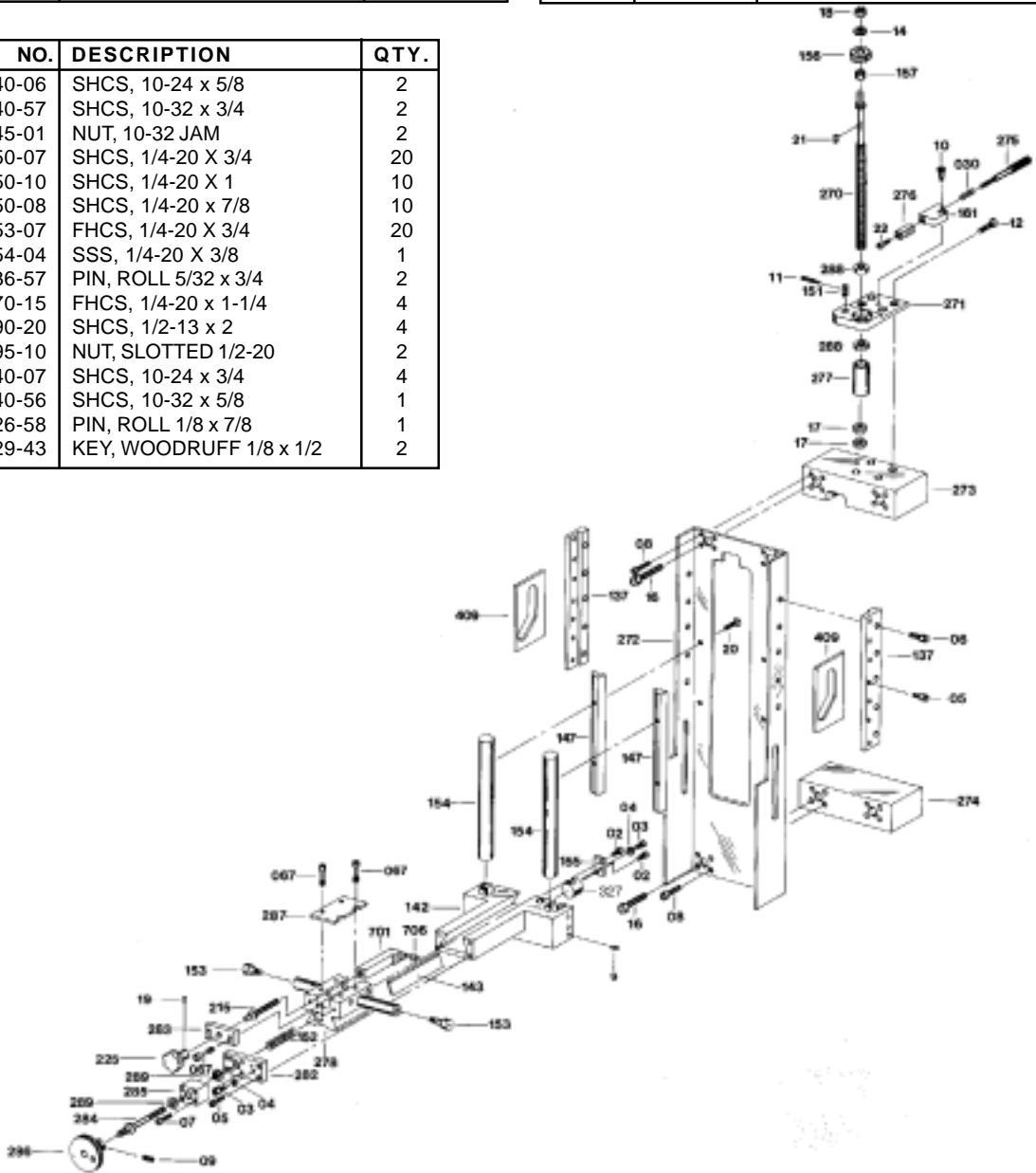
60-428-36 BRIDGE SLIDE (32"- 36" RANGE & 42"- 48" RANGE)

REF.	PART NO.	DESCRIPTION	QUANTITY
029	43-039-00	PINT, FEED SCREW	1
067	43-067-00	SCREW, CAPTIVATED	2
071	60-230-00	SCREW, CAPTIVATED	4
252	43-252-00	NUT, FEED	1
137	53-137-00	BLOCK, TEMPLATE	2
142	53-142-00	SLIDE, FEMALE	1
143	53-143-00	GIB	1
147	53-147-00	RAIL, SUPPORT	2
152	53-152-00	SPRING	1
153	53-153-00	ROLLER, TRACK	2
154	53-154-00	SHAFT	2
155	53-155-00	PLATE, GIB	1
215	53-215-00	SCREW, TOOL HOLDER ADJ.	1
327	60-327-00	NUT, FEED	1
225	53-225-00	KNOB, ADJUST. SCREW	1
270	60-270-00	SCREW, FEED	1
271	60-271-00	PLATE, FEED	1
272	60-272-36	BRIDGE 32"-36" MACHINE	1
275	60-272-48	BRIDGE 42"-48" MACHINE	1

REF.	PART NO.	DESCRIPTION	QUANTITY
273	60-273-00	SUPPORT, TOP	1
274	60-274-00	SUPPORT, BOTTOM	1
275	60-275-00	STARWHEEL	1
276	60-276-00	GEAR, STARWHEEL	1
277	60-277-00	GEAR, FEED SCREW	1
278	60-278-00	MALE, SLIDE	1
282	60-282-00	PLATE, SPRING	1
283	60-283-00	PLATE, TOOL FEED	1
284	60-284-00	SCREW, FEED	1
285	60-285-00	BLOCK	1
286	60-286-00	KNOB	1
287	60-287-00	PLATE, COVER	1
288	60-288-00	BEARING, SHOULDER	2
289	60-289-00	BEARING, SHOULDER	2
701	60-701-00	HOLDER, TOOL	1
703	60-703-00	INSERT, BEVEL	1
706	60-706-00	TOOL HOLDER, C'BORE	1
325	60-325-00	BUSHING	1
326	60-326-00	BUSHING	1

FASTENERS

REF.	PART NO.	DESCRIPTION	QTY.
2	90-040-06	SHCS, 10-24 x 5/8	2
3	90-040-57	SHCS, 10-32 x 3/4	2
4	90-045-01	NUT, 10-32 JAM	2
5	90-050-07	SHCS, 1/4-20 X 3/4	20
6	90-050-10	SHCS, 1/4-20 X 1	10
7	90-050-08	SHCS, 1/4-20 x 7/8	10
8	90-053-07	FHCS, 1/4-20 X 3/4	20
9	90-054-04	SSS, 1/4-20 X 3/8	1
10	90-036-57	PIN, ROLL 5/32 x 3/4	2
12	90-070-15	FHCS, 1/4-20 x 1-1/4	4
16	90-090-20	SHCS, 1/2-13 x 2	4
18	90-095-10	NUT, SLOTTED 1/2-20	2
19	90-040-07	SHCS, 10-24 x 3/4	4
20	90-040-56	SHCS, 10-32 x 5/8	1
21	90-026-58	PIN, ROLL 1/8 x 7/8	1
22	90-029-43	KEY, WOODRUFF 1/8 x 1/2	2



SF SERIES LOW CLEARANCE SPLIT FRAME

60-428-20 BRIDGE (01-103 RANGE)

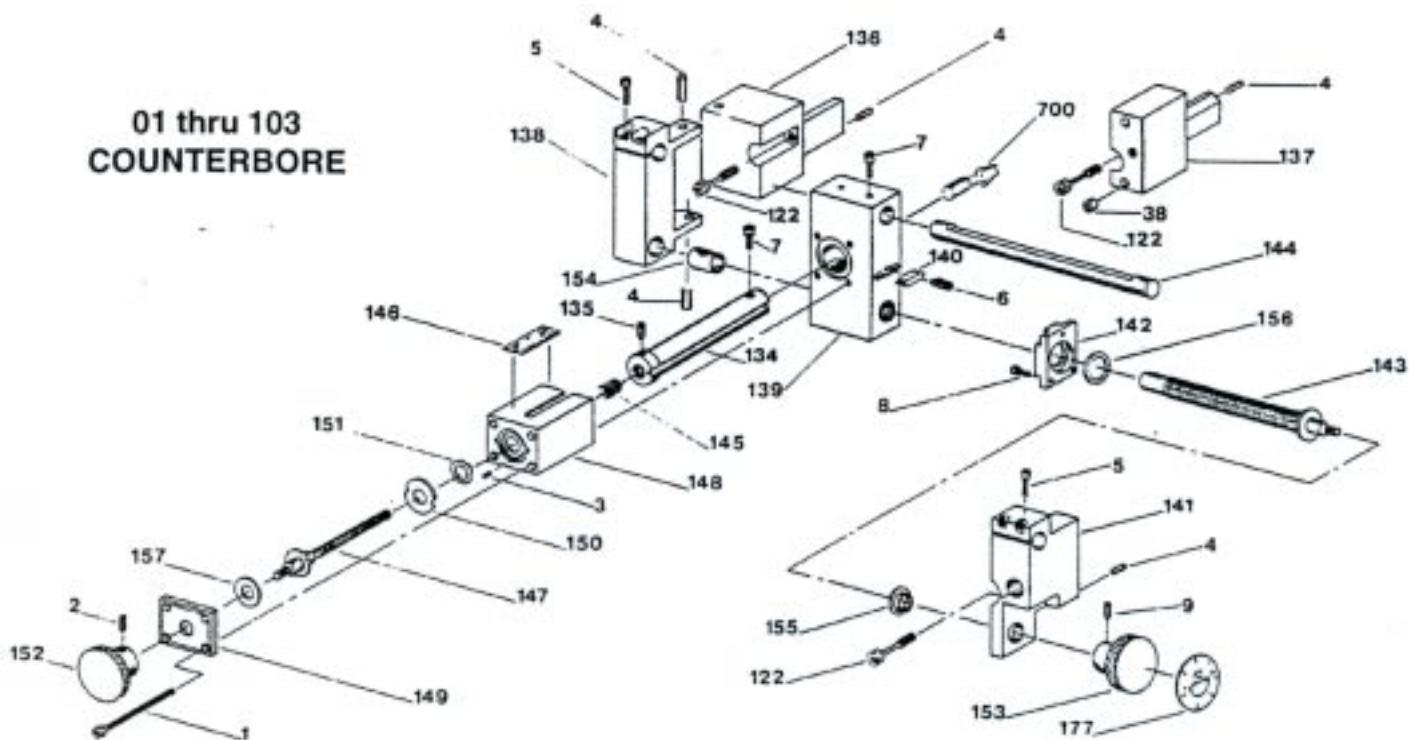
REF.	PART NO.	DESCRIPTION	QUANTITY
038	43-038-00	LINER	
122	60-122-00	SCREW, CAPTIVE	6
134	60-134-01	BAR, BORING	1
135	60-135-00	INDICATOR	1
136	60-136-01	BLOCK, PIVOT	1
137	60-137-01	BLOCK, LOCKING	1
138	60-136-01	PIVOT BLOCK	1
139	60-139-01	BLOCK, SLIDE	1
140	60-140-01	KEY	1
141	60-141-01	BLOCK, FEED	1
142	60-142-01	COVER, SCREW	1
143	60-143-01	SCREW P05. LC 0-1	1
143	60-143-02	SCREW P06. LC 1-2	1
144	60-144-01	GUIDE ROD LC 0-1	1
144	60-144-02	GUIDEROD L C1-2	1
144	60-144-03	GUIDE ROD LC 2-3	1
145	60-145-00	INSERT, SCREW	1
146	60-146-00	DECAL, FEED	1
147	60-147-00	SCREW, FEED	1
148	60-148-00	BLOCK, SUPPORT	1
149	60-149-00	PLATE, THRUST	1
150	60-150-00	BUSHING	1
151	60-151-00	SPRING, FEED	1
152	60-152-00	HANDLE	1
153	60-153-00	HANDLE	1
154	60-154-00	BUSHING	1
155	60-155-00	BUSHING	1
156	60-156-01	BUSHING	1
157	60-157-00	BUSHING	1
177	60-177-01	DECAL, SCREW POS.	1
700	60-700-01	C'BORE TOOL	1
fasteners			
1	90-050-30	1/4-20X3 SCHS	4
2	90-054-02	1/4-20 X 114 SSS	1
3	90-036-52	5/32X 1/4 ROLL PIN	2
4	90-056-05	1/4 X1/2 DOWEL PIN	6
5	90-040-55	10-32 X 1/2 SHCS	4
7	90-060-05	5/16-18 X 112 SHCS	3
8	90-001-03	6-32 X 3/8 SHCS	4
9	90-043-07	10-24X3/16 SSS	1
NOTSHOWN			
	43-053-00	STORAGE CASE	1
	43-054-00	INSERT, FOAM	1
	90-059-12	1/4-20 X 1/2 INSERT	4
	90-069-12	5/16-18 X 1/2 INSERT	9
	90-219-75	3/4-10X 3/4 INSERT	3
180	60-180-00	DECAL, SLIDE WARNING	1
181	60-181-00	DECAL, GEAR WARNING	1
	60-209-00	SEAL, PINION HOUSING	1

60-405-UL COUNTERBORE SLIDE (204-1420 RANGE)

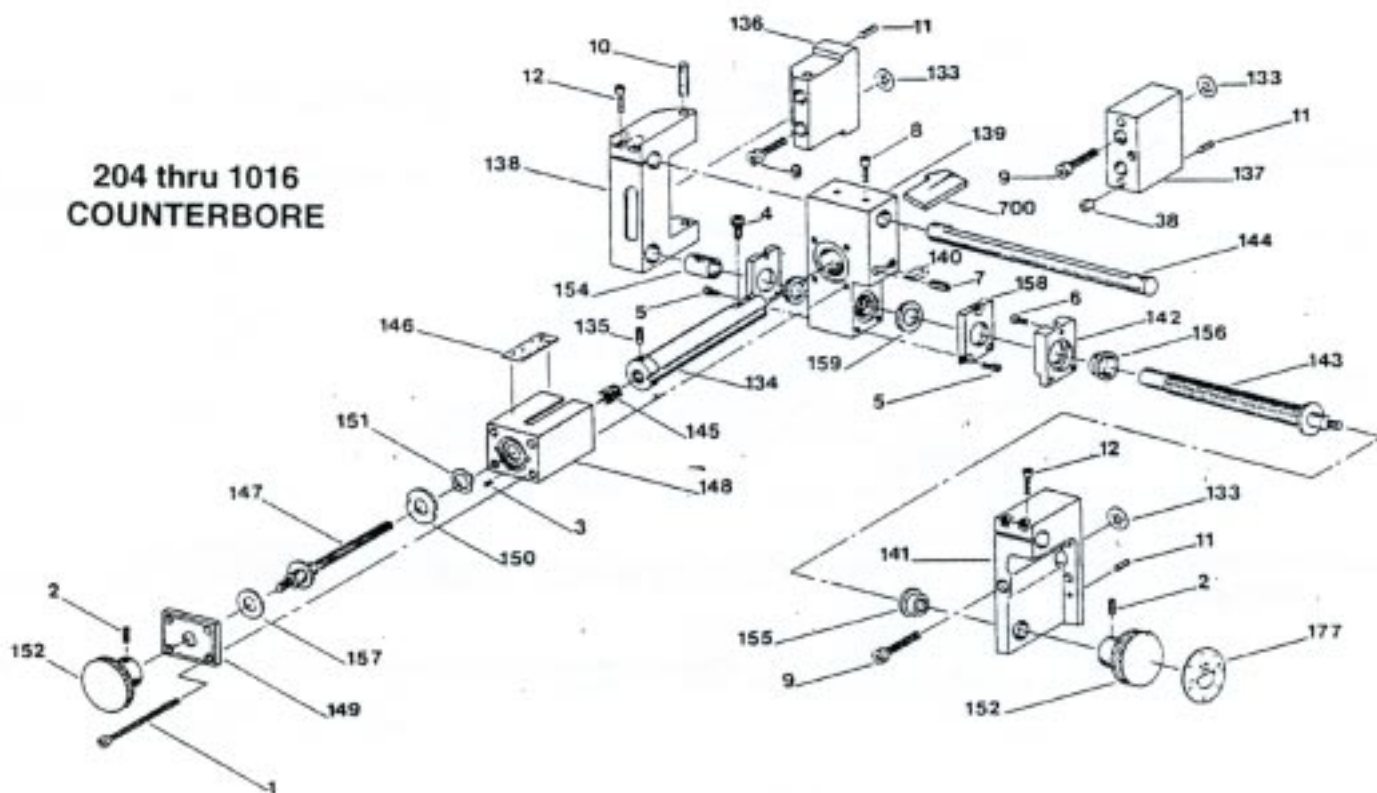
REF.	PART NO.	DESCRIPTION	QUANTITY
038	43-038-00	LINER	2
133	60-133-00	NUT, PUSH	5
134	60-134-04	BAR, BORING	1
135	60-135-00	INDICATOR	1
136	80-136-04	BLOCK, PIVOT	1
137	60-137-04	BLOCK, LOCKING	1
138	60-138-04	PIVOT BLOCK	1
139	60-139-04	BLOCK, SLIDE	1
140	60-140-04	KEY	1
141	60-141-04	BLOCK, FEED	1
142	60-142-04	COVER, SCREW	1
143	60-143-04	SCREW P05. LC 204	1
143	60-143-06	SCREW P06 LC 206	1
143	60-143-08	SCREW P05. LC 408	1
143	60-143-10	SCREW P06. LC610	1
143	60-143-12	SCREW P08. LC 1420	1
143	60-143-14	SCREW POS. LC 814	1
143	60-143-16	SCREW P05. LC 1016	1
144	60-144-08	GUIDE ROD LC 4-8	1
144	60-144-10	GUIDE ROD LC 8-10	1
144	60-144-12	GUIDE ROD LC 10-12	1
144	60-144-14	GUIDE ROD LO 14-16	1
145	60-145-00	INSERT, SCREW	1
146	60-146-00	DECAL, FEED	1
147	60-147-00	SCREW, FEED	1
148	60-148-00	BLOCK, SUPPORT	1
149	60-149-00	PLATE, THRUST	1
150	60-150-00	BUSHING	1
151	60-151-00	SPRING, FEED	1
152	60-152-00	HANDLE	1
154	60-154-00	BUSHING	1
155	60-155-00	BUSHING	1
156	60-156-01	BUSHING	1
157	60-157-00	BUSHING	1
158	60-158-00	COVER, SEAL	2
159	60-159-00	SEAL, FELT	2
177	60-177-04	DECAL, SCREW P05.	1
700	60-700-04	C'BORE TOOL	1
fasteners			
1	90-050-30	1/4-20X3 SCHS	4
2	90-054-02	1/4-20X1/4 SSS	2
3	90-036-52	5/32 X 1/4 ROLL PIN	2
4	90-060-07	5/16-18 X 3/4 SHCS	2
5	90-040-03	10-24 X 318 SHCS	6
6	90040-05	10-24X 1/2 SHCS	3
7	90-074-05	3/8-16 X 1/2 SSS	2
8	90-060-05	5116-18 X 1/2 SHCS	2
9	90-060-15	5/16-18 X 1-1/2 SHCS	5
10	90-076-12	3/8 x 1-1/4 DOWEL	2
11	90-056-05	1/4 X 1/2 DOWEL	6
12	90-050-07	1/4-20 X 3/4 SHCS	4
NOTSHOWN			
	43-053-00	STORAGE CASE	1
	43-054-00	INSERT, FOAM	1
	90-059-12	1/4-20 X 1/2 INSERT	4
	90-069-12	5/16-18 X 1/2 INSERT	9
	90-219-75	3/4-10X 3/4 INSERT	3
180	60-180-00	DECAL, SLIDE WARNING	1
181	60-181-00	DECAL, GEAR WARNING	1
	60-209-00	SEAL, PINION HOUSING	1

SF SERIES LOW CLEARANCE SPLIT FRAME

01 thru 103 COUNTERBORE



204 thru 1016 COUNTERBORE

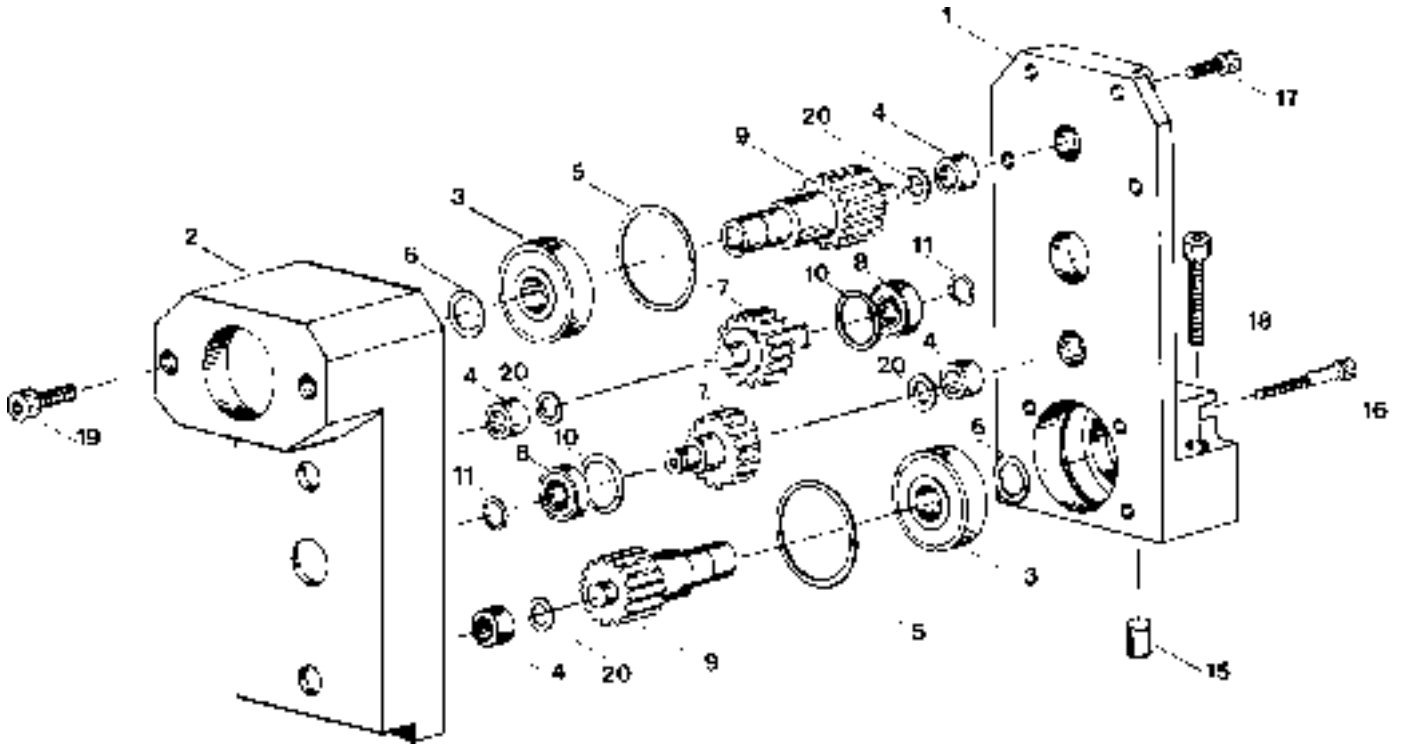


SF SERIES LOW CLEARANCE SPLIT FRAME

60-414-00 DIAL INDICATOR SYSTEM

REF	PART #	QTY	DESCRIPTION	REF	PART #	QTY.	DESCRIPTION
	27-188-00	1	Dial		27-192-00	1	sleeve
	27-189-00	1	Attachment, indicator		27-197-00	1	Attachment, Universal
	27-190-00	1	Rod		60-187-00	1	Rod Indicator
	27-191-00	1	Sleeve		90-065-04	3	5/16-18 Jam Nut

SF SERIES LOW CLEARANCE SPLIT FRAME

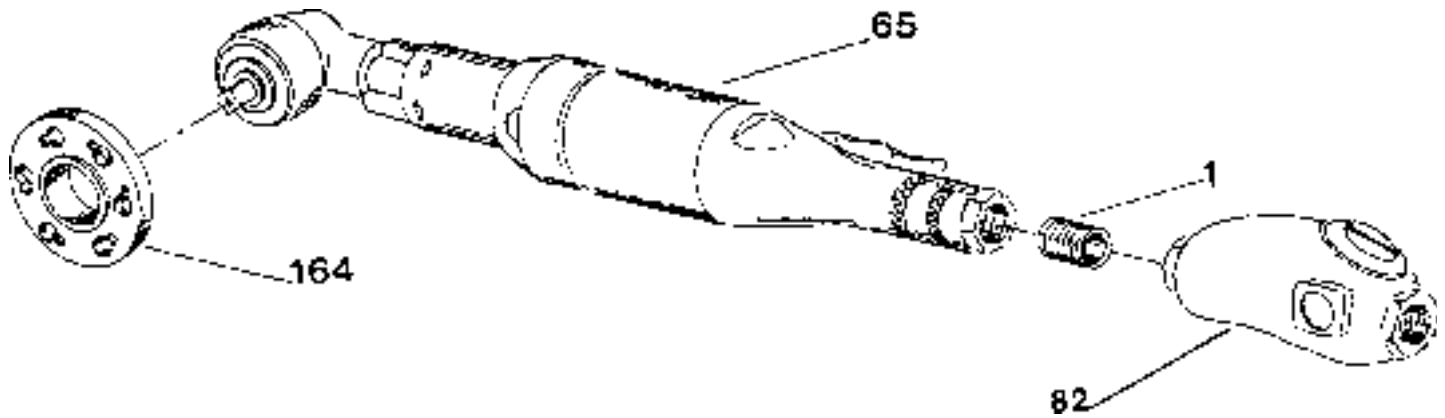


LC SF MACHINE DOUBLE DRIVE PINION HOUSING

REF.	PART NO.	DESCRIPTION	QUANTITY
1	60-217-00	HOUSING PINION, REAR	1
2	60-216-00	HOUSING PINION, FRONT	1
3	60-125-00	BEARING PINION, REAR	2
4	60-126-00	BEARING PINION, FRONT	4
5	60-160-00	RETAINING RING, PINION	2
6	60-161-00	RETAINING RING, PINION	2
7	60-333-00	GEAR W/ SHAFT	2
8	60-219-00	BEARING, PINION	2
9	60-103-00	DRIVE PINION	2
10	60-220-00	RETAINING RING	2

REF.	PART NO.	DESCRIPTION	QUANTITY
199	60-202-00	SCREW, Feed-Cam(H D)	1
200	60-200-00	DOVETAIL, FIXED (H.D.)	1
1	90-0604)8	5/16-18 X 7/8	5
2	90-05~1 2	1/4 x 1/4 DOWEL PIN	2
3	90-0~1 5	5/16-18x 1-1/4 SHCS	7
4	90-050-08	1/4-20 x 7/8 SHCS	10
5	90-0544)0	1/4-20 x 1/2 SSS	4
6	90-050-05	1/4-20x1/2 SHCS	6
7	90-046-02	3/16 x 1/4 DOWEL PIN	2
8	90-057-05	14 x 1/2 Stripper bolt	1
9	90-050-03	114-20 X 3/8	1
10	90-05~03	1/4-28 JAM NUT	1
NOT SHOWN			
	90-059-12	1/4-20 X 1/2 INSERT	10
	90-020-03	8132 X3/8 SHCS	2

SF SERIES LOW CLEARANCE SPLIT FRAME



LCSF/3 AIR MOTOR ASSEMBLY PART # 60-407-00

SINGLE HYDRAULIC DRIVE PART # 60-424-00

REF.	PART NO.	DESCRIPTION	QUANTITY
1	90-098-01	NIPPLE, CLOSE 112 LP	1
65	60-211-00	MOTOR, AIR STANDARD	1
	60-215-00	COLLECTOR, EXHAUST	1
82	05-082-00	OILER, AIR LINE	1
164	60-210-00	FLANGE, MOUNTING	1
	90-060-07	SHCS, 5/16-18 X 3/4,, (N/S)	2
	66-100-00	VALVE, SPEED CONTROL (N/S)	1
	90-098-65	ELBOW MALE 112 HP (N/S)	1

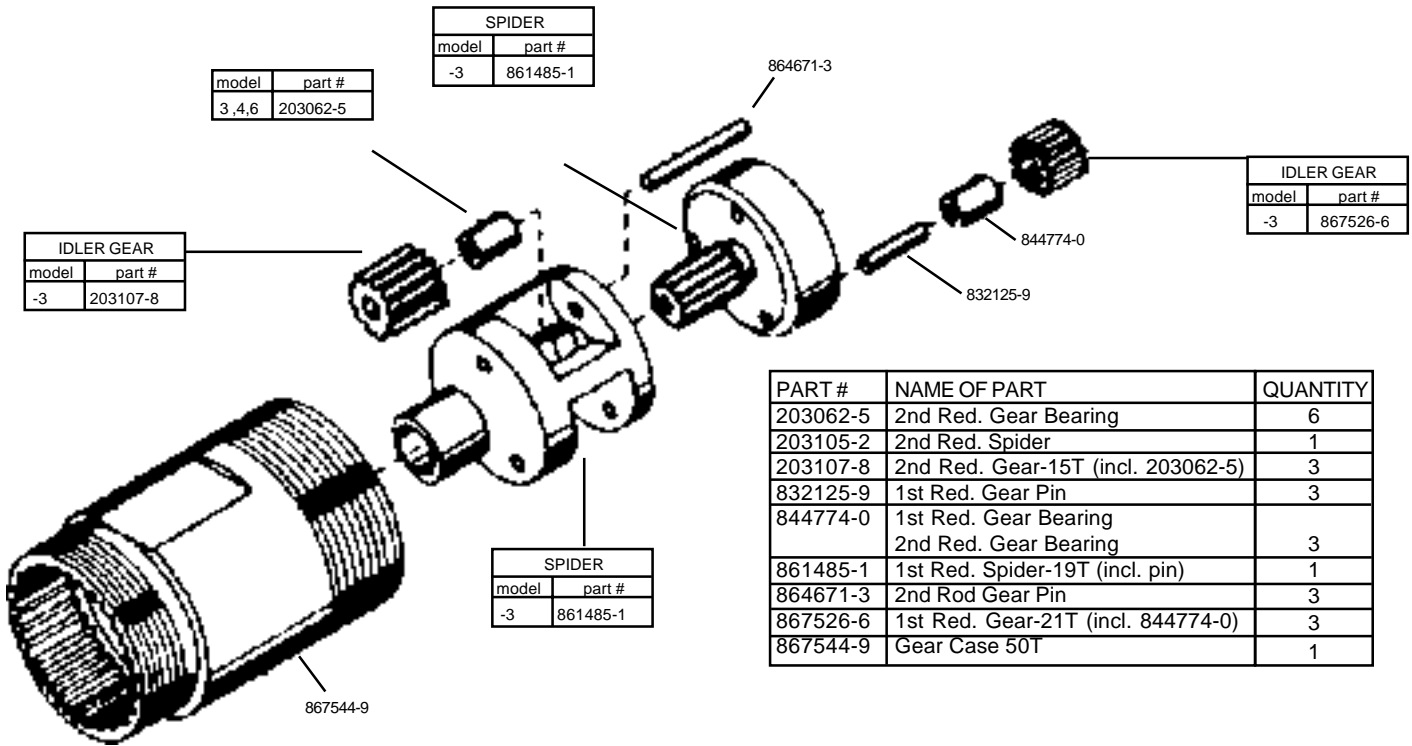
REF.	PART NO.	DESCRIPTION	QUANTITY
	02-203-00	COUPLING, HYD MOTOR	1
	53-073-00	MOTOR, HYDRAULIC	1
	60-212-00	KEY, SQUARE - HYD DRIVE	1
	60-213-00	MOUNT, MOTOR	2
	05-150-00	O'RING	1
	23-187-00	MANIFOLD	1
	23-188-00	VALVE, FLOW	1
	23-189-00	SPOOL, COMPENSATOR	1
	90-098-65	ELBOW, MALE, 1/2 HP	1
	90-098-58	HEX NIPPLE, 1/2 HP	1
	90-090-15	1/2-13 X 1-1/2 SHCS	1
	90-060-12	5/16-18 X 1-3/4 SHCS	1
	90-054-02	1/420 X 1/4 SSS	1
	90-081-25	HHCS, 5/16-18 X 2-1/2"	1
	90-055-53	FLATWASHER 1/4"	1

SF SERIES LOW CLEARANCE SPLIT FRAME

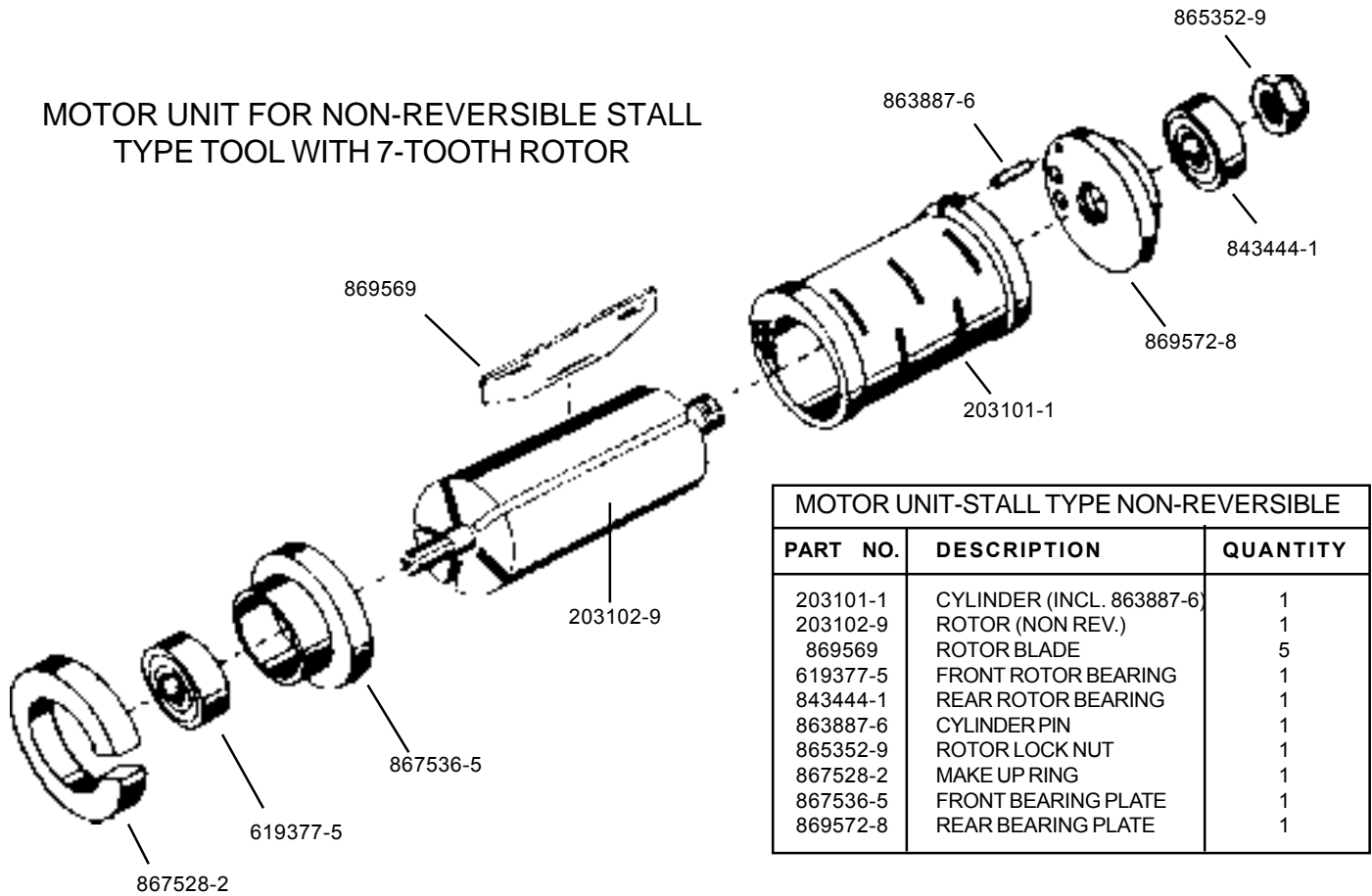
AIR MOTOR SCHEMATICS

SF SERIES LOW CLEARANCE SPLIT FRAME

Wachs 60-423-00 (55 Cleco NL 3T)



MOTOR UNIT FOR NON-REVERSIBLE STALL TYPE TOOL WITH 7-TOOTH ROTOR



SF SERIES LOW CLEARANCE SPLIT FRAME

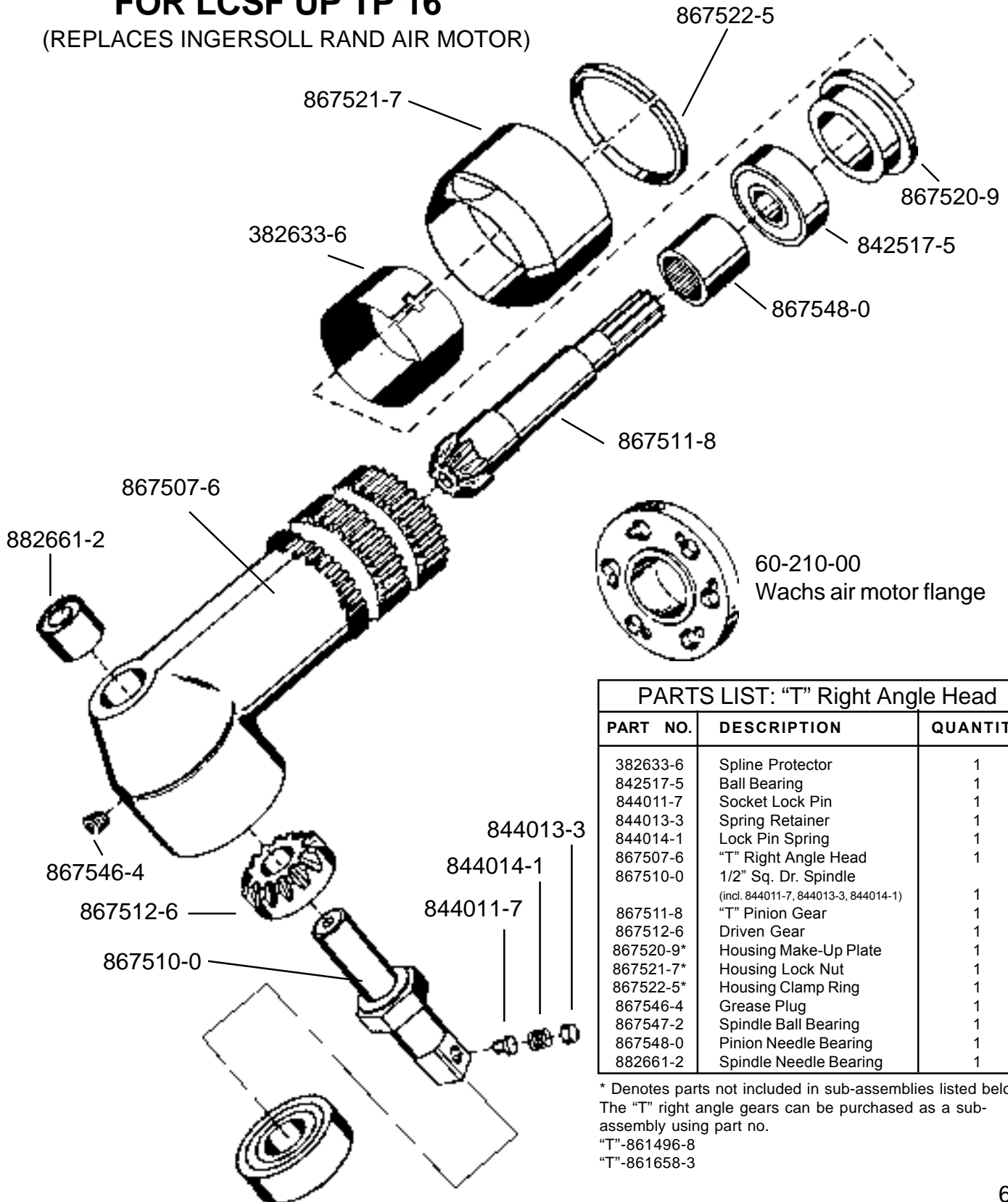
Wachs 60-423-00 (55 Cleco NL 3T)

CLECO AIR MOTOR

60-423-00

FOR LCSF UP TP 16"

(REPLACES INGERSOLL RAND AIR MOTOR)



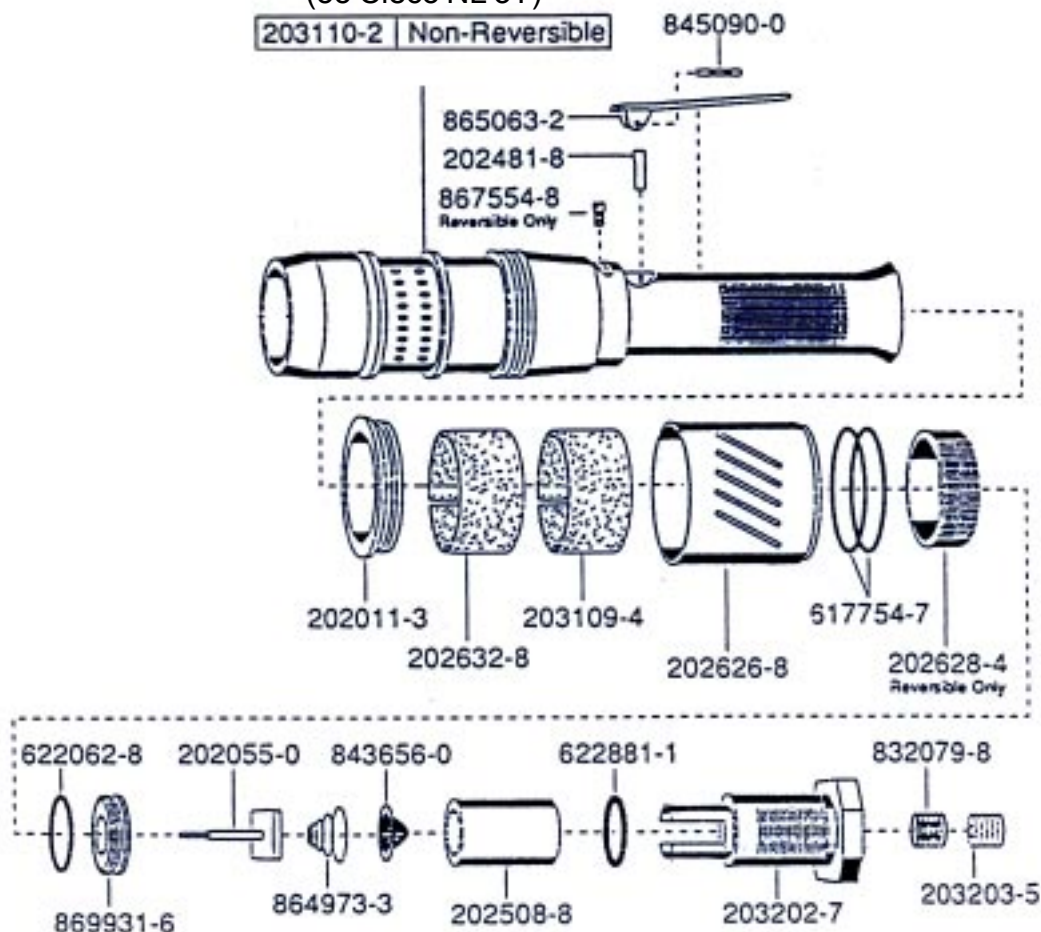
PARTS LIST: "T" Right Angle Head		
PART NO.	DESCRIPTION	QUANTITY
382633-6	Spline Protector	1
842517-5	Ball Bearing	1
844011-7	Socket Lock Pin	1
844013-3	Spring Retainer	1
844014-1	Lock Pin Spring	1
867507-6	"T" Right Angle Head	1
867510-0	1/2" Sq. Dr. Spindle (incl. 844011-7, 844013-3, 844014-1)	1
867511-8	"T" Pinion Gear	1
867512-6	Driven Gear	1
867520-9*	Housing Make-Up Plate	1
867521-7*	Housing Lock Nut	1
867522-5*	Housing Clamp Ring	1
867546-4	Grease Plug	1
867547-2	Spindle Ball Bearing	1
867548-0	Pinion Needle Bearing	1
882661-2	Spindle Needle Bearing	1

* Denotes parts not included in sub-assemblies listed below.
 The "T" right angle gears can be purchased as a sub-assembly using part no.
 "T"-861496-8
 "T"-861658-3

SF SERIES LOW CLEARANCE SPLIT FRAME

NO. 55 RIGHT ANGLE NUTRUNNER HANDLE

(55 Cleco NL 3T)



PARTS LIST — HANDLE

PART NO.	NAME OF PART	QTY.	PART NO.	NAME OF PART	QTY.
202011-3	SEAL RING	1	622881-1	"O"-RING 7/8" X 1-1/8"	1 *
202055-0	THROTTLE VALVE	1	832079-8	SPRING	1
202481-8	THROTTLE VALVE PIN	1	843656-0	AIR INLET SCREEN	1
202508-8	INLET SPACER	1	845090-0	LEVER PIN	1
202626-8	EXHAUST DEFLECTOR	1	847275-5*	"O"-RING 1-1/16" X 1-3/16"	1
202628-4	REVERSING VALVE SLEEVE	1	863468-5*	TRIP ROD	1
202632-6	MUFFLER	1	864973-3	THROTTLE VALVE SPRING	1
203109-4	MUFFLER	1	865063-2	THROTTLE LEVER	1
203110-2	MOTOR HOUSING (NON-REV.)	1	867554-8	REVERSING VALVE SCREW	1
203111-0	MOTOR HOUSING (REV.)	1	867667-8*	SHUT-OFF VALVE	1
203202-7	INLET BUSHING	1	867682-7*	VALVE BLOCK	1
203203-5	METERING NUT	1	869655-1	MOTOR SPACER	1
617754-7	"O"-RING 2" X 2-1/8"	2	869659-3	REVERSING VALVE	1
619164-7	"O"-RING 1-9/16" X 1-3/4"	1	869931-6	THROTTLE VALVE SEAT	1
622062-8	"O"-RING 7/8" X 1-1/16"	1			

* Denotes parts not included in sub-assemblies listed below.

The complete motor housing can be purchased as a sub-assembly using the part numbers listed below.

55NAL - 201302-7

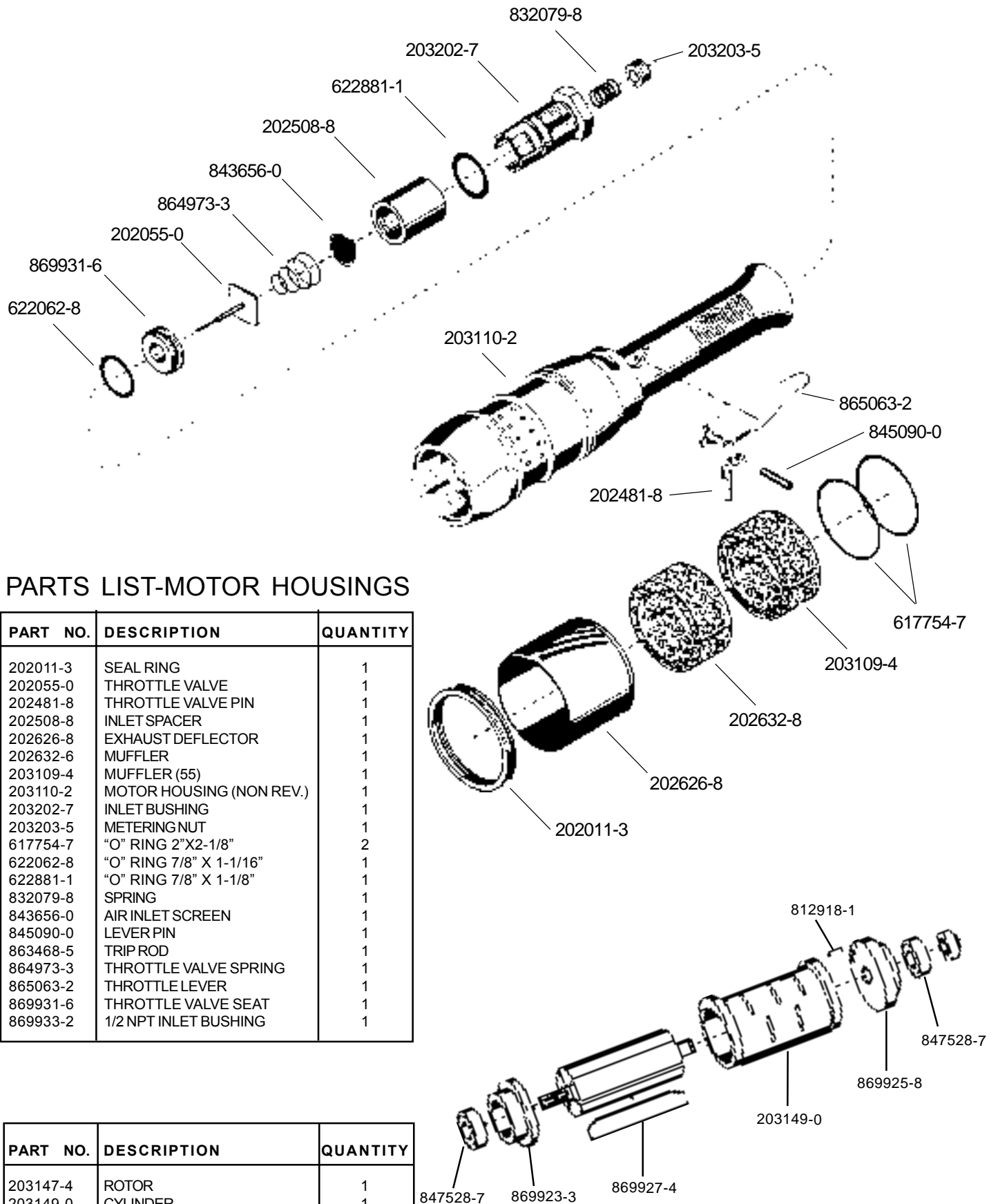
55RNAL - 201317-5 (incl. 867667-8)

55NJL - 201302-7

55RNAL - 201305-0

55NL - 201302-7

SF SERIES LOW CLEARANCE SPLIT FRAME

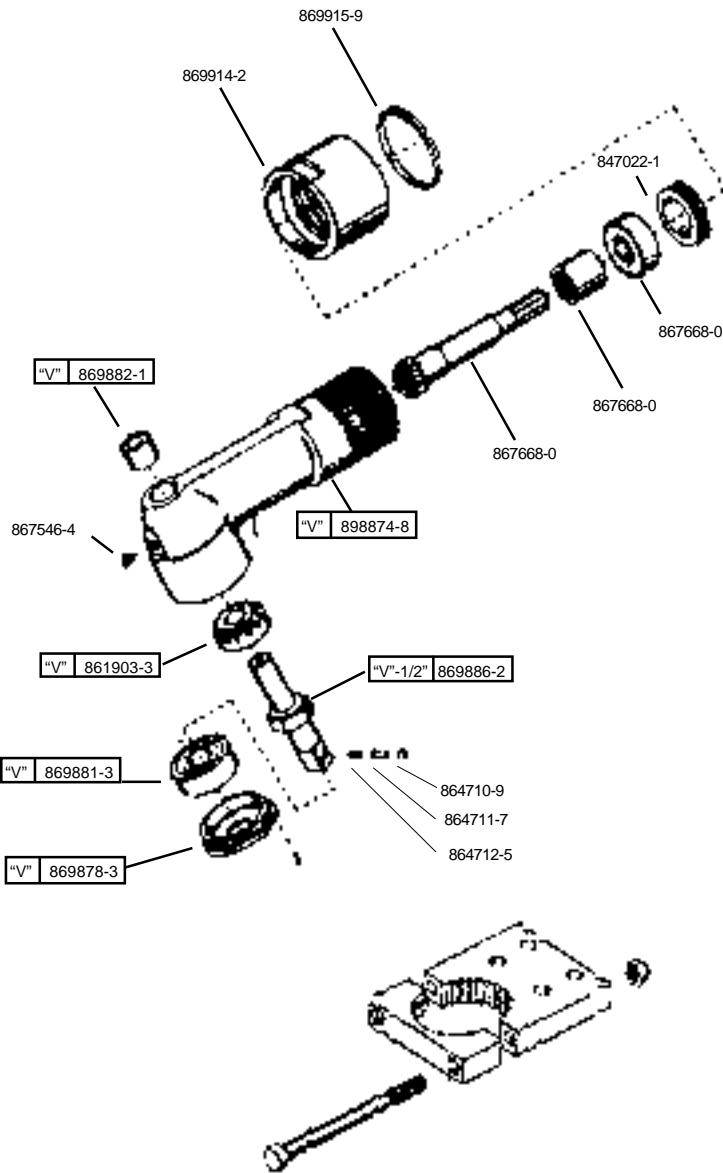


PARTS LIST-MOTOR HOUSINGS

PART NO.	DESCRIPTION	QUANTITY
202011-3	SEAL RING	1
202055-0	THROTTLE VALVE	1
202481-8	THROTTLE VALVE PIN	1
202508-8	INLET SPACER	1
202626-8	EXHAUST DEFLECTOR	1
202632-6	MUFFLER	1
203109-4	MUFFLER (55)	1
203110-2	MOTOR HOUSING (NON REV.)	1
203202-7	INLET BUSHING	1
203203-5	METERING NUT	1
617754-7	"O" RING 2"X2-1/8"	2
622062-8	"O" RING 7/8" X 1-1/16"	1
622881-1	"O" RING 7/8" X 1-1/8"	1
832079-8	SPRING	1
843656-0	AIR INLET SCREEN	1
845090-0	LEVER PIN	1
863468-5	TRIP ROD	1
864973-3	THROTTLE VALVE SPRING	1
865063-2	THROTTLE LEVER	1
869931-6	THROTTLE VALVE SEAT	1
869933-2	1/2 NPT INLET BUSHING	1

PART NO.	DESCRIPTION	QUANTITY
203147-4	ROTOR	1
203149-0	CYLINDER	1
847528-7	ROTOR BEARING	2
869927-4	ROTOR BLADE	4
869928-8	REAR BEARING	1

SF SERIES LOW CLEARANCE SPLIT FRAME

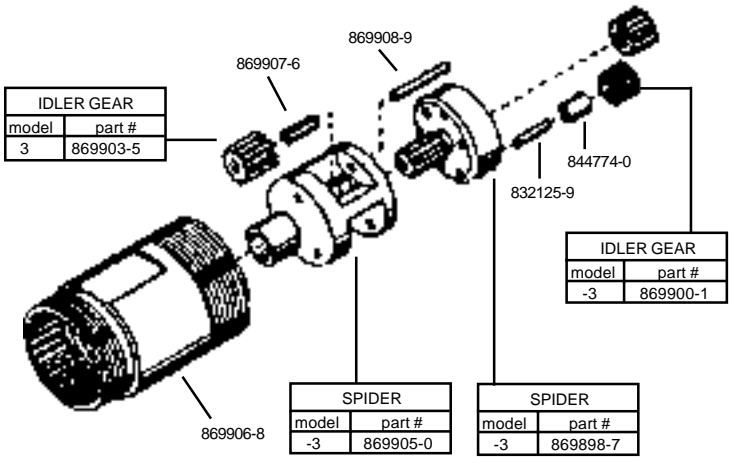


PART NO.	DESCRIPTION	QUANTITY.
202483-4	Reaction Bar Clamp	1
202484-2	Reaction Bracket	1
202485-9	Bracket Bolt	2
845995-0	Jam Nut	2
847659-0	Pinion Ball Bearing	1
861903-3	"V" Gear Set (incl. both gears 9T & 12T)	1
864710-9	Lock Pin Retainer (5/8" requires 2)	1
864711-7	Socket Lock Pin	1
864712-5	Lock spring Pin	1
867548-4	Grease Plug	1
867997-9	Bearing Cap Lock Screw	1
869874-5	"V" Right Angle Head	1
869878-3	"V" Bearing Cap (incl. 867997-9)	1
869877-1	Bearing Retainer	1
869878-9	Clamp Nut	1
869879-7	Clamp Ring	1
869880-5	Pinion Needle Bearing	1
869881-3	"V" Spindle Ball Bearing	1
869882-1	"V" Spindle (5/8" sq. Dr. incl. 864710-9 (2) 864711-7 864712-5)	1
869886-2	"V" Spindle (incl. 864710-9 (2), 864711-7, 864712-5) Cap-(incl. 867997-9) (3/4" sq. Dr.)-(incl. 864710-9, 864711-7, 864712-5)	1
883720-5	"X" Spindle Needle Bearing	1
OPTIONAL PARTS		
869883-9	"V" Spindle (5/8" sq. dr.)-(incl. Socket Lock Pin Components	

Denotes parts not included in sub-assemblies listed below.

The complete right angle head can be purchased as a sub assembly using the following part numbers:
"V-1/2" Right Angle Head--Part No. 861904-1

The complete Reaction Bar bracket can be purchased as a sub-assembly using Part No. 201034-6



PART NO.	DESCRIPTION	QUANTITY
832125-9	Idler Gear Pin	6
844774-0	Idler Gear Bearing	3
869898-9	-3 & -5 Spider-incl. 832125-9	1
869899-5	-4 & -5 Idler Gear (17T)-incl. 844774-0	3
869900-1	-2 & -3 Idler Gear (21T)-incl. 844774-0	3
		1
869902-7	-2 & -4 Idler Gear (18T)	3
869903-5	-3 & -5 Idler Gear (15T)	3
869904-3	-2 & -4 Spider	1
869905-0	-3 & -5 Spider	1
869906-8	Gear Case (50T)	1
869907-6	Needle Roller (13 per gear)	39
869908-4	Idler Gear Pin	3

SF SERIES LOW CLEARANCE SPLIT FRAME

SECTION X

LCSF ORDERING INFORMATION

To place an order or to get more detailed information on any E.H. Wachs products, call us at:
1-800-323-8185.

ORDERING REPLACEMENT PARTS

Please use parts list provided in manual. Have part description and part number of required replacement part or parts to help expedite order and insure proper parts are being ordered.

REPAIR INFORMATION

Please call E.H. Wachs Company prior to returning any equipment for repair. We will advise you of shipping and handling. Please enclose with equipment to be repaired your name, address, phone number and a brief description of problem or work to be done or estimated.

All repair work done at our plant will be estimated and the customer advised of cost and time required to complete repair.

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs. Retain the owners registration record and warranty card for your information.

RETURN GOODS ADDRESS



E.H. Wachs Company
100 Shepard Street
Wheeling, Illinois 60090

Gary Herman Companies, LLC.
4706 Curtis Lane
New Iberia, LA 70560
337-367-2880 www.alpha4rentals.com

847-537-8800

FAX: 847-520-1147 • 847-520-1168

Toll-Free: 1-800-323-8185

	TUBE & PIPE	
	CUT-OFF MACHINES	
Mod. LCSF/3 Ser.No.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Enter Your Machines Serial Number Here For Proper Record Keeping and Ordering Reference.		